

Indiana Department of Transportation

Access Management Guide

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AECOM

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PREFACE

This Guide presents and explains how and when to use a wide-range of access management techniques to address common traffic and access-related problems. Access management is a set of proven techniques that can help reduce traffic congestion, reduce the frequency of crashes, maintain the existing roadway capacity, and preserve investment in roads by managing the location, design and type of access to property. By preserving the flow of traffic and improving traffic safety, access management helps to encourage economic growth.

Purposes of the Guide

This Guide is intended as both a reference manual for INDOT District and Central Office Permits staff, as well as an informational resource for elected and appointed local government officials, planners, and road authority personnel. The Guide is based on the growing recognition that many transportation operations and safety benefits are achieved through local, county, regional, and state cooperation in solving existing transportation problems, and preventing future ones. By raising awareness of the planning, design, and regulatory techniques applied in effective access management among local, county, regional and state officials, better communication and success in the pursuit of common transportation and land use objectives could be achieved. Chief among these common objectives is the prevention of needless deaths and injury caused by poor access design. Good access design also prevents traffic crashes, improves roadway performance, and preserves the public investment in our roadways.

There are six principal purposes of this Guide:

1. Identify and explain the role and benefits of access management in contributing to solutions to common traffic problems.
2. Present a set of access management principles to serve as a foundation for effective access management techniques on both developed and developing corridors.
3. Provide a description of effective access management techniques for a wide variety of situations.
4. Identify the steps to prepare an access management plan and access management regulations by local governments in Indiana.
5. Describe the desired relationship between the Indiana Department of Transportation (INDOT) and local governments on access management issues.
6. Describe how Guide readers can make a difference on common access management issues in their own communities.

Organization of the Guide

This Guide presents access management techniques designed to help address common traffic problems. These techniques are organized around 15 access management principles listed in Section 1.3. Few access-related traffic problems can be solved with a simple “quick fix”. Typically, many techniques must be used together as part of a coordinated set of long range initiatives to achieve the desired result. Similarly, most principles and many techniques are interrelated. This interrelationship is evident with the references to multiple techniques for nearly every question presented at the start of Section 1.1 and the multiple cross-references throughout the Guide.

Contacting INDOT regarding the Guide

As noted in the Acknowledgements, the materials in this Guide were prepared with considerable guidance from a large number of local, state, and other stakeholders. The Guide is intended to meet a wide range of user needs. Research regularly contributes to refining various access management techniques. State and national guidelines sometimes change. Local officials unfamiliar with the access management techniques in this guidebook may require more information or clarification. Please contact INDOT if you wish to get more information, to suggest an improvement to the Guide or to order additional copies.

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1.0 INTRODUCTION

1.1 Common Access-Related Problems

At one time or another, virtually all motorists experience frustrations while driving. Congestion, delays, accidents, and wasted fuel while waiting in traffic are all too often some of the more common experiences encountered by motorists as they navigate our nation's roadways. As indicated in *Reducing Traffic Congestion and Improving Traffic Safety in Michigan Communities: The Access Management Guidebook*, prepared by Planning & Zoning Center, Inc. (Reference 1) the following are some typical complaints and questions often voiced by motorists in regard to transportation, land use, and property access:

Why do I have to wait through two or three light changes at the intersection? Why does it take 10 minutes to travel only 1 mile?

Why must I drive on the highway to travel between two stores located relatively close together on the same side of the road? Is there a way to connect the two properties more directly? Or construct a sidewalk between them so I can just walk?

Why are there so many driveways along this road? All the turning traffic is unsafe for pedestrians and cyclists, and it is confusing for motorists as well.

Why are there so many accidents on this roadway? There are so many vehicles turning into and out of all these driveways that it slows down the through traffic and increases the chances of an accident.

How come my competitor across the street has more business than I do, but yet fewer driveways?

My customers have difficulty exiting my property and turning onto the highway. There is too much conflicting traffic and congestion, both inside and outside my property. Will another driveway help?

How can we improve the appearance of this roadway? All the driveways, signs, and other clutter are ugly.

We spend a lot of money to improve our roads, yet we cannot build our way out of congestion. How can we protect our highway investment?

What can we do at the local government level to alleviate traffic congestion through our town?

How can we plan to prevent these problems before they arise in the future?

The complaints above are very often reflective of poor access management practices along our roadways and highways, which result in the following:

- High accident rates;
- Poor traffic flow and congestion;
- Frequent braking by drivers in the through lanes in response to turning vehicles;
- Unsightly strip development;
- Neighborhoods disrupted by cut-through traffic;

- Pressures to widen existing roadways, build bypasses, or incorporate a parallel local street to create a one-way couplet;
- Bypass routes that are as congested as the routes they were intended to relieve;
- A decrease in property values; and
- Wasted investment in the transportation system.

The good news is that many of the questions and complaints above can be addressed with a change in how abutting properties access the adjacent roadways, while others can be addressed by improvements to the design of the roadway. Some improvements can be made quickly, while others require implementation over a period of time. In addition, many existing problems along roadways in developed areas can be avoided altogether along other roadways in developing areas if the Indiana Department of Transportation (INDOT), metropolitan planning organizations (MPOs), counties, and local governments work cooperatively and proactively to apply the access management techniques described in this Guide. The techniques and processes used to fix or prevent these traffic problems are commonly referred to as “Access Management.”

1.2 What is Access Management?

In short, access management is the process of balancing the competing needs of traffic movement and land access. Over the last several decades, numerous transportation studies and research efforts have demonstrated a fundamental relationship between the level of direct property access permitted along a roadway and the roadway’s corresponding operational and safety performance. The introduction of vehicle conflict points associated with unrestricted vehicular property access has been shown to result in increases in delays, crash rates, and vehicle emissions. However, most roadways must provide some level of vehicular access to abutting properties, in addition to providing a mobility function. The basic principles of access management involve achieving a balance between mobility and access by limiting the number of conflict points, separating the conflict points, and reducing the impediments to through traffic caused by turning and queued vehicles.

The *Access Management Manual* (Reference 2), published in 2003 by the Transportation Research Board of the National Academy of Sciences, is a comprehensive resource that summarizes the results of access management research conducted over the last several decades. The *Access Management Manual* defines access management, and its purpose, as follows:

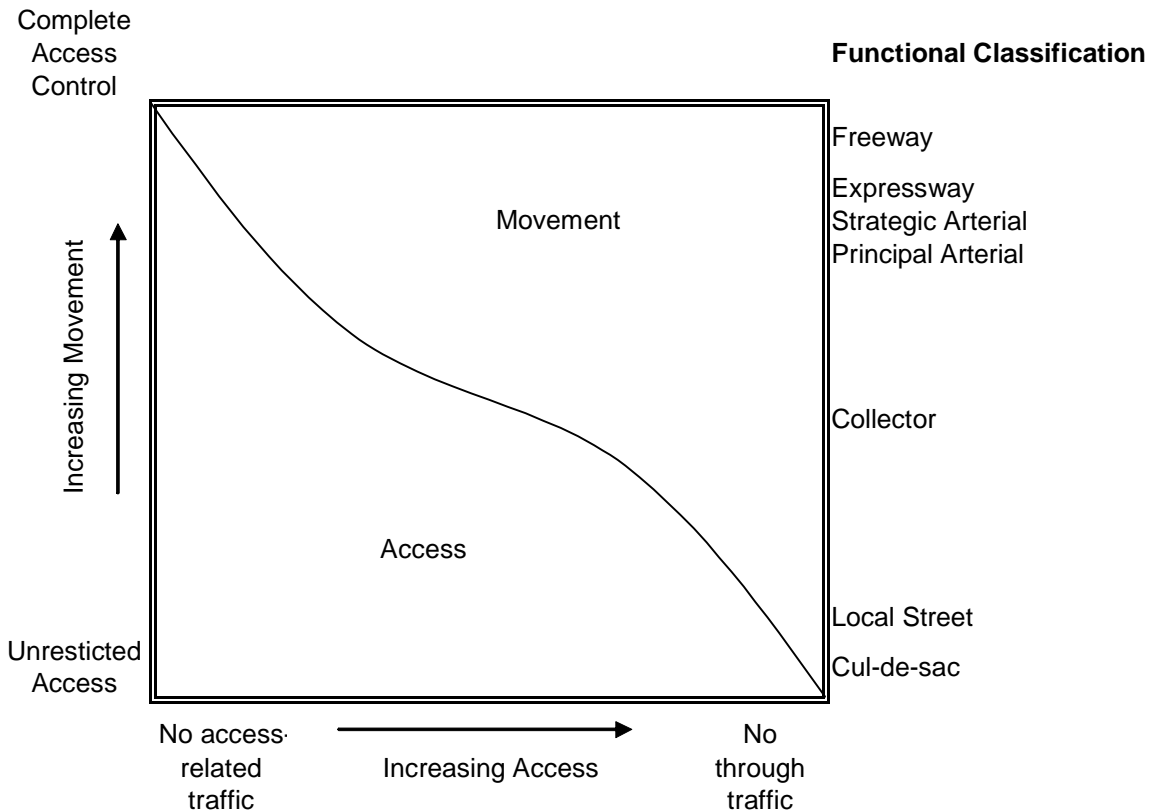
Access management is the systematic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway. It also involves roadway design applications, such as median treatments and auxiliary lanes, and the appropriate spacing of traffic signals. The purpose of access management is to provide vehicular access to land development in a manner that preserves the safety and efficiency of the transportation system.

As indicated above, roadways serve two primary functions: 1) moving vehicles, and 2) providing direct access to property. The primary objective of access management is to protect the functional integrity of the roadway system by ensuring that each roadway maintains its intended balance between the movement and access functions.

Figure 1-1 illustrates the balance between movement and access functions for roadways of various functional classifications. Higher-order roadways—such as freeways, expressways, and arterials—have a higher degree of access control to preserve their movement function. On the other hand, local streets

have less restrictive access control because they are intended primarily to provide access to abutting properties.

Figure 1-1: Movement versus Access balance by Functional Classification



Contemporary practice applies the concept of access management to all roadways in the transportation system, not just limited-access freeways and expressways. In fact, access management is critically important along arterials, collectors, and other high-level to mid-level roadways that are expected to accommodate both the safe and efficient movement of through traffic, as well as provide access to adjacent properties. The appropriate degree of access control to apply to a particular roadway varies based on:

- The functional role of the roadway in the overall transportation system;
- The nature of the abutting land uses;
- The traffic characteristics of the roadway; and
- The roadway’s long-term planning objectives.

Because access management involves trade-offs between these often competing objectives, the level of access control established for a particular roadway is usually decided as a matter of policy by the governing agency. Each agency must decide what level of performance and operational efficiency it is willing to accept in exchange for more frequent and direct property access.

1.3 Access Management Objectives

In order to accommodate access to existing and future development in a safe and efficient manner, INDOT seeks to manage the location, design, and type of property access in order to:

- Reduce traffic congestion;
- Preserve the flow of traffic;
- Improve traffic safety and reduce the frequency of crashes;
- Preserve existing road capacity;
- Support economic growth;
- Improve access to businesses and homes;
- Maintain or improve property values; and
- Preserve the public investment in the transportation infrastructure.

These objectives can be achieved through the application of the following access management techniques described in this Guide:

- Consolidate and limit (where necessary) access along the State highway system;
- Promote a supporting local street system;
- Promote the sharing of site-access to the State highway system; and
- Promote efficient on-site circulation.

The primary goal is to create an interconnected system of State highways that function safely and efficiently for their useful life. Proper application of access management techniques also assures businesses and drivers of safe and convenient access, and taxpayers of more cost-effective use of their money spent on roads. In addition, access management practices quite often result in more attractive corridors.

1.4 Basic Access Management Principles

The objectives described above are accomplished by applying the following access management principles:

1. Provide a Specialized Roadway System

As described in the previous section, different types of roadways serve different functions relative to access and mobility. It is important to design and manage roadways according to the primary functions that they are expected to serve. Roadway operations can be improved by achieving the proper balance between traffic flow and access to abutting property.

2. Limit Direct Access to State Highways and Other Major Roadways

State highways and other roadways that serve higher volumes of regional through traffic need a greater level of access control to preserve their traffic movement function. On the other hand, frequent and direct property access is more compatible with the function of local and collector roadways. “Reasonable access” to property abutting a state highway or county road is protected by Indiana State law. However, direct access is not required if other access options are available.

3. Promote Intersection Hierarchy

An efficient transportation network provides appropriate transitions from one classification of roadway to another. For example, freeways connect to arterials through an interchange that is designed appropriately for the transition. This concept is also extended to surface streets, resulting in a series of intersection types that range from the junction of two major arterial roadways to a residential driveway connecting to

a local street. The more important the roadway (i.e. the higher its functional classification) the higher the degree of access management that should be applied so that the roadway continues to perform according to the function it was designed to serve.

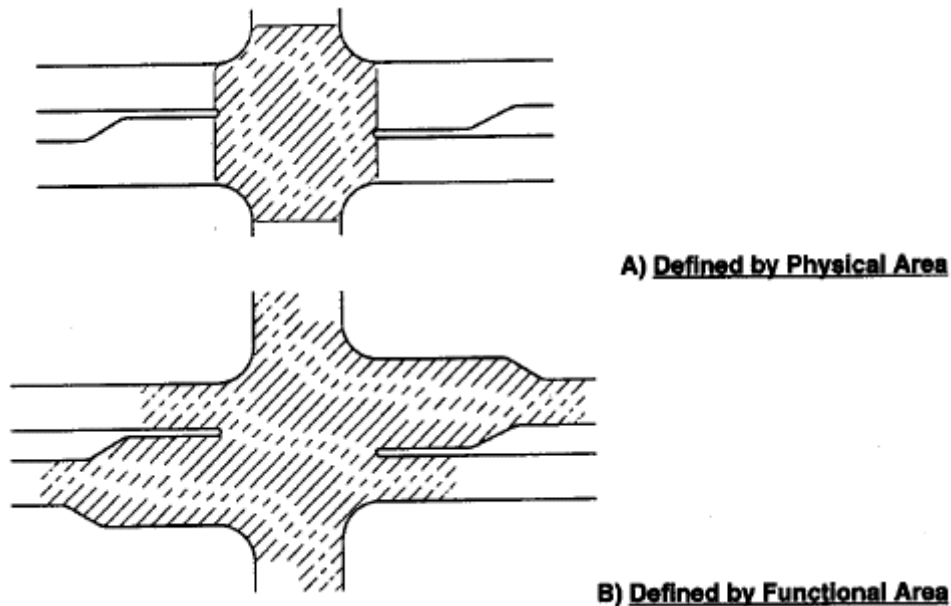
4. Locate Signals to Favor Through Movements

Long, uniform spacing of intersections and signals on major roadways enhances the ability to coordinate signals and ensure continuous movement of traffic at the desired speed. Failure to carefully locate access connections or median openings that may later become signalized can cause substantial increases in arterial travel times. In addition, poor signal placement may lead to delays that cannot be overcome by computerized signal-timing systems.

5. Preserve the Functional Area of Intersections and Interchanges

The functional area of an intersection (or interchange) includes the areas beyond the junction of the intersecting roadways that is critical to the proper function of the intersection (see Figure 1-2). This functional area includes the approaches and vehicle departure areas where motorists are responding to the traffic control devices at the intersection, accelerating, decelerating, and maneuvering into the appropriate lane to stop or complete a turn. Access driveways located too close to intersections or interchange ramps (i.e. within the functional area) can cause serious traffic conflicts that impair the function of the affected facilities.

Figure 1-2: Intersection Physical Area versus Functional Area



6. Limit the Number of Driveways and Other Conflict Points

Drivers make more mistakes, and are more likely to have collisions, when they are presented with complex driving situations created by numerous conflicts (see Figure 1-3). On the other hand, simplifying the driving task—by limiting the number of conflict points a motorist is faced with—contributes to improved traffic operations and fewer collisions (see Figure 1-4). The number of potential conflicts also increases substantially when pedestrian and bicycle movements are considered as well.

Therefore, a less complex driving environment is accomplished by also limiting the number and type of conflicts between vehicles, vehicles and pedestrians, and vehicles and bicyclists.

Figure 1-3: Conflicts at Four-Leg Full-Movement Intersection

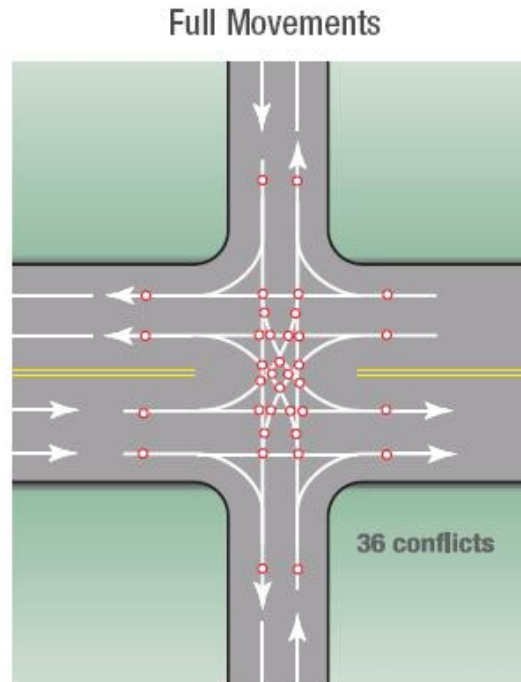
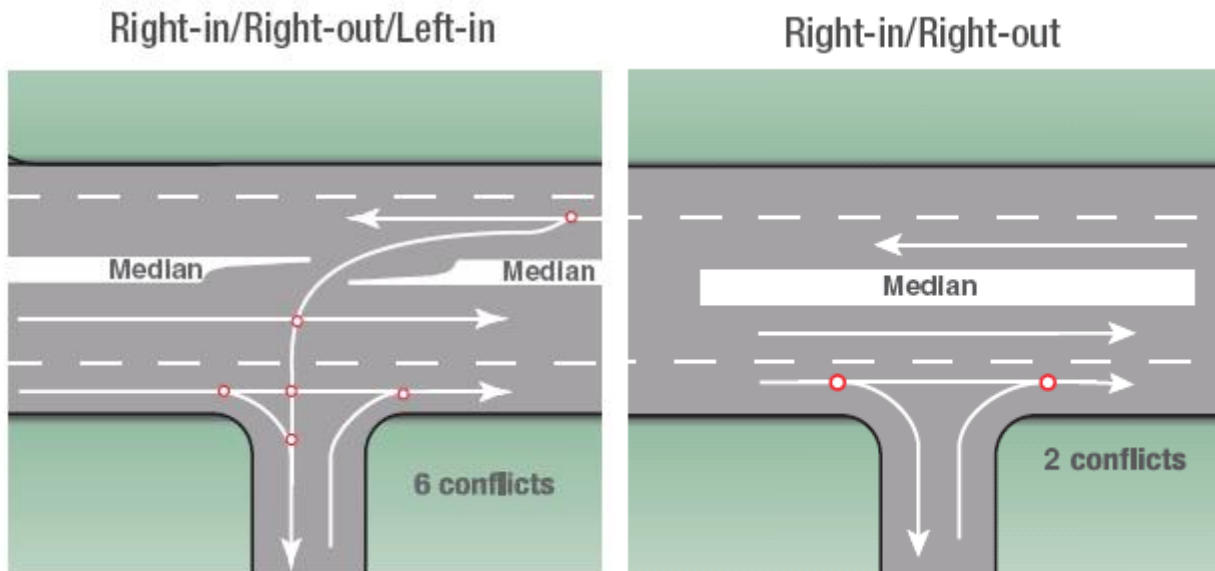


Figure 1-4: Reduced Conflict Points at Median-Controlled Intersection



7. Separate Driveways and Other Conflict Points

Drivers need sufficient time to address one potential set of conflicts before facing another. The necessary spacing between conflict areas increases as travel speed increases, in order to provide drivers adequate perception and reaction time. Separating conflict areas helps to simplify the driving task and contributes to improved traffic operations and safety.

8. Remove Turning Vehicles from Through Traffic Lanes

Turning lanes allow drivers to decelerate gradually out of the through lane and wait in a protected area for an opportunity to complete a turn, thereby reducing the severity and duration of conflict between turning vehicles and through traffic. Similarly, acceleration and deceleration lanes allow drivers to transition their travel speeds gradually to enter or leave the through traffic stream. The physical separation of turning and through traffic improves the safety and efficiency of roadways and intersections.

9. Use Non-Traversable Medians to Manage Left-Turn Movements

Medians channel turning movements on major roadways to designated locations. Non-traversable medians and other techniques that minimize left-turns or reduce the driver workload can be especially effective in improving roadway safety. Full median openings—that allow left-turns from either direction—are more appropriately reserved for signalized intersections and unsignalized junctions of arterial and collector streets. Full median openings at other unsignalized locations can adversely affect safety and traffic flow, but may be appropriate in some areas where analysis indicates that traffic operations and safety would be improved.

10. Provide a Supporting Local Street System and On-Site Circulation Systems

Interconnections between adjacent developments—as well as connections to the existing local street system—are important in maintaining safe and efficient traffic flow. Well-planned communities provide a supporting network of local and collector streets to accommodate development, as well as unified property access and circulation systems. Interconnected local street systems and on-site circulation systems provide alternative routes for bicyclists, pedestrians, and drivers alike.

Alternatively, commercial strip development with separate driveways for each business forces even short trips to occur on the major roadway, thereby impeding safety and mobility along that roadway. Connectivity can be maintained, while advancing access management objectives, for arterial roadways by ensuring that local street connections to the arterial conform with the adopted connection spacing interval.

11. Match Driveway Design with Operational and Safety Needs

Driveways accommodate a wide range of vehicle types, traffic volumes, and vehicle turning speeds. For example, a short curb-return radius cannot efficiently accommodate large trucks or the high-speed traffic expected on a rural arterial, but may be an acceptable design treatment for lower-speed urban areas where only passenger cars and single-unit trucks may be expected. Consequently, driveway design should be tailored to meet the needs of the vehicles using the driveway.

12. Coordinate Actively with Other Agencies regarding Transportation and Land Use

Effective access management is rarely accomplished by one agency independently. To optimize the benefits of access management, coordination and cooperation with all the appropriate transportation agencies is essential when introducing design techniques along a roadway or preparing an Access

Management Plan. In addition, multi-jurisdictional coordination is essential when applying access management standards relative to lot split, subdivision, site plan, zoning, and other local land use application reviews.

13. Consider Preparing an Access Management Plan or Corridor Management Plan

An Access Management Plan (sometimes referred to as a “Corridor Management Plan”) is a comprehensive study of existing and planned transportation infrastructure and land use within a defined study area that establishes a plan for providing reasonable access to all properties, while restoring or preserving the integrity of the transportation system, through careful consideration of the other principles described above. The primary benefit of having such a plan is that it lays the foundation for correcting existing access management problems and preventing others from occurring in the future. An Access Management Plan may be formally adopted into a local comprehensive plan.

14. Educate and Involve Others

The effective application of access management is greatly enhanced by on-going education activities to inform planners, engineers, highway designers, and law-makers at the State, county, MPO, and local levels about the benefits of access management, the principles and techniques for successful application, and current implementation activities.

1.4 Benefits of Access Management

This section outlines the benefits of improving access management policy and practices in Indiana. The wide-ranging benefits of access management extend to a host of users and affected parties including:

- *Motorists* – who face fewer conflicts and decision points, simplifying the driving task and improving safety;
- *Cyclists and Pedestrians* – who face fewer conflicts with traffic, and are afforded safe refuge locations such as medians;
- *Transit riders* – who experience reduced delays and travel times, and benefit from an improved walking environment;
- *Business persons* – who are served by a more efficient transportation system that captures a broader market area, and benefit from stable property values and a predictable and consistent development environment;
- *Freight delivery carriers* – who experience reduced delays and improved safety, resulting in shorter transportation times and lower delivery costs;
- *Government agencies* – who benefit from the lower cost of delivering a safe and efficient transportation system; and
- *Communities* – who benefit from a safer and more attractive transportation system and from reduced disruptions associated with road widening and construction.

Considerable research and experience from other states has demonstrated the traffic safety and operational benefits to the motoring public. However, access management extends beyond these to

include economic, environmental, system preservation, and aesthetic benefits. This section draws upon national research and associated literature presented in the *Access Management Manual* (Reference 2) and *NCHRP Report 420: Impacts of Access Management Techniques* (Reference 3) to describe these benefits as they relate to the various access management techniques that are recommended for Indiana. The access management benefits described in this section focus on the following major areas:

- System preservation benefits
- Economic benefits
- Environmental benefits
- Roadway safety benefits
- Traffic operations benefits
- Aesthetic benefits

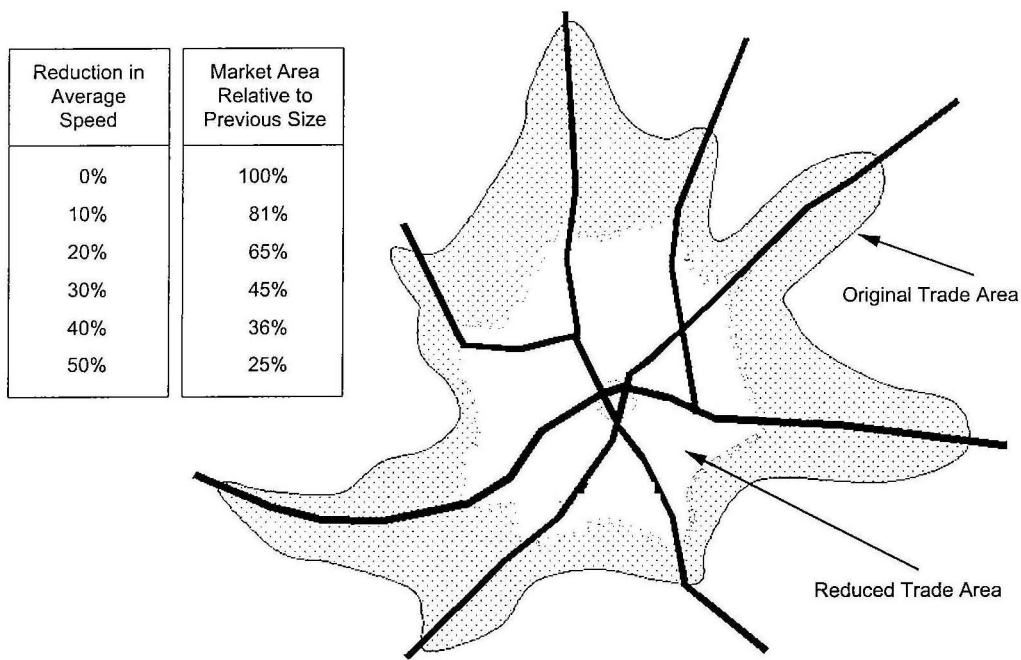
1.4.1 System Preservation Benefits

Access management is *asset* management. Roads are an important public resource, and are costly to build, improve, and replace. Because access management preserves the functional integrity of the roadway system, it is an essential tool for maximizing the return on this investment in public infrastructure. Roadways with closely-spaced driveways, irregularly-spaced traffic signals, numerous median openings, and inefficient traffic signal progression, suffer the deteriorating effects of increased traffic congestion, and degraded safety performance. However, by managing access, Indiana can extend the life of its highways by providing for more safe and efficient traffic operations, largely within existing rights-of-way.

1.4.2 Economic Benefits

Access management does not only improve the transportation function of the roadway, but it also helps preserve long-term property values and the viability of abutting development. Poor access management results in greater average travel delays and increased travel times. Market area analysis demonstrates that greater delays and the associated increases in travel times lead to a corresponding decrease in the market areas that can be served by businesses. Although the sizes of market areas for each business are different, the proportionate decrease in the size of the market area remains the same. This relationship is illustrated in Figure 1-5.

Figure 1-5: Effects of Travel Time on Market Area



Source: Figure 2-4, *Access Management Manual*, 2003.

1.4.3 Environmental Benefits

Maximum fuel efficiency occurs at constant speeds between 35 and 50 mph. Similarly, minimum emissions for carbon monoxide and organic compounds occur at speeds between 35 and 55 mph. Access management helps to save fuel and reduce vehicle emissions by helping to ensure the efficient progression of through vehicles along major roadways, maintaining desired progression speeds, and reducing the propensity for start-and-stop traffic operations due to vehicle turning conflicts. In addition, as described above, access management protects the capacity and efficiency of existing roadways, reducing the need for the construction of new major roadways and bypass roadways, and the associated environmental impacts of these actions.

1.4.4 Roadway Safety Benefits

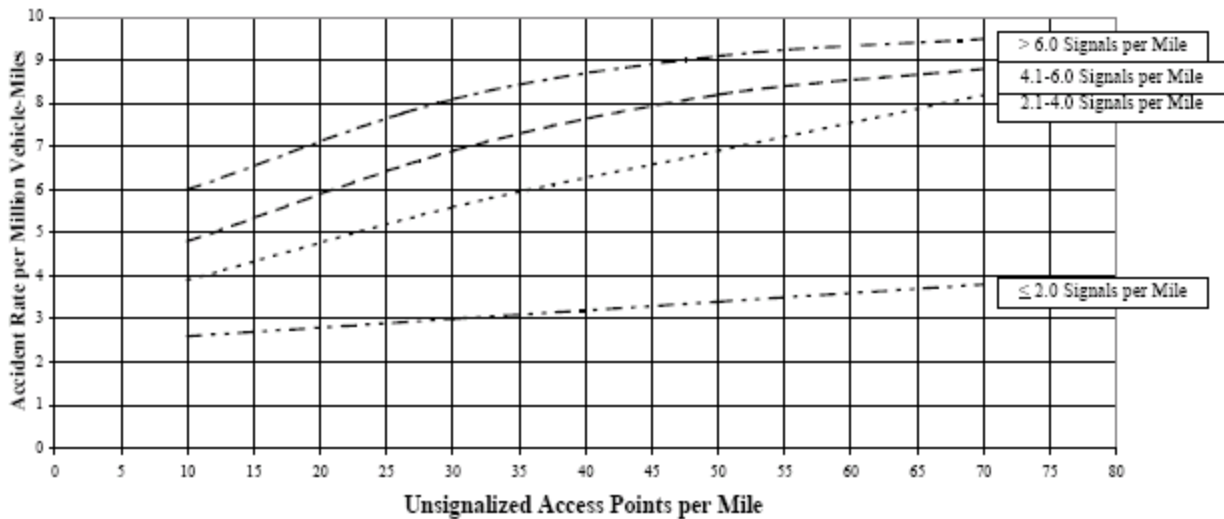
This section summarizes the roadway safety benefits associated with the following major access management techniques:

- Traffic Signal Spacing;
- Unsignalized Access Spacing;
- Median Installations; and
- Left-Turn Lanes.

Traffic Signal Spacing

Several studies have found that the number of crashes, and crash rates (i.e. crashes per million vehicle miles), increase as traffic signal density increases. The effect of signal density on crash rates is illustrated in Figure 1-6.

Figure 1-6: Effect of Signal Density and Unsignalized Access Density on Average Crash Rates in Urban and Suburban Areas



Source: Figure 26, *NCHRP Report 420: Impacts of Access Management Techniques*, 1999.
Also shown in Figure 9-3 in *Access Management Manual*, 2003 and Exhibit 2-37 in *AASHTO Green Book*, 2004.

For example, at a density of 20 unsignalized access points per mile, an increase in signal density from ≤2.0 signals per mile to 2.1 to 4.0 signals per mile can result in an estimated 70 percent increase in crash rate (from approximately 2.8 to 4.8 crashes per million vehicle miles). The average crash rate more than doubles—from 3.6 crashes to 7.6 crashes per million vehicle miles—at 60 unsignalized access points per mile.

Unsignalized Access Spacing

Unsignalized access points introduce conflicts and friction into the traffic stream as vehicles enter and leave the highway. As stated in the 2004 AASHTO “Green Book” (*A Policy on Geometric Design of Highways and Streets*, Reference 4):

Driveways are, in effect, intersections... The number of crashes is disproportionately higher at driveways than at other intersections; thus, their design and location merit special consideration.

The separation of conflict areas is commonly recognized as an effective way to improve safety for motorists, pedestrians, and bicyclists. Drivers need sufficient time to address one set of potential conflicts before facing another. Sufficient spacing between unsignalized access points also permits the design of auxiliary lanes that reduce the interference on through traffic caused by turning vehicles. Studies have shown that crash rates rise with increasing frequency of driveways and intersections. Each additional driveway increases the number of conflict points, as well as the crash potential. The crash rate indices shown in Table 1-1 were derived using 10 access points per mile as a base.

Table 1-1: Relative Crash Rates for Unsignalized Access Connection Spacing

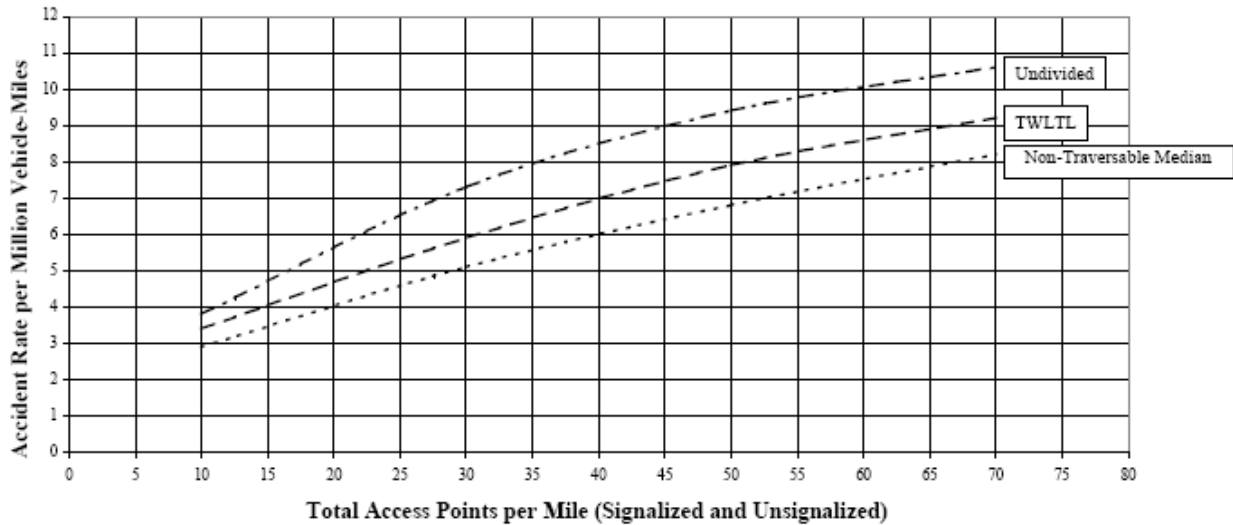
Unsignalized Access Points Per Mile ^a	Average Spacing (feet) ^b	Relative Crash Rate
10	1,056	1.0
20	528	1.4
30	352	1.8
40	264	2.1
50	211	2.4
60	176	3.0
70	151	3.5

a = Total access connections on both sides of highway
 b = Average spacing between access connections on the same side of the roadway; one-half of the connections on each side of the roadway.
 Source: Derived from Table 4 in *NCHRP Report 420: Impacts of Access Management Techniques*, 1999.
 Also shown in Table 9-4, *Access Management Manual*, 2003.

As shown in Table 1-1, a segment with 60 access points per mile would be expected to have a crash rate that is three times higher than a segment with 10 access points per mile. In general, each additional access point per mile increases the crash rate by approximately four percent.

Figures 1-7 and 1-8 present crash rates by median type and total access density (both directions) for urban/suburban and rural roadways, respectively.

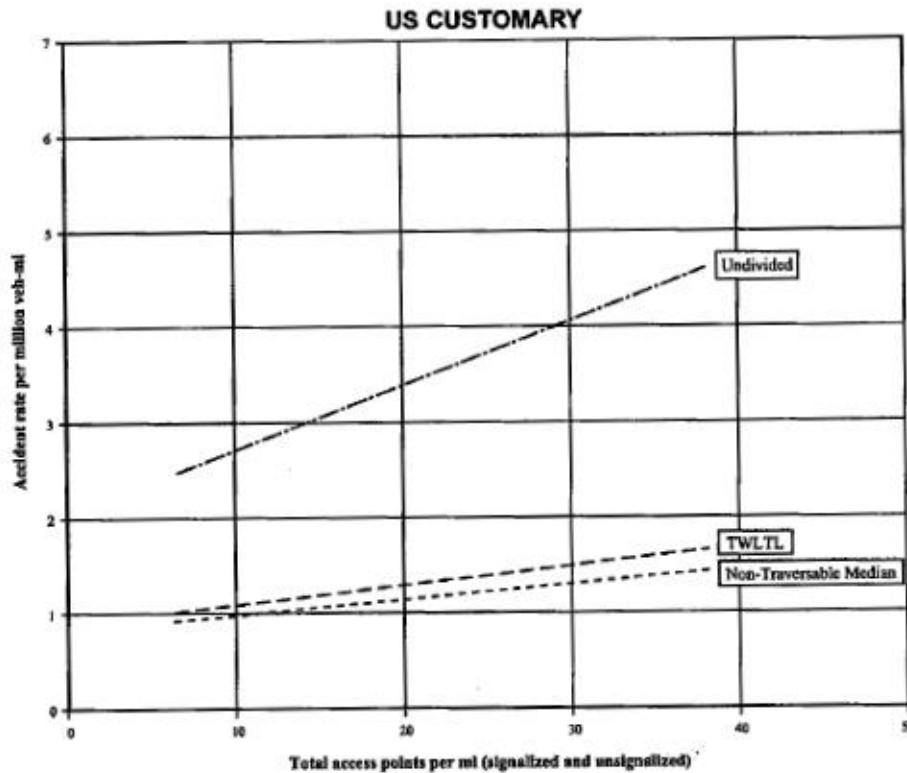
Figure 1-7: Estimated Crash Rates by Median Type, Urban and Suburban Areas



Source: Figure 26, *NCHRP Report 420: Impacts of Access Management Techniques*, 1999.
 Also shown in Exhibit 2-35 of *AASHTO Green Book*, 2004.

As shown in Figure 1-7, each access point added in urban/suburban areas is projected to increase the annual crash rate by 0.11 to 0.18 crashes per million vehicle-miles-traveled (VMT) on undivided highways, and by 0.09 to 0.13 crashes per million VMT on highways with two-way left-turn lanes (TWLTLs) or non-traversable medians.

Figure 1-8: Estimated Crash Rates by Median Type, Rural Areas



Source: Figure 25, NCHRP Report 420: *Impacts of Access Management Techniques*, 1999.
Also shown in Exhibit 2-36 of AASHTO Green Book, 2004.

As shown in Figure 1-8, each access point (or driveway) added in rural areas is projected to increase the annual crash rate by 0.07 crashes per million VMT on undivided highways, and 0.02 crashes per million VMT on highways with TWLTLs or non-traversable medians.

Median Installations

A synthesis of research on the safety effects of alternative median treatments concluded that roadways with non-traversable medians are safer than both undivided roadways and those with continuous two-way left-turn lanes (TWLTL). Tables 1-2 and 1-3 compare crash rates of various access densities by median type for urban/suburban areas, and rural areas, respectively.

Table 1-2: Representative Crash Rates by Type of Median, Urban/Suburban Areas (crashes per million vehicle-miles traveled)

Total Access Points Per Mile ^a	Median Type		
	Undivided	TWLTL	Non-traversable Median
≤ 20	3.8	3.4	2.9
20.01 – 40	7.3	5.9	5.1
40.01 – 60	9.4	7.9	6.8
> 60	10.6	9.2	8.2
All	9.0	6.9	5.6

a = Includes both signalized and unsignalized access points.

Source: Table 6 in NCHRP Report 420: *Impacts of Access Management Techniques*, 1999.

Also shown in Table 2-2, *Access Management Manual*, 2003.

**Table 1-3: Representative Crash by Type of Median, Rural Areas
(crashes per million vehicle-miles traveled)**

Total Access Points Per Mile ^a	Median Type		
	Undivided	TWLTL	Non-traversable Median
≤ 15	2.5	1.0	0.9
15.01 – 30	3.6	1.3	1.2
> 30	4.6	1.7	1.5
All	3.0	1.4	1.2

a = Includes both signalized and unsignalized access points.

Source: Table 7 in *NCHRP Report 420: Impacts of Access Management Techniques*, 1999.

Also shown in Table 2-2, *Access Management Manual*, 2003.

Table 1-2 indicates that in urban and suburban areas, undivided highways were found overall to experience 9.0 crashes per million vehicle miles, as compared with rates of 6.9 for TWLTLs and 5.6 for nontraversable medians. As Table 1-3 shows, in rural areas, undivided highways were found overall to experience 3.0 crashes per million vehicle miles, as compared with rates of 1.4 for TWLTLs and 1.2 for non-traversable medians.

Table 1-4 illustrates the findings of a before-and-after study of crash rates along Memorial Drive in Atlanta, Georgia. A raised median was installed along this roadway, which previously was striped for a continuous TWLTL.

Table 1-4: Percentage Change in Crash Rates after Replacing a TWLTL with a Raised Median

Location	Total Crash Rate	Injury Rate
Mid-block	-55	-59
Intersections	-24	-40
TOTAL	-37	-48

Source: Table 2-4, *Access Management Manual*, 2003.

As shown in Table 1-4, conversion from a TWLTL configuration to a raised median configuration reduced the total crash rate for the roadway by 37 percent and reduced the injury rate by 48 percent.

Table 1-5 provides a summary of the results of research efforts on the operational and safety effects of various median treatments.

Table 1-5: Summary of Research on the Effects of Various Access Management Techniques

Treatment	Effect
1. Add continuous TWLTL	35% reduction in total crashes
2. Add non-traversable median	35% reduction in total crashes
3. Replace TWLTL with a non-traversable median	15%-57% reduction in crashes on 4-lane roads 25%-50% reduction in crashes on 6-lane roads

TWLTL = Two-Way Left-Turn Lane

Source: Excerpt from Table 2-5, *Access Management Manual*, 2003.

Selecting a median alternative—whether retaining an undivided cross-section, installing a two-way left-turn lane, or providing a non-traversable median barrier—is a major decision that will influence the

operational and safety characteristics of a roadway. Roadway agencies in Indiana must consider the following in deciding the best median type, or if medians are the preferred method of access management:

- Roadway function;
- Adjacent land use;
- Supporting street system;
- Existing access spacing, design, and traffic control features;
- Traffic speeds;
- Crash history and future crash potential; and
- Costs.

Left-Turn Lanes

A synthesis of safety experience indicates that the removal of left-turns from through traffic lanes via an exclusive left-turn bay reduced crash rates between 25 and 50 percent on four-lane roadways.

1.4.5 Traffic Operations Benefits

This section summarizes the traffic operations benefits associated with the following major access management techniques:

- Traffic Signal Spacing;
- Unsignalized Access Spacing;
- Median Installations; and
- Left-Turn Lanes.

Traffic Signal Spacing

The spacing of traffic signals, in terms of their frequency and uniformity, is a critical parameter that governs the performance of urban and suburban highways. Closely-spaced—or irregularly-spaced—traffic signals on arterial roadways result in frequent stops, unnecessary delays, increased fuel consumption and vehicular emissions, as well as high crash rates. Sufficient and uniform traffic signal spacing allow signal timing plans to be developed that can efficiently accommodate varying traffic conditions during peak and off-peak time periods. Establishing traffic signal spacing standards is one of the most important access management techniques. For this reason, states such as Colorado, Florida, and New Jersey require longer signal spacing (e.g. ½ mile) or minimum through bandwidths¹ (e.g. 50 percent) along higher-speed principal arterial roadways.

Each traffic signal per mile added to a roadway reduces travel speeds by approximately 2 to 3 miles per hour. Table 1-6 indicates the percentage increases in travel time that can be expected as signal density increases, using two traffic signals per mile as a base. For example, travel time on a segment with four signals per mile would be approximately 16 percent greater than on a segment with two signals per mile.

¹ Bandwidth measures how large a platoon of vehicles can pass through a series of signals without stopping for a red traffic light. It represents a “window of green” in which motorists traveling along a roadway will encounter a series of green lights as they proceed. For example, a bandwidth of 45 percent indicates that, if a traffic signal has a 100-second cycle length, there is a 45-second band in which a platoon of vehicles will encounter green lights as they travel along a roadway.

Table 1-6: Percentage Increase in Travel Times as Signalized Density Increases

Signals Per Mile	Percent Increase in Travel Time (compared to 2 signals per mile)
2	0
3	9
4	16
5	23
6	29
7	34
8	39

Source: Derived from Table 3 in *NCHRP Report 420: Impacts of Access Management Techniques*, 1999.
Also shown in Table 2-7 in *Access Management Manual*, 2003

The Colorado Access Demonstration Project concluded that ½-mile signal spacing could reduce vehicle-hours of delay by more than 60 percent, and vehicle-hours of travel by more than 50 percent, compared with signals spaced at ¼-mile intervals with full median openings between signals.

Traffic signals account for most of the delay that motorists experience on arterials and also may contribute to certain types of crashes. The planning, design, and operation of traffic signals in Indiana need to achieve a balance among capacity, property access, and progression requirements. Restricting signals to those locations where effective progression can be achieved will result in both safety and operational benefits to the users of the Indiana roadway system.

Unsignalized Access Spacing

Travel times along unsignalized multi-lane divided highways can be estimated using procedures set forth in the *Highway Capacity Manual (HCM, Reference 5)*. Speeds are estimated to be reduced by 0.25 mph for every access point up to a 10 mph reduction for 40 access points per mile. The *HCM* procedure is keyed to access points on one side of a highway, but access points on the opposite side of a highway may be included where they have a significant effect on traffic flow.

More detailed analysis used for the development of the *Highway Capacity Manual* showed a speed reduction of 0.15 mph per access point and 0.005 mph per right-turning movement per mile of road (see Table 1-7). Thus, for 40 access points per mile and 400 right-turns per mile, the speed reduction would be 8.0 mph. If the right-turn volume were to increase to 600, the corresponding speed reduction would be 9.0 mph. The *HCM* value in both cases is 10 mph.

Table 1-7: Speed Reductions for Uninterrupted Multi-Lane Arterials

Access Points per Mile	Speed Loss per Access Point (mph)	Hourly Right-Turn Volume Per Mile							HCM @ 0.25 mph speed loss per access
		100	200	300	400	500	600	900	
		Speed Loss (mph)							
		0.5 ^b	1.0	1.5	2.0	2.5	3.0	4.5	
Combined Speed Loss (mph)									
1	0.15 ^a	0.65 ^c	1.15	1.65	2.15	2.65	3.15	4.65	1.25
5	0.75	1.25	1.75	2.25	2.75	3.25	3.75	5.25	1.25
10	1.50	2.00	2.50	3.00	3.50	4.00	4.50	6.00	2.50
15	2.25	2.75	3.25	3.75	4.25	4.75	5.25	6.75	3.75
20	3.00	3.50	4.00	4.50	5.00	5.50	6.00	7.50	5.00
30	4.50	5.00	5.50	6.00	6.50	7.00	7.50	9.00	7.50
40	6.00	6.50	7.00	7.50	8.00	8.50	9.00	10.50	10.00

Note: Numbers within box represent sum of marginal totals (i.e. c = a + b).
Source: Table 42, NCHRP Report 420: Impacts of Access Management Techniques, 1999.

The research clearly indicates that increasing the spacing between access points improves roadway safety and the quality of traffic flow. Indiana motorists will experience operational and safety benefits by increasing the spacing distance between access points, which provides for reduced vehicular travel times, fewer vehicular conflicts and reduced crash potential, and opportunities for the installation of turn lanes and auxiliary lanes.

Median Installations

The basic choices for designing the roadway median are whether to install a continuous TWLTL or a non-traversable median on an undivided roadway, or to replace a two-way left-turn lane with a non-traversable median. Two-way left-turn lanes provide greater access and maximize operational flexibility. A non-traversable median design involves the provision of either a raised or depressed median that cannot be crossed or discourages crossing. Such treatments improve traffic safety and operations by removing left-turn movements from the through travel lanes. Medians physically separate opposing traffic, limit access, clearly define conflicts, and provide better pedestrian refuge. Median design requires adequate provisions for left-turns and “U”-turns to avoid concentrating these movements at signalized intersections.

Table 1-8 provides a summary of the results of research efforts on the operational effects of various median treatments.

Table 1-8: Summary of Research on the Effects of Various Access Management Techniques

Treatment	Effect
1. Add continuous TWLTL	30% decrease in delay 30% increase in capacity
2. Add non-traversable median	30% decrease in delay 30% increase in capacity

TWLTL = Two-Way Left-Turn Lane
Source: Excerpt from Table 2-5, *Access Management Manual*, 2003.

Selecting a median alternative—whether retaining an undivided cross-section, installing a two-way left-turn lane, or providing a non-traversable median barrier—is a major decision that will influence the operational and safety characteristics of a roadway. Roadway agencies in Indiana must consider the following in deciding the best median type, or if medians are the preferred method of access management:

- Roadway function
- Adjacent land use
- Supporting street system
- Existing access spacing, design, and traffic control features
- Traffic speeds
- Crash history and future crash potential
- Costs

Left-Turn Lanes

The treatment of left-turns is a major access management strategy. Left-turns at driveways and street intersections may be accommodated, prohibited, diverted, or separated depending upon specific circumstances. Left-turn movements made from shared lanes can block through vehicles. The proportion of through vehicles blocked on an approach to a signalized intersection is a function of the number of left-turns per signal cycle, as shown in Table 1-9.

Table 1-9: Proportion of Through Vehicles Blocked as a Function of Left-Turns per Cycle

Left-Turns Per Cycle	Proportion of Through Vehicles Blocked
1	25%
2	40%
3	60%

Source: Table 14, *NCHRP Report 420: Impacts of Access Management Techniques*, 1999.

As shown in Table 1-9, even with only a few left-turns each cycle, the capacity of a shared through/left-turn lane may be 40 to 60 percent that of a standard through-only lane under typical urban or suburban conditions. Thus, providing left-turn lanes along a four-lane arterial has the potential to increase the number of effective travel lanes from approximately 1.5 to 2.0 lanes in each direction—a 33 percent increase in capacity. Table 1-10 provides the following illustrative capacities for two- and four-lane roads at signalized intersections, based on application of *Highway Capacity Manual* methodologies.

Table 1-10: Capacities of Two-Lane and Four-Lane Roads at Signalized Intersections

Approach Configuration	Approach Capacity (Vehicles per Hour per Approach)	
	Two-Lane Roads	Four-Lane Roads
Shared lane only (50 to 150 left-turns per hour)	425-650	900-1,000
With exclusive left-turn lane	750-960	1,100-1,460

Source: Table 15, *NCHRP Report 420: Impacts of Access Management Techniques*, 1999.

As shown in Table 1-10, the addition of a left-turn lane on the approach results in a capacity increase of approximately 50 to 75 percent on two-lane roadways, and approximately 20 to 50 percent on four-lane roadways.

Due to the operational and safety implications associated with allowing left-turns to occur from shared through lanes, left-turns should be removed from the travel lanes whenever possible by providing separate left-turn lanes. Therefore, provisions for left-turns have widespread implications in Indiana, particularly along arterials and collector roads, and are essential to improve safety and preserve capacity.

1.4.6 Aesthetic Benefits

By minimizing the number of driveways, consolidating driveways, and constructing medians, access management techniques provide more landscaping opportunities that can result in more visually pleasing corridors. These aesthetic benefits can, in turn, help attract new businesses.

2.0 INDOT DRIVEWAY PERMIT PROGRAM

2.1 Driveway Permit Process

Indiana State law requires the public to obtain permission from the governmental unit having jurisdiction over a street or highway to construct inside of the right-of-way (ROW) line. INDOT has jurisdiction over the State highway system and has established a driveway permit process to be followed by all applicants. This section summarizes that process.

2.1.1 Legal Authority for Access Permitting

The administrative requirements associated with the driveway access permit application process for all State highways are governed by the promulgated rules of Title 105, Article 7 of the Indiana Administrative Code (IAC): *Permits for Highways* (Reference 6).

2.1.2 Permit Application Forms and Related Documentation

Any business or private party wishing to construct an access driveway onto the State highway right-of-way is required to apply for, and obtain, a permit from INDOT prior to beginning any construction. A permit is also required for any proposed relocation or alteration of an access, approach, or cross-over and is governed by the same regulations and standards as for a new access driveway.

The appropriate INDOT application form, entitled “Driveway Permit” [Form 1945(RS/3-00)], is used for all routine requests by individuals and corporations for residential and commercial driveways along State highways. The form can be obtained on-line via the INDOT website (<http://www.in.gov/dot/div/permits/forms/1945.pdf>) or from the appropriate INDOT district offices. The permit application must be accompanied by drawings, plans, and other documentation sufficient to describe in detail the specific access proposal to INDOT review staff. Drainage and sub-grade design is also an integral part of the driveway design and, therefore, must be addressed as part of the driveway permit application.

Key items to be provided by the applicant on (or attached to) the driveway permit form include the following:

- 1) Type of permit (described below);
- 2) Specific driveway location, including INDOT district, sub-district, and reference point number;
- 3) Legal description of the parcel;
- 4) 20-year Certified Title Search or Title Insurance (for commercial driveway permits only);
- 5) Present and proposed use of the parcel(s);
- 6) Bond amount and number (if a bond is required);
- 7) Name, contact information, and signature of applicant; and
- 8) Application fee payable to INDOT.

Types of Driveway Permits

All *driveway permits* fall into one of the following four (4) types, one of which must be specified on the permit application form:

- 1) *Major Commercial Driveway* – Serves a private property used for commercial purposes, or a public property, that generates enough traffic to require auxiliary lanes. The driveway can be located in an urban or rural area.
- 2) *Minor Commercial Driveway* -- Serves a private property used for commercial purposes, or a public property, that does not generate enough traffic to require auxiliary lanes. The driveway can be located in an urban or rural area.
- 3) *Sub-Minor Commercial Driveway* – Serves a private property used for commercial purposes that does not generate more than 25 vehicles per day. The driveway can be located in an urban or rural area.
- 4) *Private Driveway* – Serves a private residence, barn, or private garage in improved or unimproved condition in an urban or rural area. The driveway is used by the owner or occupant of the premises, guests, and necessary service vehicles.

Types of Driveways

In addition, all *driveways* fall into one of the following seven (7) classes, one of which must be specified on the permit application form:

Class I – Private residential approach, urban area

Class II – Private residential approach, rural area

Class III – Commercial approach, urban area

Class IV – Commercial approach, rural area

Class V – Field approach (i.e. serving vacant lot, field, or unimproved property), urban and rural areas

Classes VI and VII – Heavy industrial/truck stop approaches, urban and rural areas.

In addition to the driveway permit form, the following supplemental information may be required of the applicant depending on site-specific circumstances:

- 1) *Additional Disclosure Form* – A document used for the purposes of identifying and notifying other parties (persons, organizations, companies, agencies, etc.) that are, or will be, served by the subject driveway approach. A separate, notarized disclosure form is required for each party.
- 2) *Permit Bond* – Should the applicant/permittee fail to perform properly, this notarized document is used to guarantee that the work performed on the right-of-way by the applicant/permittee will be completed as required in the conditions and provisions of the permit.
- 3) *Traffic Impact Analysis (TIA)* – A technical study, prepared by a registered professional engineer, may be required to evaluate the impact of present and future traffic generated by the proposed development. The TIA should be prepared in accordance with the *Applicant's Guide to Traffic Impact Studies* (Reference 7), an INDOT publication.
- 4) *Agreement to Execute an Access Control Document* – In consideration for INDOT granting a driveway permit, the applicant may be required to sign an agreement to execute an access control document conveying the access rights for the balance of property frontage owned by the applicant. This agreement allows INDOT to issue a permit to begin driveway construction before the actual deed relinquishing the remaining access rights is prepared and recorded on the

property. This document is required for most developments with over 400 feet of frontage along a State controlled highway.

In addition, INDOT has developed two documents—the “Covenant Limiting Land Uses” (shown in Appendix “C”) and the “Future Traffic Signal Commitment” (shown in Appendix “D”)—that may be used to establish legally-binding agreements with property owners for specific access management purposes.

- 5) *Covenant Limiting Land Uses* – This document serves as a formal agreement between INDOT and the subject property that, in exchange for an access permit, development density thresholds for specific land uses on a subject site cannot be exceeded, unless a Traffic Impact Study is prepared to identify any additional traffic impacts. This agreement is signed by both INDOT and the property owner and is bound to the deed on the property. The intent of this document is to avoid the potential for additional site traffic generation that would degrade traffic operations and/or safety on the State highway system and generate the need for improvements (such as auxiliary lanes) that would need to be paid at taxpayer’s expense.
- 6) *Future Traffic Signal Commitment* – This document serves as a formal agreement between INDOT and the subject property owner that, in exchange for an access permit, obligates the property owner to pay for future design and construction of a traffic signal at a specific location (provided traffic signal warrants are met). INDOT agrees to assume the signal maintenance costs following construction. This agreement is signed by both INDOT and the property owner, and is binding for 10 years from the date of its execution. The intent of this document is to provide INDOT with the opportunity to ensure that a traffic signal would be installed at a location where it may be needed at some future date (as traffic volumes increase over time), but is not needed at the present time.

2.1.3 Rules and Guidelines

INDOT encourages applicants to use its *Driveway Permit Manual* (Reference 8), which explains the State highway access permit rules and procedures to be followed when applying for a permit, and also outlines design guidelines associated with locating and constructing the access driveway on the State right-of-way. The guidelines outlined in the *Manual* are also used by INDOT in reviewing the access permit application. The most recent (1996) version of this document can be found on-line via the INDOT website: <http://www.in.gov/dot/business/permits/pdf/driveway.pdf>

Figure 2-1 shows the table of contents from the INDOT *Driveway Permit Manual*. The manual contains a variety of design criteria for access driveways on State highways such as:

- Number and location of driveways;
- Driveway separation and clearance distances;
- Required sight distance;
- Specific driveway design features (number of lanes, driveway width, return radii, etc.);
- Drainage and curb design; and
- Channelization features.

In addition, Section 32 of the *Driveway Permit Manual* includes general guidelines for when a Traffic Impact Study (TIA) is required of an applicant, based on the size of the proposed land uses. If a TIA is determined to be necessary, the *Applicant’s Guide to Traffic Impact Studies* establishes the methodology for, and scope of, the required traffic impact study.

It should be noted that the regulations contained in INDOT's *Driveway Permit Manual* give consideration to access management principles. The *Manual* recognizes the need to manage access by specifying the responsibility of INDOT:

...to regulate and control the location, design, and operation of access driveways and to reconcile, to the extent feasible, the needs and rights of both (land owners and road users).

and that

...driveway design in accordance with these parameters should assure a reasonably good level of service to the driveway users and at the same time minimize the interference to highway traffic.

The policies and procedures set forth in the *Driveway Permit Manual* are supported by the promulgated rules in the Indiana Administrative Code (Title 105, Article 7: Permits for Highways). However, because the *Driveway Permit Manual* is administered by six district offices, and because it sets forth guidelines (i.e. not standards), its actual application sometimes varies throughout the State, depending on specific circumstances.

Figure 2-1: Table of Contents from *Driveway Permit Manual*

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2.1.4 Processing and Issuance of Permits

Construction of a new driveway or reconstruction of an existing driveway connecting to a State highway is allowed only after an access permit has been issued by INDOT. INDOT's review process is dependent upon the type of permit requested and the nature of the permit request. More complicated applications usually take longer to review and process, and may involve the Central office in Indianapolis.

As shown in Figure 2-2, INDOT has six (6) district offices throughout the State, each with numerous sub-districts. The sub-district offices are responsible for accepting and reviewing the access permit application form and other supporting documentation included in the submittal package prepared by the applicant. Submittal packages deemed complete by the sub-district office are forwarded to the respective district office where they are reviewed for compliance with current INDOT guidelines and specifications (including the *Roadway Design Manual* and the *Driveway Permit Manual*).

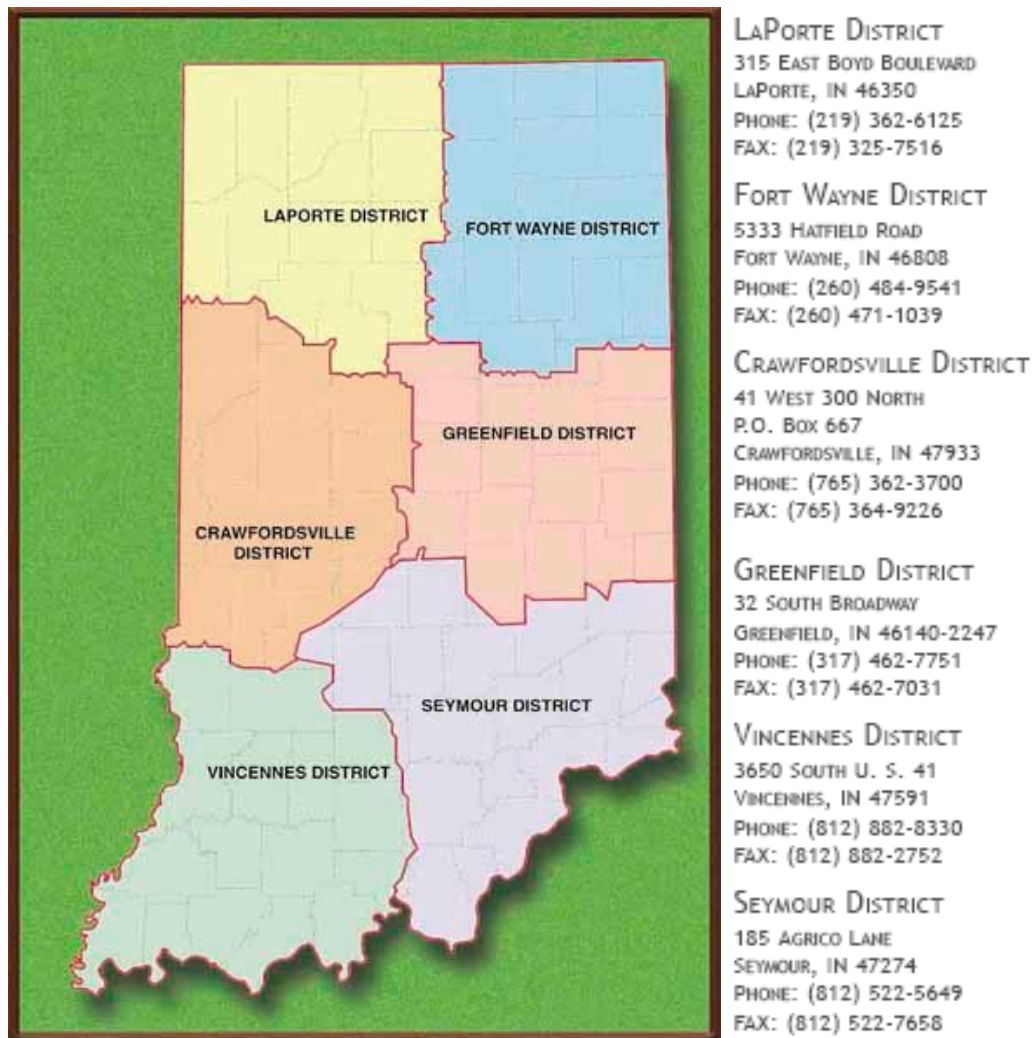
If the permit application and supporting materials are determined to be in accordance with all established requirements and regulations—and the applicant is not seeking access within a limited access right-of-way corridor—an access permit is granted by the district office subject to appropriate conditions and provisions. However, if the applicant is seeking access within a limited access corridor, the district office either: 1) denies the permit, or 2) forwards it to the Central office in Indianapolis with associated recommendations. Approvals for any break in the limited access right-of-way can only be granted by the Chief Engineer in the Central office. For development projects that are not within a limited access right-of-way corridor, but require an access control document to prohibit out-lot access to the State highway system, the district office coordinates preparation of the appropriate documentation that is then recorded on the subject property.

In practice, INDOT staff typically does not deny applications outright. Rather, staff typically works with the developer or property owner to help ensure that key site and access design issues are resolved.

2.1.5 Access Permit Enforcement

Permit enforcement, while typically the responsibility of the sub-district and district offices, may also require the involvement of the State Attorney General's office. All construction work by the applicant within State right-of-way must proceed in accordance with the conditions and provisions specified in the issued access permit. INDOT may halt any activity if the permit conditions and provisions are not satisfied (or if an individual fails to obtain the appropriate permit). In instances where a driveway is constructed illegally or without a permit, INDOT will request an application be filed and a permit issued retroactively if the driveway is acceptably designed and located. If not, differences are typically resolved before legal activity commences. In rare instances, when there is no cooperation from the property owner, INDOT files for court orders through the Attorney General's Office. The Attorney General's Office determines which cases to take to court and the best means of addressing violations. Any costs incurred by INDOT in correcting a failure to comply with the terms and conditions of a permit, or a failure to obtain a permit, are borne by the property owner.

Figure 2-2: INDOT District Map and Contact Information



Source: INDOT website, <http://www.in.gov/dot/div/traffic/districts/>

2.2 Grandfathering of Existing Access Driveways

Many existing driveways may not meet INDOT access spacing guidelines. These existing driveways would remain unchanged unless one of the following actions occurs:

- 1) INDOT implements an access management project which may be in conjunction with other roadway reconstruction projects.
- 2) There is a change in the existing land use, or a proposed new land use, on the property that requires some local public agency approval for a right-of-encroachment, a rezoning, a subdivision or site plan approval, or amendment thereto.
- 3) There is a change in the existing land use, or a proposed new land use, on the property that requires an INDOT access permit.

3.0 INDOT ACCESS CLASSIFICATION SYSTEM AND DESIGN CRITERIA

As stated previously, INDOT's access management program seeks to:

- Reduce traffic congestion;
- Preserve the flow of traffic;
- Improve traffic safety and reduce the frequency of crashes;
- Preserve existing road capacity;
- Support economic growth;
- Improve access to businesses and homes;
- Maintain or improve property values; and
- Preserve the public investment in the transportation infrastructure.

These objectives are accomplished by:

- Establishing appropriate levels of allowable access for each State highway through the implementation of a statewide Access Classification System;
- Managing the driveway permitting process to ensure that new driveways proposed in conjunction with private development are properly located and designed;
- Enforcing identified permit violations;
- Working cooperatively and proactively with other government agencies, property owners, and the public when access and land use decisions affecting State highways must be made;
- Incorporating access management techniques into design plans for new State highways and improvement plans for existing State highways;
- Educating INDOT staff and others regarding INDOT's specific access management-related policies and procedures.

3.1 Access Classification System

An Access Classification System is typically used to establish the level of allowable access for roadways of varying levels of importance in the State highway system. In essence, an Access Classification System is a hierarchy of access categories that forms the basis for the application of access management. Each access category sets forth criteria governing the access-related standards and characteristics for corresponding roadways. These access categories ultimately define where access can be allowed between private developments and the roadway system, and where it should be denied or discouraged. They define spacing standards for signalized intersections, and where a driveway should be restricted to right-in/right-out operation. Defining access categories involves consideration of the following factors:

- 1) *Roadway Functional Classification System* – As alluded to above, the foundation of an access classification system is the functional classification system (arterial, collector, etc.) that reflects the general purpose of each roadway within the transportation system.
- 2) *Roadway Design Characteristics* – In addition, roadway characteristics associated with geometric design (such as the number of lanes, shoulder widths, design speed, and particularly median treatments) should be considered in defining access categories.

- 3) *Degree of Urbanization* – Factors (such as intersection frequency, development intensity, traffic volume, and speed conditions) can be used to help define the degree of urbanization, and could be considered in defining access categories.

Typically, direct property access is prohibited from freeways and expressways. Direct property access is also typically denied (or highly restricted) for higher-level arterial class roadways, although access may be provided where no reasonable alternative access is available. Direct property access is often permitted for lower level arterials and collectors, although there may be limitations on the number and location of access points. Direct property access is typically allowed on local roadways and frontage roads, subject to safety considerations (such as maintaining proper sight distances).

Table 3-1 provides an overview of the INDOT Access Classification System. As shown in Table 3-1, the access classification system uses the Planning Level Corridor Hierarchy as the primary basis for a tiered system of access categories. Because interstate highways and freeways are of the highest level of importance and are fully access-controlled, they represent the highest category within the access classification system. However, spacing criteria for these roadways are already established in other sources such as the INDOT *Roadway Design Manual* and AASHTO's *A Policy on Geometric Design of Highway and Streets* (the "Green Book").

Tiers 1 and 2 of the Access Classification System include all "Statewide Mobility Corridors" and "Regional Corridors," respectively, on the INDOT highway system. Tier 3 of the Access Classification System includes all "Local Access Corridors" on the INDOT highway system. However, because Local Access Corridors serve a mobility function and accommodate some through traffic volume, the term "Sub-Regional Corridors" has been used instead for Tier 3 roadways in the Access Classification System.

As shown in Table 3-1, Statewide Mobility Corridors (Tier 1), Regional Corridors (Tier 2), and Sub-Regional Corridors (Tier 3) are each subdivided into two subcategories (Type "A" and Type "B") that reflect distinct variations within each of these Tiers. For all three tiers, the Type "A" distinction applies exclusively to multi-lane roadways, and the Type "B" distinction applies exclusively to two-lane roadways. The purpose for this distinction was to reflect the different characteristics associated with two-lane roadways.

**Table 3-1
Overview of INDOT Access Classification System**

Level of Importance / Access Category	Type	Traffic Function	Design Standards
Interstate Highways and Freeways		Accommodates high-speed, high-volume, and long-distance through traffic for interstate, intrastate, or intercity travel. Also can provide a major connection between suburban areas and metropolitan centers.	Multi-lane roadways with full access-control. Access via interchanges only (no direct private access to abutting properties allowed). All roadways are multi-lane and median-controlled/divided. At-grade intersections and access driveways not permitted under any circumstances. Interchange spacing is in accordance with the INDOT <i>Roadway Design Manual</i> .
Tier 1: Statewide Mobility Corridor	A	Provides connections to major metropolitan areas within the State and to neighboring states. Provides accessibility to cities and regions around the state. Accommodates high-speed and long-distance trips. Can accommodate heavy commercial vehicle traffic. Includes most rural non-Interstate routes on the Principal Arterial System.	Includes all multi-lane roadways. Access generally occurs only at interchanges or at-grade public street intersections. Some movements at public street intersections may need to be restricted based on existing and projected operating conditions and intersection spacing. Private access to abutting properties is <u>not</u> allowed, unless property has no reasonable alternative access (via joint-use driveways or frontage roads) or opportunity to obtain such access.
	B	Same traffic function as Tier 1, Type A. Generally provides key rural connections between metropolitan areas.	Includes only 2-lane roadways. Access generally only occurs via at-grade public street intersections. Some movements at public street intersections may need to be restricted based on existing and projected operating conditions and intersection spacing. Private access to abutting properties is <u>not</u> allowed, unless property has no reasonable alternative access (via joint-use driveways or frontage roads) or opportunity to obtain such access.
Tier 2: Regional Corridors	A	Provides connections to smaller cities and regions, feeds traffic to the Statewide Mobility Corridors, and provides for regional accessibility. Accommodates moderate to high-speed traffic, medium distance trips, and moderate volumes of through traffic and commercial vehicle traffic. Can accommodate local heavy traffic volumes.	Includes all multi-lane roadways. Generally median-controlled/divided. Public street connections occur at-grade. Private access to abutting properties is allowed. Full movements and signalization are allowed for public street connections and "commercial major" driveways only. All other private driveways are limited to unsignalized, right-in/right-out (median-controlled) access, with left-turns allowed conditionally subject to INDOT review and approval.
	B	Same traffic function as Tier 2, Type A.	Includes only 2-lane roadways. Public street connections occur at-grade. Private access to abutting properties is allowed. Full movements are allowed at all private driveways, with the exception of access driveways located within 300 feet of an existing (or potential future) signalized intersection which must be right-in/right-out (with left-turn access allowed conditionally subject to INDOT review and approval). Signalization is allowed for public street intersections and "commercial major" driveways only.
Tier 3: Sub-Regional Corridors	A	Typically provides access to local residences and businesses in rural areas and small towns. Accommodates moderate to low speed traffic, short distance trips, and moderate local traffic volumes.	Includes all multi-lane roadways. Public street connections occur at-grade and may be signalized. "Commercial major" driveways may also be signalized. Full movements are allowed at public street intersections and all private access driveways.
	B	Same traffic function as Tier 3, Type A.	Includes only 2-lane roadways. Public street connections occur at-grade and may be signalized. "Commercial major" driveways may also be signalized. Full movements are allowed at public street intersections and all private access driveways.

A summary of the key differences in spacing guidelines for the three tiers is shown in Table 3-2:

Table 3-2: Summary of Key Differences in Spacing Guidelines by Tier of Access Classification System

Tier	Ideal Signalized Intersection Spacing Guideline*	Minimum Acceptable Bandwidth for Deviation from Ideal Signalized Intersection Spacing	
		Urban	Rural
1A and 1B	½ mile	45%	50%
2A and 2B	½ mile	40%	45%
3A and 3B	½ mile	35%	40%

* A ¼-mile spacing guideline applies to all State highways with speeds ≤ 40 mph located within a built-up urban area, regardless of tier.

As shown above, the ideal spacing guideline for signalized intersections on all tiers of the State highway system is ½ mile in most cases. The ½ mile spacing typically accommodates progression speeds ranging between approximately 30 mph and 60 mph, depending on the length of the signal cycle that is selected.

As noted in the table above, for State highways with posted speeds of 40 mph or less that are located in built-up urban areas, a ¼ mile spacing guideline applies. Currently, these conditions would apply to a total of approximately 6.8 miles of the INDOT highway system under Tiers 3A and 3B. The ¼ mile spacing typically accommodates progression speeds ranging between approximately 15 mph and 30 mph, depending on the length of the signal cycle that is selected.

Where the ideal signal spacing guidelines cannot be met, a deviation may be allowed, provided a minimum acceptable bandwidth criterion can be met. As shown above, this minimum acceptable bandwidth criterion varies depending on the tier of the State highway system, and the location of the highway in either an urban or rural area.

Bandwidth measures how large a platoon of vehicles can pass through a series of signals without stopping for a red traffic light. It represents a “window of green” in which motorists traveling along a roadway will encounter a series of green lights as they proceed. For Tier 1 State highways, the minimum bandwidth is defined to be 45-percent in urban areas and 50-percent in rural areas. This means that if a traffic signal has a 100-second cycle length, there is a 45-second band in which a platoon of vehicles will encounter green lights as they travel along a State highway in urban areas, and a 50-second band for rural areas. In addition to minimum bandwidth, the signal spacing for a particular roadway is also a function of the cycle length of the signals and the desired progression speed for that roadway.

The spacing guidelines for unsignalized intersections and driveways are based on speed as specified in Table 8.1 of INDOT’s *Driveway Permit Manual*, irrespective of tier. The decision-making process with respect to the application of the access spacing guidelines may also consider existing and projected future traffic volumes and the type of environment (built-up, intermediate, suburban, and rural). In general, greater flexibility is needed for lower speed roadways in built-up areas.

Driveways should not be situated within the longitudinal length of an auxiliary lane from an adjacent intersection along any State highway. It should be noted that auxiliary lane criteria are not defined as part of the access classification system described above. The criteria for various types of auxiliary lanes are defined in the *Roadway Design Manual* and the *Driveway Permit Manual*, based on the roadway cross-section, traffic volume, and speed.

Tables 3-3 through 3-8 at the end of this section provide the following details for Tiers 1, 2 and 3:

- Type of access permitted (at-grade intersection, private driveway)
- Traffic movements allowed (full movements, right-in/right-out only, etc.)
- Traffic control devices permitted (traffic signal, STOP sign)
- Spacing criteria for public intersections and driveways

Detailed descriptions of the design criteria for each access category, corresponding to Tables 3-2 through 3-8, are provided in the following sections.

3.2 Design Criteria

3.2.1 Tier 1A – Statewide Mobility Corridors (Multi-Lane)

Tier 1A is comprised of all multi-lane Statewide Mobility Corridors on the INDOT system. At-grade, public street intersections are permitted along these roadways and may be signalized contingent upon the intersection meeting the warrant criteria set forth in the *Manual on Uniform Traffic Control Devices* (MUTCD) and provided INDOT concurs with the signal installation based on spacing and other considerations. Full turning movements may be allowed for public street intersections, although INDOT may require some movements be restricted based on intersection spacing requirements, and existing and projected operating conditions.

Access driveways are restricted under Tier 1A, and may be allowed by INDOT only if the property owner has no reasonable alternative access (or opportunity to obtain such access), and joint-use driveways and frontage roads are infeasible. Full turning movements may be allowed for Commercial Major driveways (i.e. those requiring an auxiliary lane), although INDOT may require some movements be restricted based on intersection spacing requirements, and existing and projected operating conditions. Commercial Major driveways may also be signalized contingent upon the intersection meeting the warrant criteria set forth in the MUTCD and provided INDOT concurs with the signal installation. All other driveways are restricted to Right-In/Right-Out (RIRO) movements, with left-turn access allowed contingent upon INDOT review and approval.

The spacing criteria for all signalized intersections and driveways on Tier 1A State highways are based on an ideal signalized intersection spacing of ½ mile. Where this ideal signal spacing cannot be met, a minimum green bandwidth of 45-percent in urban areas and 50-percent in rural areas is required.

The spacing criteria for all unsignalized intersections and driveways is based on speed as indicated in the *Driveway Permit Manual*, except for locations where future development may trigger the need for a signal, in which case the signalized spacing distance is to be applied instead.

3.2.2 Tier 1B – Statewide Mobility Corridors (Two-Lane)

Tier 1B is comprised of all two-lane Statewide Mobility Corridors on the INDOT system. At-grade, public street intersections are permitted along these roadways and may be signalized contingent upon the intersection meeting the warrant criteria set forth in the MUTCD and provided INDOT concurs with the signal installation. Full turning movements are generally allowed for public street intersections.

Access driveways are restricted under Tier 1B, and may be allowed by INDOT only if the property owner has no reasonable alternative access (or opportunity to obtain such access), and joint-use driveways and frontage roads are infeasible. Full turning movements may be allowed for driveways permitted on Tier

1B roadways, with the exception of those located within the functional area of an existing (or potential future) signalized intersection, in which case the driveway is restricted to RIRO movements only (left-turn access may be allowed conditionally upon INDOT review and approval). Commercial Major driveways may be signalized contingent upon the intersection meeting the warrant criteria set forth in the MUTCD and provided INDOT concurs with the signal installation.

The spacing criteria for all signalized intersections and driveways on Tier 1B State highways are based on an ideal signalized intersection spacing of ½ mile. Where this ideal signal spacing cannot be met, a minimum green bandwidth of 45-percent in urban areas and 50-percent in rural areas is required (same criteria as Tier 1A).

The spacing criteria for all unsignalized intersections and driveways is based on speed as indicated in the *Driveway Permit Manual*, except for locations where future development may trigger the need for a signal, in which case the signalized spacing distance is to be applied instead.

3.2.3 Tier 2A – Regional Corridors (Multi-Lane)

Tier 2A is comprised of all multi-lane Regional Corridors on the INDOT system. At-grade, public street intersections are permitted along these roadways and may be signalized contingent upon the intersection meeting the warrant criteria set forth in the MUTCD and provided INDOT concurs with the signal installation. Full turning movements generally are allowed for public street intersections.

Access driveways are allowed under Tier 2A subject to certain restrictions. Full turning movements generally may be allowed for all Commercial Major driveways, with the exception of those located within the functional area of an existing (or potential future) signalized intersection, in which case the driveway is restricted to RIRO movements only (left-turn access may be allowed conditionally upon INDOT review and approval). Commercial Major driveways may be signalized contingent upon the intersection meeting the warrant criteria set forth in the MUTCD and provided INDOT concurs with the signal installation. All other driveways are restricted to RIRO movements, with left-turn access allowed contingent upon INDOT review and approval.

The spacing criteria for all signalized intersections and driveways on Tier 2A State highways are based on an ideal signalized intersection spacing of ½ mile. Where this ideal signal spacing cannot be met, a minimum green bandwidth of 40-percent in urban areas and 45-percent in rural areas is required.

The spacing criteria for all unsignalized intersections and driveways is based on speed as indicated in the *Driveway Permit Manual*, except for locations where future development may trigger the need for a signal, in which case the signalized spacing distance is to be applied instead.

3.2.4 Tier 2B – Regional Corridors (Two-Lane)

Tier 2B is comprised of all two-lane Regional Corridors on the INDOT system. At-grade, public street intersections are permitted along these roadways and may be signalized contingent upon the intersection meeting the warrant criteria set forth in the MUTCD and provided INDOT concurs with the signal installation. Full turning movements generally are allowed for public street intersections.

Access driveways are allowed under Tier 2B subject to certain restrictions. Full turning movements generally may be allowed for all driveways, with the exception of those located within the functional area of an existing (or potential future) signalized intersection, in which case the driveway is restricted to RIRO movements only (left-turn access may be allowed conditionally upon INDOT review and

approval). Commercial Major driveways may be signalized contingent upon the intersection meeting the warrant criteria set forth in the MUTCD and provided INDOT concurs with the signal installation.

The spacing criteria for all signalized intersections and driveways on Tier 2B State highways are based on an ideal signalized intersection spacing of ½ mile. Where this ideal signal spacing cannot be met, a minimum green bandwidth of 40-percent in urban areas and 45-percent in rural areas is required (same as Tier 2A).

The spacing criteria for all unsignalized intersections and driveways are based on speed as indicated in the *Driveway Permit Manual*, except for locations where future development may trigger the need for a signal, in which case the signalized spacing distance is to be applied instead.

3.2.5 Tier 3A – Sub-Regional Corridors (Multi-Lane)

Tier 3A is comprised of all multi-lane Local Access Corridors on the INDOT system. At-grade, public street intersections are permitted along these roadways and may be signalized contingent upon the intersection meeting the warrant criteria set forth in the MUTCD and provided INDOT concurs with the signal installation. Full turning movements generally are allowed for public street intersections.

Access driveways are allowed under Tier 3A subject to certain restrictions. Full turning movements may be allowed for driveways permitted, with the exception of those located within the functional area of an existing (or potential future) signalized intersection, in which case the driveway is restricted to RIRO movements only (left-turn access may be allowed conditionally upon INDOT review and approval). Commercial Major driveways may be signalized contingent upon the intersection meeting the warrant criteria set forth in the MUTCD and provided INDOT concurs with the signal installation.

The spacing criteria for all signalized intersections and driveways on Tier 3A State highways are based on an ideal signalized intersection spacing of ½ mile. Where this ideal signal spacing cannot be met, a minimum green bandwidth of 35-percent in urban areas and 40-percent in rural areas is required.

For Tier 3A State highways with posted speeds of 40 mph or less that are located in built-up urban areas, a ¼ mile spacing guideline applies. Currently, these criteria would apply to a total of approximately 2.9 miles of the INDOT highway system under Tier 3A. The ¼ mile spacing typically accommodates progression speeds ranging between approximately 15 mph and 30 mph, depending on the length of the signal cycle that is selected.

The spacing criteria for all unsignalized intersections and driveways is based on speed as indicated in the *Driveway Permit Manual*, except for locations where future development may trigger the need for a signal, in which case the signalized spacing distance is to be applied instead.

3.2.6 Tier 3B – Sub-Regional Corridors (Two-Lane)

Tier 3B is comprised of all two-lane Sub-Regional Corridors on the INDOT system. At-grade, public street intersections are permitted along these roadways and may be signalized contingent upon the intersection meeting the warrant criteria set forth in the MUTCD and provided INDOT concurs with the signal installation. Full turning movements generally are allowed for public street intersections.

Access driveways are allowed under Tier 3B subject to certain restrictions. Full turning movements may be allowed for all driveways permitted, with the exception of those located within the functional area of an existing (or potential future) signalized intersection, in which case the driveway is restricted to RIRO movements only (left-turn access may be allowed conditionally upon INDOT review and approval). Commercial Major driveways may be signalized contingent upon the intersection meeting the warrant criteria set forth in the MUTCD and provided INDOT concurs with the signal installation.

The spacing criteria for all signalized intersections and driveways on Tier 3B State highways are based on an ideal signalized intersection spacing of ½ mile. Where this ideal signal spacing cannot be met, a minimum green bandwidth of 35-percent in urban areas and 40-percent in rural areas is required (same as Tier 3A).

For Tier 3B State highways with posted speeds of 40 mph or less that are located in built-up urban areas, a ¼ mile spacing guideline applies. Currently, these criteria would apply to a total of approximately 3.9 miles of the INDOT highway system under Tier 3B. The ¼ mile spacing typically accommodates progression speeds ranging between approximately 15 mph and 30 mph, depending on the length of the signal cycle that is selected.

The spacing criteria for all unsignalized intersections and driveways is based on speed as indicated in the *Driveway Permit Manual*, except for locations where future development may trigger the need for a signal, in which case the signalized spacing distance is to be applied instead.

**Table 3-3
Design Criteria for Tier 1: Statewide Mobility Corridors - Type "A" (Multi-Lane Roadways)**

		At-Grade Public Street Intersections	Access Driveways ^{1,2}	
			Commercial Major	All other driveways
Permitted?		Yes	Restricted	Restricted
Traffic movements allowed		Full movements ³	Full movements ³	RIRO ⁴
Traffic control devices		Traffic signal ⁵	Traffic signal ⁵	STOP ⁶
Spacing criteria	Urban areas	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i> ⁷	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i>	Spacing per <i>Driveway Permit Manual</i>
		Ideal <u>signalized</u> spacing = 1/2 mile ^{8,9}	Ideal <u>signalized</u> spacing = 1/2 mile ^{8,9}	
	Rural areas	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i> ⁷	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i>	Spacing per <i>Driveway Permit Manual</i>
		Ideal <u>signalized</u> spacing = 1/2 mile ¹⁰	Ideal <u>signalized</u> spacing = 1/2 mile ¹⁰	

Notes:

1: Driveways should be avoided within the functional area of an existing (or potential future) signalized intersection.

2: Driveways are allowed if property owner has no reasonable alternative access (or opportunity to obtain such access) and joint-use driveways and frontage roads are infeasible.

3: Some movements may need to be restricted based on intersection spacing, and existing and projected operating conditions. Limited to Right-In/Right-Out (RIRO) movements for driveways within the functional area of an existing (or potential future) signalized intersection. A median may be required to reinforce RIRO movements. Left-turn access may be allowed conditionally subject to INDOT review and approval.

4: RIRO driveways are allowed if property owner has no reasonable alternative access (or opportunity to obtain such access) and joint-use driveways and frontage roads are infeasible. Left-turn access may be allowed conditionally subject to INDOT review and approval. A median may be required to reinforce RIRO movements in high-accident locations. At INDOT's discretion, driveways may be restricted to RIRO movements through installation of a section of median where a two-way left-turn lane currently exists.

5: Traffic signal installation subject to traffic signal warrant criteria per MUTCD and additional assessment by INDOT, including signal criteria. Where a signal is to be installed, the new approach should be situated opposite an existing 3-leg intersection, if present.

6: STOP control applies to the access driveway and not to the State highway.

7: Except where future development may trigger the need for a signal, in which case the signalized spacing distance is to be applied.

8: Signal spacing = 1/4 mile for roadways ≤ 40 mph in built-up urban areas.

9: Where signalized intersection spacing guideline can not be met, minimum bandwidth must equal 45%. Bandwidth will apply to progression in both directions along a two-way state highway for length of the signal system segment defined by INDOT. Where the existing signal bandwidth on the State highway is less than or equal to the minimum bandwidth guidelines stated in the ACS, no further deterioration in the existing bandwidth will be allowed without a waiver.

10: Where signalized intersection spacing guideline can not be met, minimum bandwidth must equal 50%. Bandwidth will apply to progression in both directions along a two-way state highway for length of the signal system segment defined by INDOT. Where the existing signal bandwidth on the State highway is less than or equal to the minimum bandwidth guidelines stated in the ACS, no further deterioration in the existing bandwidth will be allowed without a waiver.

**Table 3-4
Design Criteria for Tier 1: Statewide Mobility Corridors - Type "B" (Two-Lane Roadways)**

		At-Grade Public Street Intersections	Access Driveways ^{1,2}	
			Commercial Major	All other driveways
Permitted?		Yes	Restricted	Restricted
Traffic movements allowed		Full movements	Full movements ³	Full movements ³
Traffic control devices		Traffic signal ⁴	Traffic signal ⁴	STOP ⁵
Spacing criteria	Urban areas	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i> ⁷	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i>	Spacing per <i>Driveway Permit Manual</i>
		Ideal <u>signalized</u> spacing = 1/2 mile ^{7,8}	Ideal <u>signalized</u> spacing = 1/2 mile ^{7,8}	
	Rural areas	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i> ⁷	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i>	Spacing per <i>Driveway Permit Manual</i>
		Ideal <u>signalized</u> spacing = 1/2 mile ⁹	Ideal <u>signalized</u> spacing = 1/2 mile ⁹	

Notes:

1: Driveways should be avoided within the functional area of an existing (or potential future) signalized intersection.

2: Driveways are allowed if property owner has no reasonable alternative access (or opportunity to obtain such access) and joint-use driveways and frontage roads are infeasible.

3: Limited to Right-In/Right-Out (RIRO) movements for driveways within the functional area of an existing (or potential future) signalized intersection. Left-turn access may be allowed conditionally subject to INDOT review and approval. A median may be required to reinforce RIRO movements. At INDOT's discretion, driveways may be restricted to RIRO movements through installation of a section of median where a two-way left-turn lane currently exists.

4: Traffic signal installation subject to traffic signal warrant criteria per MUTCD and additional assessment by INDOT, including signal criteria. Where a signal is to be installed, the new approach should be situated opposite an existing 3-leg intersection, if present.

5: STOP control applies to the access driveway and not to the State highway.

6: Except where future development may trigger the need for a signal, in which case the signalized spacing distance is to be applied.

7: Signal spacing = 1/4 mile for roadways ≤ 40 mph in built-up urban areas.

8: Where signalized intersection spacing guideline can not be met, minimum bandwidth must equal 45%. Bandwidth will apply to progression in both directions along a two-way state highway for length of the signal system segment defined by INDOT. Where the existing signal bandwidth on the State highway is less than or equal to the minimum bandwidth guidelines stated in the ACS, no further deterioration in the existing bandwidth will be allowed without a waiver.

9: Where signalized intersection spacing guideline can not be met, minimum bandwidth must equal 50%. Bandwidth will apply to progression in both directions along a two-way state highway for length of the signal system segment defined by INDOT. Where the existing signal bandwidth on the State highway is less than or equal to the minimum bandwidth guidelines stated in the ACS, no further deterioration in the existing bandwidth will be allowed without a waiver.

**Table 3-5
Design Criteria for Tier 2: Regional Corridors - Type "A" (Multi-Lane Roadways)**

		At-Grade Public Street Intersections	Access Driveways ¹	
			Commercial Major	All other driveways
Permitted?		Yes	Yes	Yes
Traffic movements allowed		Full movements	Full movements ²	RIRO ³
Traffic control devices		Traffic signal ⁴	Traffic signal ⁴	STOP ⁵
Spacing criteria	Urban areas	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i> ⁷	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i>	Spacing per <i>Driveway Permit Manual</i>
		Ideal <u>signalized</u> spacing = 1/2 mile ^{7,8}	Ideal <u>signalized</u> spacing = 1/2 mile ^{7,8}	
	Rural areas	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i> ⁷	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i>	Spacing per <i>Driveway Permit Manual</i>
		Ideal <u>signalized</u> spacing = 1/2 mile ⁹	Ideal <u>signalized</u> spacing = 1/2 mile ⁹	

Notes:

1: Driveways should be avoided within the functional area of an existing (or potential future) signalized intersection.

2: Limited to Right-In/Right-Out (RIRO) movements for driveways within the functional area of an existing (or potential future) signalized intersection. A median may be required to reinforce RIRO movements in high-accident locations. Left-turn access may be allowed conditionally subject to INDOT review and approval.

3: Limited to RIRO movements. Left-turn access may be allowed conditionally subject to INDOT review and approval. A median may be required to reinforce RIRO movements. At INDOT's discretion, driveways may be restricted to RIRO movements through installation of a section of median where a two-way left-turn lane currently exists.

4: Traffic signal installation subject to traffic signal warrant criteria per MUTCD and additional assessment by INDOT, including signal criteria. Where a signal is to be installed, the new approach should be situated opposite an existing 3-leg intersection, if present.

5: STOP control applies to the access driveway and not to the State highway.

6: Except where future development may trigger the need for a signal, in which case the signalized spacing distance is to be applied.

7: Signal spacing = 1/4 mile for roadways ≤ 40 mph in built-up urban areas.

8: Where signalized intersection spacing guideline can not be met, minimum bandwidth must equal 40%. Bandwidth will apply to progression in both directions along a two-way state highway for length of the signal system segment defined by INDOT. Where the existing signal bandwidth on the State highway is less than or equal to the minimum bandwidth guidelines stated in the ACS, no further deterioration in the existing bandwidth will be allowed without a waiver.

9: Where signalized intersection spacing guideline can not be met, minimum bandwidth must equal 45%. Bandwidth will apply to progression in both directions along a two-way state highway for length of the signal system segment defined by INDOT. Where the existing signal bandwidth on the State highway is less than or equal to the minimum bandwidth guidelines stated in the ACS, no further deterioration in the existing bandwidth will be allowed without a waiver.

**Table 3-6
Design Criteria for Tier 2: Regional Corridors - Type "B" (Two-Lane Roadways)**

		At-Grade Public Street Intersections	Access Driveways ¹	
			Commercial Major	All other driveways
Permitted?		Yes	Yes	Yes
Traffic movements allowed		Full movements	Full movements ²	Full movements ²
Traffic control devices		Traffic signal ³	Traffic signal ³	STOP ⁴
Spacing criteria	Urban areas	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i> ⁷	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i>	Spacing per <i>Driveway Permit Manual</i>
		Ideal <u>signalized</u> spacing = 1/2 mile ^{6,7}	Ideal <u>signalized</u> spacing = 1/2 mile ^{6,7}	
	Rural areas	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i> ⁷	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i>	Spacing per <i>Driveway Permit Manual</i>
		Ideal <u>signalized</u> spacing = 1/2 mile ⁸	Ideal <u>signalized</u> spacing = 1/2 mile ⁸	

Notes:

1: Driveways should be avoided within the functional area of an existing (or potential future) signalized intersection.

2: Limited to Right-In/Right-Out (RIRO) movements for driveways within the functional area of an existing (or potential future) signalized intersection. Left-turn access may be allowed conditionally subject to INDOT review and approval. A median may be required to reinforce RIRO movements. At INDOT's discretion, driveways may be restricted to RIRO movements through installation of a section of median where a two-way left-turn lane currently exists.

3: Traffic signal installation subject to traffic signal warrant criteria per MUTCD and additional assessment by INDOT, including signal criteria. Where a signal is to be installed, the new approach should be situated opposite an existing 3-leg intersection, if present.

4: STOP control applies to the access driveway and not to the State highway.

5: Except where future development may trigger the need for a signal, in which case the signalized spacing distance is to be applied.

6: Signal spacing = 1/4 mile for roadways ≤ 40 mph in built-up urban areas.

7: Where signalized intersection spacing guideline can not be met, minimum bandwidth must equal 40%. Bandwidth will apply to progression in both directions along a two-way state highway for length of the signal system segment defined by INDOT. Where the existing signal bandwidth on the State highway is less than or equal to the minimum bandwidth guidelines stated in the ACS, no further deterioration in the existing bandwidth will be allowed without a waiver.

8: Where signalized intersection spacing guideline can not be met, minimum bandwidth must equal 45%. Bandwidth will apply to progression in both directions along a two-way state highway for length of the signal system segment defined by INDOT. Where the existing signal bandwidth on the State highway is less than or equal to the minimum bandwidth guidelines stated in the ACS, no further deterioration in the existing bandwidth will be allowed without a waiver.

**Table 3-7
Design Criteria for Tier 3: Sub-Regional Corridors - Type "A" (Multi-Lane Roadways)**

		At-Grade Public Street Intersections	Access Driveways ¹	
			Commercial Major	All other driveways
Permitted?		Yes	Yes	Yes
Traffic movements allowed		Full movements	Full movements ²	Full movements ²
Traffic control devices		Traffic signal ³	Traffic signal ³	STOP ⁴
Spacing criteria	Urban areas	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i> ⁷	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i>	Spacing per <i>Driveway Permit Manual</i>
		Ideal <u>signalized</u> spacing = 1/2 mile ^{6,7}	Ideal <u>signalized</u> spacing = 1/2 mile ^{6,7}	
	Rural areas	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i> ⁷	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i>	Spacing per <i>Driveway Permit Manual</i>
		Ideal <u>signalized</u> spacing = 1/2 mile ⁸	Ideal <u>signalized</u> spacing = 1/2 mile ⁸	

Notes:

1: Driveways should be avoided within the functional area of an existing (or potential future) signalized intersection.

2: Limited to Right-In/Right-Out (RIRO) movements for driveways within the functional area of an existing (or potential future) signalized intersection. Left-turn access may be allowed conditionally subject to INDOT review and approval. A median may be required to reinforce RIRO movements. At INDOT's discretion, driveways may be restricted to RIRO movements through installation of a section of median where a two-way left-turn lane currently exists.

3: Traffic signal installation subject to traffic signal warrant criteria per MUTCD and additional assessment by INDOT, including signal criteria. Where a signal is to be installed, the new approach should be situated opposite an existing 3-leg intersection, if present.

4: STOP control applies to the access driveway and not to the State highway.

5: Except where future development may trigger the need for a signal, in which case the signalized spacing distance is to be applied.

6: Signal spacing = 1/4 mile for roadways ≤ 40 mph in built-up urban areas.

7: Where signalized intersection spacing guideline can not be met, minimum bandwidth must equal 35%. Bandwidth will apply to progression in both directions along a two-way state highway for length of the signal system segment defined by INDOT. Where the existing signal bandwidth on the State highway is less than or equal to the minimum bandwidth guidelines stated in the ACS, no further deterioration in the existing bandwidth will be allowed without a waiver.

8: Where signalized intersection spacing guideline can not be met, minimum bandwidth must equal 40%. Bandwidth will apply to progression in both directions along a two-way state highway for length of the signal system segment defined by INDOT. Where the existing signal bandwidth on the State highway is less than or equal to the minimum bandwidth guidelines stated in the ACS, no further deterioration in the existing bandwidth will be allowed without a waiver.

**Table 3-8
Design Criteria for Tier 3: Sub-Regional Corridors - Type "B" (Two-Lane Roadways)**

		At-Grade Public Street Intersections	Access Driveways ¹	
			Commercial Major	All other driveways
Permitted?		Yes	Yes	Yes
Traffic movements allowed		Full movements	Full movements ²	Full movements ²
Traffic control devices		Traffic signal ³	Traffic signal ³	STOP ⁴
Spacing criteria	Urban areas	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i> ⁷	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i>	Spacing per <i>Driveway Permit Manual</i>
		Ideal <u>signalized</u> spacing = 1/2 mile ^{6,7}	Ideal <u>signalized</u> spacing = 1/2 mile ^{6,7}	
	Rural areas	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i> ⁷	<u>Unsignalized</u> spacing per <i>Driveway Permit Manual</i>	Spacing per <i>Driveway Permit Manual</i>
		Ideal <u>signalized</u> spacing = 1/2 mile ⁸	Ideal <u>signalized</u> spacing = 1/2 mile ⁸	

Notes:

1: Driveways should be avoided within the functional area of an existing (or potential future) signalized intersection.

2: Limited to Right-In/Right-Out (RIRO) movements for driveways within the functional area of an existing (or potential future) signalized intersection. Left-turn access may be allowed conditionally subject to INDOT review and approval. A median may be required to reinforce RIRO movements. At INDOT's discretion, driveways may be restricted to RIRO movements through installation of a section of median where a two-way left-turn lane currently exists.

3: Traffic signal installation subject to traffic signal warrant criteria per MUTCD and additional assessment by INDOT, including signal criteria. Where a signal is to be installed, the new approach should be situated opposite an existing 3-leg intersection, if present.

4: STOP control applies to the access driveway and not to the State highway.

5: Except where future development may trigger the need for a signal, in which case the signalized spacing distance is to be applied.

6: Signal spacing = 1/4 mile for roadways ≤ 40 mph in built-up urban areas.

7: Where signalized intersection spacing guideline can not be met, minimum bandwidth must equal 35%. Bandwidth will apply to progression in both directions along a two-way state highway for length of the signal system segment defined by INDOT. Where the existing signal bandwidth on the State highway is less than or equal to the minimum bandwidth guidelines stated in the ACS, no further deterioration in the existing bandwidth will be allowed without a waiver.

8: Where signalized intersection spacing guideline can not be met, minimum bandwidth must equal 40%. Bandwidth will apply to progression in both directions along a two-way state highway for length of the signal system segment defined by INDOT. Where the existing signal bandwidth on the State highway is less than or equal to the minimum bandwidth guidelines stated in the ACS, no further deterioration in the existing bandwidth will be allowed without a waiver.

3.3 Other Design Considerations

3.3.1 Guidelines for Crossroad Access Control

It is particularly important to protect the functional integrity of major crossroad intersections along State highways (e.g., intersections of State highways with either other State highways, or with major local street intersections). This can be accomplished by managing driveway access within the functional area of such intersections. The functional area extends beyond the physical intersection of the State highway and the crossroad to include the upstream approaches on the State highway and the crossroad (where deceleration, maneuvering and queuing takes place), as well as the downstream departure area beyond the intersection (where potential driveway conflicts occur that could generate queues backing up through the major intersection).

Figure 3-1 and Table 3-9 provide guidance for determining the functional distances (i.e., distances “A” through “D”, as shown in Figure 3-1) both upstream and downstream of major intersections on both the State highway and the crossroad.

Table 3-9 identifies PIEV + Maneuver distances as a function of speed. The queue length should be added to the distances shown in Table 3-9 to calculate the total functional length on State highway approaches at major intersections.

3.3.2 Median Length on Intersection Approaches

INDOT may choose to install non-traversable medians on State highway approaches at major intersections, to reduce conflicts associated with left-turns into and out of adjacent driveways and protect the functional integrity of these key intersections. The following guideline—based on the intersection functional area calculations (see Figure 3-1 and Table 3-9)—is recommended for calculating the required length of a non-traversable median on an intersection approach along a State highway:

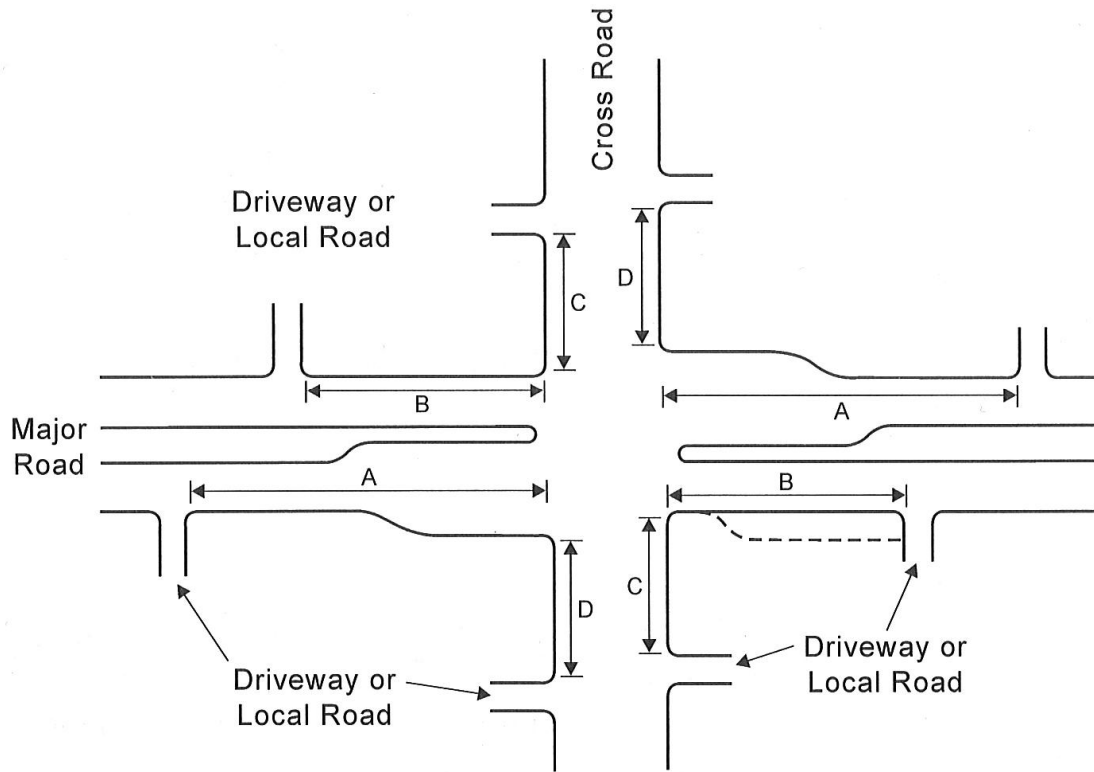
$$\text{Median Length} = (\text{PIEV distance} + \text{Maneuver distance}) + \text{Queue}$$

Where:

- **PIEV distance** = Distance traveled during Perception-Identification-Evaluation-Volition (commonly referred to as “Perception-Reaction distance)
- **Maneuver distance** = Distance traveled while maneuvering and decelerating to a stop.
- **Queue:**
 - For existing and planned future traffic signals = 95th percentile back-of-queue length for the approach lane group with the longest queue
 - For unsignalized intersections = 200 feet

The queue length, described above, should be added to the PIEV + Maneuver distances in Table 3-9 to calculate the total length of the median on State highway approaches at major intersections.

Figure 3-1: Crossroad Access Control Guidelines based on Intersection Functional Area



“A” = (PIEV + Maneuver distance)* + Queue

Where:

PIEV distance = Distance traveled during Perception-Reaction-Evaluation-Volition (commonly referred to as “perception-reaction distance”)

Maneuver distance = Distance traveled while maneuvering and decelerating to a stop.

Queue = For existing and future traffic signals: 95th percentile back-of-queue for longest lane group queue

= For unsignalized intersections: 200 feet

“B” = For roadways where a non-traversable median is present, or access is restricted to right-in/right-out:

“B” = unsignalized spacing distance (based on AASHTO stopping sight distance)

For all other roadways:

“B” = “A”

“C” = Greater of:

95th percentile back-of-queue for longest lane group queue

OR

Unsignalized spacing distance (based on AASHTO stopping sight distance)

“D” = Unsignalized spacing distance (based on AASHTO stopping sight distance)

*See Table 3-9

Note: Lot depth may prevent driveway spacing on the crossroad from being achieved. In these cases, the spacing of the driveway on the State highway should be maximized.

Table 3-9: PIEV and Maneuver Distances

Speed	PIEV + Maneuver Distance
(mph)	(feet)
25	200
30	230
35	280
40	330
45	430
50	550
55	680
60	780
65	880
70	980

Source: Adapted from INDOT Design Manual, Figure 46-4J: Deceleration Distance for Turn Lane

3.3.3 Locations for New Breaks in Controlled Access

INDOT is requested at times to allow new breaks in limited access rights-of-way along State highways. Although a break in access may be justifiable at certain key locations to relieve traffic congestion and increase capacity at nearby intersections, there is a long-term opportunity cost associated with breaking the limited access right-of-way.

Any breaks in limited access rights-of-way along State highways must be approved by the Federal Highway Administration (FHWA) where the right-of-way has been acquired using Federal funds.

The following are recommended provisions for identifying under what conditions breaks in controlled access should be allowed. The intent is that all of the provisions described below would apply to a particular site. In addition, these provisions are intended to apply to all Tiers of the State highway access classification system (excluding limited-access facilities). These provisions apply only to new breaks, and do not apply to alterations (e.g., shifting of, or consolidation of) existing breaks.

Site / Property Conditions

- The property was landlocked (i.e. no alternative access) as a result of actions taken beyond INDOT's control (as a result, the local agency involved would need to provide accommodations for access); and
- The property was not subdivided, following INDOT's purchase of access rights, to create a parcel that would be landlocked.

Access Driveway Conditions

- The proposed access location is outside of the functional area² of the upstream and downstream intersections, based on a future (e.g. 10 year) traffic projection;
- Only right-in/right-out (RIRO) movements will be allowed at the access, and acceleration and deceleration lanes will be provided.
- There are no provisions for future signalization, or allowances for additional movements (i.e. left-turns);

² See functional area description in Figure 3-1 and Table 3-9.

- The access may be temporary until a supporting street system can be developed that provides alternative access; and
- INDOT determines that providing the access will result in traffic operations or safety benefits from an overall system perspective.

4.0 ACCESS MANAGEMENT TECHNIQUES

This section of the Guide describes various techniques to help implement access management within Indiana, including the use of retrofit techniques and the preparation of Access Management Plans.

4.1 *Retrofit Techniques*

Access management improves traffic safety and protects the public's investment in the road system by preserving its functional integrity. Its focus is to minimize disruptions to the through traffic that would reduce the highway's safety and efficiency. Access management is best implemented by applying criteria based on established traffic engineering and roadway design principles. However, there may be constraints in built-up areas that would limit the application of the access management criteria. This section provides guidance on access management techniques that can be used in situations where it is not possible to achieve the desired access criteria. These are commonly referred to as "retrofit" situations.

4.1.1 *When and where should retrofit apply?*

The design criteria described in this Guide identify the desired outcome for access connections to the State highway system. However, in areas that are fully developed, it may not be possible to achieve these desired conditions. For example, block widths and mid-block alleys in some urban areas may rule out achieving the spacing standards. Elsewhere, there may be many pre-existing driveways and patterns of land ownership that make it difficult to achieve the desired access location criteria. In these cases, retrofit techniques should be used to the maximum extent feasible to accomplish INDOT's access policy goals.

4.2.1 *Basic Principles for Improving Access Management in Retrofit Projects*

The basic principles of access management described previously in this Guide apply to retrofit situations as well, with an emphasis on the following:

- Limiting direct access to State highways and other major roadways.
- Preserving the functional area of intersections and interchanges.
- Limiting the number of driveways and other conflict points.
- Separating driveways and other conflict points.
- Removing turning vehicles from through lanes.
- Using non-traversable medians to manage left-turn movements.
- Provide a supporting local street system and on-site circulation systems.
- Providing sufficient spacing between at-grade intersections.
- Providing adequate on-site storage areas.
- Encouraging access to street with the lowest functional classification where this option exists.

Appendix "B" of this Guide summarizes various retrofit techniques and provides illustrations of their application. The retrofit techniques in Appendix "B" are divided into two categories:

- 1) Access/Driveway Location and Operation
- 2) Roadway Design

To the extent feasible, the retrofit techniques under both categories should be applied by INDOT as part of driveway permit review and roadway reconstruction projects.

4.2 Access Management Plans

An access management plan (AMP) is useful for dealing with areas that are undeveloped or areas where redevelopment is possible. An AMP may be a stand-alone document, or prepared as part of sub-area or corridor plan. The agency lead in preparing an AMP may be INDOT, an MPO, or a local government. The plan essentially focuses on a specific area, of smaller geographic scale than a statewide or MPO plan. It may address, for example, several communities or areas with roadways that are projected to be or are in need of improvement. An AMP is prepared as an integral component of area-wide plans or as an independent effort, and should incorporate provisions for coordination of area growth with development of the roadway network and any required traffic mitigation. An AMP relates to both comprehensive (that is, area-wide) transportation planning and to detailed construction plans.

4.2.1 Features of an Access Management Plan

As stated in *NCHRP 548: A Guidebook for Including Access Management in Transportation Planning*, a publication of the National Cooperative Highway Research Program of the Transportation Research Board (Reference 9), an AMP has several important features:

- It is designed to achieve better long-range planning for highway access. It enables the State, MPO, county and/or local jurisdictions to specify, in advance, where access in a given area or along a given stretch of highway can be provided. It also enables these agencies to identify current access problems and to work toward their alleviation.
- It provides a coherent frame of reference for developers and local governments. It provides a predictable and consistent basis by which to plan and locate access points, thereby introducing access considerations into the local planning process. It gives property owners guidance for sharing access between two adjacent lots, consolidating access for contiguous lots, and obtaining alternative access via collector streets, local streets, or frontage roads.
- It can lead to a higher density of development from the improved road capacity resulting from better traffic management. This translates into higher land values.
- It can facilitate the administration of access regulations and the issuance of driveway permits. It assists municipalities and developers by defining the conditions under which driveway permits will be issued. A developer can use the plan to establish permissible access points and can be assured that access permits will be forthcoming where access conforms to the plan.

The AMP should be a clear and concise document. It should include a map and an accompanying report showing where and how access can be provided, specifying how development and associated roadway network changes should be implemented, and indicating who is to be responsible for which elements.

4.2.2 Major Steps in Preparation of an Access Management Plan

As stated in *NCHRP 548* (Reference 9), the major steps involved in preparing an Access Management Plan are the following:

- Identify the study area and participating agencies/stakeholders.

- Develop a public involvement plan that will engage interested parties and consider different opinions for the future of the corridor to shape a realistic plan.
- Establish a vision and supporting goals and objectives to provide a basis for weighing various options.
- Perform policy, land use, and traffic analyses to provide a basis for the development of alternative options and the selection of the components to include in the access management plan. The following questions should be explored:
 - What problems need to be resolved?
 - What methods of access management may be used to help resolve these problems?
 - Are auxiliary lanes needed in certain locations?
 - Are there problems with traffic signal locations and traffic progression?
 - Does an existing median need to be improved or should a non-traversable median be incorporated into the roadway design?
 - Is there a supporting street network?
 - Are there opportunities for shared access or inter-parcel circulation?
 - How can the supporting street and circulation system be modified or developed to improve corridor safety and operations?
- Evaluate options based on potential social, economic, and environmental impacts as well as specific impacts on the following:
 - Roadway safety;
 - Roadway efficiency and operation;
 - The supporting road network;
 - Accessibility of neighborhoods and commercial areas; and
 - Diversion of non-local trips through an existing residential area.
- Establish the responsibilities of each of the participants for the improvements contemplated by the plan.
- Identify the manner in which the timing and sequence of construction of the improvements are to be implemented.
- Provide, if necessary, for temporary access pending completion of the improvements.
- Identify expected future mitigation measures, including traffic limitations and lots with “nonconforming” access (as in Florida and New Jersey).

4.2.3 Issues to Address in an Access Management Plan

As stated in *NCHRP 548* (Reference 9), the following issues should be addressed in an Access Management Plan:

- Inter-governmental collaboration. The defining characteristic of a successful AMP is the level of cooperation achieved among affected property owners and agencies involved in carrying out the plan.

- Access plans can also be incorporated into the project through the National Environmental Protection Act, road design, and public involvement processes and documents.
- Providing incentives that encourage local governments to initiate and develop plans. Incentives could include state and local sharing of costs and facilitation of the permit review process.
- Requires supporting land use actions by local jurisdictions.
- Phasing in new access approaches. The issuance of temporary access permits is one strategy for phasing and adjusting access as an area develops or is redeveloped. A temporary permit can specify when a temporary driveway is to be removed and a permanent driveway installed. This requires careful planning and coordination and a clear understanding of who pays for what.

5.0 INTER-GOVERNMENTAL COORDINATION

The need for coordination between INDOT and local governments with respect to land use and transportation decisions cannot be understated. This section of the Guide addresses the role of local jurisdictions, their relationship to INDOT, and the need for coordinated decision-making with respect to access management.

5.1 *Current Practices and the Need for Coordination*

In Indiana, access management is a prerogative of local government that varies in the level of exercise from no access control requirements, to access management standards that may, on occasion, be more restrictive than INDOT. Under general enabling legislation for municipalities (IC 36-9-2 and 36-9-6), counties (IC 8-17-1 and 8-20) and all levels of government (IC 9-21), local governments may require permits for private access to public roadways. A secondary means of access management by local jurisdictions is through land use controls (zoning per IC 36-7-4-600 series, subdivisions per IC 36-7-4-700 series and site plan review per IC 36-7-4-1400 series) where requested permission to expand a land use right may trigger a review of roadway access to the subject property. Historically, the relationships between State and local jurisdictions regarding access management have been informal and found to vary widely throughout Indiana.

Although the review and approval of applications for driveway access to abutting State roadways is primarily the responsibility of INDOT (as described in Section 2.0), site plan review and approval are the responsibility of local governmental agencies. Although in some cases the permit review and site plan review processes are well-coordinated between INDOT and the local jurisdiction, the more frequent lack of coordination jeopardizes the ability of both agencies to manage access properly, which can have detrimental effects on the operations and safety of the highway system.

Sometimes problems begin with the local agency responsible for local land use planning, zoning, and site plan review. Site plans are approved without the county or municipality requesting an independent review by INDOT. As a result, the number and spacing of driveways, and the placement of buildings and parking areas, essentially become fixed, leaving INDOT with little or no opportunity for recourse.

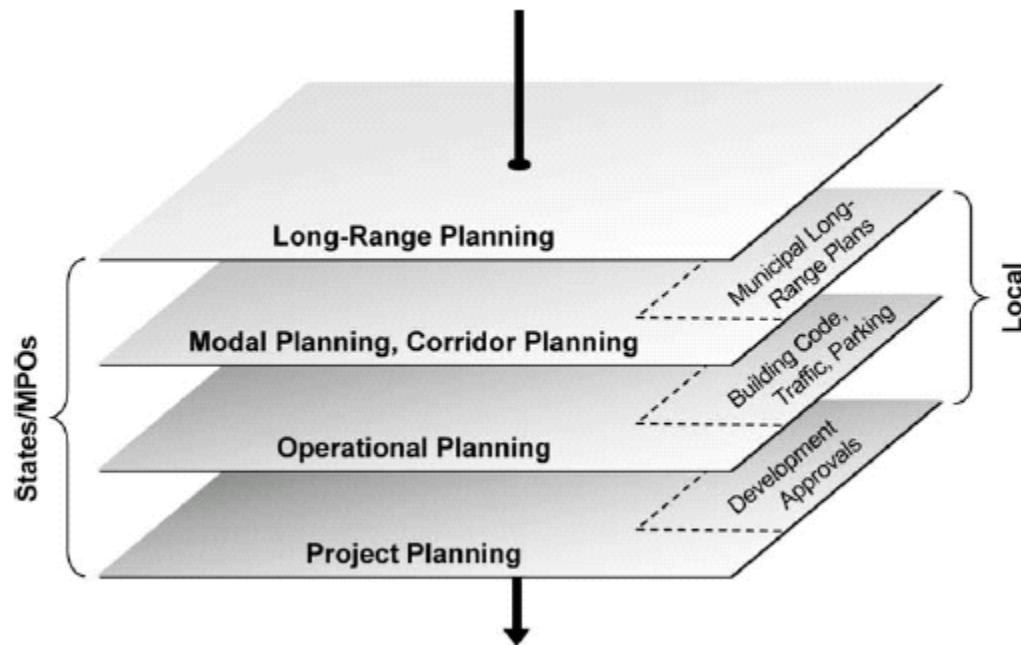
It is not uncommon for developers and property owners to use this lack of inter-agency coordination to their advantage, pressuring one agency to take action only after approvals have been issued by the other agency. In addition, the INDOT driveway permit process can be avoided by the developer in cases where no direct site-access to a State highway is proposed. Although much of the traffic associated with the development may use the State highway, INDOT is limited in its ability to require mitigating measures to compensate for this additional traffic.

The conflict between vehicle movement and land access increases as development continues in both urban and rural areas. The challenge is how best to coordinate vehicular access with land development in a way that encourages economic activity while simultaneously preserving mobility and providing adequate property access. The principles of access management, described in Section 1.3 of this Guide, address these competing needs.

Land use planning and development review all take place at the local level where the authority resides. A key objective of the transportation process, therefore, is to coordinate transportation and land use. This is especially important for access management and corridor preservation. The actions of local jurisdictions in planning, reviewing, and approving land development can significantly impact the ability of other agencies to implement their transportation plans. A key feature of successful access management is coordination with land use decisions made by local jurisdictions. As illustrated in Figure 5-1, successful

land use planning and traffic management requires integrated planning efforts and other related actions at both the State and local levels.

Figure 5-1: Relationships between State and Local Agencies in Land Use/Transportation Planning Process



Source: Exhibit 3-1 from *NCHRP 548: A Guidebook for Including Access Management in Transportation Planning*, 2005.

A critical element of access management is the land use authority of Indiana’s local units of government. While INDOT is responsible for state highways, land use decisions for adjacent and nearby properties are most often made by the local governments. Local planning, zoning, and elected officials are the community land use decision-makers. They ensure new development is consistent with local land use (or master) plans, compatible with other land uses in the community, and in compliance with local regulations. These local officials are responsible for assessing the affects of land use decisions within their community’s borders, but not beyond. Consequently, the local development review process is often segregated. In other words, local officials often review development plans without consulting the appropriate road agency (city, county or INDOT) responsible for managing access in their area. Through zoning, subdivision regulations, condominium regulations, private road regulations, and building codes, local governments can approve new developments with, or without, considering the impact on access.

Many local governments may not be well informed of INDOT’s driveway permitting requirements. They also may know little about how development decisions affect the safety and function of state highways and other roads. Moreover, the process of access permitting often does not occur until after land use decisions are made. As a result, INDOT and other road agencies often have little, if any, input regarding land use decisions. This can result in frustration among all participants if project design changes are needed to obtain a driveway permit. If access problems are identified too late in the decision process, some solutions that may have worked earlier in the design stage may no longer be options. Simply involving INDOT or the local road agency early in the process of planning and reviewing a development can produce many benefits, because access-related issues can be raised earlier and solutions more easily identified.

No laws or regulations in Indiana require local planning, zoning and building permitting agencies to coordinate their efforts with INDOT. However, some local governments have worked out informal procedures with INDOT district offices. In these instances, it is usually because the local government has professional staff or consultants able and available to coordinate the process.

5.2 Opportunities for Coordinated Access Management

Better project review coordination between INDOT and local governments leads to better access management. Better access management allows motorists to conveniently and safely access their homes and local businesses with fewer delays. If local permit procedures are coordinated with INDOT driveway permit procedures, many access-related conflicts and issues can be avoided.

5.2.1 Benefits of Coordinated Decision-making

Coordinated land use and access management decision-making can:

- Prevent conflicts involving the community, developer, and INDOT created because:
 - 1) A driveway permit was issued by INDOT before local site plan review has been completed.
 - 2) The community approved a site plan or building permit before determining if a driveway permit has been issued by INDOT.
- Build professional relationships based on a common understanding of local road issues, which in turn can improve cooperation and mutual support on future maintenance, remedial and/or improvement projects.
- Prevent unnecessary redesign, which typically results in higher development costs.

5.2.2 Basic Elements of Coordinated Decision-making

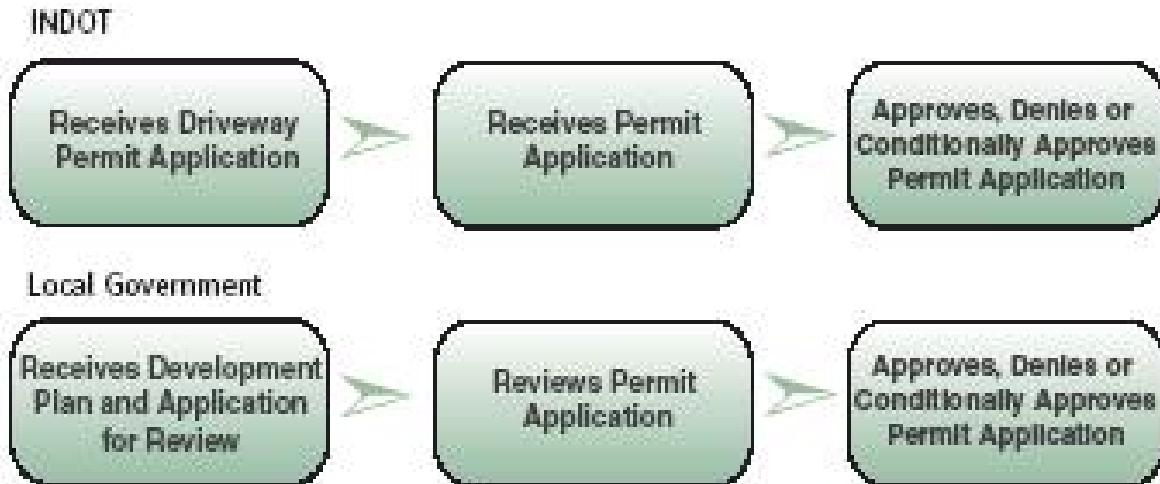
The key elements of coordinated decision making are:

- All relevant government agencies reviewing proposed projects at the same time,
- Compatible standards, and
- Conditioning approval of each permit upon the receipt of required permits issued by other approving authorities.

Figure 5-2 shows the typical segregated project review procedures used by many local governments and road agencies, as well as an alternative procedure used in some communities to coordinate development reviews with INDOT and other appropriate road authorities.

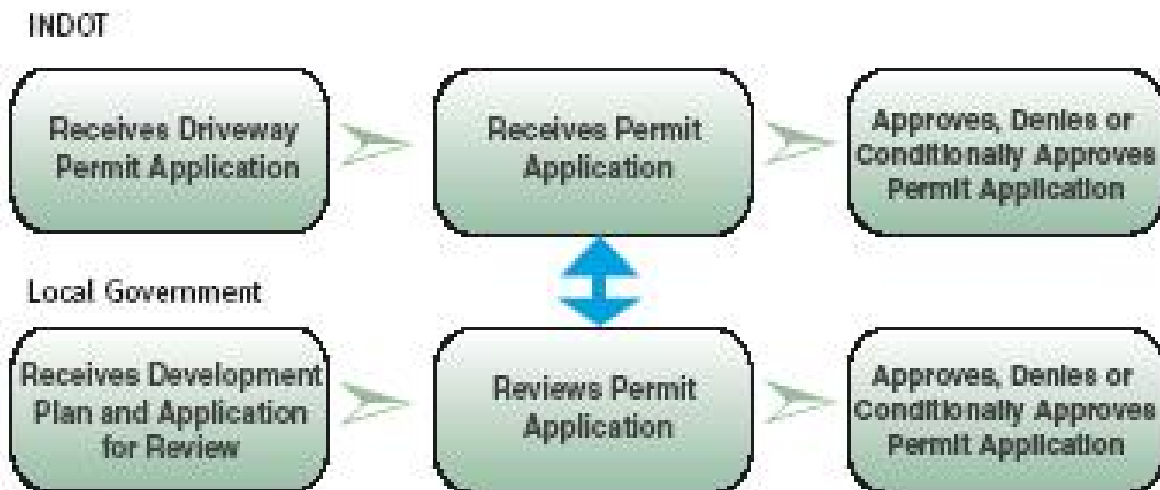
Figure 5-2: State and Local Review and Approval Processes – Separate versus Coordinated

Separate Review and Approval Processes



When there is little or no coordination, chances for problems increase.

Coordinated Review and Approval Processes



In a coordinated process, comments are shared before final decisions are made.

Coordinated decision-making requires that INDOT and other road agencies review proposed site plans for most projects at the same time they are being reviewed by local authorities. Very large projects should go through a two-step review process, where the developer meets with INDOT (and other road authorities) and local government officials early in the project design process. At the discretion of local officials, these preliminary site plan review meetings should be conducted together with the appropriate road authorities.

If local zoning authorities have no access management standards, compatibility of standards is not an issue. But if there are local access management regulations, and they conflict with INDOT's standards, then in most cases, the developer must comply with the most stringent regulations. If INDOT or the responsible road authority is not aware of local standards, they could issue a driveway permit that is inconsistent with local requirements.

By conditioning local site plan approval on receipt of required permits from the responsible road authority, the local government will assure compliance of the project with INDOT standards and/or those of other road agencies. Similarly, INDOT and local agencies that condition approval of their permits with local land use standards will help assure new development does not violate local zoning and related requirements.

Coordination between road authorities and local land use authorities is the best way to ensure that future land use decisions protect motorists and the public's investment in Indiana's highways. Coordinated access management reduces traffic crashes and congestion, provides people with easy access to and from homes and businesses, allows roads to carry the volume of traffic they were designed for, and helps communities grow and prosper.

5.3 Access Management Assistance for Local Agencies

Appendix "A" of this Guide provides two model access management ordinances for use by local governments. These model ordinances are intended to help guide efforts to implement access management techniques that are best enacted through a local ordinance adopted by the local legislative body (city or town council or board of county commissioners), implemented through the city/town public works department (office of the city engineer) or the county highway department (office of county engineer) and reinforced through local land use controls such as zoning, subdivision and site plan review regulations.

5.4 Memorandum of Understanding for Intergovernmental Cooperation

It is generally in the mutual interest of INDOT and local governments to coordinate the approval of the location and design of access driveways serving properties abutting, and in proximity to, the State highway system, with the review and approval of developments and the subdivision of land. To this end, language for a Memorandum of Understanding (MOU) has been drafted to help formally establish and document agreements between INDOT and local governments with respect to access management and local land use controls. The draft language for the MOU document is included as Appendix "E".

As part of the MOU, INDOT agrees to:

- Notify the local public agency of applications for driveway or right-of-way encroachment permits from developers, to ensure the developer has, or will, comply with local land use regulations relative to local development review and approval. This is intended to coordinate the review of

INDOT and the local public agency to ensure the approval of one party does not occur without the knowledge and input of the other.

- Notify the local public agency of agreements with developers concerning future signalization, roadway improvements, and access control restrictions. This will enable the local public agency to help INDOT with agreement enforcement.
- Notify the local public agency about planned roadway improvements prior to the execution of design contracts, so that existing and planned crossroad improvements, and access management to abutting properties, may be addressed in the scope of design.
- Involve the local public agency in design plan review before the roadway design is finalized, and prior to any public meetings or hearings, so that the treatment of existing and planned crossroad improvements and access management to abutting properties may be reviewed.

As part of the MOU, the local public agency agrees to:

- Notify INDOT in the event of any of the following land use actions:
 - Proposed major residential subdivisions or land use re-zonings of properties abutting the State right-of-way, or with access via a local crossroad that has property with access within a ¼-mile of the State right-of-way, and meeting INDOT warrants for a Traffic Impact Study.
 - New land use approvals (including special exceptions, special uses, contingent uses, conditional uses or use variances) before the local board of zoning appeals when properties abut the State right-of-way.
 - Proposals for minor residential subdivisions with direct access to State roadways.
- Notify INDOT in the event of:
 - Any local site plan reviews, and
 - Any local review actions concerning commercial developments (apartments, retail, office, industrial or institutional) if the site abuts the State right-of-way, or if the site access is via a local crossroad that has property with access within a ¼-mile of the State right-of-way and the site trip generation meets INDOT warrants for a Traffic Impact Study.
- For all new buildings abutting State right-of-way (as well as expansions and changes to existing commercial uses), coordinate the local building permit process with INDOT to ensure the existing driveways can accommodate or be improved to accommodate additional site traffic.
- Notify INDOT of dimensional variances (such as structure setbacks and height standards) on corner properties of State/crossroad intersections to ensure preservation of corner sight triangles and to avoid conflicts with traffic control devices.

6.0 REFERENCES

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2. *Access Management Manual*, Transportation Research Board, National Academy of Sciences, 2003.
3. *NCHRP 420: Impacts of Access Management Techniques*, National Cooperative Highway Research Program, Transportation Research Board, 1999.
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6. *Title 105, Article 7: Permits for Highways*, Indiana Administrative Code.
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2. *Review of SDDOT's Highway Access Control Process, Study SD99-01: Final Report*, Dye Management Group, Inc., February 2000.
3. *Roadway Design Manual*, Indiana Department of Transportation, June 2003.

APPENDIX "A"

SAMPLE ACCESS MANAGEMENT ORDINANCES

This appendix contains the following two model ordinances:

- Kentucky Model Access Management Ordinance (Version 1.1, dated October 2004) from the Kentucky Transportation Cabinet
- Chapter 8, Sample Access Management Ordinances from the Michigan Access Management Guidebook (October 2001) from the Michigan DOT

These model ordinances are intended to help guide efforts to implement access management techniques that are best enacted through a local ordinance adopted by the local legislative body (city or town council or board of county commissioners), implemented through the city/town public works department (office of the city engineer) or the county highway department (office of county engineer) and reinforced through local land use controls such as zoning, subdivision and site plan review regulations.

Appendix A-1
Kentucky Model Access Management Ordinance

Kentucky
Model Access Management
Ordinance

Version 1.1

October 2004

Developed by Brent A. Sweger
Division of Multimodal Programs
Kentucky Transportation Cabinet

Part 1

Overview

Introduction

The *Kentucky Model Access Management Ordinance* has been adapted from the Florida *Model Land Development & Subdivision Regulations That Support Access Management*, developed by the Center for Urban Transportation Research and the Florida DOT. This model ordinance is provided to assist Kentucky cities and counties in developing access management ordinances to further improve safety and traffic flow efficiency of Kentucky's roadways. Although the ordinance does not cover all access treatments, it does cover the most-used treatments. Municipalities are urged to tailor the ordinance to meet local needs and develop additional language as necessary.

Overview

Effective local access management requires planning as well as regulatory solutions. Where applicable, communities should establish a policy framework that supports access management in the local comprehensive plan, prepare corridor or access management plans for specific problem areas, and encourage good site planning techniques. Land development and subdivision regulations should be amended accordingly. Communities may also consider a separate access management ordinance. Access management programs should address commercial development along thoroughfares, as well as flag lots, residential strips, and other issues related to the division and subdivision of land. Comprehensive and sub-area plans provide the rationale for access management programs and can serve as the legal basis for public policy decisions.

Communities are increasingly concerned about the effects of development on service costs, community character, and overall quality of life. Yet conventional regulatory practice has played a role in perpetuating land development problems. Nowhere is this more apparent than the cycle of functional obsolescence created by strip commercial development along major arterials. The practice of strip zoning major corridors for commercial use is widespread across Kentucky. The primary reasons are accessibility and the expedience of rezoning highway frontage for commercial use as additional land is needed. Extension of utilities along highway rights-of-way promotes this linear land use pattern, and commercial businesses favor corridor locations because of the ready supply of customers.

Yet as development intensifies along a roadway, the growing number of curb cuts and turning movements conflict with the intended function of arterials: to move people and goods safely, quickly, and efficiently. Unlike urban downtowns or activity centers, commercial strips are rarely designed for pedestrians or transit. Commercial corridors, residential areas, and office parks are frequently sealed off from each other with walls, ditches, loading docks and a host of other barriers—including the heavily traveled arterials that serve them.

Poorly coordinated access systems force more trips onto the arterial, traffic conflicts multiply, and congestion increases. As the level of service declines, additional lanes, controlled medians, and other expensive retrofitting measures are needed to maintain the capacity of the corridor for regional traffic. Businesses also suffer as accessibility deteriorates. Heavy traffic, difficult left turns, and poor sight clearance at corners deter customers. Businesses may relocate to areas where accessibility is less impaired, causing increased vacancies and declined property values in the area from where they moved. Eventually the corridor is transformed into an unattractive and confusing jumble of signs, curb cuts,

utility lines, and asphalt.

These are not inevitable results of development and growth. Rather, they relate to the lack of adequate land division and access controls and problems inherent in current planning and regulatory practice. This report examines the role of the comprehensive plan in developing an access management program, aspects of current regulatory practice that contribute to access problems, and regulatory techniques that support access management principles.

The Comprehensive Plan

The local comprehensive plan is the policy and decision making guide for future development and capital improvements in the municipality or county. It analyzes development trends; identifies key planning issues; provides the policy framework; and specifies strategies for carrying out the plan. Purposes of the plan are to:

- promote orderly and efficient development;
- protect property values;
- preserve community character, natural resources, and the environment;
- promote economic vitality; and
- increase public awareness of the forces of community change.

Local comprehensive plans should establish how the community will balance mobility with access, identify the desired access management approach, and designate corridors that will receive special treatment. This may be supplemented through functional plans, such as an access management or thoroughfare plan, or through sub-area plans, such as an interchange or corridor plan.

The comprehensive planning process is an opportunity to increase community awareness of the forces of change and determine a strategic course of action. What level of growth can the community expect? What are the future land use and capital improvement needs? And what type of land development patterns do citizens prefer? Public opinion surveys, town meetings, and visioning workshops may be used to identify citizen concerns and build political support for regulatory change. Citizen dissatisfaction with commercial strips, for example, can be translated into policies for joint access, shared parking, and sign regulation. When evaluating future land use needs, communities should account for vacancies and surplus land already available for that use. Many communities set aside far more land than required to accommodate reasonable estimates of growth, thereby encouraging scattered development patterns and strip development. It is not uncommon for communities to strip zone the majority of their highway frontage for commercial use. Additional highway frontage should not be planned or rezoned for commercial use where vacant or surplus commercial space is already available. This encourages reuse of existing commercial sites, increases property values in those areas, and is a long term economic development strategy.

Some cities have incorporated these planning and access management principles into their comprehensive plan. Examples of these principles include:

- designated mixed-use corridors, rather than commercial strips;
- mandatory mixed use with transit access in activity centers;
- limiting the supply of commercial areas to encourage reuse;
- designated cross access corridors with joint access requirements;
- comprehensive access classification and driveway spacing;
- policies and standards relating to bicycle and pedestrian access.

Subdivision Regulations

Subdivision regulations help ensure:

- proper street layout in relation to existing or planned roadways;
- adequate space for emergency access and utilities;
- adequate water, drainage, and sanitary sewer facilities;
- appropriate site design.

The subdivision ordinance establishes:

- the administrative review and evaluation procedure for processing conceptual, preliminary, and final plats
- information that must be included on the plat
- design principles and standards for lots, blocks, streets, public places, pedestrian ways, and utilities
- required improvements, including streets, sidewalks, water, sewer, and curbs and gutters;
- financing and maintenance responsibilities.

The subdivision review process should address a variety of issues, including these transportation related issues:

- Is the road system designed to meet the projected traffic demand and does the road network consist of hierarchy of roads designed according to function?
- Is access properly placed in relation to sight distance, driveway spacing, and other related considerations?
- Do units front on residential access streets rather than major roadways?
- Does the project avoid areas unsuitable for development?
- Does the pedestrian path system link buildings with parking areas, entrances to the development, open space, and recreational and other community facilities?
- Have utilities been properly placed?

State subdivision statutes grant local governments authority to regulate subdivision of land and establish minimum requirements for subdividing and platting. Subdivision is defined as the division of land into two or more parcels and provides exceptions only in special circumstances.

Yet many local subdivision statutes exempt division of land into larger parcels or creation of a small number of lots from review and conformance with subdivision. These plans evaluate long term trends;

provide data on traffic accidents and related considerations; and establish the relationship between access management and other community objectives, such as congestion management and transportation level of service. By establishing the relationship between regulatory strategies and public health, safety, and welfare, these plans can serve as the legal basis for access controls.

Corridor Overlay Zones

Overlay zones are a method for managing access along commercial corridors. The technique is used to overlay a special set of requirements onto an existing zoning district, while retaining the underlying zoning and its associated requirements. Text that specifies standards for the access management overlay district is included in the land development (or zoning) code and then corridors are designated on the zoning map. Overlay requirements may address any issues of concern such as joint access, parking lot cross access, reverse frontage, driveway spacing and limitation on new driveways. See Section 14 of the Model Regulations for corridor overlay standards.

Model Ordinance

Features of the model ordinance include classification of roadways by function and requirements for sight distance, driveway spacing, maximum driveways per lot, corner lot access, corner clearance, shared (joint and cross) access, turn radius, driveway width, driveway throat length, and parking/loading. The model ordinance contains commentary to establish the logic behind the ordinance and assist the planner in the tailoring of the local ordinance. These commentaries should be stricken from the actual local ordinance. In addition, there are several areas within the ordinance marked in blue that should be replaced with the appropriate name of local agencies, documents, etc.

Conclusion

Access management, if implemented locally, addresses a broad array of quality of life issues fundamental to promoting livable, prospering communities. Land division and access controls:

- Foster well designed circulation systems that improve the safety and character of commercial corridors;
- Discourage subdivision practices that destroy the rural character of the landscape or essential natural resources;
- Advance economic development goals by promoting more efficient use of land and transportation systems;
- Help control public service costs and the substantial public investment in infrastructure and services.

Part 2

Model Regulations

Adapted for Indiana

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- Section 2: Applicability
- Section 3: Conformance with Plans, Regulations, and Statutes
- Section 4: Definitions
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- Section 6: Corner Clearance
- Section 7: Joint and Cross Access
- Section 8: Interchange Areas
- Section 9: Access Connection and Driveway Design
- Section 10: Requirements for 4 Outparcels and Phased Development Plans
- Section 11: Emergency Access
- Section 12: Transit Access
- Section 13: Nonconforming Access Features
- Section 14: Corridor Access Management Overlay
- Section 15: Reverse Frontage
- Section 16: Flag Lot Standards
- Section 17: Lot Width-to-Depth Ratios
- Section 18: Shared Access
- Section 19: Connectivity
- Section 20: Minor Subdivisions
- Section 21: Private Roads
- Section 22: Regulatory Flexibility
- Section 23: Site Plan Review Procedures
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Section 1: Intent and Purpose

The intent of this ordinance is to provide and manage access to land development, while preserving the regional flow of traffic in terms of safety, capacity, and speed. Major thoroughfares, including highways and other arterials, serve as the primary network for moving people and goods. These transportation corridors also provide access to businesses and homes and have served as the focus for commercial and residential development. If access systems are not properly designed, these thoroughfares will be unable to accommodate the access needs of development and retain their primary transportation function. This ordinance balances the right of reasonable access to private property, with the right of the citizens of the *(city/county)* and the State of Indiana to safe and efficient travel.

To achieve this policy intent, state and local thoroughfares have been categorized by function and classified for access purposes based upon their level of importance. Regulations have been applied to these thoroughfares for the purpose of reducing traffic accidents, personal injury, and property damage attributable to poorly designed access systems, and to thereby improve the safety and operation of the roadway network. This will protect the substantial public investment in the existing transportation system and reduce the need for expensive remedial measures. These regulations also further the orderly layout

and use of land, protect community character, and conserve natural resources by promoting well-designed road and access systems and discouraging the unplanned subdivision of land.

Section 2: Applicability

This ordinance shall apply to all arterials and selected collectors within (*city/county*) and to all properties that abut these roadways. The access classification system and standards of the Indiana Department of Transportation (INDOT) shall apply to all roadways on the state highway system.

Section 3: Conformance with Plans, Regulations, and Statutes

This ordinance is adopted to implement (*cite specific policies*) of the (*city/county*) as set forth in the (*name local comprehensive plan*). In addition, this ordinance conforms with (*cite specific policies*) of the (*name of Metropolitan Planning Organization – if applicable*) as specified in the (*name of long range transportation plan – if applicable*), and the planning policies set forth in the INDOT Long Range Plan. The ordinance also conforms to the access classification system and standards of INDOT, and policy and planning directives of the Federal Highway Administration.

Commentary: The link between regulations and public policy has undergone intense legal scrutiny in recent years. To establish this link, local governments should clearly identify the intent and purpose of the regulatory program, and specify any plans, state and federal regulations, or statutes that will be carried out through the regulatory standards. It is also important to cite specific planning policies that are being advanced through these regulations. Local governments in designated transportation management areas may also cite access management as a congestion management measure in accordance with the federal transportation planning regulations. Communities that do not lie within the planning area boundaries of a Metropolitan Planning Organization (MPO) would simply leave out the reference to MPOs in this section. Demonstrating conformance with state and federal law, and with the local comprehensive plan, is important in strengthening the legal basis for any local regulatory program.

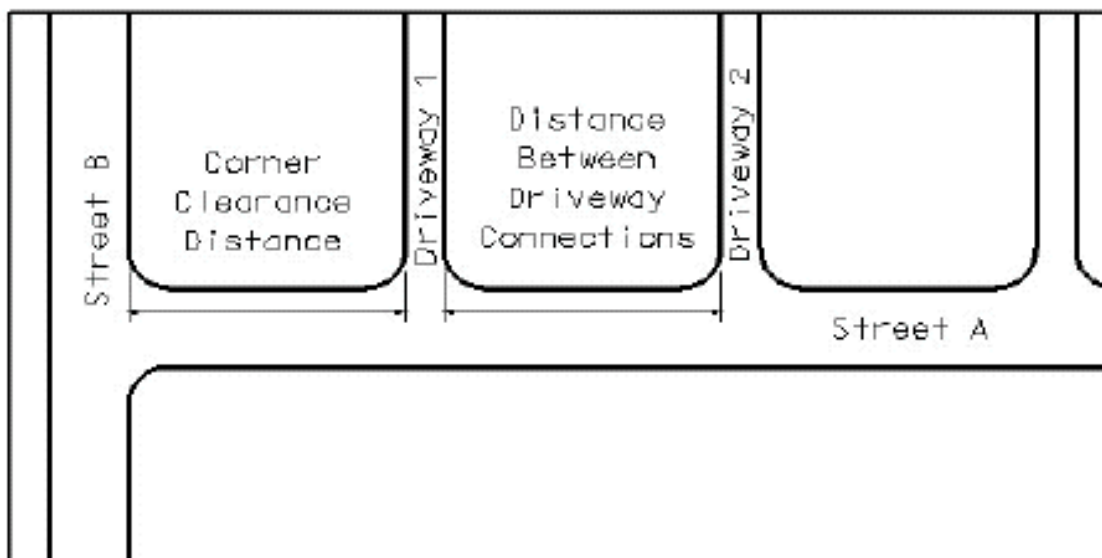
Section 4: Definitions

- **Access** - A way or means of approach to provide vehicular or pedestrian entrance or exit to a property.
- **Access Classification** - A ranking system for roadways used to determine the appropriate degree of access management. Factors considered include functional classification, the appropriate local government's adopted plan for the roadway, subdivision of abutting properties, and existing level of access control.
- **Access Connection** - Any driveway, street, turnout or other means of providing for the movement of vehicles to or from the public roadway system.
- **Access Management** - The process of providing and managing access to land development while preserving the regional flow of traffic in terms of safety, capacity, and speed.
- **Access Management Plan (Corridor)** - A plan illustrating the design of access for lots on a highway segment or an interchange area that is developed jointly by the state, the metropolitan planning organization, and the affected jurisdiction(s).
- **Cartway** - That area of road surface from curb line to curb line or between the edges of the paved

or hard surface of the roadway, which may include travel lanes, parking lanes, and deceleration or acceleration lanes.

- **Connection Spacing** -The distance between connections, measured from the closest edge of pavement of the first connection to the closest edge of pavement of the second connection along the edge of the traveled way.
- **Corner Clearance** - The distance from an intersection of a public or private road to the nearest access connection, measured from the closest edge of the pavement of the intersecting road to the closest edge of the pavement of the connection along the traveled way (see Figure A1-1)

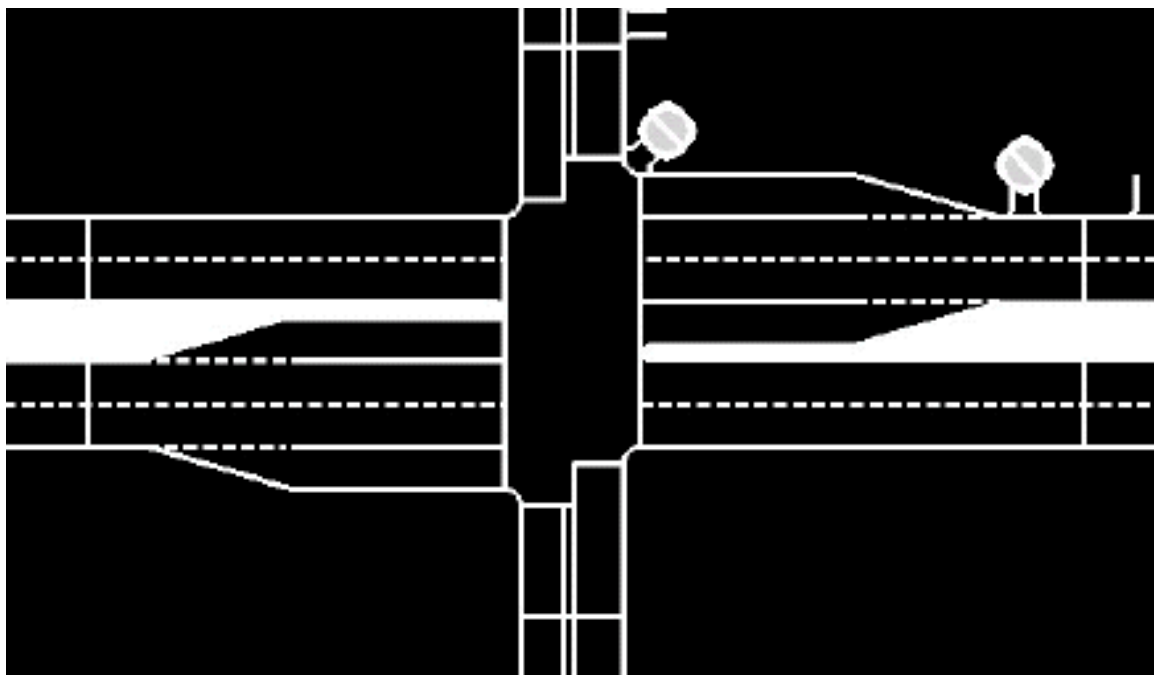
Figure A1-1: Corner Clearance and Driveway Spacing



- **Corridor Overlay Zone** - Special requirements added onto existing land development requirements along designated portions of a public thoroughfare.
- **Cross Access** - A service drive providing vehicular access between two or more contiguous sites so the driver need not enter the public street system (see Figure A1-4)
- **Deed** - A legal document conveying ownership of real property.
- **Directional Median Opening** - An opening in a restrictive median which provides for specific movements and physically restricts other movements. Directional median openings for two opposing left or "U-turn" movements along a road segment are considered one directional median opening.
- **Easement** - A grant of one or more property rights by a property owner to or for use by the public, or another person or entity.
- **Frontage Road** - A public or private drive which generally parallels a public street between the right-of-way and the front building setback line. The frontage road provides access to private properties while separating them from the arterial street. (see also Service Roads)

- **Full Median Opening** - An opening in a restrictive median that allows all turning movements from the roadway and the intersecting road or access connection.
- **Functional Area (Intersection)** - That area beyond the physical intersection of two controlled access facilities that comprises decision and maneuver distance, plus any required vehicle storage length, and is protected through corner clearance standards and driveway connection spacing standards (see Figure A1-2).

Figure A1-2: Functional Area of Intersection



- **Functional Classification** - A system used to group public roadways into classes according to their purpose in moving vehicles and providing access.
- **Joint Access (or Shared Access)** - A driveway connecting two or more contiguous sites to the public street system.
- **Lot** - A parcel, tract, or area of land whose boundaries have been established by some legal instrument, which is recognized as a separate legal entity for purposes of transfer of title, has frontage upon a public or private street, and complies with the dimensional requirements of this code.
- **Lot, Corner** - Any lot having at least two (2) contiguous sides abutting upon one or more streets, provided that the interior angle at the intersection of such two sides is less than one hundred thirty-five (135) degrees.

Commentary: Corner lots can create confusion in relation to dimensional requirements. The recommended approach is to designate one frontage as the "front" and the rear lot line would be that opposite the designated frontage. Both portions of the lot with street frontage should still be required to meet the required front yard setback to ensure adequate sight distance and consistency of setback with abutting properties. A lot abutting a curved street(s) is typically considered a corner lot if the arc has a radius less than one hundred and fifty (150) feet.

- **Lot Depth** - The average distance measured from the front lot line to the rear lot line.
- **Lot, Flag** - A large lot not meeting minimum frontage requirements and where access to the public road is by a narrow, private right-of-way or driveway.
- **Lot, Nonconforming** - A lot that does not meet the dimensional requirements of the district in which it is located and that existed before these requirements became effective.
- **Lot, Through** (also called a double frontage lot) - A lot that fronts upon two parallel streets or that fronts upon two streets that do not intersect at the boundaries of the lot.
- **Lot Frontage** - That portion of a lot extending along a street right-of-way line.
- **Lot of Record** - A lot or parcel that exists as shown or described on a plat or deed in the records of the Clerk of the County Court.
- **Lot Width** - The horizontal distance between side lot lines measured parallel to the front lot line at the minimum required front setback line.
- **Manual of Uniform Traffic Control Devices (MUTCD)** - A Federal document adopted by the Kentucky Transportation Cabinet that provides standards for traffic control devices.
- **Minor Subdivision** - A subdivision of land into not more than two (2) lots where there are no roadways, drainage, or other required improvements.
- **Nonconforming Access Features** - Features of the access system of a property that existed prior to the date of ordinance adoption and do not conform to the requirements of this code.
- **Nonrestrictive Median** - A median or painted centerline that does not provide a physical barrier between traffic traveling in opposite directions or turning left, including continuous center turn lanes and undivided roads.
- **Outparcel** - A parcel of land abutting and external to the larger, main parcel, which is under separate ownership and has roadway frontage.
- **Parcel** - A division of land comprised of one or more lots in contiguous ownership.
- **Plat** - An exact and detailed map of the subdivision of land.
- **Private Road** - Any road or thoroughfare for vehicular travel which is privately owned and maintained and which provides the principal means of access to abutting properties.

- **Public Road** - A road under the jurisdiction of a public body that provides the principal means of access to an abutting property.
- **Reasonable Access:** The minimum number of access connections, direct or indirect, necessary to provide safe access to and from the thoroughfare, as consistent with the purpose and intent of this code and any applicable plans and policies of the (*city/county*).
- **Restrictive Median** - A physical barrier in the roadway that separates traffic traveling in opposite directions, such as a concrete barrier or landscaped island.
- **Right-of-Way** - Land reserved, used, or to be used for a highway, street, alley, walkway, drainage facility, or other public purpose.
- **Service Road** - A public or private street or road, auxiliary to and normally located parallel to a controlled access facility, that maintains local road continuity and provides access to parcels adjacent to the controlled access facility.
- **Significant Change in Trip Generation** - 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.
- **State Primary Road System** - The network of limited access and controlled access highways that have been functionally classified and are under the jurisdiction of the Commonwealth of Kentucky.
- **Stub-out (Stub-street)** - A portion of a street or cross access drive used as an extension to an abutting property that may be developed in the future.
- **Subdivision** - Is the process and the result of any of the following:
 - a. The platting of land into lots, building sites, blocks, open space, public areas, or any other division of land;
 - b. Establishment or dedication of a road, highway, street or alley through a tract of land, by the owner thereof, regardless of area;
 - c. The re-subdivision of land heretofore subdivided (however, the sale or exchange of small parcels of land to or between adjoining property owners, where such sale or exchange does not create additional lots and does not result in a nonconforming lot, building, structure or landscape area, shall not be considered a subdivision of land);
 - d. The platting of the boundaries of a previously unplatted parcel or parcels.
- **Substantial Enlargements or Improvements** - A 10% increase in existing square footage or 50% increase in assessed valuation of the structure.

Commentary: This standard is typical of many standards used to address nonconforming situations. Check these standards related to nonconforming situations against those of your code to assure consistency.

- **Temporary Access** - Provision of direct access to the controlled access facility until that time when adjacent properties develop, in accordance with a joint access agreement or frontage road plan.

Section 5: Access Management Classification System and Standards

1. Roadways within the (city/county) that are not on the state highway system are classified by the following functional categories (roadways on the state highway system are classified based on the INDOT access classification system):

Principal (Major) Arterials – High volume roadways that provide priority to mobility over access. They often provide service to traffic entering and exiting the city and between major activity centers within the city.

Minor Arterials – Moderate volume roadways that provide priority to mobility over access. They often feed the major arterial system, support moderate length trips, and serve activity centers.

Collectors – Roads with moderate to low volumes that provide a balance between mobility and access. They often link Local Streets with the Arterials.

Local Streets – Low volume streets that provide immediate access to individual residential, commercial, industrial and institutional properties not classified in the above three classes. Access and frontage roads are also considered local streets.

Commentary: Major arterial, minor arterial, and collector streets should be indicated in a thoroughfare plan that maps roadways by their classification. Additional classes may be designated based on various land-use conditions or projected land-use changes.

2. All connections on facility segments that have been assigned an access classification shall meet or exceed the minimum connection spacing requirements of that access classification as specified in Table A1-1.

Table A1-1: Minimum Driveway and Signal Spacing

Access Category	Unsignalized Intersection and Driveway Spacing						Ideal Signal Spacing	Minimum Acceptable Bandwidth for Deviation from Ideal Signal Spacing
	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph		
Tier 1	200	250	305	360	425	495	½ mile	Urban areas = 45% Rural areas = 50%
Tier 2	200	250	305	360	425	495	½ mile	Urban areas = 40 % Rural areas = 45%
Tier 3	200	250	305	360	425	495	½ mile	Urban areas = 35% Rural areas = 40%

Commentary: The spacing within this table reflects the draft criteria identified for the state highway system. The standards are to provide a starting point for other government agencies to use in developing acceptable local standards. Spacing for state roads must be equal to or greater than the INDOT criteria.

3. Driveway spacing shall be measured from the closest edge of the pavement to the next closest edge of the pavement (*see Definition section and Figure A1-1*). The projected future edge of the pavement of the intersecting road shall be used in measuring corner clearance, where widening, relocation, or other improvement is indicated in an adopted transportation plan.

4. The (*local permitting department*) may reduce the connection spacing requirements in situations where they prove impractical, but in no case shall the permitted spacing be less than 85% of the applicable standard, except as provided in Section 24.

5. If the connection spacing of this code cannot be achieved, then a system of joint use driveways and cross access easements may be required in accordance with Section 7.

6. Variation from these standards shall be permitted at the discretion of the Planning Commission where the effect would be to enhance the safety or operation of the roadway.

Examples might include a pair of one-way driveways in lieu of a two-way driveway, or alignment of median openings with existing access connections. Applicants may be required to submit a study prepared by a registered engineer to assist the (*city/county*) in determining whether the proposed change would exceed roadway safety or operational benefits of the prescribed standard.

Commentary: Driveway spacing standards limit the number of driveways on a roadway by mandating a minimum separation distance between driveways. This reduces the potential for collisions as travelers enter or exit the roadway and encourages sharing of access, where appropriate. Driveway spacing at intersections and corners should provide adequate sight distance and response times and permit adequate stacking space. Driveway spacing on non-classified arterials and collectors may be tied to the posted speed limit, as shown here, with the minimum distance between driveways greater as speed limits increase. The method used to regulate driveway spacing does, however, vary widely across local governments. Some jurisdictions tie driveway spacing to functional classification rather than speed limit, and others provide variable spacing depending upon the land use intensity of the site served and that of adjacent sites. The standards above fall within the recommended range and are compatible with connection spacing standards in Table A1-1.

Section 6: Corner Clearance

1. Corner clearance for connections shall meet or exceed the minimum connection spacing requirements for that roadway.

2. New connections shall not be permitted within the functional area of an intersection or interchange as defined by the connection spacing standards of this code, unless:

a. No other reasonable access to the property is available, and

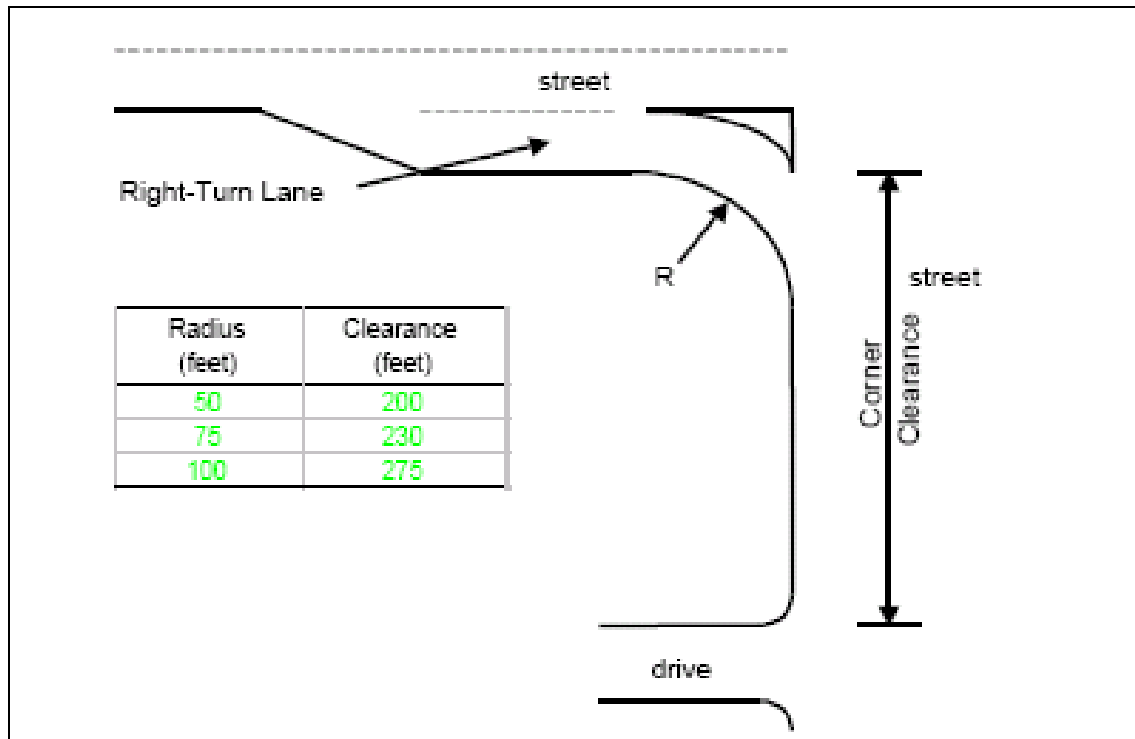
b. The (*permitting department*) determines that the connection does not create a safety or operational problem upon review of a site-specific study of the proposed connection prepared by a registered engineer and submitted by the applicant.

3. Where no other alternatives exist, the (*permitting department*) may allow construction of an access connection along the property line farthest from the intersection. In such cases, directional connections (i.e. right in/out, right in only, or right out only) may be required.

4. In addition to the required minimum lot size, all corner lots shall be of adequate size to provide for

required front yard setbacks and corner clearance on street frontage.

Figure A1-3: Downstream Corner Clearance



Section 7: Joint and Cross Access

1. Adjacent commercial or office properties classified as major traffic generators (i.e. shopping plazas, office parks), shall provide a cross access drive and pedestrian access to allow circulation between sites.

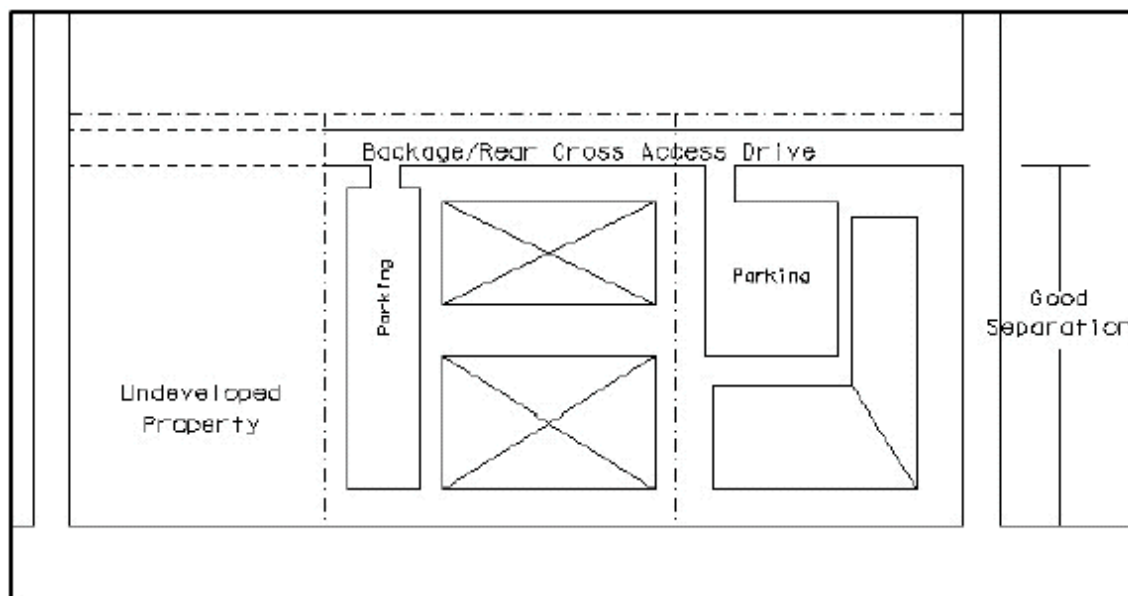
Commentary: Adjacent shopping centers or office parks are often not connected by a service drive and sidewalk. As a result, customers who wish to shop in both centers, or visit both sites, must exit the parking lot of one, travel a short distance on a major thoroughfare, and then access the next site. A cross access drive reduces traffic on the major thoroughfare and reduces safety hazards. As a result, this can have positive business benefits by providing easy access to one site from another.

2. A system of joint use driveways and cross access easements as shown in Figures A1-4 and A1-5 shall be established wherever feasible along *(name affected corridors or refer to a list)* and the building site shall incorporate the following:

- a. A continuous service drive or cross access corridor extending the entire length of each block served to provide for driveway separation consistent with the access management classification system and standards.
- b. A design speed of 10 mph and sufficient width to accommodate two-way travel aisles designed to accommodate automobiles, service vehicles, and loading vehicles;
- c. Stub-outs and other design features to make it visually obvious that the abutting properties may be tied in to provide cross-access via a service drive;

- d. A unified access and circulation system plan that includes coordinated or shared parking areas is encouraged wherever feasible.

Figure A1-4: Examples of Cross Access Corridor Design



Note: This illustration shows that sufficient separation is needed between side street access to the property and the major road.

3. Shared parking areas shall be permitted a reduction in required parking spaces if peak demand periods for proposed land uses do not occur at the same time periods.

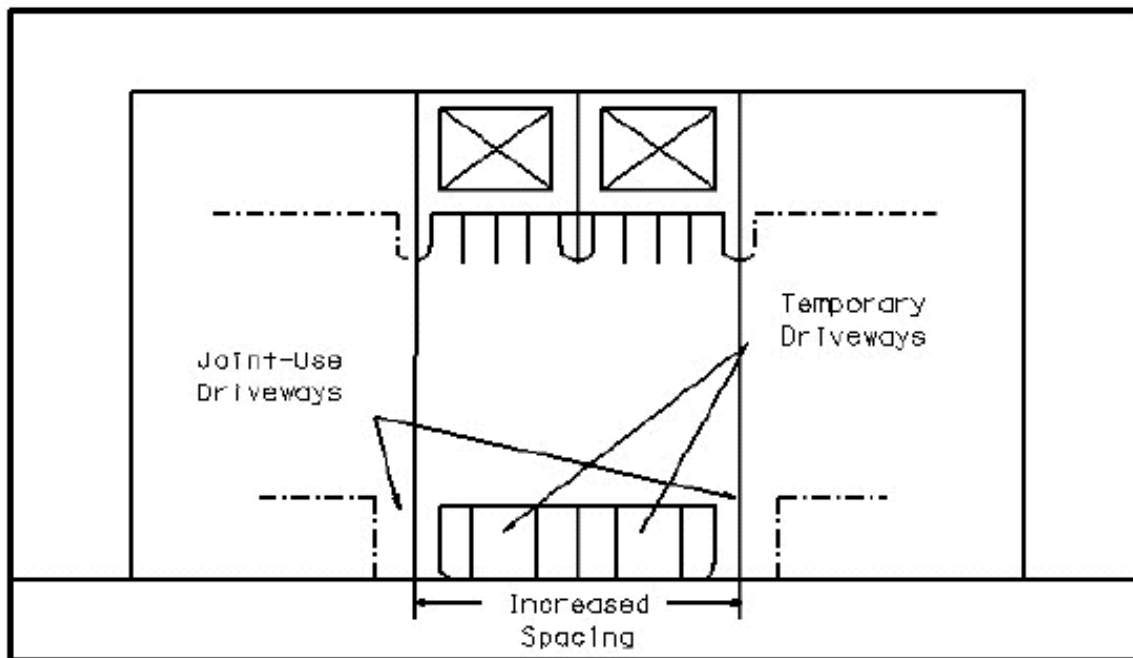
Commentary: For example, a bank and a movie theater need parking for their patrons at two distinctly different times.

4. Pursuant to this section, property owners shall:

- a. Record an easement with the deed allowing cross access to and from other properties served by the joint use driveways and cross access or service drive;
- b. Record an agreement with the deed that remaining access rights along the thoroughfare will be dedicated to the (city/county) and pre-existing driveways will be closed and eliminated after construction of the joint-use driveway;
- c. Record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners.

Commentary: See Appendix A-3 for a sample cross access agreement from the City of Orlando. These agreements must be prepared with the assistance of an attorney. Another option is that used by the City of Orlando, who ties joint access requirements to specific zoning districts.

Figure A1-5: Joint and Cross Access



5. The (*permitting department*) may reduce required separation distance of access points where they prove impractical, provided all of the following requirements are met:

- a. Joint access driveways and cross access easements are provided wherever feasible in accordance with this section.
- b. The site plan incorporates a unified access and circulation system in accordance with this section.
- c. The property owner shall enter a written agreement with the (*city/county*), recorded with the deed, that pre-existing connections on the site will be closed and eliminated after construction of each side of the joint use driveway.

6. The (*permitting department*) may modify or waive the requirements of this section where the characteristics or layout of abutting properties would make development of a unified or shared access and circulation system impractical.

Commentary: This model provides that where properties are unable to meet driveway spacing requirements, then the planning or public works official may provide for less restrictive spacing, based on the conditions that joint use driveways and cross access easements must be established wherever feasible. A variance is provided only where joint and cross access is not practical. Variances and other remedial actions such as those described above are necessary to prevent unusual hardship on property owners and other situations that could incur a regulatory taking. (Note: Variances and special conditions, like standards for nonconforming features, must be consistently and rigorously applied.) These standards are also applied to phased development in the same ownership and leasing situations. Where abutting properties are in different ownership, cooperation is encouraged but not required. But the building site under consideration is subject to the requirements, which are recorded as a Binding Agreement prior to issuing a building permit. Abutting properties will be brought into compliance as they are developed or initiate retrofitting requirements, as provided in Section 13. In the meantime, the property owner will be

permitted a temporary curb cut and driveway that will be closed upon development of the joint use driveway.

Section 8: Interchange Areas

1. New interchanges or significant modification of an existing interchange will be subject to special access management requirements to protect the safety and operational efficiency of the limited access facility and the interchange area, pursuant to the preparation and adoption of an access management plan. The plan shall address current and future connections and median openings within 1/4 mile of an interchange area (measured from the end of the taper of the ramp furthest from the interchange) or up to the first intersection with an arterial road, whichever is less.

2. The distance to the first connection shall comply with the minimum driveway spacing standards. However, no connection will be less than 30 meters in an urban area, or 90 meters in a rural area (distances of 60 meters for urban areas and 150 meters or more in urban areas are preferred). This distance shall be measured from the end of the taper for that quadrant of the interchange.

Commentary: New highway interchanges can have substantial impacts on land development patterns around the interchange area. In turn, if land development is not properly planned it can create safety hazards and interfere with the flow of traffic onto and off of the interchange. An access management plan would identify the appropriate access system around the interchange area, in accordance with a desired land development plan. Such a plan would also incorporate minimum spacing requirements for new interchanges required by INDOT. These standards are provided above for incorporation into the local code.

Section 9: Access Connection and Driveway Design

1. *Driveway grades on the state highway system shall conform to INDOT requirements. Driveway grades on non-state roads shall conform to the criteria established by the governing agency involved. .*

2. Driveway approaches must be designed and located to provide an exiting vehicle with an unobstructed view.

3. Construction of driveways along acceleration or deceleration lanes and tapers is discouraged due to the potential for vehicular weaving conflicts (see Figure A1-6).

4. Driveways with more than one entry and one exit lane shall incorporate channelization features to separate the entry and exit sides of the driveway. Double yellow lines may be considered instead of medians where truck off-tracking is a problem.

5. Driveways across from median openings shall be consolidated wherever feasible to coordinate access at the median opening.

6. Driveway width and flair shall be adequate to serve the volume of traffic and provide for rapid movement of vehicles off of the major thoroughfare, but standards shall not be so excessive as to pose safety hazards for pedestrians, bicycles, or other vehicles.

(Sample criteria appear in Table A1-2.)

Figure A1-6: Driveway Location

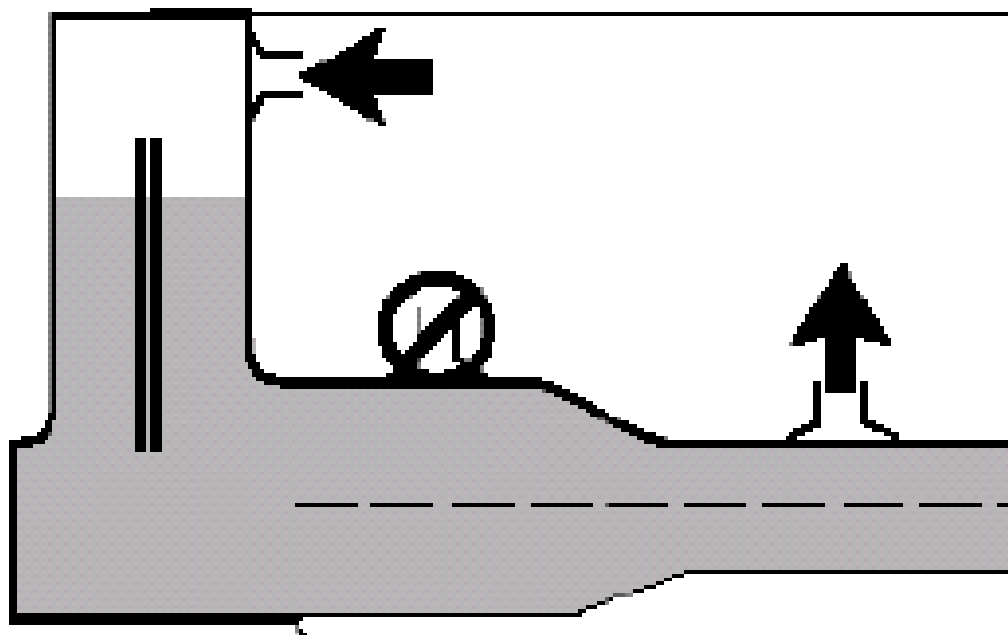


Table A1-2: Suggested Access Connection Design

Trips/Day	1-20		21-600		601-4,000*	
Trips/Hour	Or 1-5		Or 6-60		Or 61-400	
	Urban	Rural	Urban	Rural	Urban	Rural
Connection Width (2-way)	12' min 24' max	12' min 24' max	24' min 36' max	24' min 36' max	24' min 36' max	24' min 36' max
Flare	10' min	N/A	10' min	N/A	N/A	N/A
Returns (Radius)	N/A	15' min 25' std 50' max	Small radii may be used	25' min 50' std 75' max	25' min 50' std 75' max	25' min 50' std 75' max
Angle of Drive			60-90	60-90	60-90	60-90
Divisional Island			4-22' wide	4-22' wide	4-22' wide	4-22' wide

*Note: These standards are not intended for major access connections carrying over 4,000 vehicles per day.

Commentary: Local governments need to adhere to certain minimum design standards in the design and location of access connections or other traffic control features. These standards are contained in three separate but related technical documents: the INDOT Driveway Permit Manual; the AASHTO Green Book (Policy on Geometric Design of Highways and Streets); and the MUTCD (Manual of Uniform Traffic Control Devices).

1. The length of driveways or "Throat Length" (see Figure A1-7) shall be designed in accordance with the anticipated storage length for entering and exiting vehicles to prevent vehicles from backing into the flow of traffic on the public street or causing unsafe conflicts with on-site circulation. General standards appear in Table A1-3 but these requirements will vary according to the projected volume of the individual

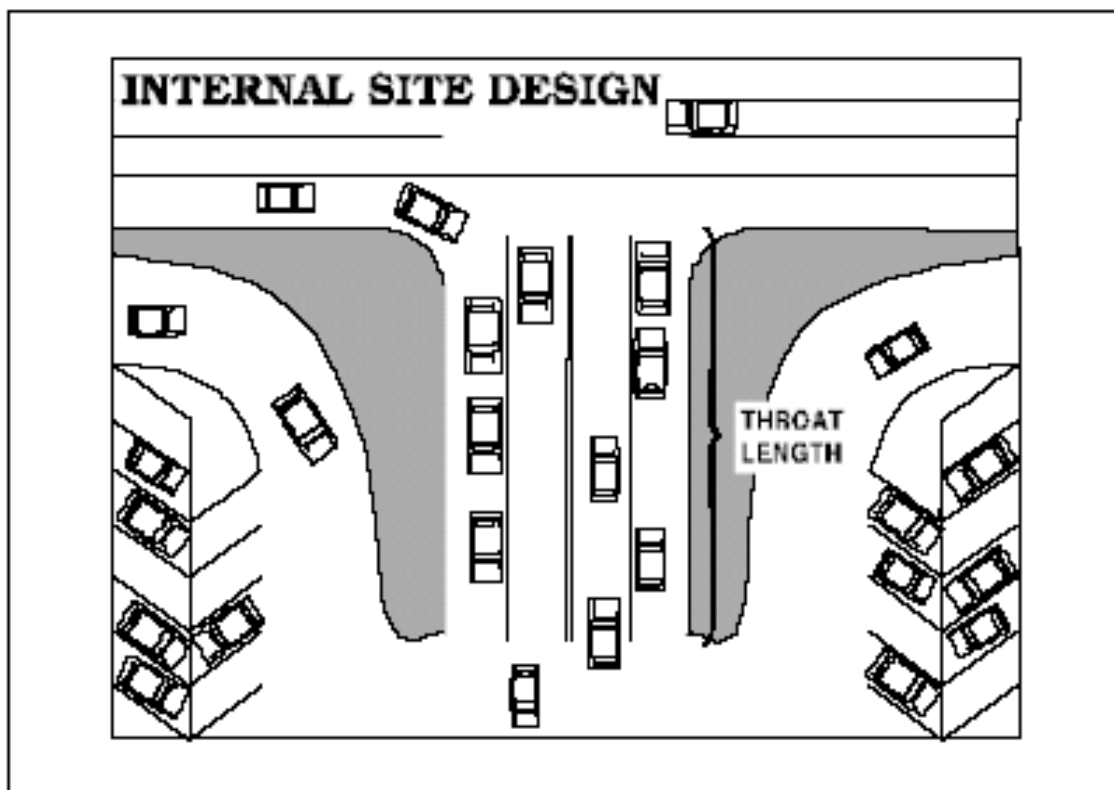
driveway. These measures generally are acceptable for the principle access to a property and are not intended for minor driveways. Variation from these shall be permitted for good cause upon approval of the *(city/county Traffic Engineer or Public Works Official)*.

Table A1-3: Generally Adequate Driveway Throat Lengths

Signalized with 2 egress lanes	75 feet
Signalized with 3 egress lanes	200 feet
Signalized with 4 egress lanes	300 feet
Unsignalized driveways with 2 egress lanes	50 to 75 feet

***Commentary:** The throat lengths in Table A1-3 are provided to assure adequate stacking space within driveways for general land use intensities. This helps prevent vehicles from stacking into the thoroughfare as they attempt to access the site. High traffic generators, such as large shopping plazas, need much greater throat length than smaller developments or those with unsignalized driveways. The guidelines here for larger developments refer to the primary access drive. Lesser throat lengths may be permitted for secondary access drives serving large developments.*

Figure A1-7: Driveway Throat Length



Section 10: Requirements for Outparcels and Phased Development Plans

1. In the interest of promoting unified access and circulation systems, development sites under the same ownership or consolidated for the purposes of development and comprised of more than one building site shall not be considered separate properties in relation to the access standards of this code. The number of connections permitted shall be the minimum number necessary to provide reasonable access to these properties, not the maximum available for that frontage. All necessary easements, agreements, and stipulations required under Section 7 shall be met. This shall also apply to phased development plans. The owner and all lessees within the affected area are responsible for compliance with the requirements of this code and both shall be cited for any violation.
2. All access to the outparcel must be internalized using the shared circulation system of the principle development or retail center. Access to outparcels shall be designed to avoid excessive movement across parking aisles and queuing across surrounding parking and driving aisles.
3. The number of outparcels shall not exceed one per ten acres of site area, with a minimum lineal frontage of 300 feet per outparcel or greater where access spacing standards for that roadway require. This frontage requirement may be waived where access is internalized using the shared circulation system of the principle development or retail center. In such cases the right of direct access to the roadway shall be dedicated to the (*city/county*) and recorded with the deed.

Section 11: Emergency Access

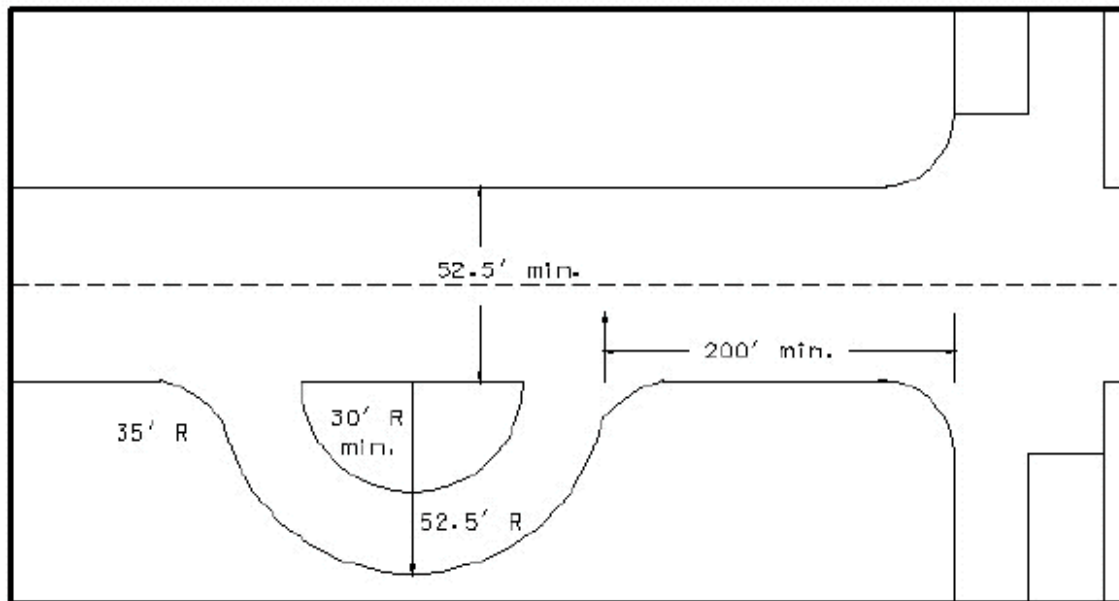
In addition to minimum side, front, and rear yard setback and building spacing requirements specified in this code, all buildings and other development activities such as landscaping, shall be arranged on site so as to provide safe and convenient access for emergency vehicles.

Section 12: Transit Access

In commercial or office zoning districts where transit service is available or is planned to be available within five years, provisions shall be made for adequate transit access, in the form of turn around loops or turnout bays. At a minimum, in the case of a loop or cul-de-sac, entrance curves shall have a radius of 35 feet, and the internal circle shall have an inside radius of 30 feet and an outside radius of 52.5 feet. In the case of turnout bays, the curve radius shall be 35 feet the distance from the roadside edge to the inside edge of the outside radius shall be 52.5 feet (see Figure A1-8).

Commentary: The bus turnaround standards in Figure A1-8 are provided for transit access along major commercial and office corridors to assure safe and convenient transit access. Bus turnarounds are useful in circumstances where circulation via the internal street system of a development would be impractical based on cost, design constraints, or the need to maintain timely service. These bus turnarounds are based upon the turning radius of a standard 40 foot bus.

Figure A1-8: Turnout Bay Turning Radii



Section 13: Nonconforming Access Features

1. Permitted access connections in place as of (*date of adoption*) that do not conform with the standards herein shall be designated as nonconforming features and shall be brought into compliance with applicable standards under the following conditions:

- a. When new access connection permits are requested;
- b. Substantial enlargements or improvements;
- c. Significant change in trip generation; or
- d. As roadway improvements allow.

Commentary: Nonconforming access features may continue in the same manner after adoption of land development regulations--a process known as "grandfathering." This protects the substantial investment of property owners and recognizes the expense of bringing those properties into conformance. Yet the negative impacts of nonconforming properties may be substantial, depending upon the degree of nonconformity. Nonconforming properties may pose safety hazards, increase traffic congestion, reduce property values, degrade the environment, and undermine community character. To address the public interest in these matters, land development regulations include conditions or circumstances where nonconforming features must be brought into conformance. Opportunities to bring nonconforming features into compliance typically occur after a change of ownership when the costs of required improvements may be amortized in the business loan or mortgage, thereby minimizing financial hardship. It is essential that these standards be consistently and rigorously applied and enforced and that data and other information supporting these decisions be well documented, or the community could be open to legal challenges regarding due process considerations.

2. If the principal activity on a property with nonconforming access features is discontinued for a consecutive period of (*180 or 365*) days or discontinued for any period of time without a present intention of resuming that activity, then that property must thereafter be brought into conformity with all applicable connection spacing and design requirements, unless otherwise exempted by the permitting authority. For uses that are vacant or discontinued upon the effective date of this code, the (*180 or 365*) day period begins on the effective date of this code.

Section 14: Corridor Access Management Overlay

1. The minimum lot frontage for all parcels with frontage on (*name affected segments of thoroughfares here or refer to a list*) shall not be less than the minimum connection spacing standards of that thoroughfare, except as otherwise provided in this Section. Flag lots shall not be permitted direct access to the thoroughfare and interior parcels shall be required to obtain access via a public or private access road in accordance with the requirements of this Code.

Commentary: Overlay zones are an effective method for managing access along commercial corridors. The technique is used to add a special set of requirements to those of an existing zoning district or districts. Section 14(1) is for those major thoroughfares or portions of major thoroughfares under state or local jurisdiction that are not already extensively subdivided and are not planned for commercial or intensive development in the near future. This approach requires that any lot fronting designated thoroughfares (usually those with an assigned access classification) have a minimum lot frontage that meets or exceeds the minimum connection spacing standard for those thoroughfares. Existing lots with

less frontage would continue as nonconforming lots. Section 14(1) standards impose large minimum lot frontage requirements to coordinate with desired connection spacing. Such requirements could disperse development and should not be applied in areas intended for intensive development. They are designed for rural and semi-rural stretches of the state (or county) highway system.

2. The following requirements shall apply to segments of designated thoroughfares that are planned for commercial or intensive development. All land in a parcel having a single tax code number, as of *(date of adoption)*, fronting on *(define segment of affected thoroughfare or refer to a Table defining affected segments)*, shall be entitled one (1) driveway/connection per parcel as of right on said public thoroughfare(s). When subsequently subdivided, either as metes and bounds parcels or as a recorded plat, parcels designated herein shall provide access to all newly created lots via the permitted access connection. This may be achieved through subdivision roads, joint and cross access, service drives, and other reasonable means of ingress and egress in accordance with the requirements of this Code. The following standards shall also apply:

a. Parcels with large frontages may be permitted additional driveways at the time of adoption of these requirements provided they are consistent with the applicable driveway spacing standards.

b. Existing parcels with frontage less than the minimum connection spacing for that corridor may not be permitted a direct connection to the thoroughfare under this Section where the Planning Commission determines alternative reasonable access is available to the site.

[Note: The Planning Commission could allow for a temporary driveway as provided in Section 7 with the stipulation that joint and cross access be established as adjacent properties develop.]

c. Additional access connections may be allowed where the property owner demonstrates that safety and efficiency of travel on the thoroughfare will be improved by providing more than one access to the site.

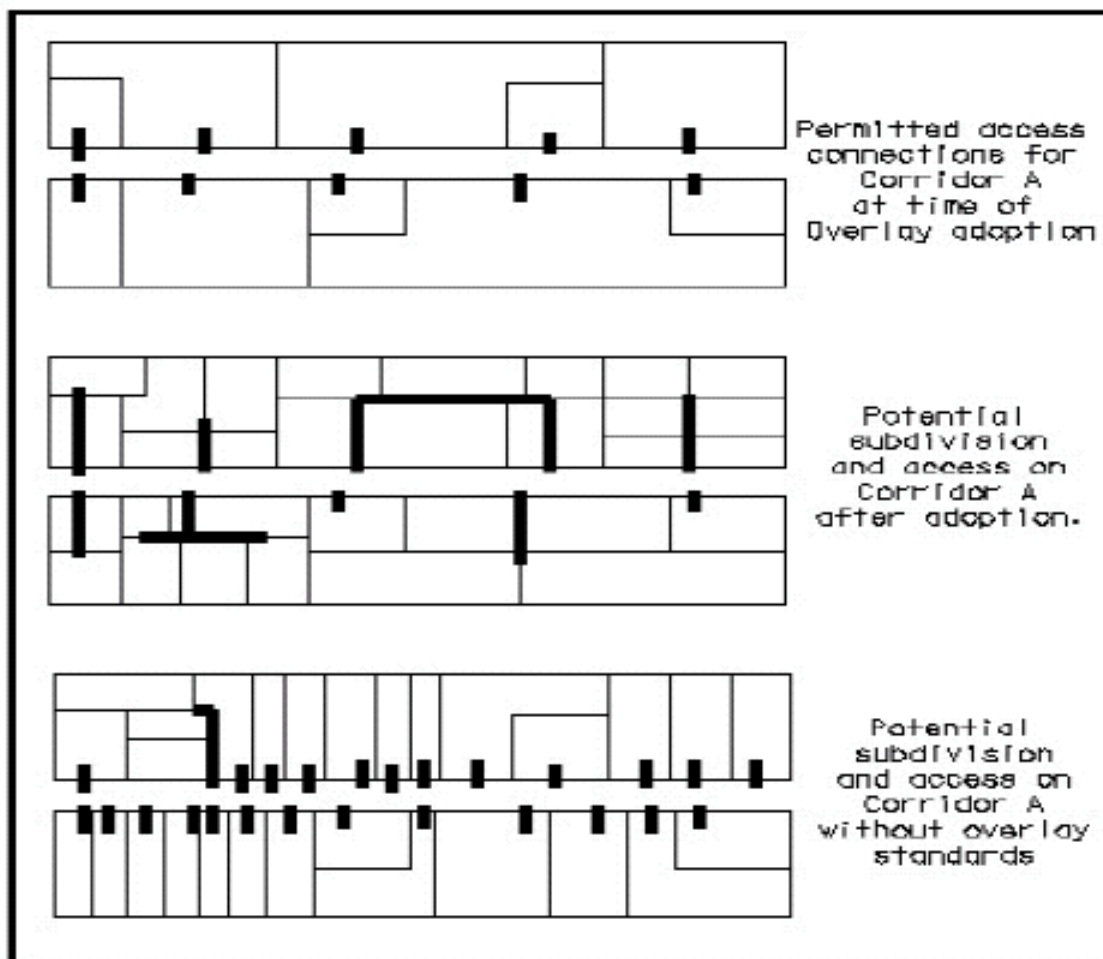
d. No parking or structure other than signs shall be permitted within *(10- 50)* feet of the roadway right-of-way. The *(10-50)* foot buffer shall be landscaped with plants suitable to the soil and in a manner that provides adequate sight visibility for vehicles exiting the site. Property owners shall be permitted to landscape the right-of-way, pursuant to an approved landscaping plan.

e. Permitted connections shall be identified on a map that shall be adopted by reference and that portion of a corridor affected by these overlay requirements shall be delineated on the *(city/county)* zoning map with hatch marks.

Commentary: The regulations in Section 14(2) are intended for corridors that are planned for commercial or intensive development and have not already been extensively subdivided into small lot frontages. Such corridors may or may not be currently zoned for commercial or mixed use development, but may already be experiencing development pressure. This approach focuses, rather than disperses, development along corridors while maintaining regional mobility through access management. The Section 14(2) overlay "freezes" allowable access to one connection by right per existing lot or parcel at the time of adoption. Lots or parcels may be extensively subdivided, but all future lots must obtain access via the access connections permitted at the time of overlay adoption. This overlay approach allows for continued subdivision and development of land while stimulating joint access, local roads, and other alternatives to direct thoroughfare access in the site design process (see Figure A1-9). These permitted connections must be designated on a map and adopted with the overlay requirements. For flexibility, additional driveways may be permitted for large parcels that meet or exceed the minimum access spacing standards for that thoroughfare, or where safety would be increased. Parcels with small frontages at the

time of adoption are not permitted a driveway on the thoroughfare where this would create a safety hazard or where alternative reasonable access is available. In such cases a temporary driveway could be permitted under joint access requirements.

Figure A1-9: Corridor Access Management Overlay



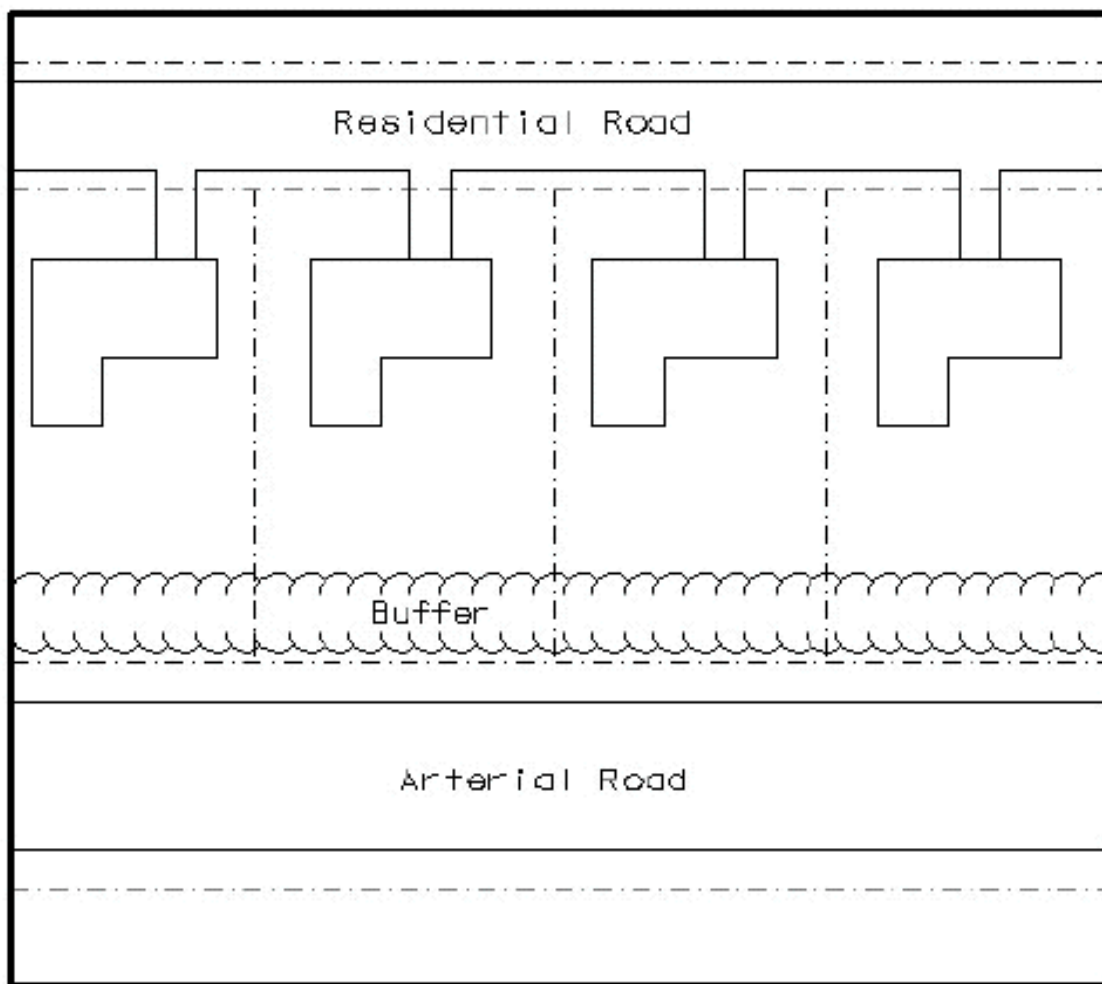
Commentary: Local governments are also encouraged to apply design guidelines that enhance community character, including standards for pedestrian access and landscaping. Section 14(2)(d) above is one potential standard for improving the visual quality of commercial corridors through landscaping and setbacks. The setback between the right-of-way and the parking area or structure should at a minimum be 10 feet. Some communities require as much as 50 feet. The appropriate standard will vary according to local preferences and existing right-of-way. If the existing right-of-way is very small, for example, then the buffer should be increased and vice versa. Some communities are also promoting side and rear parking, or shared parking areas, to reduce the appearance of asphalt from the street and provide for a more pleasing site design.

Section 15: Reverse Frontage

1. Access to double frontage lots shall be required on the street with the lower functional classification.

2. When a residential subdivision is proposed that would abut an arterial, it shall be designed to provide through lots along the arterial with access from a frontage road or interior local road (see Figure A1-10). Access rights of these lots to the arterial shall be dedicated to the (city/county) and recorded with the deed. A berm or buffer yard may be required at the rear of through lots to buffer residences from traffic on the arterial. The berm or buffer yard shall not be located within the public right-of-way.

Figure A1-10: Reverse Frontage



Commentary: *If your community lacks any standards governing reverse frontage, it is essential that such standards be adopted. These standards are currently applied by many communities and are highly effective in preventing safety hazards caused by direct residential access to high-speed roadways.*

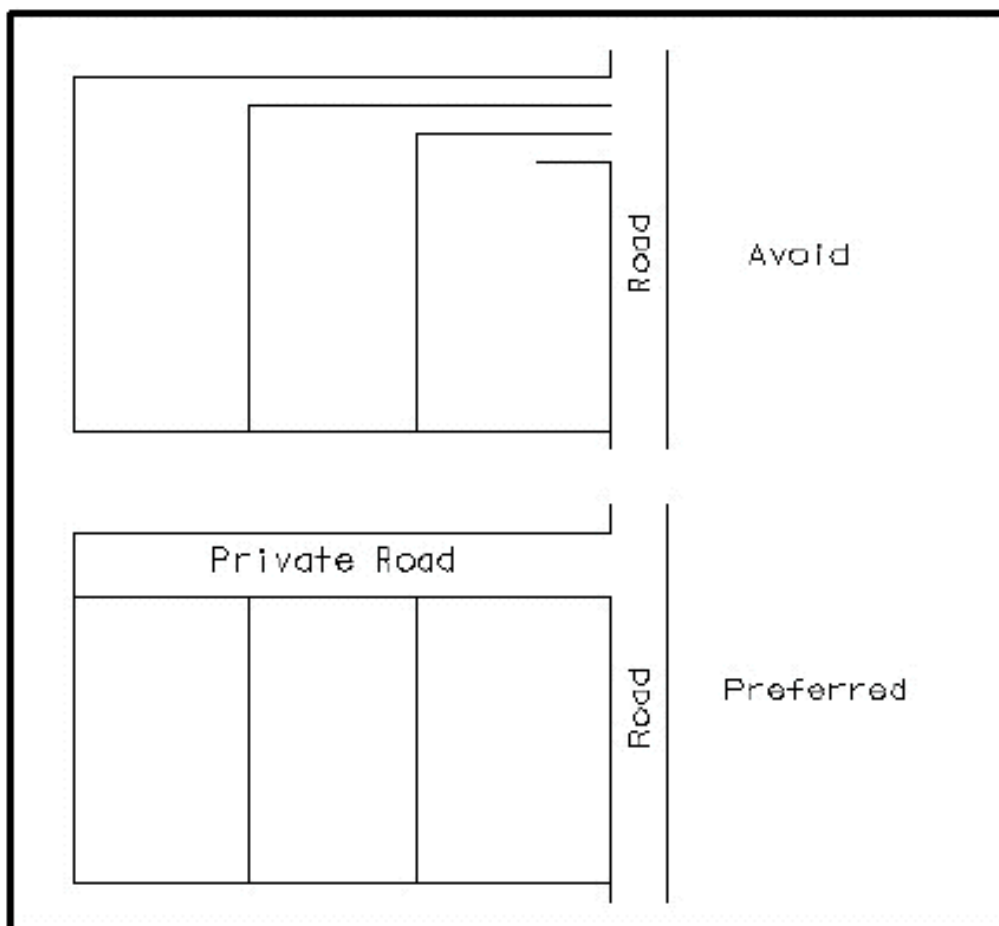
Section 16: Flag Lot Standards

1. Flag lots shall not be permitted when their effect would be to increase the number of properties requiring direct and individual access connections to the State Primary Road System or other major thoroughfares.
2. Flag lots may be permitted for residential development, when deemed necessary to achieve planning objectives, such as reducing direct access to thoroughfares, providing internal platted lots with access to a

residential street, or preserving natural or historic resources, under the following conditions:

- a. Flag lot driveways shall be separated by at least twice the minimum frontage requirement of that zoning district.
- b. The flag driveway shall have a minimum width of 20 feet and maximum width of 50 feet
- c. In no instance shall flag lots constitute more than 10% of the total number of building sites in a recorded or unrecorded plat, or three lots or more, whichever is greater.
- d. The lot area occupied by the flag driveway shall not be counted as part of the required minimum lot area of that zoning district.
- e. No more than one flag lot shall be permitted per private right-of-way or access easement.

Figure A1-11: Flag Lots and Alternative Access



Commentary: Local plat maps often reveal lots shaped like flags with long narrow access "poles". Flag lots are especially prevalent along lakes, rivers, cul-de-sacs, and rural highways. Although they can be useful where natural features or land division patterns create access problems, they are subject to abuses. Flag lots proliferate in some areas where property owners use the technique to avoid plat review and further subdivide land. The result is a subdivision that lacks adequate access and creates long term problems for the community and those who purchase the lots. Where the narrow frontages abut a thoroughfare, they afford inadequate spacing between driveways and increase safety hazards from vehicles turning on and off the high speed roadway. Because flag lots often violate driveway spacing standards on the state highway system, they also create problems for the buyer who later attempts to build on the property and obtain a driveway permit. Under these standards existing flag lots would be nonconforming and allowed to continue. In areas where flag lots proliferate on a state or county thoroughfare, property owners should be contacted and strongly encouraged to consolidate access with adjacent properties--especially in the case of abutting flag lots.

Section 17: Lot Width-to-Depth Ratios

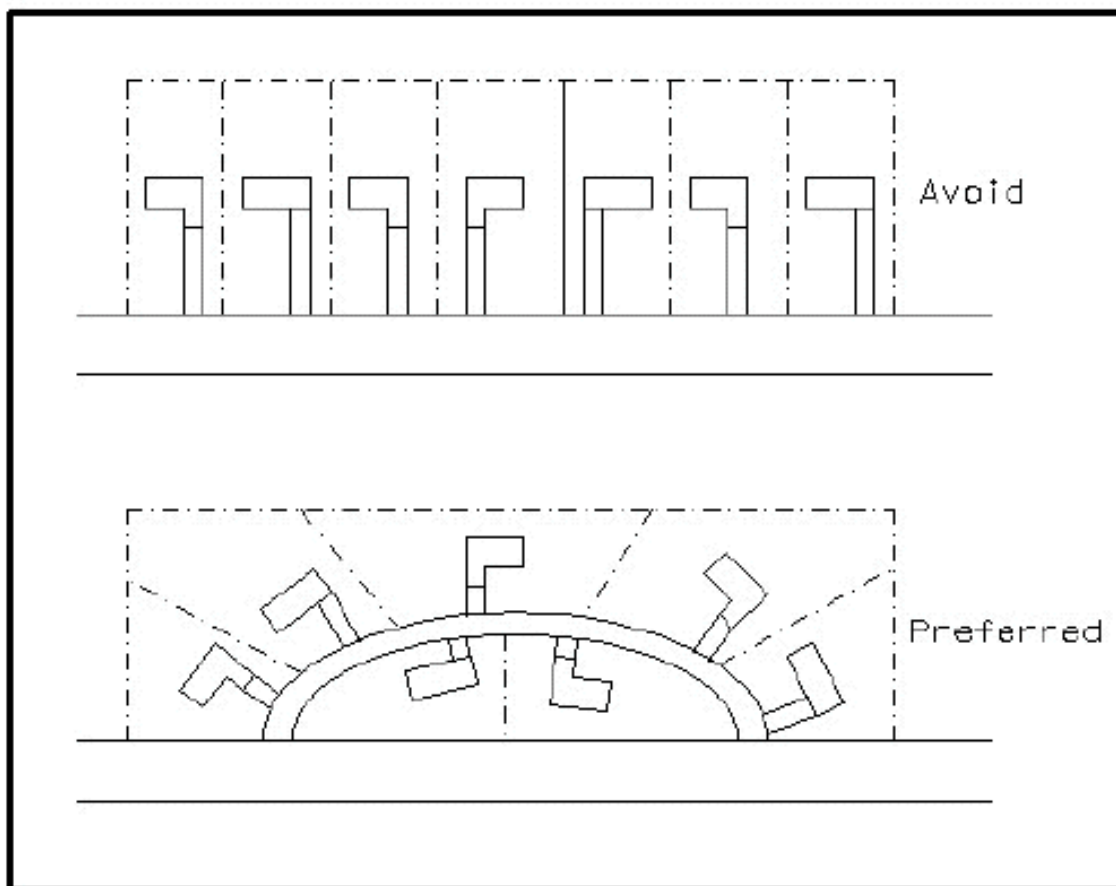
1. To provide for proper site design and prevent the creation of irregularly shaped parcels, the depth of any lot or parcel shall not exceed 3 times its width (or 4 times its width in rural areas).

Commentary: Minimum lot frontage and maximum lot width-to-depth ratios prevent the creation of long and narrow or irregularly shaped lots that can lead to access and circulation problems. This standard is especially useful in rural areas, to govern the dimensions of newly created lots and parcels. Note: Rural areas may adopt a maximum width-to-depth ratio of 1:4, meaning that parcels with 100 feet of frontage may not be deeper than 400 feet. Urban or suburban areas may use maximum ratios of 1:2.5 or 1:3. Width-to-depth ratios that are somewhat deeper may be permitted along arterials to provide for berms or buffer yards in reverse frontage situations.

Section 18: Shared Access

1. Subdivisions with frontage on the state highway system shall be designed into shared access points to and from the highway. Normally a maximum of two accesses shall be allowed regardless of the number of lots or businesses served (see Figure A1-12).
2. Subdivisions on a single residential access street ending in a cul-de-sac shall not exceed 25 lots or dwelling units, and the cul-de-sac shall have a minimum cartway radius of 30 feet.

Figure A1-12: Shared Access on Major Thoroughfares



Commentary: Subdivisions served by a single access street ending in a cul-de-sac may inhibit emergency access and increase traffic congestion during peak hours by providing only one point of ingress and egress. Single access problems may also result in phased subdivisions where additional access is proposed for future phases. If future phases are not built, the remaining subdivision may have insufficient

access. Although this is not a problem where only a few dwelling units are served, how many lots is too many? Average daily trips for residential streets provide a baseline for access and cul-de-sac standards. Listokin and Walker (1989) recommend that when a subdivision on a single access residential access street exceeds 25 lots (or 25 dwelling units), it should have at least two access points. A minimum turning radius that accommodates emergency vehicles should be required for cul-de-sacs.

The above provisions for shared access are intended to prevent a proliferation of driveways on the state highway system--a common problem in some semi-rural and rural areas. Provisions for shared access also promote land development patterns that are more compatible with the rural character of the landscape.

Section 19: Connectivity

1. The street system of a proposed subdivision shall be designed to coordinate with existing, proposed, and planned streets outside of the subdivision as provided in this Section.
2. Wherever a proposed development abuts unplatted land or a future development phase of the same development, street stubs shall be provided as deemed necessary by the (*city/county*) to provide access to abutting properties or to logically extend the street system into the surrounding area. All street stubs shall be provided with temporary turn-around or cul-de-sacs unless specifically exempted by the **Public Works Director**, and the restoration and extension of the street shall be the responsibility of any future developer of the abutting land.
3. Collector streets shall intersect with collector or arterial streets at safe and convenient locations.
4. Sub-collector and local residential access streets shall connect with surrounding streets to permit the convenient movement of traffic between residential neighborhoods or facilitate emergency access and evacuation, but such connections shall not be permitted where the effect would be to encourage the use of such streets by substantial through traffic.
5. Pedestrian connections should be provided between adjacent properties in addition to roadway connections. These pedestrian connections should provide for safe pedestrian travel along roadways and across parking areas to the buildings.

***Commentary:** Local governments must maintain a tenuous balance between enhancing accessibility and limiting excessive through traffic in residential areas. These standards strive to address both considerations. Properly used traffic calming measures are another means of minimizing through-traffic in residential areas.*

Section 20: Minor Subdivisions

1. The (*approving Department*) may approve a Minor Subdivision that conforms to the following standards:
 - a. Each proposed lot must be buildable in conformance with the requirements of this Code and all other applicable regulations.
 - b. Each lot shall abut a public or private street for the required minimum lot frontage for the zoning district where the lots are located.

c. If any lot abuts a street right-of-way that does not conform to the design specifications of this Code, the owner may be required to dedicate one-half the right-of-way width necessary to meet minimum design requirements.

2. Further subdivision of the property shall be prohibited unless applicants submit a plat or development plan in accordance with requirements for major subdivisions in this Code.

Commentary: This standard prohibits property owners from incrementally subdividing land to avoid review.

3. The (*approving Department*) shall consider a proposed Minor Subdivision upon the submittal of the following materials:

a. An application form provided by the (*city/county*);

b. () copies of the proposed Minor Subdivision plat;

[Note: The number of copies required should be based on number of entities that will review the plan under adopted procedures.]

c. A statement indicating whether water and/or sanitary sewer service is available to the property; and

d. Land descriptions and acreage or square footage of the original and proposed lots and a scaled drawing showing the intended divisions shall be prepared by a professional land surveyor registered in the Commonwealth of Kentucky. In the event a lot contains any principal or accessory structures, a survey showing the structures on the lot shall accompany the application.

4. Review Procedure

a. The (*approving official*) shall transmit a copy of the proposed Minor Subdivision to the appropriate (*departments or officials*) for review and comment.

b. If the proposed Minor Subdivision meets the conditions of this section and otherwise complies with all applicable laws and ordinances, the (*approving official*) shall approve the Minor Subdivision by signing the application form.

c. Upon approval of the Minor Subdivision, the (*approving official*) shall record the plat on the appropriate maps and documents, and shall, at the applicant's expense, record the plat in the official county records.

Commentary: These requirements for minor subdivisions are provided here to emphasize the importance of adequate land division controls in access management. They provide for local review of divisions of land or "lot splits" that would otherwise be exempted from subdivision review and platting requirements. A review process for lot splits prevents creation of lots that are not in conformance with land development regulations and thus could be rendered unbuildable. It further prevents creation of lots with inadequate or inappropriate access to a public road. This allows local governments to prevent access problems attributable to flag lots, through lots, and corner lots. This review process is streamlined and platting requirements are less costly than those of a major subdivision, so as not to create a hardship for property owners engaged in only minor subdivision activity. Local governments are strongly advised not to provide exemptions from public review of land division activity based on lot size or number of lots,

because this creates long term problems that can seriously undermine the local planning and regulatory program.

Section 21: Private Roads

1. Private roads may be permitted in accordance with the requirements of this Section and the following general standards shall apply:

- a. All (*city/county*) roads shall be constructed to public specifications and have an easement of a minimum of sixty-six feet in width, except as otherwise provided in Section 21 (2).
- b. Private roads that by their existence invite the public in shall have all traffic control features, such as striping or markers, in conformance with the Manual of Uniform Traffic Control Devices.
- c. The minimum distance between private road outlets on a single side of a public road shall be 600 feet, or less where provided by access classification and standards for state roads and local thoroughfares.
- d. All properties served by the private road shall provide adequate access for emergency vehicles and shall conform to the approved local street numbering system.
- e. All private roads shall be designated as such and will be required to have adequate signage indicating the road is a private road and not publicly maintained.
- f. All private roads shall have a posted speed limit not to exceed twenty miles an hour.
- g. All private roads shall have adequate provisions for drainage and stormwater runoff as provided in Section (*refer to appropriate section of the local subdivision regulations*).
- h. A second access connection to a public road shall be required for private roads greater than 2000 feet in length.

2. Private roads in rural and semi-rural areas may be permitted reductions in easement and roadway width and pavement standards to provide for adequate access while retaining the rural character of the landscape and design flexibility. At a minimum, the private road shall meet the (*city/county*) specifications for gravel roadway construction. Other standards shall apply in accordance with the following schedule:

- a. A private road serving up to two lots shall have a minimum right-of-way easement of 30 feet and a roadbed of at least 12 feet.
- b. A private road intended to serve no more than three to six lots shall have a minimum right-of-way easement of 30 feet and a roadbed of at least 16 feet.
- c. A private road intended to serve no more than seven to twelve lots shall have a minimum right-of-way easement of 66 feet and a roadbed of at least 20 feet. Paving shall be required for all areas with grades of greater than three (3%) percent. Such pavement shall be a minimum of 18 feet in width.
- d. A private road intended to serve no more than 13 to 24 lots shall have a minimum right-of-way easement of 66 feet, a roadbed of at least 20 feet and shall be paved.
- e. A private road intended to serve 25 or more lots or parcels shall provide at least two access

connections to a public road and shall meet the minimum design requirements for public roads.

Commentary: This section provides a sliding scale approach, allowing gravel roads of about 12 feet to 18 feet wide for 2-4 parcels and requiring higher design specifications for larger developments. The standards are intended to provide flexibility and to preserve the character of rural areas. Communities considering a sliding scale approach to private roads should also adopt a site plan review process aimed at encouraging creative site design and landscape preservation.

1. Applications for subdivision approval that contain private roads shall include a drainage plan and road construction plan, prepared by a registered engineer. The (city/county) Public Works Official shall review private road plans for conformance with this Code.

2. Construction permits are required for connection to public roads. Application for road construction shall be made concurrent with the creation of a lot that does not have frontage on a public road. A road construction permit shall be issued after approval of the private road plan and the entire length of the road shall be inspected during construction and upon completion. If found to be in conformance, a final use permit shall be issued.

3. No building permit shall be issued for any lot served by a private road until the private road has been constructed and approved, so that all lots to be served by the private road have access to a public road.

4. A road maintenance agreement, prepared by the (city/county) attorney shall be recorded with the deed of each property to be served by a common private road. The agreement shall provide for:

a. A method to initiate and finance a private road and maintain that road in good condition;

b. A method of apportioning maintenance costs to current and future users;

c. A provision that the (city/county) may inspect, and if necessary, require that repairs be made to the private road to ensure that safe access is maintained for emergency vehicles. If required repairs are not made within six months of date of notice, the (city/county) may make the necessary repairs and assess owners of parcels on the road for the cost of all improvements plus an administrative fee, not to exceed 25% of total costs;

d. A provision that the majority vote of all property owners on the road shall determine how the road is maintained except in the case of emergency repairs as outlined above;

e. A statement that no public funds shall be used to construct repair or maintain the road;

f. A provision requiring mandatory upgrading of the roadway if additional parcels are added to reach the specified thresholds; and

g. A provision that property owners along that road are prohibited from restricting or in any manner interfering with normal ingress and egress by any other owners or persons needing to access properties with frontage on that road.

5. No private road shall be incorporated into the public road system unless it is built to public road specifications of the (city/county). The property owners shall be responsible for bringing the road into conformance.

6. All private roads shall have a sign and name meeting (city/county) standards and shall include the

following notice: "Private Road" "Not maintained by the (city/county)".

7. An application fee will be established by the **Director of Public Works** to cover administrative, processing, and inspection costs.

8. All purchasers of property served by a private road shall, prior to final sale, be notified that the property receives access from a private road that shall be maintained collectively by all property owners along that road; that the (city/county) shall not be held responsible for maintaining or improving the private road; and that a right-of way easement to provide the only access to that property has been recorded in the deed for that property.

9. The United States postal service and the local school (board/district) is not required to use the private road for access to the parcels abutting the private road and may require that service be provided only at the closest public access point.

Commentary: These private road standards were adapted from sample regulations prepared for the Grand Traverse Bay Region (Planning & Zoning Center, Inc., Lansing, Michigan, September 1992). Some communities prohibit private roads altogether or require all private roads serving more than one dwelling unit to be built to public specifications and paved. This is because of problems associated with private roads, such as pressure to adopt the private road into the public road system in the future. Yet if properly regulated, private roads can offer an effective means of access to small subdivisions in rural areas. In the absence of private road regulations, common practice is the creation of multiple lots served by a common lot, easement, or multiple easements as in the example of stacked flag lots. The easement then becomes a private unpaved road serving several properties.

Unregulated private roads raise several problems. They may be inaccessible to emergency vehicles or large delivery trucks, placing public safety and private property at risk. Substandard roads deteriorate quickly and without a maintenance agreement, the local government may be called upon to maintain it. Buyers may not be aware of the maintenance issues associated with the road until after purchasing the property. Narrow rights-of-way may impede placement of utilities, and private roads can exacerbate inefficient land development patterns. These problems can be avoided through private road regulations that address design, construction, joint maintenance agreements, signage, and review. Private roads should be permitted for residential uses only and standards should be tied to lot split (minor replat) or subdivision regulations. Limitations should be placed upon the number of residences that may be served by a single access to a public road.

As in other land development regulations, private road provisions must be made for grandfathering existing nonconforming situations. Some ordinances address the situation by providing a different set of standards for nonconforming private access or by providing for expansion of existing substandard private roads or easements pursuant to the special use permit process.

Section 22: Regulatory Flexibility

1. The Planning Commission may permit departure from dimensional lot, yard, and bulk requirements of the zoning district where a subdivision or other development plan is proposed to encourage creativity in site design, protect natural resources, and advance the access objectives of this Code. Such regulatory modifications under this section are not subject to variance approval by the Board of Adjustment.

Section 23: Site Plan Review Procedures

1. Applicants shall submit a preliminary site plan for review by *(name of department responsible for conducting review)*. At a minimum, the site plan shall show:

- a. Location of access point(s) on both sides of the road where applicable;
- b. Distances to neighboring constructed access points, median openings, traffic signals, intersections, and other transportation features on both sides of the property;
- c. Number and direction of lanes to be constructed on the driveway plus striping plans;
- d. All planned transportation features (such as auxiliary lanes, signals, etc.);
- e. Trip generation data or appropriate traffic studies;
- f. Parking and internal circulation plans;
- g. Plat map showing property lines, right-of-way, and ownership of abutting properties; and
- h. A detailed description of any requested variance and the reason the variance is requested.

2. Subdivision and site plan review shall address the following access considerations:

- a. Is the road system designed to meet the projected traffic demand and does the road network consist of hierarchy of roads designed according to function?
- b. Does the road network follow the natural topography and preserve natural features of the site as much as possible? Have alignments been planned so grading requirements are minimized?
- c. Is access properly placed in relation to sight distance, driveway spacing, and other related considerations, including opportunities for joint and cross access? Are entry roads clearly visible from the major arterials?
- d. Do units front on residential access streets rather than major roadways?
- e. Is automobile movement within the site provided without having to use the peripheral road network?
- f. Does the road system provide adequate access to buildings for residents, visitors, deliveries, emergency vehicles, and garbage collection?
- g. Have the edges of the roadways been landscaped? If sidewalks are provided alongside the road, have they been set back sufficiently from the road, and has a landscaped planting strip between the road and the sidewalk been provided?
- h. Does the pedestrian path system link buildings with parking areas, entrances to the development, open space, and recreational and other community facilities?

Commentary: *The subdivision and site plan review process provides local governments with the most effective opportunity for addressing access considerations and preventing access problems before they*

occur. This should be done as early as possible in the process. Developers will be far less amenable to revising the access plan later in the process or after the site plan or plat has been approved.

3. The (*city/county*) reserves the right to require traffic and safety analysis where safety is an issue or where significant problems already exist.
4. After 30 days from filing the application, applicants must be notified by the (*permitting department*) if any additional information is needed to complete the application.
5. Upon review of the access application, the (*permitting department*) may approve the access application, approve with conditions, or deny the application. This must be done within 90 days of receiving the complete application.
6. Any application that involves access to the State Primary Road System shall be reviewed by the Kentucky Transportation Cabinet for conformance with state access management standards. Where the applicant requires access to the State Primary Road System, and a zoning change, or subdivision or site plan review is also required, development review shall be coordinated with the Kentucky Transportation Cabinet, as follows:
 - a. An access management/site plan review committee, that includes representatives of local KYTC District Office and the local government, shall simultaneously review the application. The committee shall inform the developer what information will be required for access review. Information required of the applicant may vary depending upon the size and timing of the development, but shall at a minimum meet the requirements of this section.
 - b. Upon review of the application, the access management review committee shall advise the (*local permitting department*) whether to approve the access application, approve with conditions, or deny the application.
7. If the application is approved with conditions, the applicant shall resubmit the plan with the conditional changes made. The plan, with submitted changes, will be reviewed within 10 working days and approved or rejected. Second applications may only be rejected if conditional changes are not made.
8. If the access permit is denied, the (*city/county*) shall provide an itemized letter detailing why the application has been rejected.
9. All applicants whose application is approved, or approved with conditions, have thirty days to accept the permit. Applicants whose permits are rejected or approved with conditions have 60 days to appeal.

Commentary: Effective coordination with INDOT, the local traffic engineer, transportation planner, and/or public works official is essential to ensure conformance with land division and access requirements. One method of improving coordination is to establish the building permit as the lead permit during development review. In this way, property owners would be required to submit the necessary permits or certificates of approval from regulatory agencies involved in development review before issuing a building permit. This should include a notice of intent to approve the proposed access connection from INDOT where the state highway system is involved to assure conformance with access management policies and regulations. The above review process would be incorporated into the community's overall subdivision and site plan review process. A conceptual review, before submission of the preliminary site plan or plat, is highly recommended. Communities should also set fees and develop the necessary forms to carry out the provisions of this code.

Section 24: Variance Standards

1. The granting of the variation shall be in harmony with the purpose and intent of these regulations and shall not be considered until every feasible option for meeting access standards is explored.
2. Applicants for a variance from these standards must provide proof of unique or special conditions that make strict application of the provisions impractical. This shall include proof that:
 - a. indirect or restricted access cannot be obtained;
 - b. no engineering or construction solutions can be applied to mitigate the condition; and
 - c. no alternative access is available from a street with a lower functional classification than the primary roadway.
3. Under no circumstances shall a variance be granted, unless not granting the variance would deny all reasonable access, endanger public health, welfare or safety, or cause an exceptional and undue hardship on the applicant. No variance shall be granted where such hardship is self-created.

Commentary: Each local government has its own process for handling appeals and variances. The standards above should be incorporated to this process. Providing for variances and other remedial measures is crucial to avoiding a takings claim by providing due process to the property owner and avoiding unreasonable hardship that may arise in relation to the regulatory framework. Federal case law has established that property owners should first exhaust available administrative remedies, including appeals to the local board of adjustment, before the case may be heard in a court of law. If local appeal procedures exist and the property owner sues before first pursuing a variance or other remedial action, the case may be invalidated on this basis.

Appendix A-2 Sample Access Management Ordinances from the Michigan Access Management Guidebook

This appendix presents sample access management ordinances that were adapted for Indiana from the **Michigan Access Management Guidebook** to fit three common local situations:

- **Option 1:** Best suited for a slowly growing rural community with one or two state highways or major county roads.
- **Option 2:** Best suited for a rural community in the path of growth or a growing suburb with significant undeveloped land along major arterials.
- **Option 3:** Best suited for an urban community with little undeveloped land and many retrofit or redevelopment opportunities.

Not all communities will neatly fit into one of the three situations described above. As a result, it may be necessary to pull elements from two or three of the options to fit the unique situation of an individual community. The commentary in *italics* and [BRACKETED TEXT] shown in the sample ordinances in this appendix is designed to help a community decide which parts of which sample ordinance to use and how to adapt it. It is imperative that a community obtains qualified professional planning and legal assistance and coordinate closely with INDOT and local roadway engineering staff when adapting any of these sample regulations to fit a local situation. Because the administration of access management regulations has some strong technical dimensions, it may also be necessary for a community to hire a qualified professional traffic engineer or transportation planner to assist them with this task, if it does not have this expertise already.

Sample ordinance language to enable the collection of escrow fees for a professional review of a proposed site plan is provided at the front of this Chapter under "Supplementary Ordinance Language". This language should be adopted along with one of the three access management regulatory options in this Chapter. This language ensures that communities, without professional planning and/or engineering staff, still have access to qualified professionals when reviewing site plans. Even if a community has such staff, a particular project may require unique skills or the staff may be overloaded with work and outside assistance is needed. The costs of such professional reviews should be charged to the applicant. This can be achieved by collecting and holding a fee from the applicant in escrow to pay for this cost. Any unused fee must be returned to the applicant.

Also, in "Supplementary Ordinance Language" are definitions of terms used in the sample ordinances that may be unique. These definitions should also be added to the local ordinance. They will need to be adapted to fit each community. Note the term "access point" is very broad, but the term "driveway" is narrow.

These three sample access management ordinance options are substantially adapted from the growth management controls in Indiana and Florida, and model ordinances prepared for Michigan, New York and Iowa communities. In Indiana, most access management has been implemented through the local driveway permit process. Many of the broader access management policies implemented in Indiana reflect the guidelines described in the INDOT *Driveway Permit Manual*. It is important that the sample language that follows be properly adapted to fit the needs of your community.

Site Plan Review Desirable

All of the following ordinance options (except Option 1a) assume that the community using them has already adopted zoning and subdivision regulations, so that approval processes are incorporated in the local zoning and subdivision approval processes. Site plan review is also desirable in conjunction with the zoning approval process because site development plans may not be required for rezoning approval or for the issuance of a permit for any structure verifying conformity with the local zoning ordinance). It may be desirable to reference the access management ordinance in existing zoning, subdivision regulations and other land use controls (e.g., site plan review when established by a separate ordinance), particularly when a site plan review procedure does not currently exist

The following ordinance options also assume that decisions on local improvement permits (reviews of uses allowed by right without any special review process or without site plan review) are made by the Zoning Administrator and that decisions on site plans are made by the Planning Commission. If that is not the case in your community, the sample language will need to be adapted to fit your situation.

For Additional Information

For additional information on access management regulations, or for other sample access management ordinances, consult the following publications:

- Model Land Development & Subdivision Regulations that Support Access Management, CUTR, 1994.
- Best Practices in Arterial Management and Sample Access Management Ordinance, New York Department of Transportation, 1998.
- Access Management Handbook, Iowa DOT, 1999.
- National Access Management Manual, TRB, 2002.
- National Cooperative Highway Research Program (NCHRP), “Access Management Guidelines to Activity Centers” Report 348 and “Impacts of Access Management Techniques” Report 420.
- AASHTO “Green Book”, A Policy on Geometric Design of Highways and Streets.

SUPPLEMENTARY ORDINANCE LANGUAGE

The following language is intended to accompany each of the sample Options in this Chapter. It is usually inserted in the "General Provisions" or "Supplementary Provisions" section of the Ordinance. The first section covers escrow fees for professional reviews.

Fees in Escrow for Professional Reviews

Section ____: Fees in Escrow for Professional Reviews

Any application for rezoning, subdivision approval, location improvement permit, site plan approval, a Special Use Permit, Planned Unit Development, variance, or other use or activity requiring a permit under this Ordinance above the following threshold, may also require the deposit of fees to be held in escrow in the name of the applicant. An escrow fee shall be required by either the Zoning Administrator or the Planning Commission for any project which requires a traffic impact study under Section _____, or which has more than _____ (e.g., *twenty (20)*) dwelling units, or more than _____ (e.g., *fifteen thousand (15,000)*) square feet of enclosed space, or which requires more than _____ (e.g., *twenty (20)*) parking spaces. [THRESHOLD COULD ALSO BE ANY PROPERTY ALONG THE CORRIDOR IN THE OVERLAY DISTRICT, OR ANY USE REQUIRING SITE PLAN REVIEW.] An escrow fee may be required to obtain a professional review of any other project which may, in the opinion of the Zoning Administrator or Planning Commission, create an identifiable and potentially negative impact on public roads, other infrastructure or services, or on adjacent properties, and because of which, professional input is desired before a decision to approve, deny or approve with conditions is made.

- 1)The escrow shall be used to pay professional review expenses of engineers, community planners, and any other professionals whose expertise the _____ (*name of community*) values to review the proposed application and/or site plan of an applicant. Professional review will result in a report to the _____ (*name of community*) indicating the extent of conformance or nonconformance with this Ordinance and to identify any problems that may create a threat to the health, safety or general welfare of the public. Mitigation measures or alterations to a proposed design may be identified where they would serve to lessen or eliminate identified impacts. The applicant will receive a copy of any professional review hired by the _____ (*name of community*) and a copy of the statement of expenses for the professional services rendered, if requested.
- 2)No application for which an escrow fee is required will be processed until the escrow fee is deposited with the _____ (*name of community*) Clerk. The amount of the escrow fee shall be established based on an estimate of the cost of the services to be rendered by the professionals contacted by the Zoning Administrator. The applicant is entitled to a refund of any unused escrow fees at the time a permit is either issued or denied in response to the applicant's request.
- 3)If actual professional review costs exceed the amount of an escrow, the applicant shall pay the balance due prior to receipt of any land use or other permit issued by the _____ (*name of community*) in response to the applicant's request. Any unused fee collected in escrow shall be promptly returned to the applicant once a final determination on an application has been made or the applicant withdraws the request and expenses have not yet been incurred.
- 4)Disputes on the costs of professional reviews may be resolved by an arbitrator mutually satisfactory to both parties.

Definitions

The definitions that follow do not include those that are generally already included in local zoning and subdivision ordinances. Accordingly, they must be compared with the definitions within local land use control documents and any differences need to be reconciled. Not all of these definitions will be needed with every adaptation of the sample ordinance. For example, very few of the definitions apply to Options 1a or 1b. Please select only definitions for terms that are actually used. Note: Many of the defined terms that follow are used in other definitions, but not in the sample ordinance language itself.

Access – A way or means of approach to provide vehicular or pedestrian entrance or exit to a property from an abutting property or a public roadway.

Access Connection – Any driveway, street, road, turnout or other means of providing for the movement of vehicles to or from the public road system or between abutting sites.

Access Management – The process of providing and managing reasonable access to land development while preserving the flow of traffic on the abutting roadway system in terms of safety, capacity, and speed.

Access Management Plan – A plan establishing the preferred location and design of access for properties along a roadway or the roadways in a community. It may be a freestanding document, or a part of a comprehensive plan, or a part of a corridor management plan.

Access Point – a) The connection of a driveway at the right-of-way line to a road, or b) A new road, driveway, shared access, or service drive.

Acceleration Lane – A speed-changing lane, including taper, for the purpose of enabling a vehicle entering the roadway to increase its speed to a rate at which it can safely merge with through traffic.

ADT – The annual average two-way daily traffic volume. It represents the total annual traffic for the year, divided by 365. (Where annual data is not available, data from a shorter period may sometimes be used).

Alternative Means of Access – A shared driveway, frontage road, rear service drive, or connected parking lot.

Arterial – See “Road Classification.”

AASHTO – Abbreviation of the American Association of State Highway and Transportation Officials, which conducts research and publishes many national road and non-motorized standards.

Boulevard – See “Divided Driveway”

Channelized or Channelizing Island – An area within the roadway or a driveway not for vehicular movement; designed to control and direct specific movements of traffic to definite channels. The island may be defined by paint, raised bars, curbs, or other devices.

Classification of Roads – See “Road Classification.”

Collector – See “Road Classification.”

Conflict – A traffic event that causes evasive action by a driver to avoid collision with another vehicle, bicycle, or pedestrian.

Conflict Point – An area where intersecting traffic either merges, diverges, or crosses.

Connected Parking Lot – Two or more parking lots that are connected by cross-access.

Corner Clearance – The distance from an intersection of a public or private road or street to the nearest access connection, measured from the closest edge of the driveway pavement to the closest edge of the road pavement. [SOME COMMUNITIES MEASURE FROM THE CENTER OF THE DRIVEWAY.]

Corridor Overlay Zone – A zoning district that provides special requirements which apply to the property in addition to those of the underlying district regulations along portions of a public roadway.

Cross Access – A service road or driveway providing vehicular access between two or more contiguous sites so the driver need not enter the public road system.

Cross Street – The adjacent intersecting street or road.

Deceleration Lane – A speed-changing lane, including taper, for the purpose of enabling a vehicle to leave the through traffic lane at a speed equal to or slightly less than the speed of traffic in the through lane and to decelerate to a stop or to execute a slow-speed turn.

Divided Driveway – A driveway with a raised median between ingress and egress lanes.

Divided Roadway – A roadway in which the opposite directions of travel are separated by a median, excluding a continuous two-way left-turn lane.

Driveway – Any entrance or exit used by vehicular traffic to or from land or buildings abutting a road.

Driveway Flare – A triangular pavement surface at the intersection of a driveway with a public street or road that facilitates turning movements and is used to replicate the turning radius in areas with curb and gutter construction.

Driveway Offset – The distance between the inside edges of two driveways [OR COULD BE MEASURED FROM THE CENTERLINE OF EACH DRIVEWAY] on opposite sides of an undivided roadway.

Driveway Return Radius – A circular pavement transition at the intersection of a driveway with a street or road that facilitates turning movements to and from the driveway.

Driveway, Shared – A driveway connecting two or more contiguous properties to the public road system.

Driveway Spacing – The distance between driveways as measured from the centerline of one driveway to the centerline of the second driveway along the same side of the street or road. [SOME COMMUNITIES MEASURE FROM THE EDGE OF DRIVEWAY PAVEMENT TO EDGE OF THE PAVEMENT OF THE SECOND DRIVEWAY.]

Driveway Width – Narrowest width of driveway measured perpendicular to the centerline of the driveway.

Egress – The exit of vehicular traffic from abutting properties to a street or road.

Frontage Road or Front Service Drive – A local street/road or private road typically located in front of principal buildings, and parallel to an arterial, for service to abutting properties for the purpose of controlling access to the arterial.

Functional Classification – A system used to group public roads into classes according to their purpose in moving vehicles and providing access to abutting properties. See “Road Classification.”

Grade – The rate or percent of change in slope, either ascending or descending, from or along the roadway. It is to be measured along the centerline of the roadway or access connection.

Ingress – The entrance of vehicular traffic to abutting properties from a roadway.

Interchange – A facility that grade-separates intersecting roadways and provides directional ramps for access movements between the roadways. The structure, ramps, and right-of-way are considered part of the interchange.

Intersection – The location where two or more roadways cross at-grade without a bridge.

Intersection Sight Distance – The sight distance provided at intersections to allow the drivers of stopped vehicles a sufficient view of the intersecting roadways to decide when to enter the intersecting roadway or to cross it. The time required is the sum of the perception/reaction time, plus the time to accelerate and cross or enter the major roadway traffic stream.

ITE – Abbreviation of the Institute of Transportation Engineers, which conducts research and publishes many national road standards.

Lane – The portion of a roadway for the movement of a single line of vehicles that does not include the gutter or shoulder of the roadway.

Local Road or Street – See “Road Classification.”

Median – The portion of a divided roadway or divided entrance separating the traveled ways from opposing traffic. Medians may be depressed, painted, or raised with a physical barrier or may be landscaped. A continuous two-way left-turn lane does not constitute a median.

Median Opening – A gap in a median provided for crossing and turning traffic.

Nonconforming Access – Features of the access system of a property that existed prior to the effective date of Article ___ and that do not conform with the requirements of this Ordinance; or in some cases, elements of approved access that are allowed by means of a temporary permit or on a conditional basis, until alternative access meeting the terms of this Ordinance becomes available.

Passing Sight Distance – The length of roadway ahead necessary for one vehicle to pass another before meeting an opposing vehicle that might appear after the passing maneuver began. **[THIS TYPE OF SIGHT DISTANCE IS NOT AN ISSUE IN ACCESS MANAGEMENT.]**

Peak Hour Trips (PHT) – A weighted-average vehicle trip generation rate during the hour of highest volume of traffic entering and exiting the site in the morning (a.m.) or the afternoon (p.m.). **[OR]** The

highest number of vehicles found to be passing over a segment of a roadway or lane during any 60 consecutive minutes. [CHOOSE ONE.]

Principal Arterial – A major arterial. See “Road Classification.”

Reasonable Access – The minimum number of access connections, direct or indirect, necessary to provide safe access to and from a public road consistent with the purpose and intent of this Ordinance, with any other applicable plans of the _____ (*insert name of jurisdiction*). Reasonable access does not necessarily mean direct access.

Rear Service Drive – A local street/road or private road typically located behind principal buildings, and parallel to an arterial, for service to abutting properties for the purpose of controlling access to the arterial.

Right-of-Way – A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Road – A way for vehicular traffic, whether designated as a “street”, “highway”, “thoroughfare”, “parkway”, “through-way”, “avenue”, “boulevard”, “lane”, “cul-de-sac”, “place”, or otherwise designated, and includes the entire area within the right-of-way.

Roadway – That portion of a street, road, or highway improved, designed, or ordinarily used for vehicular travel, exclusive of the curb-and-gutter or shoulder and side ditch. In the event a highway includes two or more separate roadways, "roadway" refers to any such roadway separately, but not to all such roadways collectively. See also “Travel Way.”

Road Classification – Roadways are classified by the following categories and are indicated on Map _____ by their functional classification. [NOTE: NOT EVERY COMMUNITY USES ALL SIX CLASSIFICATIONS (FOR EXAMPLE IT IS COMMON TO ONLY HAVE ONE TYPE OF COLLECTOR), AND SOME COMMUNITIES USE A SLIGHTLY DIFFERENT FUNCTIONAL CLASSIFICATION. BE SURE TO ADAPT THE CLASSIFICATIONS BELOW TO FIT THE LOCAL SITUATION.]

1. Limited Access Highway – Major highways providing no direct property access that are designed primarily for through traffic.
2. Major Arterial – Arterials are roadways of regional importance intended to serve moderate to high volumes of traffic traveling relatively long distances. A major arterial is intended primarily to serve through traffic where access is carefully controlled. Some major arterials are referred to as "principal arterials". [SOME COMMUNITIES REFER TO MAJOR ARTERIALS AS “MAJOR THOROUGHFARES.”]
3. Minor Arterial – A roadway that is similar in function to major arterials, but operates under lower traffic volumes, over shorter distances, and provides a higher degree of property access than major arterials. [SOME COMMUNITIES REFER TO THESE AS “MINOR THOROUGHFARES.”]
4. Major Collector – A roadway that provides for traffic movement between arterials and local streets and carries moderate traffic volumes over moderate distances. Collectors may also provide direct access to abutting properties.

5. Minor Collector – A roadway similar in function to a major collector, but which carries lower traffic volumes over shorter distances and provides a higher degree of property access than a major collector.

6. Local Street – A street or road intended to provide access to abutting properties, that tends to accommodate lower traffic volumes and serves to provide mobility within that neighborhood.

Secondary Street or Side Street – A street or road with a lower functional classification than the intersecting street or road (e.g., a local street is a side or secondary street when intersecting with a collector or arterial).

Service Drive – See “Frontage Road” or “Rear Service Drive.”

Shared Driveway or Common Driveway – See “Driveway, Shared.”

Shoulder – The portion of a public road contiguous to the traveled way for the accommodation of disabled vehicles and for emergency use.

Sight Distance – The distance of unobstructed view for the driver of a vehicle, as measured along the normal travel path of a roadway to a specified height above the roadway.

Standard – A definite rule or measure establishing a minimum level of quantity or quality that must be complied with or satisfied in order to obtain development approval, such as (but not limited to) a height, setback, bulk, lot area, location or spacing requirement.

Stopping Sight Distance – The sum of the perception-reaction distance and the braking distance. The available sight distance should be sufficiently long to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path.

Street – See “Road.”

Taper – A triangular pavement surface that transitions the roadway pavement to accommodate an auxiliary lane.

Temporary Access – Provision of direct access to a road until that time when adjacent properties develop in accordance with a joint access agreement, service road, or other shared access arrangement.

Thoroughfare – A public roadway, the principal use or function of which is to provide an arterial route for through traffic, with its secondary function the provision of access to abutting property, and that is classified as a “limited access highway” or “major arterial” or “minor arterial” on the Street and Highway Classification Map (see Map ____).

Throat Length – The distance parallel to the centerline of a driveway to the first on-site location at which a driver can make a right-turn or a left-turn. On roadways with curb and gutter, the throat length shall be measured from the face of the curb. On roadways without a curb and gutter, the throat length shall be measured from the edge of the paved shoulder.

Throat Width – The edge-to-edge width of a driveway measured at the right-of-way line.

Travel Way – The portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

TRB – Abbreviation of the Transportation Research Board, which conducts research and publishes transportation research, findings and policy.

Trip Generation – The estimated total number of vehicle trip ends produced by a specific land use or activity. A trip end is the total number of trips entering or leaving a specific land use or site over a designated period of time. Trip generation is estimated through the use of trip rates that are based upon the type and intensity of development.

Undivided Roadway – A roadway having access on both sides of the direction of travel, including roadways having center two-way left-turn lanes.

ACCESS MANAGEMENT ORDINANCE OPTIONS

The commentary in *italics* and [BRACKETED TEXT] shown in the sample ordinances in this appendix is designed to help a community decide which parts of which sample ordinance to use and how to adapt it.

ORDINANCE OPTION 1 – BEST SUITED FOR A SLOWLY GROWING RURAL COMMUNITY WITH ONE OR TWO STATE HIGHWAYS

[TWO OPTIONS (OPTIONS 1A AND 1B) ARE PRESENTED TO MEET THE NEEDS OF A RURAL COMMUNITY WITH LITTLE LAND USE CHANGE, AND/OR LITTLE PROFESSIONAL STAFF OR CONSULTANT ASSISTANCE. OPTION 1A MERELY "LOCKS IN" EXISTING ACCESS SO THAT AS LAND IS DIVIDED, ADDITIONAL ACCESS POINTS ARE NOT CREATED. THIS APPROACH LEAVES ALL DRIVEWAY PERMITS TO THE INDIANA DEPARTMENT OF TRANSPORTATION ON STATE HIGHWAYS AND TO THE BOARD OF COUNTY COMMISSIONERS ON COUNTY ROADS. IT ALSO ESTABLISHES A SIMPLE COORDINATION MECHANISM FOR REVIEW OF DEVELOPMENT PROPOSALS BEFORE THE APPROPRIATE ROAD AUTHORITY MAKES A DRIVEWAY PERMIT DECISION. THE COMMUNITY MAY NOT EVEN HAVE A SITE PLAN REVIEW PROCESS IN THE ZONING ORDINANCE AND IT WOULD NOT BE NEEDED UNLESS THEY CHOOSE TO REGULATE SERVICE DRIVES.

OPTION 1B ALSO LEAVES ALL THE ACCESS MANAGEMENT DECISIONS TO THE INDIANA DEPARTMENT OF TRANSPORTATION ON STATE HIGHWAYS AND TO THE BOARD OF COUNTY COMMISSIONERS ON COUNTY ROADS, BUT INSTEAD OF "LOCKING IN ACCESS" IT TARGETS ONE OR TWO ARTERIALS (AS IDENTIFIED IN A "CORRIDOR OVERLAY ZONE") FOR COORDINATED REVIEW AND APPROVAL OF A PROPOSED SITE PLAN WITH THE DRIVEWAY PERMIT REQUIREMENTS OF THESE TWO ROAD AUTHORITIES. THIS APPROACH WOULD NEED SUBSTANTIAL MODIFICATION IN SECTION 0.3 TO ADAPT ITS USE IN A CITY OR TOWN THAT CONTROLLED ALL THE STREETS WITHIN THE COMMUNITY. COORDINATION WOULD THEN BE BETWEEN THE CITY OR TOWN ROAD AUTHORITY AND THE PLANNING COMMISSION.

OPTIONS 1A AND 1B CAN BE MOST EFFECTIVE IF THE COMMUNITY HAS DEVELOPMENT PLAN REVIEW, SITE PLAN REVIEW OR PLANNED UNIT DEVELOPMENT REVIEW, BECAUSE THE INDIANA STATE PLANNING ENABLING ACT (IC 36-7-4-1400 SERIES AND IC 36-7-4-1500 SERIES) PERMITS A COMMUNITY TO IMPOSE CONDITIONS IN THE APPROVAL OF A DEVELOPMENT PLAN OR SITE PLAN OR PLANNED UNIT DEVELOPMENT BASED ON THE REQUIREMENTS OF OTHER COUNTY AND STATE AGENCIES. A COMMUNITY MAY ALSO IMPOSE "USE OR DEVELOPMENT COMMITMENTS" OR "LAND USE RESTRICTION" IF THE PROPERTY IS SUBJECT TO A CHANGE IN ZONING (IC 36-7-4-615). HOWEVER, EVEN WITHOUT SITE PLAN REVIEW OR THE SUBJECT PROPERTY BEING SUBJECT TO A CHANGE IN ZONING, COORDINATION ALONE MAY PREVENT A COMMUNITY FROM APPROVING A SITE PLAN WITH ACCESS THAT DOES NOT MEET A ROAD AUTHORITY'S STANDARDS AND VICE VERSA.

OPTIONS 1A AND 1B WILL WORK BEST WITH PROFESSIONAL PLANNING ASSISTANCE IN REVIEW OF PROPOSED SITE PLANS FOR LARGE DEVELOPMENT PROPOSALS. IT IS IMPORTANT THAT THE COMPANION SAMPLE ORDINANCE LANGUAGE FOUND AT THE BEGINNING OF THIS APPENDIX UNDER "SUPPLEMENTARY ORDINANCE LANGUAGE" ALSO BE ADOPTED. THIS LANGUAGE PERMITS A COMMUNITY TO CHARGE AN APPLICANT FOR THE COST OF A PROFESSIONAL REVIEW OF A SITE PLAN BY COLLECTING AN ESCROW FEE ALONG WITH THE APPLICATION.

OPTION 1A OR OPTION 1B COULD BE INSERTED AS A SEPARATE SECTION IN THE GENERAL PROVISIONS OR SUPPLEMENTARY PROVISIONS ARTICLE (OR CHAPTER) OF THE ORDINANCE, OR CAN BE A SEPARATE ARTICLE (OR CHAPTER).

SECTION 0.3 IN OPTION 1A AND SECTION 1.3 IN OPTION 1B SET FORTH INFORMATION TO BE SUBMITTED BY AN APPLICANT AND A COORDINATION PROCESS FOR REVIEW OF A SITE PLAN. MOST LOCAL SITE PLAN REVIEW PROCEDURES ALREADY ADDRESS THESE ISSUES; HOWEVER, THE COORDINATION FUNCTION MAY NOT BE AS CLEAR. BE SURE TO ADAPT THIS LANGUAGE TO FIT THE LOCAL CIRCUMSTANCES. SECTION 0.4 IN OPTION 1A AND SECTION 1.4 IN OPTION 1B ADDRESS SERVICE DRIVES. SINCE THESE ARE USUALLY OUTSIDE THE RIGHT-OF-WAY OF A ROAD AUTHORITY, THERE MUST BE STANDARDS IN THE ORDINANCE IF THIS TECHNIQUE IS USED. STANDARDS SHOULD BE DERIVED FROM SECTION 2.3 IN OPTION 2 AND ADAPTED TO FIT THE LOCAL SITUATION.

Note: The *italic* text in the following sample ordinances are directions (such as what to insert in a blank space) or limited commentary and are NOT to be included as part of the adopted ordinance. Text in regular type is proposed ordinance language. Text in [BRACKETS AND LARGE CAPS] are explanatory notes and are NOT to be included as part of the adopted ordinance.

Option 1a - "Lock-In Access" Approach

[THIS APPROACH COULD BE:

- ADOPTED ALONE AND APPLIED TO A SINGLE CORRIDOR EXPECTED TO EXPERIENCE PRESSURE FOR LAND SPLITTING, OR
- IT COULD BE USED WITH OPTION 1B, OR
- IT COULD BE ADAPTED TO APPLY TO ALL ROADS IN THE COMMUNITY EXCEPT THOSE SUBJECT TO THE CORRIDOR OVERLAY ZONE LANGUAGE IN OPTION 1B.

OPTION 1A SHOULD BE ADAPTED TO FIT THE LOCAL CIRCUMSTANCE. IN PARTICULAR, IF THE COMMUNITY DOES NOT PERMIT PRIVATE ROADS, OR IF IT DOES NOT WISH TO ALLOW FRONT OR REAR SERVICE DRIVES, THE REFERENCES TO THEM WOULD NEED TO BE DELETED.]

Section 0.1 – Intent

The provisions of this Article (*or Chapter*) are intended to promote safe and efficient travel within the _____ (*name of jurisdiction*); minimize disruptive and potentially hazardous traffic conflicts; ensure safe access by emergency vehicles; protect the substantial public investment in the street system by preserving capacity and avoiding the need for unnecessary and costly reconstruction which disrupts business and traffic flow; separate traffic conflict areas by reducing the number of driveways; provide safe spacing standards between driveways, and between driveways and intersections; provide for shared access between abutting properties; implement the _____ (*name of jurisdiction*) Comprehensive Plan and the _____ Corridor (*insert name of Plan if there is one or use route name and/or number*) (*change "Corridor" to "Access", if this is intended to be an access management plan*) Management Plan recommendations; ensure reasonable access to properties, though not always by the most direct access; and to coordinate access decisions with the Indiana Department of Transportation and/or the _____ Board of County Commissioners, as applicable.

Section 0.2 – One Access Per Parcel

A. All land in a parcel or lot having a single tax code number, as of the effective date of the amendment adding this provision to the Ordinance (hereafter referred to as "the parent parcel"), that shares a lot line for less than _____ feet [AT LEAST 330 FEET, BETTER IS 660 FEET] with right-of-way on a public road or highway [OR SPECIFICALLY DEFINE THE BEGINNING AND ENDING POINTS OF ONE OR TWO CORRIDORS IF THE COMMUNITY DOES NOT WANT THIS PROVISION TO APPLY TO ALL PUBLIC ROADS IN THE COMMUNITY] shall be entitled to one (1) driveway or road access per parcel from said public road or highway.

1. All subsequent land divisions of a parent parcel shall not increase the number of driveways or road accesses beyond those entitled to the parent parcel on the effective date of this amendment.
2. Parcels subsequently divided from the parent parcel, either by metes and bounds descriptions, or as a plat under the applicable provisions of the Indiana Code regarding subdivision control (IC 36-7-4-700 series, as amended) shall have access by a platted subdivision road, by another public road, by a private road that meets the requirements of Section _____, or by a service drive meeting the requirements of Section 0.40.

B. Parent parcels with more than _____ feet [AT LEAST 330 FEET, BETTER IS 660 FEET] of frontage on a public road or highway shall also meet the requirements of A.1 and A.2 above, except that whether subsequently divided or not, they are entitled to not more than one driveway for each _____

feet [AT LEAST 330 FEET, BETTER IS 660 FEET] of public road frontage thereafter, unless a registered traffic engineer determines that topographic conditions on the site, curvature on the road, or sight distance limitations demonstrate a second driveway within a lesser distance is safer or the nature of the land use to be served requires a second driveway for safety. If the parcel is a corner lot and a second driveway is warranted, the second driveway shall have access from the abutting street unless that street is of a higher functional classification.

Section 0.3 – Application Review, Approval, and Coordination Process

A. Standards of Road Authorities Apply – All standards of the applicable road authority (*specify either the Indiana Department of Transportation or the _____ Board of County Commissioners, or both*) shall be met prior to approval of an access application under this Article.

B. Application, Review, and Approval Process – Applications for driveway or access approval shall be made on a form prescribed by and available at _____ (*insert name of jurisdiction*) and/or the _____ Board of County Commissioners and Indiana Department of Transportation as applicable. [IF THE COMMUNITY ALREADY HAS A SITE PLAN REVIEW PROCESS OR DRIVEWAY PERMIT ROCESS, THE FOLLOWING ITEMS CAN BE ADDED TO THE EXISTING LIST OF SUBMITTAL REQUIREMENTS, IF THEY ARE NOT ALREADY INCLUDED.]

1. Applications shall be accompanied by clear, scaled drawings (minimum of 1"=20') in triplicate showing the following items:

- a. Location and size of all structures proposed on the site.
- b. Size and arrangement of parking stalls on aisles.
- c. Proposed plan of routing vehicles entering and leaving the site (if passenger vehicles are to be separated from delivery trucks indicate such on drawing).
- d. Driveway placement.
- e. Property lines.
- f. Right-of-way lines.
- g. Intersecting roads, streets and driveways within 300' of either side of the property on both sides of the street.
- h. Width of right-of-way.
- i. Width of road surface.
- j. Type of surface and dimensions of driveways.
- k. Proposed inside and outside turning radii.
- l. Show all existing and proposed landscaping, signs, and other structures or treatments within and adjacent to the right-of-way.
- m. Traffic analysis and trip generation survey results, obtained from a licensed traffic engineer for all developments with over 100 directional vehicle trips per peak hour.
- n. Design dimensions and justification for any alternative or innovative access design.
- o. Dumpsters or other garbage containers.

2. Applications are strongly encouraged to rely on the following sources for access designs:

- The National Access Management Manual, TRB, 2002;
- National Cooperative Highway Research Program (NCHRP), "Access Management Guidelines to Activity Centers" Report 348;
- "Impacts of Access Management Techniques" Report 420; and
- The AASHTO "Green Book" (A Policy on Geometric Design of Highways and Streets)

The following techniques are addressed in these guidebooks and are strongly encouraged to be used when designing access:

- a. Not more than one driveway access per abutting road
- b. Shared driveways
- c. Service drives: front, rear and perpendicular
- d. Parking lot connections with adjacent property
- e. Other appropriate designs to limit access points on an arterial or collector

3. Applications shall be accompanied by an escrow fee for professional review per the requirements of Section _____. **[BE SURE TO INCLUDE THIS SECTION IN THE ZONING ORDINANCE. SAMPLE LANGUAGE IS FOUND AT THE BEGINNING OF THIS APPENDIX UNDER "SUPPLEMENTARY REGULATIONS".]**

C. Review and Approval Process – The following process shall be completed to obtain access approval: **[THE FOLLOWING PROCESS COULD BE INCORPORATED INTO THE SITE PLAN REVIEW PROCESS OF THE ZONING ORDINANCE IF THERE IS ONE, INSTEAD OF BEING LISTED SEPARATELY HERE.]**

1. An Access Application meeting the requirements of Section 0.3.B.1 shall be submitted to the Zoning Administrator and on the same day to the _____ Board of County Commissioners and/or the Indiana Department of Transportation, as applicable.

2. The completed application must be received by the _____ Zoning Administrator at least _____ days (*insert number, typically 14-30 days*) prior to the Planning Commission meeting where the application will be reviewed.

3. The applicant, the Zoning Administrator and representatives of the _____ Board of County Commissioners, the Indiana Department of Transportation, and the Planning Commission may meet prior to the Planning Commission meeting to review the application and proposed access design. **[SOME COMMUNITIES AND/OR ROAD AUTHORITIES MAY WANT THESE MEETINGS EVERY TIME, IF SO, CHANGE "MAY" TO "SHALL".]**

4. The Planning Commission shall review and recommend approval, or denial, or request additional information. They shall also forward the Access Application (and other relevant project information) to the _____ Board of County Commissioners and/or Indiana Department of Transportation for their review as applicable.

5. The _____ Board of County Commissioners and/or the Indiana Department of Transportation, as applicable, shall review the access application and conclusions of the Planning Commission. One of three actions may result:

a. If the Planning Commission and the Board of County Commissioners, and/or the Indiana Department of Transportation, as applicable, approve the application as submitted, the access application shall be approved.

b. If both the Planning Commission and the Board of County Commissioners, and/or the Indiana Department of Transportation, as applicable, deny the application, the application shall not be approved.

c. If either the Planning Commission, the Board of County Commissioners, and/or Indiana Department of Transportation, as applicable, requests additional information, approval with conditions, or does not concur in approval or denial, there shall be a joint meeting of the Zoning Administrator, a representative of the Planning Commission and staff of the _____ County Board of Commissioners, and/or the Indiana Department of Transportation, as applicable, and the applicants. The purpose of this meeting will be to review the application to obtain concurrence between the Planning Commission and the applicable road authorities regarding approval or denial and the terms and conditions of any permit approval.

No application will be considered approved, nor will any permit be considered valid, unless all the above-mentioned agencies have indicated approval, unless approval by any of the above-mentioned agencies would clearly violate adopted regulations of the agency. In this case, the application shall be denied by that agency and the requested driveway(s) shall not be constructed. Conditions may be imposed by the Planning Commission to ensure conformance with the terms of any driveway permit approved by a road authority.

6. The Zoning Administrator shall keep a record of each application that has been submitted, including the disposition of each one. This record shall be a public record.

7. Approval of an application remains valid for a period of one year from the date it was authorized. If authorized construction is not initiated by the end of one (1) year, the authorization is automatically null and void. Any additional approvals that have been granted by the Planning Commission or the Zoning Board of Appeals, such as Special Use Permits, or variances, also expire at the end of one year.

8. An approval may be extended for a period not to exceed _____ [TYPICALLY 6 MONTHS TO ONE YEAR]. The extension must be requested in writing by the applicant before the expiration of the initial approval. The Zoning Administrator may approve extension of an authorization provided there are no deviations from the original approval present on the site, and there are no violations of applicable ordinances and no development on abutting property has occurred with a driveway location that creates an unsafe condition. If there is any deviation or cause for question, the Zoning Administrator shall consult a representative of the _____ Board of County Commissioners and/or the Indiana Department of Transportation, as applicable, for input.

9. Re-issuance of an authorization that has expired requires a new Access Application form to be filled out and processed independently of any previous action.

10. The applicant shall assume all responsibility for all maintenance of such driveway approaches from the right-of-way line to the edge of the traveled roadway.

11. Where authorization has been granted for entrances to a parking facility, said facility shall not be altered or the plan of operation changed until a revised Access Application has been submitted and approved as specified in this Section.

12. Application to construct or reconstruct any driveway entrance and approach to a site shall also cover the reconstruction or closing of all nonconforming or unused entrances and approaches to the same site at the expense of the property owner.

13. When a building permit is sought for the reconstruction, rehabilitation, or expansion of an existing site or a local improvement permit is sought for use or change of use for any land, buildings, or structures, all of the existing, as well as proposed driveway approaches and parking facilities shall comply, or be brought into compliance, with all design standards as set forth in this Ordinance prior to the issuance of a location improvement permit, and pursuant to the procedures of this section.

14. _____ (*insert name of jurisdiction*) and the _____ Board of County Commissioners and/or the Indiana Department of Transportation, as applicable, may require a irrevocable letter of credit, performance bond [SOME JURISDICTIONS NO LONGER ACCEPT PERFORMANCE BONDS], or cash deposit in any sum not to exceed \$5,000 for each such approach or entrance to ensure compliance with an approved application. Such financial instrument shall terminate and any deposit shall be returned to the applicant when the terms of the approval have been met or when the authorization is cancelled or terminated.

Section 0.4 – Service Drives

[ADAPT FROM SECTION 2.3 IN ORDINANCE OPTION 2 TO FIT LOCAL CIRCUMSTANCES, IF THE COMMUNITY WISHES TO PERMIT SERVICE DRIVES.]

Option 1b - Rural Corridor Overlay Zone

[OPTION 1B IS INTENDED FOR USE IN A RURAL AREA WITHOUT PLANNING STAFF OR A SOPHISTICATED PLANNING COMMISSION. IT IS ESSENTIALLY THE SAME AS OPTION 1A WITHOUT THE "LOCK IN ACCESS" PROVISIONS AND IT TARGETS ONE OR TWO CORRIDORS. IF THE COMMUNITY IS IN THE PATH OF DEVELOPMENT, OR ANTICIPATES SIGNIFICANT DEVELOPMENT ALONG A PARTICULAR CORRIDOR IN THE NEXT FEW YEARS, IT WOULD BE BETTER TO ADOPT THE MORE ROBUST APPROACH PRESENTED IN OPTION 2. HOWEVER, IF A COMMUNITY WAS UNPREPARED TO ADOPT ALL OF THE PROVISIONS IN OPTION 2, BUT WANTED MORE THAN THIS OPTION OFFERS, IT COULD ADD ANOTHER SECTION 1.5 THAT WAS A "SLIMMED DOWN" VERSION OF THE STANDARDS IN SECTION 2.2 IN OPTION 2]

Section 1.1 – Intent

The provisions of this Article (*or Chapter*) are intended to promote safe and efficient travel within the _____ (*name of jurisdiction*); minimize disruptive and potentially hazardous traffic conflicts; ensure safe access by emergency vehicles; protect the substantial public investment in the street system by preserving capacity and avoiding the need for unnecessary and costly reconstruction which disrupts business and traffic flow; separate traffic conflict areas by reducing the number of driveways; provide safe spacing standards between driveways, and between driveways and intersections; provide for shared access between abutting properties; implement the _____ (*name of jurisdiction*) Comprehensive Plan and the _____ Corridor (*or Access*) Management Plan (*insert name of Plan if there is one*) recommendations; ensure reasonable access to properties, though not always by the most direct access; and to coordinate access decisions with the Indiana Department of Transportation and/or the _____ Board of County Commissioners, as applicable.

Section 1.2 Identification of the Corridor Overlay Zone

The _____ (*insert name of road here*) corridor is defined as those properties that abut the highway right-of-way on either side of _____ (*insert name of road here*) in _____ (*insert name of community here*) between _____ (*location A – usually an intersection*) and _____ (*location B – usually an intersection*). [AS AN ALTERNATIVE, A MAP COULD BE ATTACHED AND SPECIFICALLY REFERRED TO. THIS IS A PREFERRED APPROACH IF PROPERTY DEEPER THAN THE ONE LOT ABUTTING THE ROAD IS PROPOSED FOR INCLUSION IN THE OVERLAY ZONE.] The following regulations apply in addition to the applicable regulations of the specific districts beneath the overlay zone:

Section 1.3 – Application Review, Approval, and Coordination Process

[ADAPT FROM SECTION 0.3 IN OPTION 1A TO FIT LOCAL CIRCUMSTANCES.]

Section 1.4 – Standards for Service Drives

[ADAPT FROM SECTION 2.3 IN OPTION 2 TO FIT LOCAL CIRCUMSTANCES, IF THE COMMUNITY WISHES TO PERMIT SERVICE DRIVES.]

Section 1.5 – Driveway and Related Access Standards

[ADAPT FROM SECTION 2.2 IN OPTION 2 TO FIT LOCAL CIRCUMSTANCES, IF THE COMMUNITY WISHES TO REGULATE DRIVEWAY SPACING, LOCATION AND CONSTRUCTION.]

ORDINANCE OPTION 2 – BEST SUITED FOR A RURAL COMMUNITY IN THE PATH OF GROWTH OR A GROWING SUBURB WITH SIGNIFICANT UNDEVELOPED LAND ALONG MAJOR ARTERIALS

[OPTION 2 IS A COMPREHENSIVE ACCESS MANAGEMENT REGULATION. IT IS DIVIDED INTO MAJOR TOPIC CATEGORIES WITH MANY SPECIFIC REGULATIONS WITHIN EACH CATEGORY. THE PERTINENT PROVISIONS FROM EVERY MAJOR TOPIC CATEGORY SHOULD BE REVIEWED AND ADAPTED TO FIT LOCAL CIRCUMSTANCES IN COOPERATION WITH APPROPRIATE BOARD OF COUNTY COMMISSIONERS AND INDOT STAFF. ALTERNATIVE LANGUAGE IS OFFERED TO APPLY OPTION 2 TO ALL COLLECTORS AND ARTERIALS IN A COMMUNITY (NOT MERELY TO STATE HIGHWAYS AND KEY CITY OR COUNTY ROADS). BE SURE TO INSERT THE PROPER NAME OF THE COMMUNITY AND THE PERTINENT ROAD AUTHORITY NAMES IN THE PLACES INDICATED. MANY TASKS ARE ASSIGNED TO THE ZONING ADMINISTRATOR. IF IT IS MORE APPROPRIATE TO ASSIGN THESE TASKS TO SOMEONE ELSE, LIKE THE PLANNING DIRECTOR, BE SURE TO CHANGE THE TEXT ACCORDINGLY. OPTION 2 ASSUMES A COMPLETE LOCAL SITE PLAN REVIEW PROCESS AND THAT REVIEWS ARE CAREFULLY COMPLETED IN COOPERATION WITH THE APPROPRIATE ROAD AUTHORITY. A MEMORANDUM OF UNDERSTANDING (MOU) IS THE BEST WAY TO PROCEED. SOME COMMUNITIES MAY WANT TO ADD THE KEY PARTS OF THE MOU REVIEW PROCESS IN THE SITE PLAN REVIEW SECTION OF THE ZONING ORDINANCE. IF SO, LANGUAGE IN OPTION 1A, SECTION 0.3 COULD BE USED AS A STARTING POINT. THE REST WOULD COME FROM THE MOU ITSELF. IF THIS LANGUAGE IS PROPOSED FOR USE IN A CITY OR TOWN, WHICH CONTROLS ALL THE STREETS WITHIN THE COMMUNITY, THEN COORDINATION BETWEEN THE CITY OR TOWN ROAD AUTHORITY AND THE PLANNING COMMISSION (RATHER THAN WITH INDOT OR THE BOARD OF COUNTY COMMISSIONERS) WOULD BE THE FOCUS.]

CHAPTER ___ ACCESS MANAGEMENT REGULATIONS

Section 2.0 – Purpose, Intent and Application

A. The purpose of this Article (*or Chapter*) is to establish minimum regulations for access to property. Standards are established for new roads, driveways, shared access, parking lot cross access, and service roads. The standards of this Article (*or Chapter*) are intended to promote safe and efficient travel within the _____ (*name of jurisdiction*); minimize disruptive and potentially hazardous traffic conflicts; ensure safe access by emergency vehicles; protect the substantial public investment in the street system by preserving capacity and avoiding the need for unnecessary and costly reconstruction which disrupts business and traffic flow; separate traffic conflict areas by reducing the number of driveways; provide safe spacing standards between driveways, and between driveways and intersections; provide for shared access between abutting properties; implement the _____ (*name of jurisdiction*) Comprehensive Plan and the _____ Corridor (*or Access*) Management Plan (*insert name of Plan*) recommendations; ensure reasonable access to properties, though not always by the most direct access; and to coordinate access decisions with the Indiana Department of Transportation and/or the _____ Board of County Commissioners, as applicable.

B. The standards in this Article (*or Chapter*) are based on extensive traffic analysis of this corridor by the _____ (*name of jurisdiction*), the _____ Board of County Commissioners, and the Indiana Department of Transportation (INDOT) as applicable. This analysis demonstrates that the combination of roadway design, traffic speeds, traffic volumes, traffic crashes and other characteristics necessitate special access standards. [INSERT THE TWO SENTENCES ABOVE IF TRUE, AND MODIFY TO FIT SITUATION. OTHERWISE DELETE THEM.] The standards in this Article (*or Chapter*) apply to

private and public land along road rights-of-way that are under the jurisdiction of the _____ (city or town street department), the _____ Board of County Commissioners, or the Indiana Department of Transportation (INDOT). [SELECT APPLICABLE ENTITIES ABOVE.] The requirements and standards of this Article (*or Chapter*) shall be applied in addition to, and where permissible shall supersede, the requirements of the Indiana Department of Transportation, _____ Board of County Commissioners, or other Articles (*or Chapters*) of this (*zoning*) Ordinance. [ADAPT PARAGRAPH TO FIT LOCAL CIRCUMSTANCES. IT IS ADVISABLE TO LIST SPECIFIC FINDINGS OF AN ACCESS MANAGEMENT PLAN OR CORRIDOR MANAGEMENT PLAN HERE WHERE THEY SUPPORT THE PURPOSE OF THE REGULATIONS.]

C. The standards of this Article (*or Chapter*) shall be applied by the Zoning Administrator during plat plan review and by the Planning Commission during site plan review, as is appropriate to the application. The Planning Commission shall make written findings of nonconformance, conformance, or conformance if certain conditions are met, with the standards of this Article (*or Chapter*) prior to disapproving or approving a site plan per the requirements of Section _____ (*the site plan review section of this or other Ordinance*). The _____ (*name of jurisdiction*) shall coordinate its review of the access elements of a plot plan or site plan with the appropriate road authority prior to making a decision on an application (see D. below). The approval of a plot plan or site plan does not negate the responsibility of an applicant to subsequently secure driveway permits from the appropriate road authority, either the _____ (*city or town street department*), the _____ Board of County Commissioners, or the Indiana Department of Transportation (depending on the roadway). Any driveway permit obtained by an applicant prior to review and approval of a plat or site plan that is required under this Ordinance will be ignored. [THIS REVIEW PROCESS WILL BE EXPEDITED BY A FORMAL MEMORANDUM OF UNDERSTANDING BETWEEN THE COMMUNITY AND THE INDIANA DEPARTMENT OF TRANSPORTATION, AND/OR THE _____ BOARD OF COUNTY COMMISSIONERS.]

D. Neither the Zoning Administrator nor the Planning Commission shall take action on a request for a new road, driveway, shared access, or a service drive that connects to a public road without first consulting the _____ (*name of city or town street department, when on a city or town street*), the _____ Board of County Commissioners (*when on a county road*), or the Indiana Department of Transportation (*when on a state highway*). To ensure coordination, applicants are required to submit a plat, site plan, or a preliminary plat concurrently to both the _____ (*name of jurisdiction*), the _____ Board of County Commissioners, and the Indiana Department of Transportation [BASED ON THE JURISDICTION RESPONSIBLE FOR REVIEW OF DEVELOPMENT ALONG SHARED PROPERTY LINES], as applicable. Complete applications shall be received at least _____ days (*insert number of days—typically 14-30 days as established in the site plan review section of the Ordinance or by a staff procedure manual*) before the Planning Commission meeting at which action is to be taken. If the initial review of the application by the Zoning Administrator reveals noncompliance with the standards of this Article (*or Chapter*), or if the proposed land use exceeds the traffic generation thresholds in Section _____, then the Zoning Administrator shall require submittal of a Traffic Impact Study as described below prior to consideration of the application by either the Zoning Administrator or the Planning Commission.

1. At a minimum the Traffic Impact Study shall contain the following:

- a. Analysis of existing traffic conditions and/or site restrictions using current data.
- b. Projected trip generation at the subject site or along the subject service drive based on the most recent edition of the Institute of Transportation Engineers *Trip Generation* manual. The _____ (*name of jurisdiction*) may approve use of other trip generation data

if based on recent studies of at least three (3) similar uses within similar locations in Indiana.

c. Illustrations of current and projected turning movements at access points. Include identification of the impact of the development and its proposed access on the operation of the abutting streets. Capacity analysis shall be completed based on the most recent version of the *Highway Capacity Manual* published by Transportation Research Board, and shall be provided in an appendix to the Traffic Impact Study.

d. Description of the internal vehicular circulation and parking system for passenger vehicles and delivery trucks, as well as the circulation system for pedestrians, bicycles and transit users.

e. Justification of need, including statements describing how the additional access will meet the intent of this Section, will be consistent with the _____ Corridor or Access Management Plan (*insert name of Plan*) and the _____ (*name of jurisdiction*) Comprehensive Plan, will not compromise public safety and will not reduce capacity or traffic operations along the roadway.

f. Qualifications and documented experience of the author, describing experience in preparing Traffic Impact Studies in Indiana. The preparer shall be either a registered traffic engineer (P.E.) or transportation planner with at least three (3) years of experience preparing Traffic Impact Studies in Indiana [OR OTHER QUALIFIED INDIVIDUAL—SEE LATER DISCUSSION ON EVALUATING TRAFFIC IMPACT STUDIES]. If the Traffic Impact Study involves geometric design, the study shall be prepared or supervised by a registered engineer with a strong background in traffic engineering.

2. The _____ (*name of jurisdiction*) may utilize its own traffic consultant to review the applicant's Traffic Impact Study, with the cost of the review being borne by the applicant per Section _____. [ADD SUPPLEMENTARY ORDINANCE LANGUAGE PRESENTED AT THE START OF THE CHAPTER IN THE APPROPRIATE PLACE OF THE ORDINANCE.]

E. Failure by the applicant to begin construction of an approved road, driveway, shared access, service drive, or other access arrangement within twelve (12) months from the date of approval, shall void the approval and a new application is required. [THIS SUBSECTION MAY ALREADY BE ADEQUATELY COVERED ELSEWHERE IN THE ORDINANCE. IF SO, DELETE HERE.]

F. The Zoning Administrator (*or city engineer or other authorized person*) shall inspect the driveway as constructed for conformance with the standards of this Ordinance and any approval granted under it, prior to issuing an occupancy permit. (*Insert proper name of permit if different than "occupancy permit". This subsection "F" may already be adequately covered elsewhere in the Ordinance. Also, the community may want to explore a formal agreement process to coordinate inspection with INDOT or the Board of County Commissioners so that dual inspections are avoided.*)

Section 2.1 – Identification of Corridor Overlay Zone

The _____ (*insert name of road here*) corridor is defined as those properties that abut the highway right-of-way either side of _____ (*insert name of road here*) in _____ (*insert name of community here*) between _____ (*location A – usually an intersection*) and _____ (*location B – usually an intersection*). The following regulations supersede otherwise applicable regulations of the **specific** districts beneath the overlay zone:

[OR INSERT THE FOLLOWING ALTERNATIVE LANGUAGE WHICH WOULD MAKE THIS ARTICLE APPLY TO ALL STREETS AND ROADS IN THE COMMUNITY, NOT TO JUST A FEW MAJOR ARTERIALS. USE ONE OR THE OTHER, BUT NOT BOTH.]

Section 2.1 – Roadways Subject to Access Management Regulations

The access management regulations of this Article (*or Chapter*) apply to all property according to the roadway classification of the abutting public streets and roads within _____ (*name of community*) as described below and as illustrated on Map _____. [THE COMMUNITY MAY OR MAY NOT ALSO WISH TO USE THE TEXT IN "A" AND "B" BELOW, WHICH FOLLOWS THE MAP FOR GREATER CLARITY.]

A. Application of the access location and design standards of this Article (*or Chapter*) requires identification of the functional classification of the street on which access is requested and then applying the appropriate spacing requirements. The streets and roads of _____ (*insert name of community*) are classified as follows and are as defined in Section _____:

1. Local Street or Road;
2. Minor Collector;
3. Major Collector;
4. Minor Arterial;
5. Major Arterial; and
6. Limited Access Highway.

B. Major arterial, minor arterial, and collector streets are indicated on the Thoroughfare Map (Map ____). All unclassified public streets are local streets principally providing access to single-family residences. [ADD THIS NEXT SENTENCE ONLY IF LOCAL STREETS ARE NOT CLASSIFIED ON THE MAP OR USE THE FOLLOWING LANGUAGE.] The functional classification of any street in _____ (*insert name of jurisdiction*) not indicated as an arterial or collector on this Map shall be determined using the functional street classification defined by the AASHTO "Green Book", *A Policy on Geometric Design of Highways and Streets*.

Section 2.2 – Driveway and Related Access Standards

All lots hereafter created, and all structures hereafter created, altered, or moved on property with frontage on, or access to, a public road or street that is subject to regulation per Section 2.1, shall conform to the following requirements:

A. General Standards [GREAT CARE SHOULD BE TAKEN TO CAREFULLY INTEGRATE THIS SECTION WITH EXISTING ZONING DISTRICT REGULATIONS AND PROVISIONS IN THE SCHEDULE OF REGULATIONS.]

1. Access Approval Required – No road, driveway, shared access, parking lot cross access, service road, or other access arrangement shall be established, reconstructed or removed without first meeting the requirements of this Section.
2. Frontage on a Public Road or Street – Any lot created after the effective date of this Ordinance shall have frontage upon a public street right-of-way or private road or access easement recorded with the County Recorder of Deeds that meets the requirements of this Article (*or Chapter*).

Contiguous properties under one ownership or consolidated for unified development will be considered one parcel for purposes of this Article.

3. Minimum Lot Width – Except for existing lots of record, all lots fronting on a major arterial, arterial, or collector subject to this Article shall not be less than _____ feet in width (*at least 300 feet; 400 feet is better*), unless served by shared access or a service drive that meets the requirements of Section 2.3, in which case minimum lot width may be reduced per the requirements of Section 2.6. **[THIS CAN BE AN IMPORTANT INCENTIVE TO MOVE TO SHARED ACCESS.]**

4. Structure Setback – No structure other than signs, as allowed in Section ____, telephone poles and other utility structures that are not buildings, transfer stations or substations, shall be permitted within _____ feet of the roadway right-of-way. **[THIS SHOULD BE DEEP ENOUGH (USUALLY 75-100 FEET) TO PERMIT EXPANSION OF THE RIGHT-OF-WAY AT A FUTURE TIME WITHOUT PREVENTING EFFECTIVE USE OF THE STRUCTURE AT THAT TIME, IF CAPACITY IMPROVEMENTS LIKE THE ADDITION OF LANES OR A MEDIAN ON THE ROADWAY ARE LIKELY].**

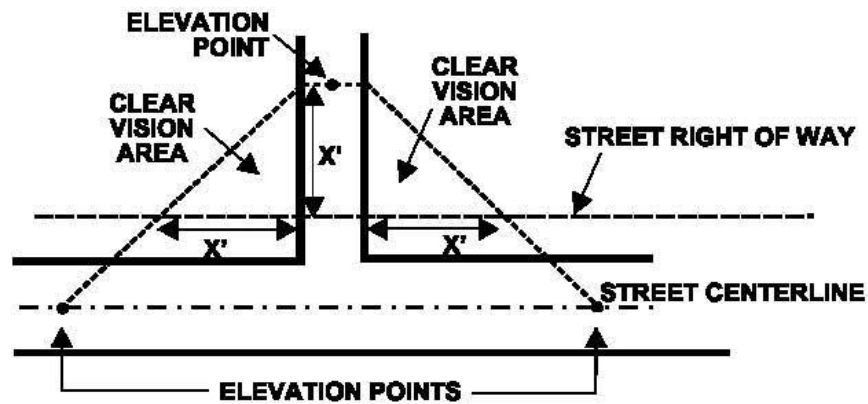
5. Parking Setback and Landscaped Area – No parking or display of vehicles, goods, or other materials for sale, shall be located within ____ (*often 50*) feet of the roadway right-of-way. This setback shall be planted in grass and landscaped with small clusters of salt tolerant trees and shrubs suitable to the underlying soils unless another design is approved under the landscape provisions of Section _____. **[THIS PROVISION IMPROVES THE AESTHETIC APPEARANCE ALONG A ROADWAY, AND IMPROVES THE CONTRAST BETWEEN A VEHICLE AND THE PAVEMENT, IMPROVING EASE OF VISIBILITY. IT ALSO SERVES AS A SNOW STORAGE ZONE. HOWEVER, THE ZONING ORDINANCE MAY VARY SETBACKS BY ZONING DISTRICT.]**

6. Clear Vision – All access points shall maintain clear vision as illustrated in Figure _____. **[SEE EXAMPLE IN FIGURE A2-1.]**

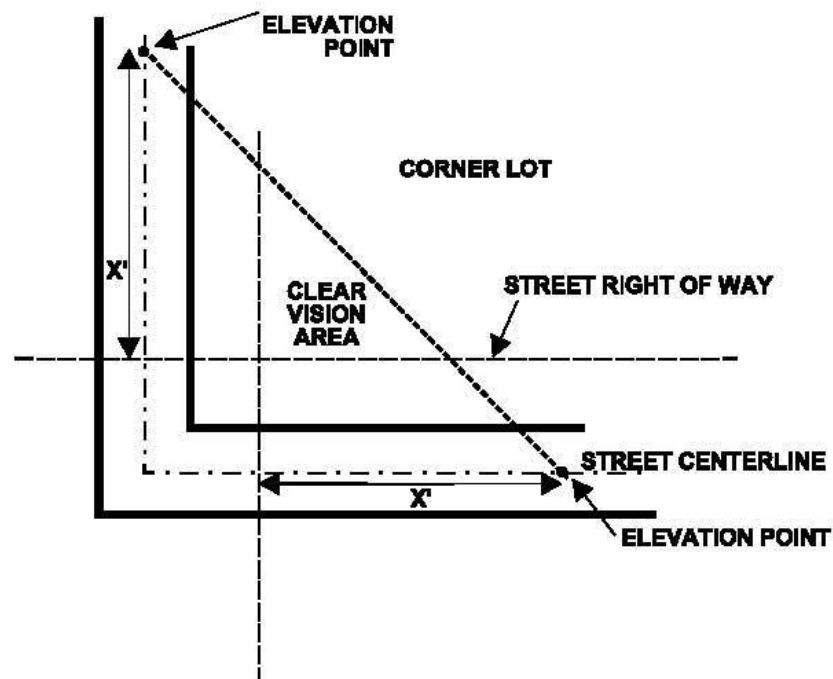
7. Street Structures – No driveway shall interfere with municipal facilities such as street light or traffic signal poles, signs, fire hydrants, cross walks, bus loading zones, utility poles, fire alarm supports, drainage structures, or other necessary street structures. The Zoning Administrator is authorized to order and effect the removal or reconstruction of any driveway that is constructed in conflict with street structures. The cost of reconstructing or relocating such driveways shall be at the expense of the abutting property owner.

Figure A2-1

CLEAR VISION AT DRIVEWAYS



CLEAR VISION ON CORNER



Note: The dimension of X' is variable depending on local conditions and must be specified in the local zoning ordinance.

Graphic by John Warbach, Planning & Zoning Center, Inc.

B. Access Location Standards

1. Access Point Approval - No access point shall connect to a public street or road without first receiving approval of the location and cross-section specifications from the _____ (*name of city or town street department*), when on a city or village street, _____ Board of County Commissioners (when on a county road) or the Indiana Department of Transportation (when on a state highway). No access point shall connect to a private road unless approved by the Planning Commission and by the parties with an ownership interest in the private road. **[INSERT THIS SENTENCE ONLY IF PRIVATE ROADS ARE ALLOWED]**.

2. Factors on Location of Driveway Access – At a minimum, the following factors shall be considered prior to making a decision on the location of a driveway or other access point: **[IF THE COMMUNITY PREPARES A PROPERTY-SPECIFIC ACCESS MANAGEMENT PLAN, THESE FACTORS MAY BE ABLE TO BE REPLACED WITH A SPECIFIC REFERENCE TO THE APPLICABLE PART OF THE ACCESS MANAGEMENT PLAN.]**

- a. The characteristics of the proposed land use;
- b. The existing traffic flow conditions and the future traffic demand anticipated by the proposed development on the adjacent street system;
- c. The location of the property;
- d. The size of the property;
- e. The orientation of structures on the site;
- f. The minimum number of driveways or other access points needed to accommodate anticipated traffic based on a traffic analysis, as determined by the community and road agency. Such finding shall demonstrate traffic operations and safety along the public street would be improved (or at least not negatively affected), and not merely that another access point is desired for convenience;
- g. The number and location of driveways on existing adjacent and opposite properties;
- h. The location and functional classification of abutting streets or roads and the carrying capacity of nearby intersections;
- i. The proper geometric design of driveways;
- j. The spacing between opposite and adjacent driveways and from any nearby intersection;
- k. The internal circulation between driveways and through parking areas;
- l. The size, location and configuration of parking areas relative to the driveways; and
- m. The speed of the adjacent roadway.

3. Access Point Location – Each access point location shall conform to access management plans or corridor improvement plans that have been adopted by the _____ (*name of community*), the _____ Board of County Commissioners, and/or the Indiana Department of Transportation.

4. Access Points within Right-of-Way – Driveways including the radii, but not including right-turn lanes, passing lanes and tapers, shall be located entirely within the right-of-way frontage, unless otherwise approved by the road agency and upon written certification from the adjacent land owner agreeing to such encroachment.

5. Backing-up from Parking or Loading Area onto a Public Street or Service Drive – Driveway access to arterials shall not be permitted for any parking or loading areas that require backing maneuvers in a public street or road right-of-way. Driveway access to collector streets, local streets, or service drives for commercial, office, industrial, or multi-family developments shall not

be permitted for parking or loading areas that require backing maneuvers in a public street right-of-way or onto a public or private service drive.

6. Relationship to Lot Line – No part of a driveway shall be located closer than _____ feet (*typical range 4-15 feet*) from a lot line unless it is a common or shared driveway as provided in Section 2.2 F. This separation is intended to help control stormwater runoff, permit snow storage on site, and provide adequate area for any necessary on-site landscaping.

7. Existing Driveways – Except for shared driveways, existing driveways that do not comply with the requirements of this Article (*or Chapter*) shall be closed when an application for a change of use requiring a zoning permit or a site plan requiring approval under Section ____ is submitted and once approval of a new means of access under this Article (*or Chapter*) is granted. A closed driveway shall be graded and landscaped to conform to adjacent land, and any curb cut shall be filled in with curb and gutter per the standards of the applicable road authority. See also Section 2.5.

8. Intersection Sight Distance – Driveways shall be located so as not to interfere with safe intersection sight distance as determined by the appropriate road authority.

9. Adequate Corner Clearance – Driveways shall be located so as not to interfere with safe traffic operations at an intersection as determined by Table A2-3 as long as that distance is beyond any clear vision area owned by a road authority.

10. Traffic Signals – Access points on arterial and collector streets may be required to be signalized in order to provide safe and efficient traffic flow. Any signal shall meet the spacing requirements of the applicable road authority. A development may be responsible for all or part of any right-of-way, design, hardware, and construction costs of a traffic signal if it is determined that the signal is warranted by the traffic generated from the development. The procedures for signal installation and the percent of financial participation required of the development in the installation of the signal shall be in accordance with criteria of the road authority with jurisdiction. **[MAKING THE “LAST GUY IN” PAY THE TOTAL COST OF A TRAFFIC SIGNAL COULD BE UNREASONABLE IF HIS DEVELOPMENT ONLY GENERATED A SMALL PORTION OF THE TRAFFIC. FINANCIAL PARTICIPATION IN THE COST OF A SIGNAL NEEDS TO CONSIDER THE SHARE OF TRAFFIC GENERATED.]**

C. Number of Driveways Permitted

1. Access for an individual parcel, lot, or building site (or for contiguous parcels, lots, or building sites under the same ownership) shall consist of either a single two-way driveway or a paired system wherein one driveway is designed, and appropriately marked, to accommodate ingress traffic and the other egress traffic.

2. One driveway shall be permitted for each single-family and two-family residential lot or parcel.

3. A temporary access permit may be issued for field entrances per Section 2.4, for cultivated land, timber land, or undeveloped land, as well as for uses at which no one resides or works such as cellular towers, water wells, pumping stations, utility transformers, billboards, and similar uses. Field-entrance and utility-structure driveways will be reviewed on a case-by-case basis. The review shall take into account the proximity of the adjacent driveways and intersecting streets, as well as traffic volumes along the roadway.

4. For a parcel, lot, or building site with frontage exceeding ____ feet (*typically over 600 feet*), or where a parcel, lot, or building site has frontage on at least two streets, an additional driveway may be allowed, provided that a Traffic Impact Study is submitted by the applicant showing that conditions warrant an additional driveway and that all driveways meet the spacing requirements.

5. Certain developments generate enough traffic to warrant consideration of an additional driveway to reduce delays for exiting motorists. Where possible, these second access points should be located on a side street or service drive, or shared with adjacent uses, or designed for right-turn-in, right-turn-out only movements, and shall meet the spacing requirements of this ordinance. In order to be considered for a second driveway on an arterial or collector street, combined approach volumes (entering and exiting) of a proposed development shall exceed 100 directional trips during the peak hour of traffic and a Traffic Impact Study shall be performed. Uses where a second driveway could be considered are influenced by the trip generation characteristics of the uses and the volumes of the adjacent roadway. [SEE THE ITE TRIP GENERATION MANUAL FOR PEAK HOUR TRIP GENERATION COUNTS FOR DRIVEWAYS BY TYPE OF LAND USE.] Table A2-1 lists land uses that may warrant consideration of an additional driveway. [A COMMUNITY MAY NOT WISH TO PUBLISH A LIST AND INSTEAD LEAVE THE DETERMINATION UP TO TRAFFIC ENGINEERS FOLLOWING A TRAFFIC IMPACT STUDY. IF SO, DELETE THIS TABLE AND RENUMBER THE REST OF THE TABLES ACCORDINGLY.] [NOTE: WHERE THE DEVELOPMENT HAS ACCESS TO A SIGNALIZED ARTERIAL OR COLLECTOR, THE APPROACH VOLUME OF DRIVEWAY TRAFFIC SHOULD BE DOUBLE THAT OF UNSIGNALIZED LOCATIONS TO WARRANT CONSIDERATION OF A SECOND ACCESS. SEE SECTION 2.2D.1.a.] [NOTE: IF RESIDENTIAL USES PREDOMINATE ON THE SIDE STREET, THERE MAY BE OPPOSITION TO A COMMERCIAL DRIVEWAY. THE POTENTIAL NEGATIVE IMPACTS, AND HENCE OPPOSITION, MAY BE MITIGATED BY USE OF A DIRECTIONAL DRIVEWAY.]

Table A2-1
Developments That May Warrant Consideration of an Additional Driveway

- Multi-family developments with over 250 units;
- A grocery store of over 30,000 square feet gross floor area (GFA);
- A shopping center with over 40,000 square feet GFA
- A hotel or motel with over 400 rooms;
- Industrial developments with over 300,000 square feet GFA or 350 employees (although a secondary entrance for trucks should be allowed);
- Warehouses of over 750,000 square feet GFA or 350 employees;
- A mobile home park with over 300 units;
- General office building of 150,000 square feet GFA or 500 employees;
- Medical office building of 60,000 square feet GFA or 200 employees;
- Fast-food restaurant of over 6,000 square feet GFA;
- Sit-down restaurant of over 20,000 square feet GFA.

6. When alternatives to a single, two-way driveway are necessary to provide reasonable driveway access to property fronting on an arterial street, and shared access or a service drive are not a viable option, the following progression of alternatives should be used:

- a. One (1) standard, two-way driveway;
- b. Additional ingress/egress lanes on one (1) standard, two-way driveway;

- c. Two (2) one-way driveways;
- d. Additional ingress/egress lanes on two (2), one-way driveways;
- e. Additional driveway(s) on an abutting street with a lower functional classification;
- f. Additional driveway on an arterial street. Note: Restricted turns and roadway modifications will be considered in conjunction with alternative driveway designs.

D. Access Point Spacing Standards

1. Separation from Other Driveways

a. The minimum spacing between unsignalized driveways and other access points shall be determined based upon posted speed limits along the parcel frontage unless the appropriate road authority approves less based on the land use and restricted turns in the driveway design. The minimum spacings indicated below are measured from the centerline of one driveway to the centerline of another driveway. **[SOME COMMUNITIES MEASURE FROM NEAREST EDGE OF PAVEMENT TO NEAREST EDGE OF PAVEMENT.]** For sites with insufficient road frontage to meet the table below, the Planning Commission shall require one of the following: construction of the driveway along a side street, a shared driveway with an adjacent property, construction of a driveway along the property line farthest from the intersection, or a service drive as described in Section 2.3. The Planning Commission may grant temporary access approval (see Section 2.4) until such time that minimum spacing requirements can be met, or alternative access meeting the requirements of this ordinance is approved.

**Table A2-2
 Minimum Access Spacing Between Adjacent Access Points**

Posted Speed Limit (MPH)	Minimum Access Spacing between Adjacent Access Points (feet)
25	130
30	185
35	245
40	300
45	350
50	455

Note: The values in Table A2-2 above are considered minimums, based on the distances required to avoid conflicts between vehicles turning right or left from adjacent driveways. **[THESE STANDARDS ARE SIGNIFICANTLY LESS THAN IN VARIOUS NATIONAL PUBLICATIONS. GREATER SPACING MAY BE ESPECIALLY APPROPRIATE IN RURAL AREAS. LESSER SPACING MAY BE APPROPRIATE ON NON-ARTERIAL ROADS THAT ARE ALREADY LARGELY DEVELOPED.]**

b. In the case of expansion, alteration, or redesign of an existing development where it can be demonstrated that pre-existing conditions prohibit adherence to the minimum driveway spacing standards, the Planning Commission shall have the authority to modify the driveway spacing requirements or grant temporary access approval until such time that minimum spacing requirements can be met, or alternative access meeting the requirements of this ordinance is approved. Such modifications shall be the minimum

amount necessary, but in no case shall driveway spacing of less than ___ feet [typically 60-75 feet, depending on the common lot size in the area] be permitted by the Planning Commission. [THIS SUBSECTION COULD BE REMOVED AND THE COMMUNITY COULD RELY ON SECTION 2.7 WAIVERS. IF THE WAIVERS SECTION IS NOT INCLUDED IN THE ORDINANCE, THAN THIS SECTION NEEDS TO STAY HERE.]

2. Access Point Separation from Intersections – All single-family and two-family driveways shall be separated from the nearest right-of-way of an intersecting street by at least _____ feet [USUALLY AT LEAST 50 FEET, MORE IF LOT SIZES ARE LARGE]. Driveways for all other land uses shall be separated from the nearest right-of-way of an intersecting street, according to Table A2-3 below:

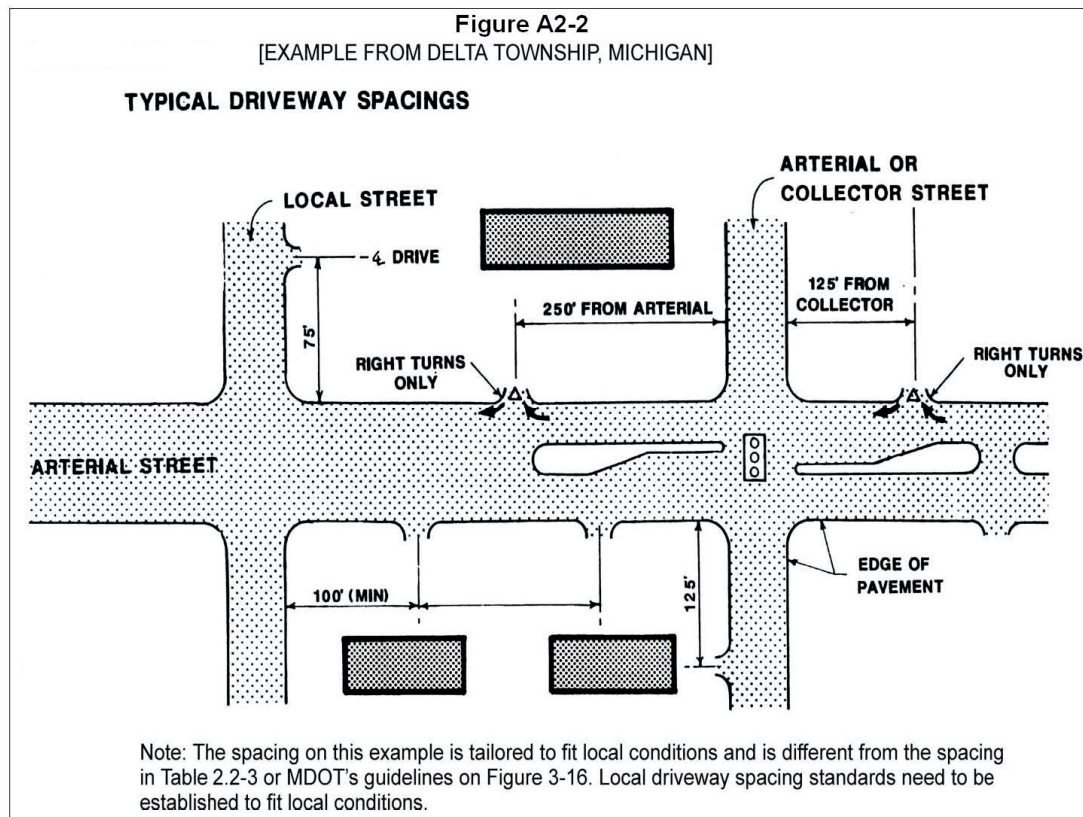
**Table A2-3
 Minimum Access Point Spacing from Street and Other Intersections***

Location of Access Point	Minimum Spacing for a Full Movement Driveway or other Access Point	Minimum Spacing for a Driveway Restricting Left-turns (channelized for right-turn-in and right-turn-out only)
Along Arterial or from • Expressway Ramps • Railroad crossings • Bridges • Median openings	300 feet [600 FEET IS BETTER] Contact INDOT for a site specific determination 100 feet 75 feet	300 feet [600 FEET IS BETTER] Contact INDOT for a site specific determination 100 feet 75 feet
Along Arterial or from another Intersecting Arterial	300 feet	125 feet
Along Arterial Intersecting a Collector or Local Street	200 feet	125 feet
Along a Collector	125 feet	75 feet
Along a Local Street or Private Road	75 feet	50 feet

* Arterials and Collectors are as classified in the _____ Comprehensive Plan (Thoroughfare Plan or on Map ____ in this Ordinance).

a. Access point spacing from intersections shall be measured from the centerline of the driveway to the extended edge of the travel lane on the intersecting street, as shown in Figure A2-2 unless otherwise noted. [SOME COMMUNITIES CHOOSE TO MEASURE FROM THE EDGE OF THE DRIVEWAY, INSTEAD OF FROM THE CENTER. SEPARATION DISTANCES NEED TO BE ADJUSTED ACCORDINGLY.]

b. The minimum distance between an access point and an intersecting street shall be based on Figure A2-2 and the following: [ADAPT FIGURE A2-2 TO FIT TABLE DIMENSIONS DECIDED UPON IN A PARTICULAR UNIT OF LOCAL GOVERNMENT.]



[SOME COMMUNITIES MAY REQUIRE LESS RESTRICTIVE STANDARDS WHEN LOCATING A DRIVEWAY AWAY FROM A NON-SIGNALIZED INTERSECTION THAN A SIGNALIZED ONE. IF SO, ADAPT THESE STANDARDS TO FIT THE LOCAL SITUATION. ALSO, THE APPROACH INDOT USES IS MORE DIRECTLY TIED TO THE SPEED OF THE ARTERIAL, RATHER THAN THE FUNCTIONAL CLASS OF THE ROAD. IT MAY BE A MORE USEFUL APPROACH IN SOME JURISDICTIONS.]

c. If the amount of lot frontage is not sufficient to meet the above criterion, the driveway shall be constructed along the property line farthest from the intersection to encourage future shared use, and/or a frontage road or rear service drive shall be developed as described in Section 2.3.

d. For parcels on which an alternative means of access (shared driveway, frontage road, service drive or connected parking lots) is not feasible due to parcel size or existing adjacent development, the Planning Commission may allow a non-channelized, full movement driveway provided that:

1. The driveway is spaced no closer to the intersection than the minimum spacing allowed for a right-turn-in, right-turn-out driveway; and

2. A traffic study conducted by a registered traffic engineer shows a right-turn-in, right-turn-out driveway does not provide reasonable access or desired safety; and
 3. A traffic study, conducted by a registered traffic engineer, provides substantial justification that the driveway operation will not create safety problems at the adjacent intersection.
3. Access Alignment – In order to prevent left-turn conflicts, two-way driveways shall not be across from an expressway ramp and shall be either:
- a. Offset in accordance with the minimum spacing standards in Table A2-3, or
 - b. Perpendicular to the existing public street or an approved private road and shall line up with existing or planned driveways on the opposite side of the road wherever facing lots are not separated by a median, unless doing so in a particular case is substantially demonstrated by a registered traffic engineer to be unsafe.

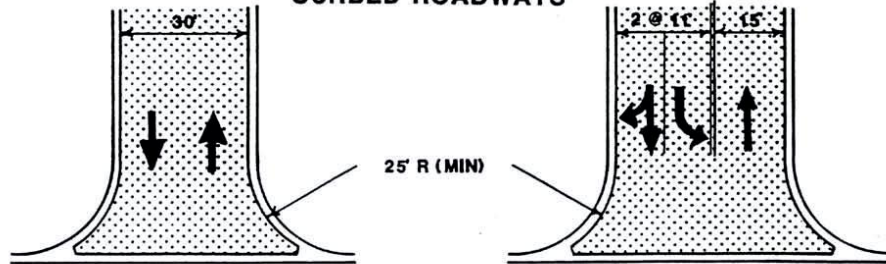
E. Driveway Design and Construction Standards

1. Driveway or Throat Width

- a. No single-family or two-family driveway shall have a width neither less than nine (9) feet nor more than sixteen (16) feet at the public road right-of-way. The driveway opening, including flares, shall not be more than 1.5 times the width of the driveway at the right-of-way line.
- b. The typical commercial driveway design shall include one ingress lane and one egress lane with a combined maximum throat width of thirty (30) feet, measured from face to face of curb (see Figure A2-3a).
- c. Where exiting traffic volumes are expected to exceed 100 directional trips per peak hour, or in areas where congestion along the arterial may create significant delays, as determined by the Planning Commission, two exit lanes shall be required. The total width of such a driveway shall be between 37 and 39 feet, with one 15 foot wide ingress lane and two 11-12 foot wide egress lanes (See Figure A2-3b).
- d. For access systems, which include a pair of one-way driveways, each driveway shall be a minimum of sixteen (16) feet wide, measured perpendicularly (See Figure A2-3c).
- e. As an alternative to (d) above, the driveway may be designed with a fully curbed median dividing the ingress and egress driveways, with a maximum median width of ten feet. The radii forming the edges on the median shall be designed to accommodate the largest vehicle that will normally use the driveway. Where median or boulevard driveways are located across the street from each other, the left-turn egress lanes shall be aligned directly across from one another to minimize left-turn conflicts (see Figure A2-3d). Boulevard driveways should not be constructed at existing or future traffic signal locations unless there is a left-turn lane where the boulevard meets the road right-of-way. Ground or monument signs shall not be permitted in boulevards if they would block motorist vision or otherwise create an unsafe condition. The Planning Commission may require landscaping on the portion of the boulevard outside the public right-of-way. Such landscaping shall use salt tolerant species.

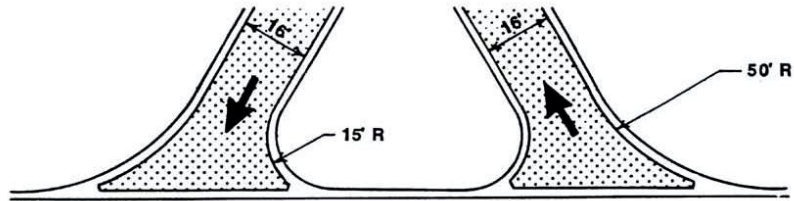
Figure A2-3 [EXAMPLE FROM DELTA TOWNSHIP, MICHIGAN]

**TYPICAL CONFIGURATIONS FOR DRIVEWAYS
 CURBED ROADWAYS**



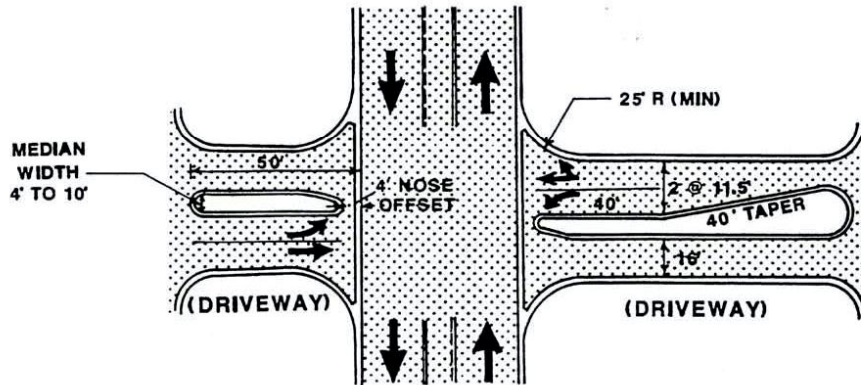
a. TYPICAL 2-WAY DRIVEWAY

b. HIGH-USE DRIVEWAY



c. ONE-WAY DRIVEWAYS

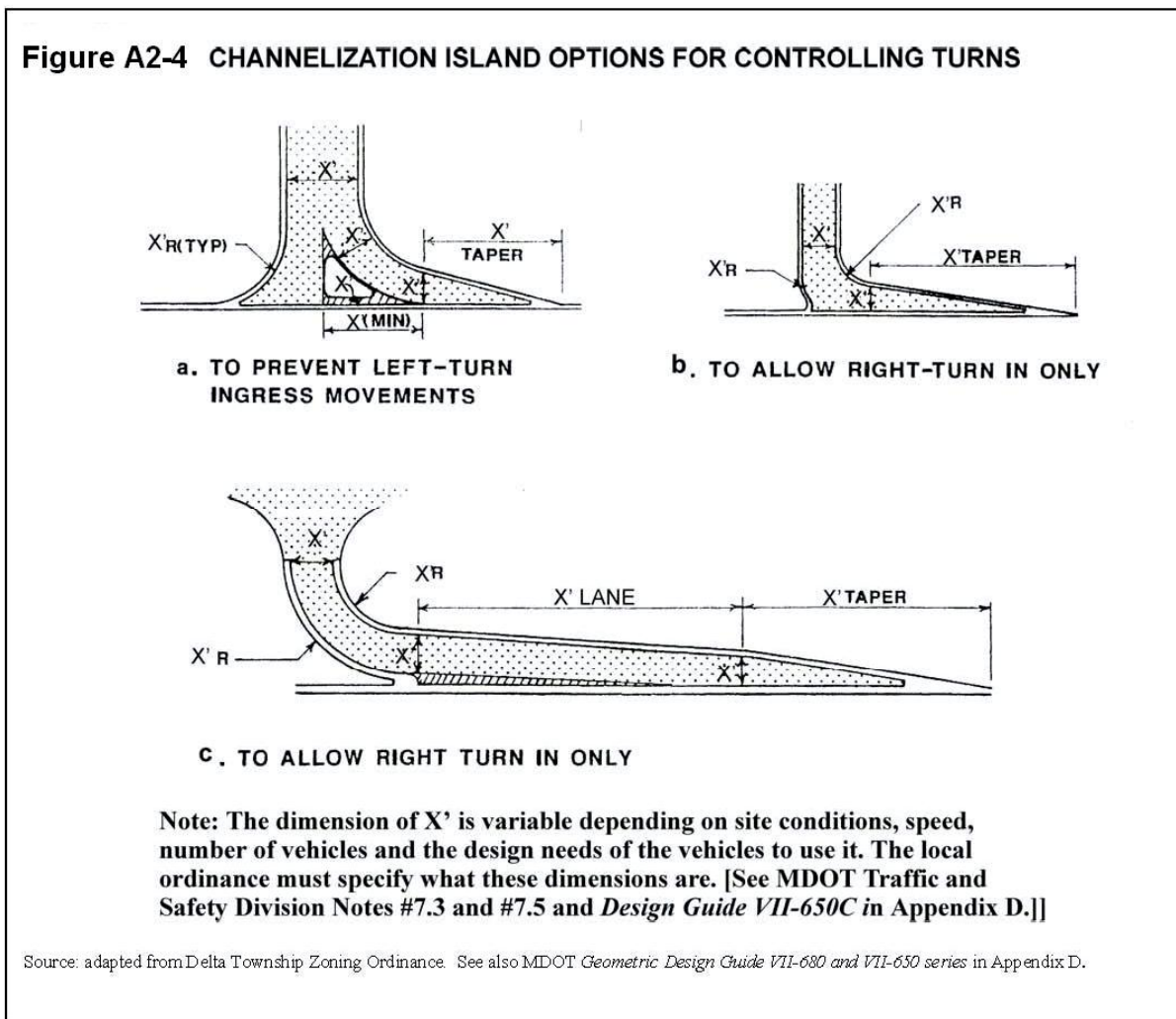
ARTERIAL STREET



d. BOULEVARD DRIVEWAYS

Note: The left-turn lanes in d. Boulevard Driveways will work better if the left-turn lanes are directly across from one another. This requires cutting off a portion of the nose of the boulevard. Also, turning radii and throat width need to be designed to accommodate vehicles using the driveway. See also MDOT Design Guide for Commercial Driveways, VII-680A.

2. Restricted Access Driveways – Left-turn and right-turn movements on and off roadways typically have the greatest impact on traffic flow and crash frequency. Therefore, where driveways are to be located in a segment defined in adopted corridor studies as having a high crash rate or significant traffic congestion/delays, or where left-turn access is available through alternative means of access, the Planning Commission may require driveway design and signing which discourages certain turning movements. Where driveways are intended to control specific left-turn and/or right-turn ingress and egress, the designs shown in Figure A2-4 shall apply. Similar designs shall be accepted, provided that they are approved by the Indiana Department of Transportation and/or the _____ Board of County Commissioners, if applicable.



3. Throat Length or Vehicle Stacking/Storage Space – There shall be a minimum of twenty (20) feet of throat length for entering and exiting vehicles at the intersection of a driveway and pavement of the public road or service drive, as measured from the pavement edge. For driveways serving between one-hundred (100) and four-hundred (400) vehicles in the peak hour (two-way traffic volumes), the driveways shall provide at least sixty (60) feet of throat length. For driveways serving over four-hundred (400) vehicles per peak hour (two-way traffic volume) and for all driveways controlled by a traffic signal, adequate throat length shall be determined by a Traffic Impact Study. In areas where significant pedestrian/bicycle travel is expected, the

ingress and egress lanes should be separated by a 4-10 feet wide median with pedestrian refuge area. In the absence of adequate traffic volume data, application of the commonly used values in Table A2-4 is appropriate.

**Table A2-4
 Minimum Driveway Throat Length**

Land Use	Building Site	Minimum Throat Length (Feet)	
		Collector	Arterial
Apartments	<100 Units	25	50
	100-200 Units	50	75
	>200 Units	75	125
Office	<50,000 Sq ft	25	50
	50,001 - 100,000 Sq ft	25	75
	100,001 - 200,000 Sq ft	50	100
	200,001 - 500,000 Sq ft	100	150
Retail	<500,000 Sq ft	125	250
	<30,000 Sq ft	25	50
	> 30,000 Sq ft	25	75
Shopping Center	< 250,000 Sq ft	25	50
	250,001 - 500,000 Sq ft	50	75
	500,000 - 750,000 Sq ft	75	200
	> 750,000 Sq ft	125	250
Supermarket	<20,000 Sq ft	50	75
	>20,000 Sq ft	75	125
Restaurant	<15,000 Sq ft	25	50
	>15,000 Sq ft	25	75
Drive-in Restaurant	<2,000 Sq ft	25	75
	>2,000 Sq ft	50	100
Motel	<150 Rooms	25	75
	>150 Rooms	25	100
Light Industrial	<100,000 Sq ft	25	50
	100,001 - 500,000 Sq ft	50	100
	>500,000 Sq ft	50	200

Source: *Oshkoto Township Zoning Ordinance*, Section 67, Access Management Guidelines, 1991

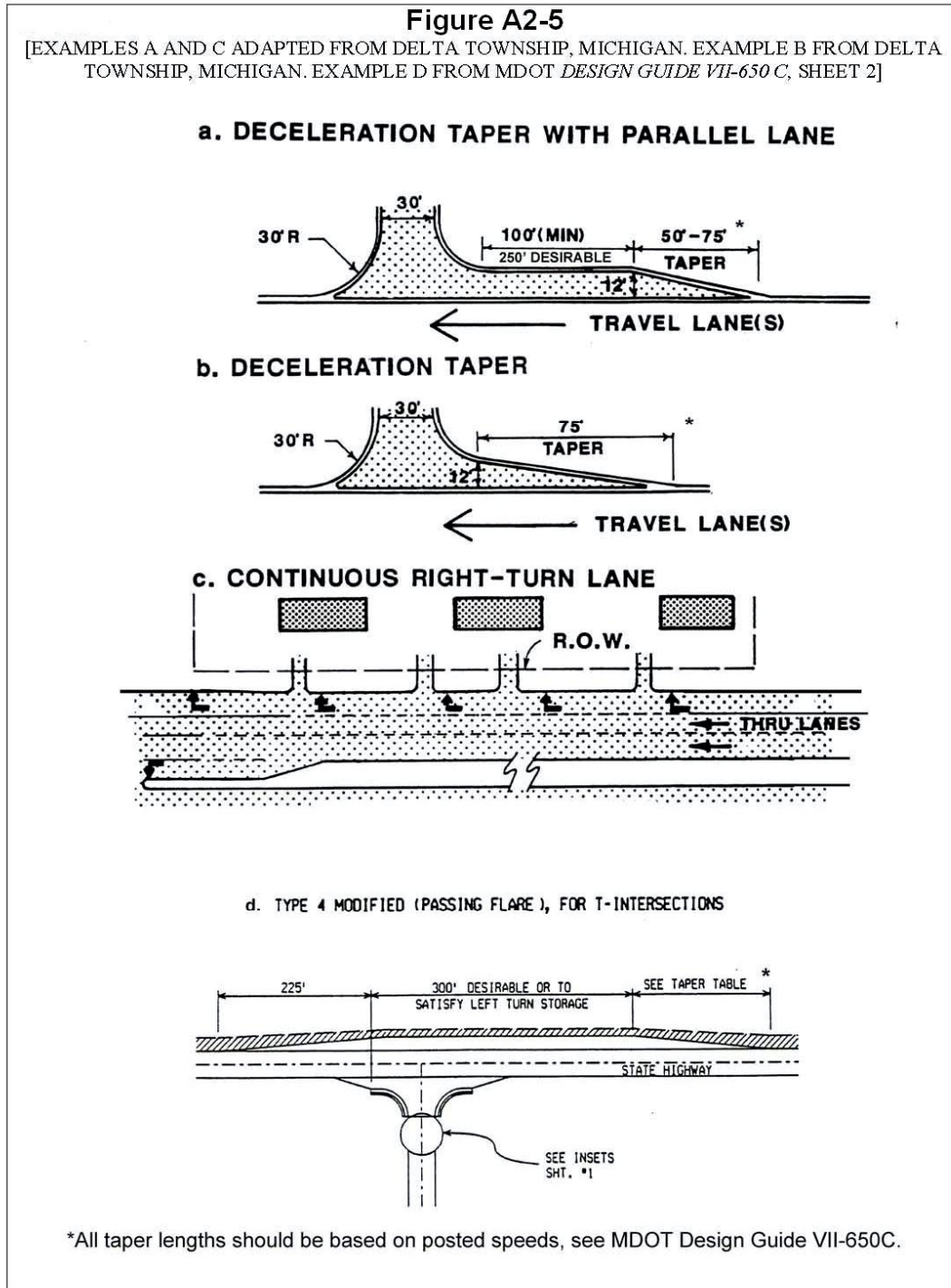
4. Construction Standards

a. Curb radii:

1. Driveways shall be designed with minimum 25-foot radii where primarily passenger vehicle traffic is expected.
2. For sites where truck traffic is expected, the driveways shall be designed with a minimum 30 foot radii unless a traffic analysis by a qualified traffic engineer reveals another radii is more appropriate for the vehicles expected to use the driveway.

b. Deceleration lanes and tapers:

1. Where it can be demonstrated that driveway volumes are expected to exceed 100 peak hour directional trips per hour, a right-turn taper, deceleration lane and/or left-turn bypass lane may be required.
2. Where site frontage allows and a right-turn lane is warranted, a taper between 50 and 225 feet may be required. See example in Figure A2-5a.



3. Where the amount of frontage precludes the construction of a deceleration lane and taper combination entirely within the property lines of a parcel, a request shall be made to the owner of the parcel to allow the installation of a right-turn

bay and taper which extends beyond the property line. If permission cannot be obtained from the adjacent property owner for an extension onto that parcel, a taper of at least 75 feet shall be constructed as shown in Figure A2-5b.

4. A continuous right-turn lane, as shown in Figure A2-5c may be required where driveway spacing requirements restrict the use of consecutive turn bays and tapers, and a traffic engineer concludes it can be constructed without being used as a through lane.

5. For driveways located along streets without an exclusive left-turn lane, a bypass lane may be required. Such a lane shall be designed to the standards in the Indiana Department of Transportation.

c. Acceleration lanes:

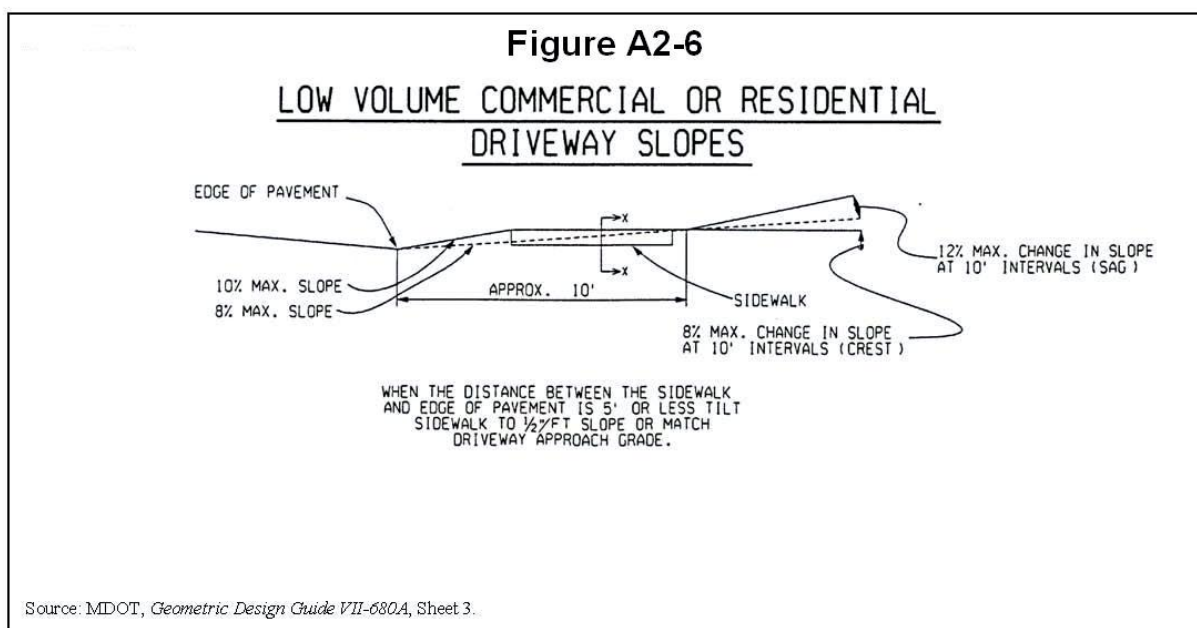
1. Generally, acceleration lanes are not permitted. However, where site frontage allows, and large semi-trucks and other slow moving vehicles routinely access an arterial, an acceleration lane may be required in consultation with the applicable road authority.

2. The acceleration lane shall be designed by a traffic engineer to meet the needs of vehicles using it, topography, sight distance, and other relevant factors.

3. Driveways shall not be permitted within an acceleration lane.

d. Grades and drainage:

1. Driveways shall be constructed such that the grade for the 25 feet nearest the pavement edge or shoulder does not exceed 1.5% (one and one-half foot vertical rise in one-hundred feet of horizontal distance) wherever feasible. Where not feasible, grades shall conform to Figure A2-6.



2. Vertical curves with a minimum length of 15 feet shall be provided on driveway approaches at a change in grade of 4% or more.

3. Driveways shall be constructed such that drainage from impervious areas located outside of the public right-of-way, which are determined to be in excess of existing drainage from these areas, shall not be discharged into the roadway drainage system absent the approval of the responsible agency. Storm drains or culverts, if required, shall be of a size adequate to carry the anticipated storm flow and be constructed and installed pursuant to the specifications of the responsible road authority.

e. Surface and Curb Construction – Commercial and all other nonresidential driveways shall be constructed of a permanent asphalt or concrete material sufficient to provide the bearing capacity needed to carry the anticipated traffic loads as determined by the appropriate road authority unless the road authority approves use of another material. Where a driveway connects with a curbed road, it shall be paved and curbed from the edge of pavement to either the right-of-way line or point of curvature of the radius returns. All soil erosion and sedimentation requirements shall be met.

f. Directional Signs and Pavement Markings – In order to ensure smooth traffic circulation on the site, direction signs and pavement markings shall be installed at the driveway(s) in a clearly visible location as required by the _____ (*name of jurisdiction*) as part of the site plan review process and approved by the Indiana Department of Transportation and _____ Board of County Commissioners (as appropriate), and shall be maintained on a permanent basis by the property owner. Directional signs and pavement markings shall conform to the standards in the Indiana Manual of Uniform Traffic Control Devices. **[BE SURE TO COORDINATE THIS WITH EXISTING SIGN STANDARDS IN THE ZONING ORDINANCE WHICH MAY REFER TO A DIFFERENT TYPE OF DIRECTIONAL SIGN.]**

F. Shared Access – Shared access is strongly encouraged, and in some cases may be required. When required, one or more of the following options, and the standards of Section 2.3, apply:

1. Shared Driveways – Sharing or joint use of a driveway by two or more property owners shall be encouraged. In cases where access is restricted by the spacing requirements of Section 2.2.D, "Access Point Spacing Standards", a shared driveway may be the only access design allowed. The shared driveway shall be constructed along the midpoint between the two properties unless a written easement is provided which allows traffic to travel across one parcel to access another, and/or access the public street.

2. Frontage Roads – In cases where a frontage road exists, is recommended either in the _____ (*insert name of jurisdiction*) Comprehensive Plan or in an adopted corridor study, and/or is proposed in an approved site plan for an adjoining lot or parcel, access shall be provided via such frontage road, rather than by direct connection to the abutting arterial street.

3. Rear Service Drives – Rear service drives shall be encouraged, especially for locations where a connection to a side street is available. In addition to access along the rear service drive, direct connection(s) to the arterial street may be allowed, provided that the driveways meet the requirements of Section 2.2.C, "Number of Driveways", and 2.2.D, "Access Point Spacing Standards."

G. Parking Lot Connections – Where a proposed parking lot is adjacent to an existing parking lot of a similar use, there shall be a vehicular connection between the two parking lots where physically feasible, as determined by the Planning Commission. For developments adjacent to vacant properties, the site shall be designed to provide for a future connection. A written access easement signed by both landowners shall be presented as evidence of the parking lot connection prior to the issuance of any final zoning approval. **[SOME COMMUNITIES PROVIDE AN INCENTIVE FOR PARKING LOT CONNECTIONS BY ALLOWING A REDUCTION OF 5-10% OF REQUIRED PARKING SPACES FOR EACH USE IF THERE IS A PARKING LOT CONNECTION. SEE SECTION 2.6 FOR AN EXAMPLE.]**

H. Access Easements – Shared driveways, cross access driveways, connected parking lots, and service drives shall be recorded as an access easement and shall constitute a covenant running with the land. Operating and maintenance agreements for these facilities should be recorded with the deed.

I. Medians and Median Openings:

1. The type, location and length of medians on public roads shall be determined by the entity having jurisdiction over such roads. This determination will be made in consultation with the Planning Commission and will be based on existing and projected traffic conditions; the type, size, and extent of existing and projected development and traffic generated by development; traffic control needs; and other factors.

2. The minimum spacing between median openings shall be as shown in Table A2-5: **[INSERT LOCAL NUMBERS IF BEING APPLIED ON A ROAD NOT UNDER INDOT CONTROL.]**

**Table A2-5
Minimum Directional Median Opening Spacing**

Location	Directional crossover spacing
Urban	660 feet
Rural	1,320 feet

3. Median openings intended to serve development must meet or exceed the minimum median opening spacing standards and must also be justified by a Traffic Impact Analysis approved by the entity having jurisdiction over such roads, in consultation with the Planning Commission (*add as appropriate: or by the Planning Commission where driveways are proposed to connect to city roads*). The cost for preparation of the Traffic Impact Analysis and construction of the median opening or openings, including installation and operation of signals and other improvements, where warranted, shall be borne by the applicant.

Section 2.3 – Service Drives and Other Shared Access Standards

A. The use of shared access, parking lot connections, and service drives—in conjunction with driveway spacing—is intended to preserve traffic flow along major thoroughfares and minimize traffic conflicts, while retaining reasonable access to the property. Where noted above, or where the Planning Commission determines that restricting new access points or reducing the number of existing access points may have a beneficial impact on traffic operations and safety while preserving the property owner's right to reasonable access, then access from a side street, a shared driveway, a parking lot connection, or service drive connecting two or more properties or uses may be required instead of more direct connection to the arterial or collector street. However, where traffic safety would be improved, and the

driveway spacing requirements of this ordinance can be met, then direct connection to the arterial or collector street may be allowed in addition to a required service drive.

1. In particular, shared access, service drives, or at least a connection between abutting land uses may be required in the following cases:

- a. Where the driveway spacing standards of this section cannot be met.
- b. Where recommended in the _____ Corridor Plan (*or Access Management Plan*) and/or other corridor or sub-area plans of the _____ (*name of jurisdiction*) Comprehensive Plan.
- c. When the driveway could potentially interfere with traffic operations at an existing or planned traffic signal location.
- d. The site is along a collector or arterial with high traffic volumes, or along segments experiencing congestion or a relatively high number of crashes.
- e. The property frontage has limited sight distance.
- f. The fire (or emergency services) department recommends a second means of emergency access.

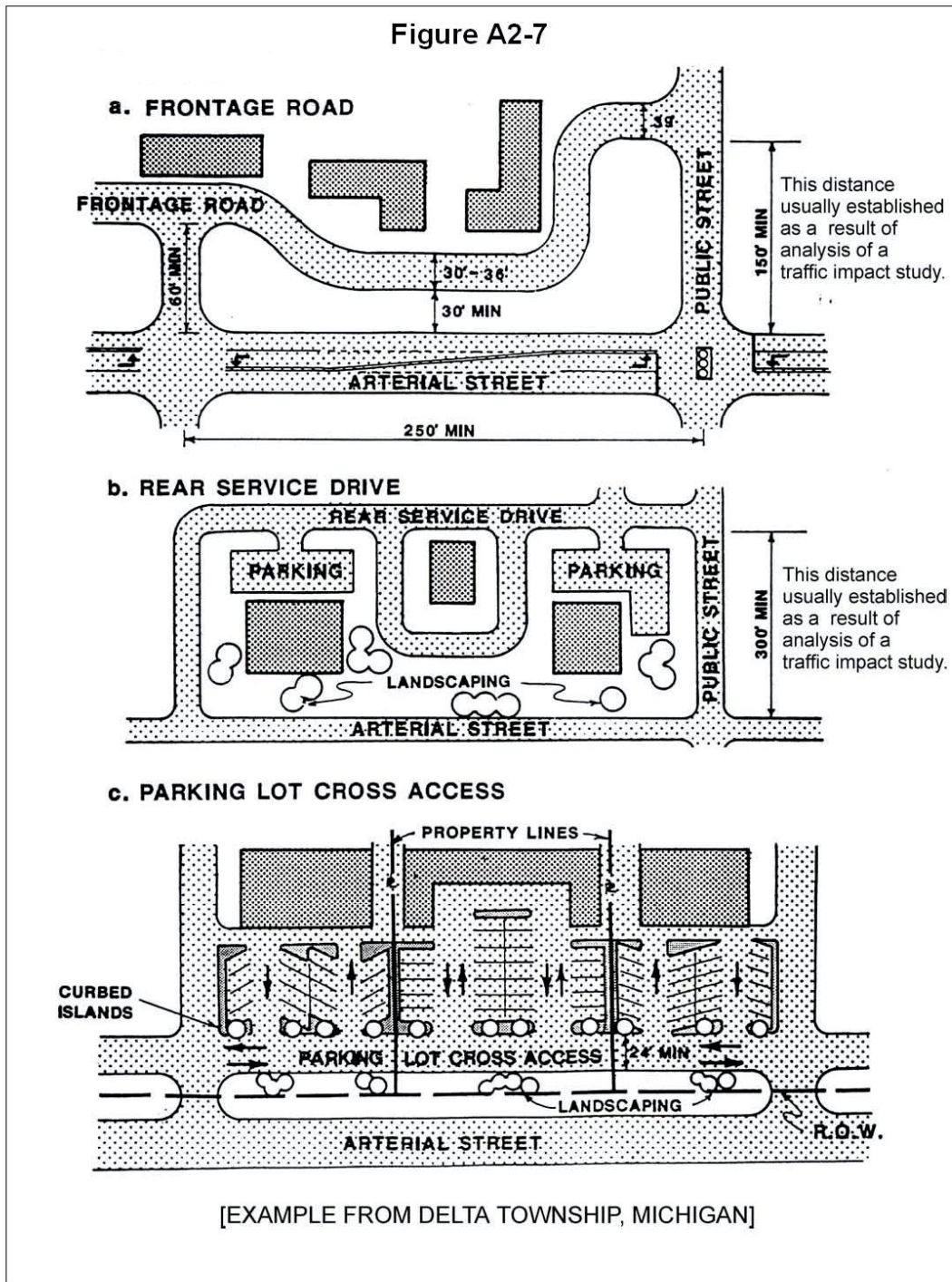
2. In areas where frontage roads or rear service drives are recommended, but adjacent properties have not yet developed, the site shall be designed to accommodate a future road/facility designed according to the standards of this Section. The Planning Commission may approve temporary access points where a continuous service drive is not yet available and a irrevocable letter of credit, performance bond [NOT PERMITTED IN SOME JURISDICTIONS], or escrow is accepted to assure elimination of temporary access when the service road is constructed. (See Section 2.4 Temporary Access Permits).

B. Notwithstanding the requirements of the _____ (*community name and Ordinance Number*) Subdivision Ordinance, the standards for all service drives shall be as follows:

1. Site Plan Review – The Planning Commission shall review and approve all service drives to ensure safe and adequate continuity of the service drive between contiguous parcels as part of the site plan review process in Section _____.
2. Front and Rear Service Drives – A front or rear service drive may be established on property that abuts only one public road. The design of a service road shall conform with national design guidelines such as those identified in the National Access Management Manual by TRB, the AASHTO “Green Book”, and National Cooperative Highway Research Program (NCHRP), “Access Management Guidelines to Activity Centers” Report 348 and “Impacts of Access Management Techniques” Report 420.
3. Location – Service roads shall generally be parallel to the front property line and may be located either in front of, or behind, principal buildings and may be placed in required yards. In considering the most appropriate alignment for a service road, the Planning Commission shall consider the setbacks of existing and/or proposed buildings and anticipated traffic flow for the site.

4. Width and Construction Materials – A service drive shall be within an access easement permitting traffic circulation between properties. The easement shall be recorded with the County Register of Deeds. This easement shall be at least forty (40) feet wide. A service drive shall have a minimum pavement width of ____ [TYPICALLY 26-36]feet, measured face to face of curb with an approach width of _____ feet [TYPICALLY 36-39 FEET] at intersections. The service drive shall be constructed of a paved surface material that is resistant to erosion and shall meet _____ (city or town, Board of County Commissioners, or INDOT – depending on what road the service drive parallels) standards for base and thickness of asphalt or concrete, unless the community has more restrictive standards.

5. Snow Storage and Landscaping Area – A minimum of fifteen (15) feet of snow storage/landscaping area shall be reserved along both sides of the service drive. Frontage roads shall have a minimum setback of 30 feet from the right-of-way, with a minimum of 60 feet of storage at the intersection for entering and exiting vehicles as measured from the pavement edge (See Figure A2-7a).



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6. Distance from Intersection on Service Drives – Frontage road and service drive intersections at the collector or arterial street shall be designed according to the same minimum standards as described for driveways in Section 2.2.D.2.

7. Driveway Entrance – The Planning Commission shall approve the location of all accesses to the service drive, based on the driveway spacing standards of this Article (*or Chapter*). Access to the service drive shall be located so that there is no undue interference with the free movement of service drive and emergency vehicle traffic, where there is safe sight distance, and where there is a safe driveway grade as established by the applicable road authority.

8. Driveway Radii – All driveway radii shall be concrete curbs and conform to the requirements of Section 2.2.E.4.

9. Acceleration Lanes and Tapers – The design of the driveway, acceleration, deceleration or taper shall conform to the requirements of Section 2.2.E.4.

10. Elevation – The elevation of a service drive shall be uniform or gently sloping between adjacent properties.

11. Service Drive Maintenance – No service drive shall be established on existing public right-of-way. The service drive shall be a public street (if dedicated to and accepted by the public), or a private road maintained by the adjoining property owners it serves who shall enter into a formal agreement for the joint maintenance of the service drive. The agreement shall also specify who is responsible for enforcing speed limits, parking and related vehicular activity on the service drive. This agreement shall be approved by the _____ (*municipality*) attorney and recorded with the deed for each property it serves by the County Recorder of Deeds. If the service drive is a private road, the local government shall reserve the right to make repairs or improvements to the service drive and charge back the costs directly or by special assessment to the benefiting landowners if they fail to properly maintain a service drive.

12. Landscaping – Landscaping along the service drive shall conform to the requirements of Section ____ (*reference applicable landscaping standards*). Installation and maintenance of landscaping shall be the responsibility of the developer or a property owners association.

13. Parking Areas – All separate parking areas (i.e. those that do not use joint parking cross access) shall have no more than one (1) access point or driveway to the service drive.

14. Parking – The service road is intended to be used exclusively for circulation, not as a parking, loading, or unloading aisle. Parking shall be prohibited along two-way frontage roads and service drives that are constructed at the minimum width (*see B.4. above*). One-way roads or two-way roads designed with additional width for parallel parking may be allowed if it can be demonstrated through traffic studies that on-street parking will not significantly affect the capacity, safety, or operation of the frontage road or service drive. Perpendicular or angle parking along either side of a designated frontage road or service drive is prohibited. The Planning Commission may require the posting of "no parking" signs along the service road. As a condition to site plan approval, the Planning Commission may permit temporary parking in the easement area where a continuous service road is not yet available, provided that the layout allows removal of the parking in the future to allow extension of the service road. Temporary parking spaces permitted within the service drive shall be in excess of the minimum required under Article____, Parking and Loading Standards.

15. Directional Signs and Pavement Markings – Pavement markings may be required to help promote safety and efficient circulation. The property owner shall be required to maintain all

pavement markings. All directional signs and pavement markings along the service drive shall conform to the current Indiana Manual of Uniform Traffic Control Devices.

16. Assumed Width of Pre-existing Service Drives – Where a service drive in existence prior to the effective date of this provision has no recorded width, the width will be considered to be _____ [TYPICALLY 40-66] feet for the purposes of establishing setbacks and measured an equal distance from the midpoint of the road surface.

17. Pedestrian and Bicycle Access – Separate, safe access for pedestrians and bicycles shall be provided on a sidewalk or paved path that generally parallels the service drive unless alternate and comparable facilities are approved by the Planning Commission.

18. Number of Lots or Dwellings Served – No more than twenty-five (25) lots or dwelling units may gain access from a service drive to a single public street.

20. Service Drive Signs – All new public and private service drives shall have a designated name on a sign meeting the standards on file in the office of the Zoning Administrator.

21. In the case of expansion, alteration or redesign of existing development where it can be demonstrated that pre-existing conditions prohibit installation of a frontage road or service drive in accordance with the aforementioned standards, the Planning Commission shall have the authority to allow and/or require alternative cross access between adjacent parking areas through the interconnection of main circulation aisles. Under these conditions, the aisles serving the parking stalls shall be aligned perpendicularly to the access aisle, as shown in Figure A2-7c, with islands, curbing and/or signage to further delineate the edges of the route to be used by through traffic.

Section 2.4 – Temporary Access Permits

A. A temporary access permit may be conditionally issued to a property included in an adopted corridor or access management plan that programs road improvements and installation of service drives and shared driveways that would eliminate the need for the temporary driveway.

B. Conditions may be included in the temporary access permit including but not limited to, a limitation on development intensity on the site until adjoining parcels develop which can provide a shared driveway, shared access via a service drive, and/or cross parking lot connection consistent with the requirements of Section 2.3.

C. A temporary access permit shall expire when the use of the site for which the temporary access permit was granted has ceased for twelve (12) months or more, or the use of the site or the driveway has changed such that the use of the driveway has increased from its initial use level at least _____ percent.

D. A site plan for property that cannot meet the access requirements of Section 2.3, nor the waiver standards in Section 2.7, and has no alternative means of reasonable access to the public road system may be issued a temporary access permit. When adjoining parcels develop which can provide a shared driveway, shared access via a service drive or a cross parking lot connection, the temporary access permit shall be rescinded and an application for an access permit consistent with the requirements of Section 2.3 shall be required.

Section 2.5 – Nonconforming Driveways

A. Driveways that do not conform to the regulations in this Article (*or Chapter*), and were constructed before the effective date of this Article (*or Chapter*), shall be considered legal nonconforming driveways. Existing driveways granted a temporary access permit are legal nonconforming driveways until such time as the temporary access permit expires.

B. Loss of legal nonconforming status results when a nonconforming driveway ceases to be used for its intended purpose, as shown on the approved site plan, or a plot plan, for a period of twelve (12) months or more. Any reuse of the driveway may only take place after the driveway conforms to all aspects of this Article (*or Chapter*).

C. Legal nonconforming driveways may remain in use until such time as the use of the driveway or property is changed or expanded in number of vehicle trips per day or in the type of vehicles using the driveway (such as many more trucks) in such a way that impact the design of the driveway. At this time, the driveway shall be required to conform to all aspects of the Ordinance.

D. When the owner of a property with an existing, nonconforming driveway or driveways applies for a permit to upgrade or change the use of the property, the Planning Commission will determine whether it is necessary and appropriate to retrofit the existing driveway or driveways.

1. The property owner may be required to establish a retrofit plan. The objectives of the retrofit plan will be to minimize the traffic and safety impacts of development by bringing the number, spacing, location, and design of driveways into conformance with the standards and requirements of this Article (*or Chapter*), to the extent possible without imposing unnecessary hardship on the property owner. The retrofit plan may include:

- a. Elimination of driveways,
- b. Realignment or relocation of driveways,
- c. Provision of shared driveways and/or cross parking lot connection,
- d. Access by means of a service drive,
- e. Restriction of vehicle movements (e.g. elimination of left-turns in and out),
- f. Relocation of parking,
- g. Traffic demand management (e.g. a reduction in peak hour trips),
- h. Signalization, or
- i. Such other changes as may enhance traffic safety.

2. The requirements of the retrofit plan shall be incorporated as conditions to the permit for the change or upgrade of use and the property owner shall be responsible for the retrofit.

E. Driveways that do not conform to the regulations in this Ordinance and have been constructed after adoption of this Ordinance shall be considered illegal driveways.

F. Illegal driveways are a violation of this Ordinance. The property owner shall be issued a violation notice that may include closing off the driveway until any nonconforming aspects of the driveway are corrected. Driveways constructed in illegal locations shall be immediately closed upon detection and all evidence of the driveway removed from the right-of-way and site on which it is located. The costs of such removal shall be borne by the property owner.

G. Nothing in this Ordinance shall prohibit the repair, improvement, or modernization of lawful nonconforming driveways, provided it is done consistent with the requirements of this Article (*or Chapter*).

Section 2.6 – Incentives

A. In order to ensure the safe and efficient movement of traffic along a road and between the road and properties abutting the road, shared driveways, service roads, and interconnected parking lots are encouraged.

B. The Planning Commission may waive the required bulk, area and coverage requirements including lot width, setbacks, density, area, height, parking, or open space otherwise required in the zoning district by up to ____ % [TYPICALLY 5-10%] when such property owner elects to provide and maintain shared driveways, service roads, or interconnected parking lots. [MOST COMMUNITIES DO NOT ALLOW ANY WAIVERS. SOME MAY WISH TO ONLY ALLOW A WAIVER ON ONE OR TWO ITEMS UP TO THE MAXIMUM AMOUNT. NOT ALL OF THESE ITEMS NEED BE INCLUDED, IF THERE IS A SENTIMENT IN FAVOR OF WAIVERS. THE TWO ITEMS OF GREATEST INCENTIVE VALUE ARE OFTEN LOT WIDTH AND PARKING. INCENTIVES ARE MOST USEFUL AT IMPROVING ACCESS IN EXISTING DEVELOPED AREAS, TRANSITION AREAS AND OTHER AREAS WHERE A RETROFIT PLAN WOULD BE BENEFICIAL.]

C. The Planning Commission reserves the authority to determine, in its discretion, the adequacy of the access management amenities to be accepted and the particular incentive to be provided to a property owner. [NOTE: MANY COMMUNITIES BELIEVE NO INCENTIVES ARE NECESSARY OR DESIRABLE, IN LIGHT OF CONCERN ABOUT EQUAL TREATMENT OF ALL PROPERTY OWNERS. SOME COMMUNITIES BELIEVE THE NEXT SECTION ON "WAIVERS AND VARIANCES" IS ALL THAT IS NEEDED.]

Section 2.7 – Waivers and Variances

A. Any applicant for access approval under the provisions of this Article (*or Chapter*) may apply for a waiver of standards in Section 2.3 if the applicant cannot meet one or more of the standards according to the procedures provided below:

1. For waivers on properties involving land uses with less than 500 vehicle trips per day (based on rates published in the *Trip Generation* manual of the Institute of Transportation Engineers):

Where the standards in this Article (*or Chapter*) cannot be met, suitable alternatives, documented by a registered traffic engineer and substantially achieving the intent of the Article (*or Chapter*) may be accepted by the Zoning Administrator, provided that all of the following apply:

- a. The use has insufficient size to meet the dimensional standards.
- b. Adjacent development renders adherence to these standards economically unfeasible.
- c. There is no other reasonable access due to topographic or other considerations.
- d. The standards in this Article (*or Chapter*) shall be applied to the maximum extent feasible.

2. For waivers on properties involving land uses with more than 500 vehicle trips per day (based on rates published in the *Trip Generation Manual* of the Institute of Transportation Engineers):

During site plan review the Planning Commission shall have the authority to waive or otherwise modify the standards of Section 2.3 following an analysis of suitable alternatives documented by a registered traffic engineer and substantially achieving the intent of this Article (*or Chapter*), provided all of the following apply:

- a. Access via a shared driveway or front or rear service drive is not possible due to the presence of existing buildings or topographic conditions.
- b. Roadway improvements (such as the addition of a traffic signal, a center turn lane or bypass lane) will be made to improve overall traffic operations prior to project completion, or occupancy of the building.
- c. The use involves the redesign of an existing development or a new use that will generate less traffic than the previous use.
- d. The proposed location and design is supported by the _____ Board of County Commissioners and/or the Indiana Department of Transportation, as applicable, as an acceptable design under the circumstances.

B. Variance Standards – The following standards shall apply when the Board of Zoning Appeals considers a request for a variance from the standards of this Article:

1. The granting of a variance shall not be considered until a waiver under Section 2.7.A or a temporary access permit under Section 2.4.D. has been considered and rejected. [SOME COMMUNITIES MAY DECIDE A VARIANCE OPTION IS NOT NEEDED BECAUSE OF THE FLEXIBILITY OFFERED IN SECTION 2.7.A AND 2.4.D. IF SO, DROP THIS SUBSECTION B. AND DROP “AND VARIANCES” FROM THE TITLE IN SECTION 2.7. IT IS NOT APPROPRIATE TO DROP EITHER SECTION 2.7 OR SECTION 2.4.D AND ONLY KEEP THE VARIANCE SECTION IN 2.7.B. ZONING BOARD OF APPEALS MEMBERS ARE NOT ADEQUATELY TRAINED TO CONSIDER DRIVEWAY OR OTHER ACCESS VARIANCES.]

2. Applicants for a variance must provide proof of practical difficulties unique to the parcel (such as wetlands, steep slopes, an odd parcel shape or narrow frontage, or location relative to other buildings, driveways or an intersection or interchange) that make strict application of the provisions of this Article (*or Chapter*) impractical. This shall include proof that:

- a. Indirect or restricted access cannot be obtained; and,
- b. No reasonable engineering or construction solution can be applied to mitigate the condition; and,
- c. No reasonable alternative access is available from a road with a lower functional classification than the primary road; and,
- d. Without the variance, there is no reasonable access to the site.

3. The Board of Zoning Appeals shall make a finding that the applicant for a variance met their burden of proof under B.2. above, that a variance is consistent with the intent and purpose of this Article, and is the minimum necessary to provide reasonable access.

4. Under no circumstances shall a variance be granted unless not granting the variance would deny all reasonable access, endanger public health, welfare or safety, or cause an unnecessary hardship on the applicant. No variance shall be granted where such hardship is self-created.

ORDINANCE OPTION 3 – BEST SUITED FOR AN URBAN COMMUNITY WITH LITTLE UNDEVELOPED LAND AND MANY RETROFIT OR REDEVELOPMENT OPPORTUNITIES

[OPTION 3 IS OPTION 2 MODIFIED TO MEET THE NEEDS OF A PARTICULAR URBAN SITUATION. USUALLY THE LOTS ARE NARROWER ALONG MAJOR ARTERIALS IN AN OLD CITY OR TOWN. IN ADDITION, THE NATURE OF LAND USE CHANGE INCLUDES MUCH MORE ADAPTIVE REUSE AND REDEVELOPMENT ALONG MAJOR ARTERIALS IN A BUILT-OUT CITY, THAN IN A SUBURBANIZING TOWNSHIP OR RURAL AREA. IT MAY ALSO BE NECESSARY TO EITHER EXEMPT THE DOWNTOWN FROM THE ACCESS MANAGEMENT STANDARDS, OR TO ADOPT A DIFFERENT SET OF ACCESS MANAGEMENT STANDARDS IN THE DOWNTOWN BECAUSE:

- LOTS ARE OFTEN MUCH NARROWER,
- SPEED LIMITS AND TRAFFIC IS MUCH SLOWER,
- THERE ARE MANY MORE SIGNALIZED INTERSECTIONS AND THEY ARE OFTEN CLOSER TOGETHER,
- THERE ARE MANY MORE PEDESTRIANS AND BICYCLES,
- MANY DELIVERY TRUCKS DOUBLE PARK BECAUSE THERE ARE INADEQUATE PLACES FOR LOADING AND UNLOADING,
- MANY BLOCKS WITH ON-STREET PARKING AND NO DRIVEWAYS,
- VACANT LAND IS NOT AVAILABLE FOR SERVICE DRIVES,
- BUILDING SETBACKS ARE TYPICALLY MUCH LESS THAN IN SUBURBAN AREAS, OR
- PARKING MAY BE PROVIDED OFF-SITE OR PARKING MAY BE IN A RAMP INSTEAD OF AT GROUND LEVEL.

CONSEQUENTLY, THE SAMPLE LANGUAGE IN OPTION 2 WOULD NEED TO BE MODIFIED IN THE FOLLOWING WAYS TO BEST FIT EACH INDIVIDUAL URBAN SITUATION:

- THE DRIVEWAY AND INTERSECTION SPACING STANDARDS IN SECTION 2.2.D. MAY NEED TO BE REDUCED BECAUSE OF PREEXISTING NARROWER AND SHALLOWER LOTS THAT DO NOT PERMIT MANY OPPORTUNITIES FOR SHARED DRIVEWAYS, FRONTAGE ROADS OR REAR SERVICE DRIVES.
- SOME OF THE TECHNICAL CONSTRUCTION STANDARDS MAY NEED TO BE REDUCED (LIKE DRIVEWAY WIDTH) IN KEEPING WITH REDUCED SPACE (NARROW LOTS) AND SLOWER SPEEDS.
- ALTERNATIVE ACCESS OPTIONS IN SECTION 2.3 MAY BE LESS FEASIBLE BECAUSE OF NARROW LOT WIDTH, SHALLOW LOT DEPTH, AND A LARGE NUMBER OF SHALLOW SETBACK BUILDINGS.
- PEDESTRIAN AND SERVICE VEHICLE CONSIDERATIONS MAY HAVE A HIGHER STATUS THAT MAY AFFECT THE ABILITY TO APPLY SOME STANDARDS.
- PARKING FACILITY DESIGN WILL HAVE DIFFERENT IMPORTANCE AND RAMPS WILL IMPOSE NEW CONSIDERATIONS.
- SIGNAL SPACING WILL BE DETERMINED BY EXISTING BLOCKS.

- MEDIANS BECOME LANDSCAPING OPPORTUNITIES AS WELL AS TRAFFIC CONTROL DEVICES.
- THE INCENTIVES IN SECTION 2.6 MAY NEED TO BE RELIED UPON MORE FREQUENTLY, BUT WILL PROBABLY NEED TO BE MODIFIED AS LOT WIDTH IS USUALLY ESTABLISHED AND PARKING MAY BE PROVIDED BY THE COMMUNITY.
- THE PROCESS AND STANDARDS FOR WAIVERS AND VARIANCES IN SECTION 2.7 MAY NEED TO BE REFINED.

APPENDIX "B" ACCESS MANAGEMENT RETROFIT TOOLBOX

1.0 Retrofit Techniques: Access/Driveway Location and Operation

The following retrofit techniques are described below:

- 1) Consolidate and/or relocate driveways.
- 2) Encourage adjacent properties to share access.
- 3) Coordinate driveway locations on both sides of the roadway.
- 4) Maximize corner clearance by locating access as far from the intersection as possible (i.e. near the property line).
- 5) Provide separate left-turn entrances and exits at major traffic generators.
- 6) Install barrier to prevent uncontrolled access along property frontage.
- 7) Install driveway channelizing island to discourage left-turn maneuvers.

1.1 Consolidate and/or relocate driveways

Description

Access connections are eliminated or relocated to reduce the number of conflict points and increase the spacing between conflict points. Access connections are located on lower-function roadways when conditions allow.

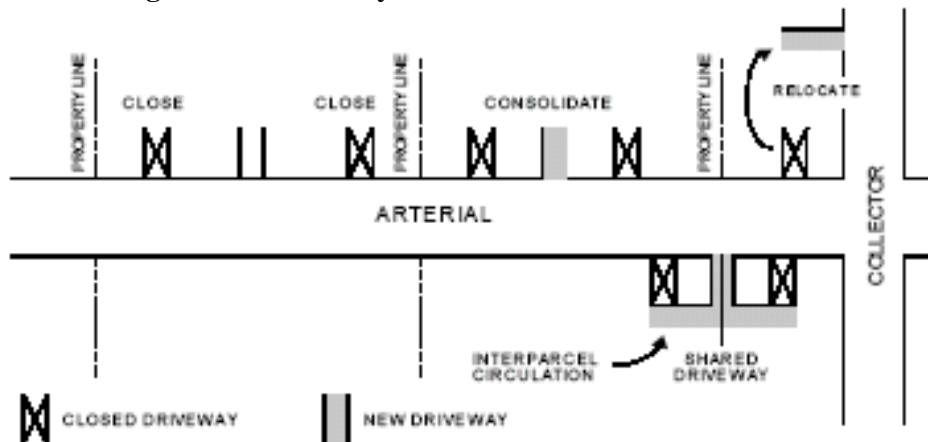
Applications

- 1) Site specific, on roadways intended to serve through travel, where there are a high number of access connections per mile.
- 2) The traffic related to access connections has a significant adverse impact on roadway safety and operations.

Implications

- Less driver confusion.
- Improved safety.

Figure B-1: Driveway Consolidation and/or Relocation



1.2 Encourage adjacent properties to share access

Description

The provision of a shared, or joint-use, access connection onto a roadway to minimize the number of conflict points.

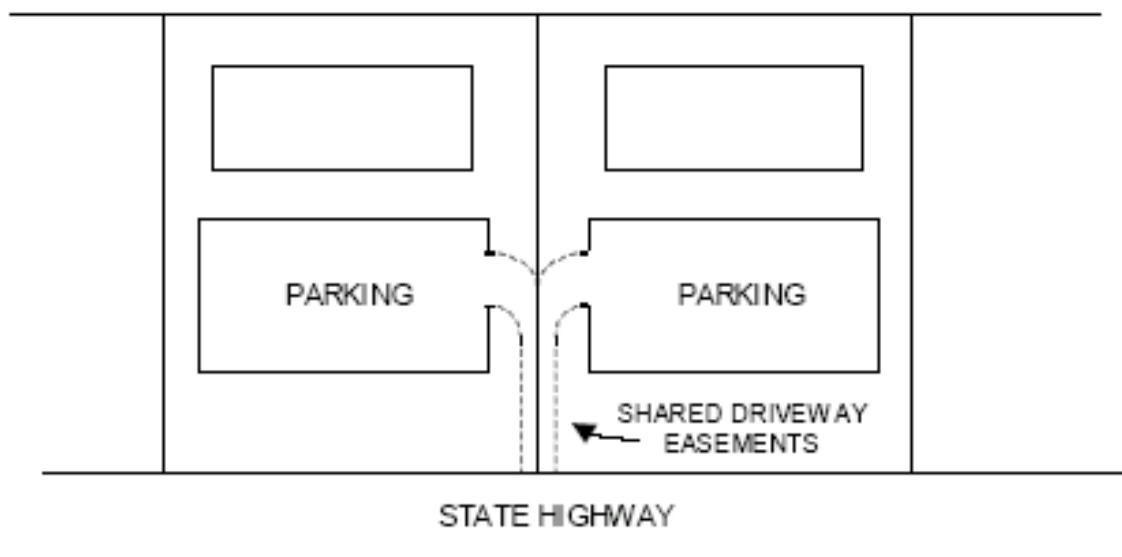
Application

Site specific, where the elevations and nature of the land uses are compatible and local conditions warrant.

Implications

- Adjacent land uses should not require separate access connections.
- Reduces roadway conflicts and improves safety.

Figure B-2: Shared Driveways



1.3 Coordinate driveway locations on both sides of the roadway

Description

Aligning access connections on opposite sides of a roadway to create a single four-leg intersection, or providing a sufficient offset distance between driveways to avoid problems with queue spillback.

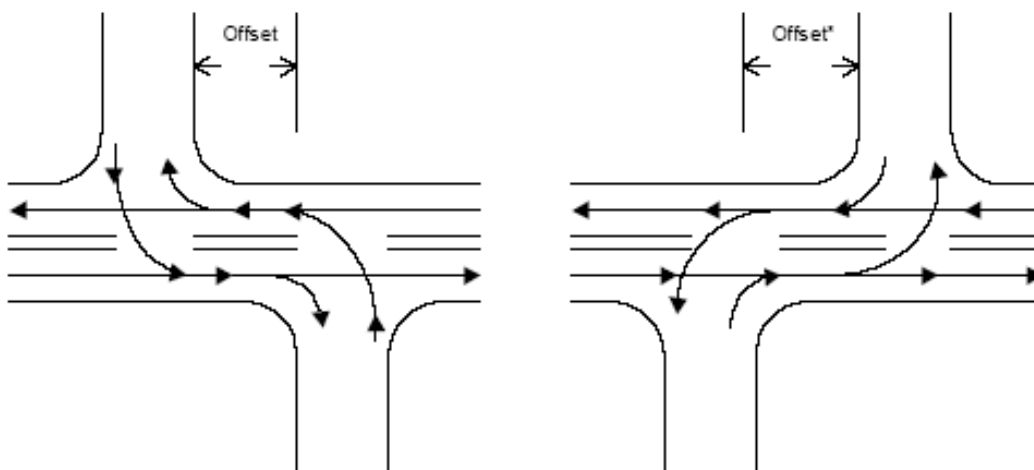
Applications

- 1) On roadways where there is an excessive number of closely-spaced access connections on both sides of the roadway, and as a result, there are safety and operational problems such as inadequate storage distances for turning traffic.
- 2) Increasing offsets applies to low-volume and low-speed roadways.

Implications

- Reduces conflicting movements along a roadway and improves safety.
- Simplifies signalization where traffic signals are involved.
- Increases available storage distances.

Figure B-3: Driveway Location Coordination



Align driveways or, as shown above, provide sufficient offset distance.
*Offset** = Sum of storage requirements for both left-turn movements on the arterial.

1.4 Maximize corner clearance by locating access as far from the intersection as possible (i.e. near the property line)

Description

Move or locate an access connection, and its associated conflict area, as far from an intersection as possible.

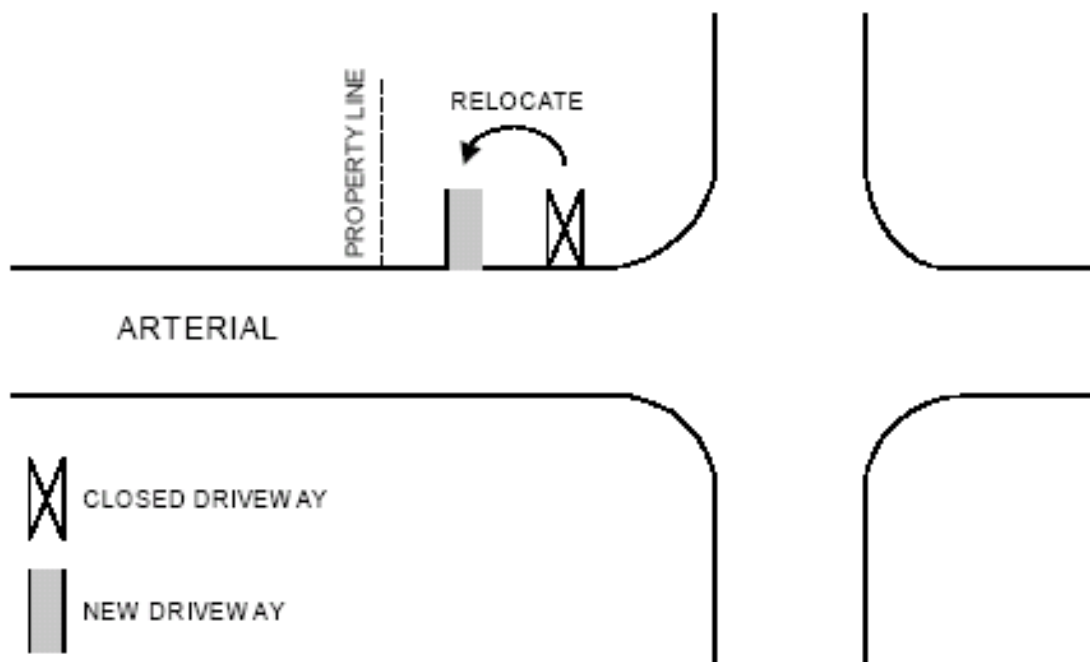
Applications

- 1) On the approaches to an intersection where the frontage of the abutting properties would allow the relocation of the access connection to be shifted away from the intersection.
- 2) Where there is an access connection upstream of an intersection that is blocked by standing queues that extend from the intersection.

Implications

- Reduces driver confusion.
- Separates conflicts and improves safety.

Figure B-4: Corner Clearance Retrofit



1.5 Provide separate left-turn entrances and exits at major traffic generators

Description

Replaces either one or two full-movement access connections with two limited-turn connections to separate the left-turn movements to and from the site.

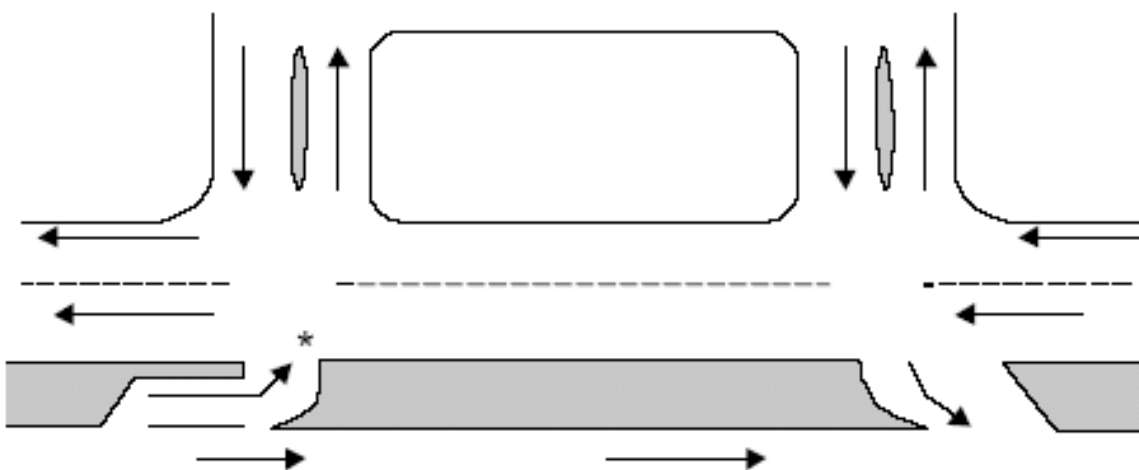
Applications

- 1) Mainly applicable on divided roadways at regional shopping centers or major traffic-generators with significant left-turn volumes and sufficient frontage to provide for adequate separation distances between the two connections.
- 2) Where there is insufficient storage distance for the turning movements at the two or more existing full-movement driveways.

Implications

- Reduces conflicts at each location.
- Where driveways are signalized, allows for two-phase signal operation.
- Disperses entering and exiting traffic within the development site.

Figure B-5: Left-turn Entrances and Exits at Major Traffic Generators



* = Median opening should be designed to physically prohibit the left-turn exit from the development.

1.6 Install barriers to prevent uncontrolled access along property frontage

Description

The installation of a barrier (i.e. a guide rail or curbing) between the edge of a roadway and the parking area to narrow the access connection and reduce the conflict area.

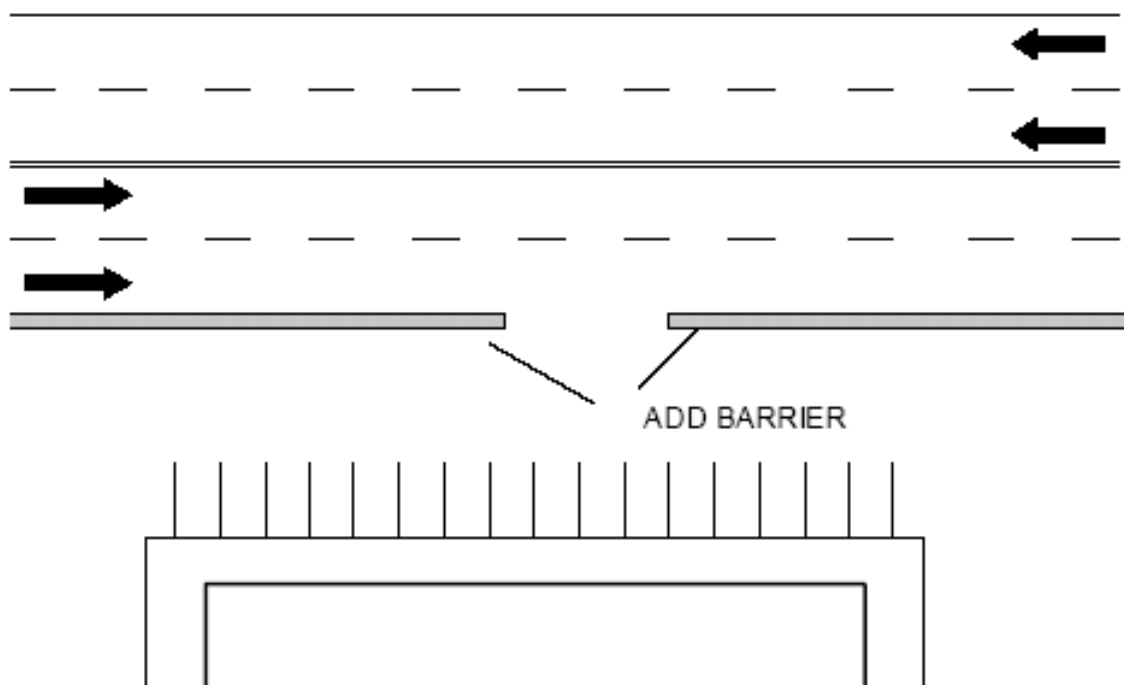
Application

Strip commercial developments where the parking areas are not physically separated from the adjacent roadway, and as a result, the driveway openings are not defined.

Implications

- Defines driveways and improves driveway visibility.
- Reduces number of conflicting movement locations and improves safety.
- Makes walking easier and safer for pedestrians, and allows for sidewalks.

Figure B-6: Installation of Barriers



1.7 Install driveway channelizing island to discourage left-turn maneuvers

Description

A channelizing island is used in a driveway throat at its intersection with a roadway to restrict selected left-turn movements and limit the basic crossing conflicts.

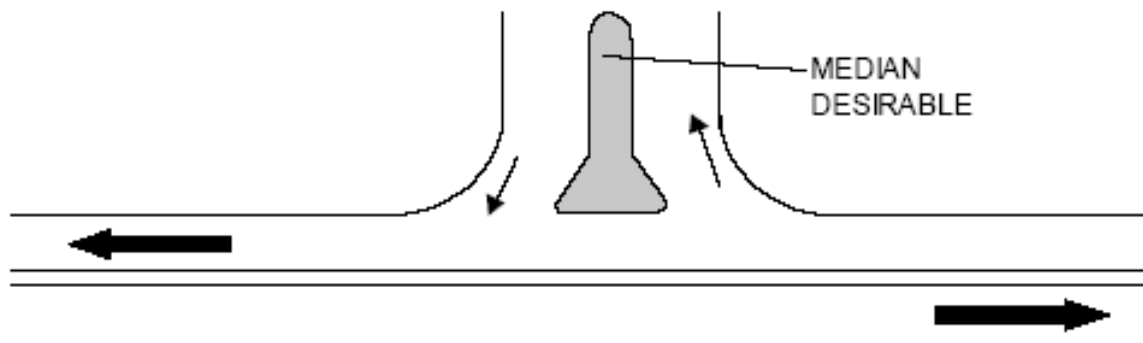
Applications

- 1) Where left-turns are undesirable, and there is a need to restrict driveway movements to right-in/right-out on undivided roadways.
- 2) Where there is a high accident rate or frequency related to left-turn movements.

Implications

- Eliminates left-turn conflicts where these movements are problems.
- Provides pedestrian refuge at high-volume driveways.
- May need enforcement to prevent wrong-way moves.

Figure B-7: Driveway Channelizing to Restrict Left-Turns



2.0 Retrofit Techniques: Roadway Design

The following techniques are considered:

- 1) Construct or modify median to allow only left turns from a major roadway.
- 2) Install two-way left-turn lane.
- 3) Provide left-turn deceleration lane.
- 4) Provide right-turn deceleration lane.
- 5) Install right-turn deceleration lane to serve several driveways.
- 6) Install non-traversable median with left-turn deceleration lane.

2.1 Construct or modify median to allow only left-turns from a major roadway

Description

A median opening is reconfigured to eliminate the left-turn movement from an abutting property onto the roadway.

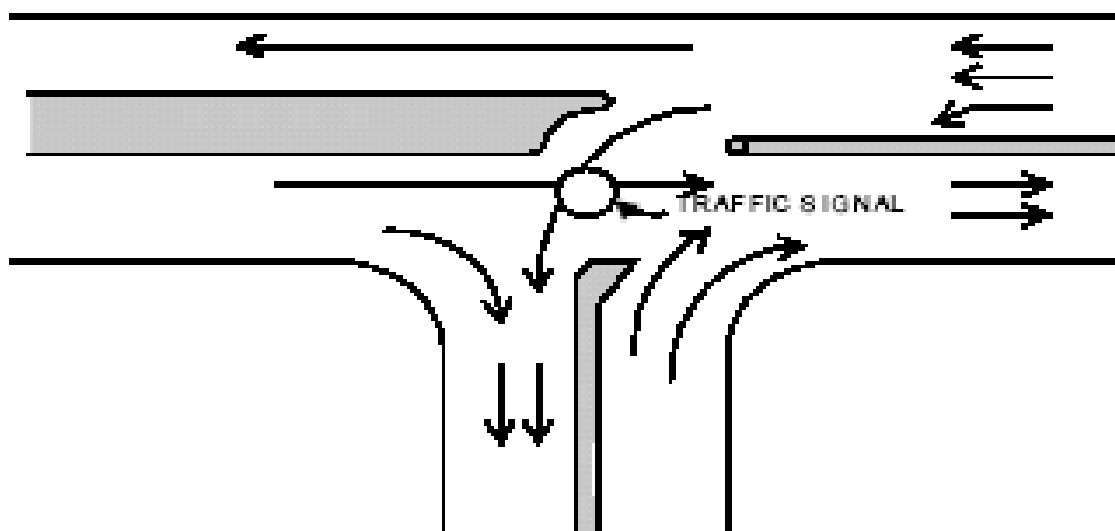
Application

Where there are safety or operational problems caused by the left-turn egress movement from a development and the re-routing of traffic that would occur as a result of the left-turn restriction could be satisfactorily accommodated.

Implications

- Reduces conflicts and delays.
- Where only one direction of travel is signalized, signals can be installed without adversely affecting progression.
- Adequate provisions are needed for the U-turns that will be made instead of direct left-turn exits.

Figure B-8: Median Modification



2.2 Install two-way left-turn lane

Description

A flush, painted median lane for making left-turns from a roadway.

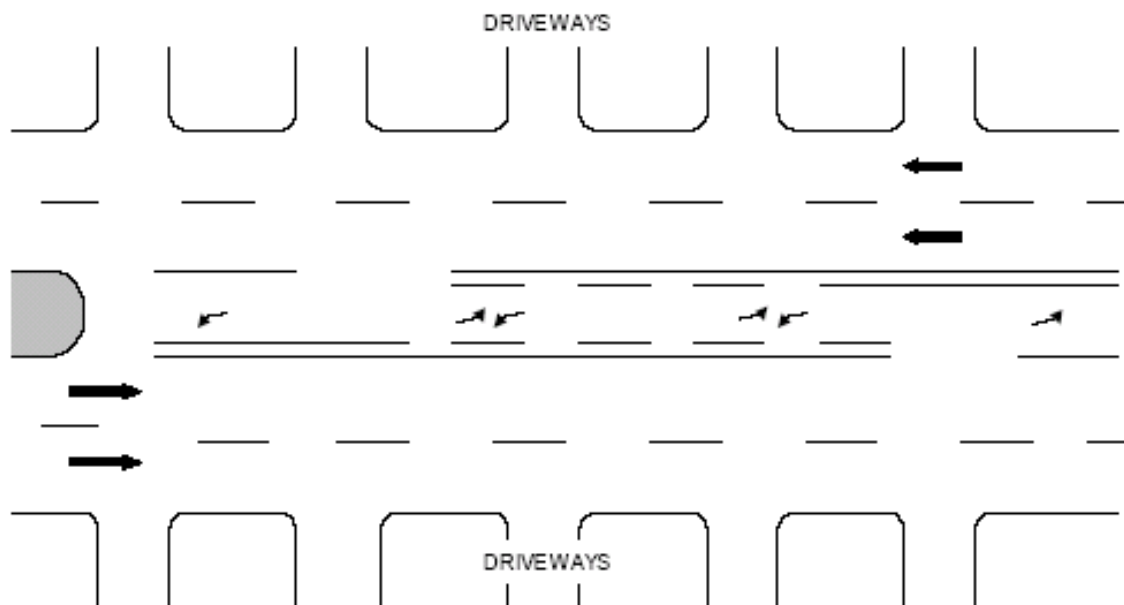
Applications

- 1) Roadway sections where numerous, closely-spaced, low-volume access connections exist and projected traffic volume is less than 24,000 vehicles per day.
- 2) Minor urban roadways that are intended to provide access to small commercial parcels.

Implications

- Removes left-turns from through travel lanes.
- Reduces accident rates relative to undivided cross-section.
- Permits use of center lane for left-turns exiting from abutting property.

Figure B-9: Installation of Two-Way Left-Turn Lane (TWLTL)



2.3 Provide left-turn deceleration lane

Description

An auxiliary left-turn lane on the roadway to remove the left-turning vehicles from the through travel lanes.

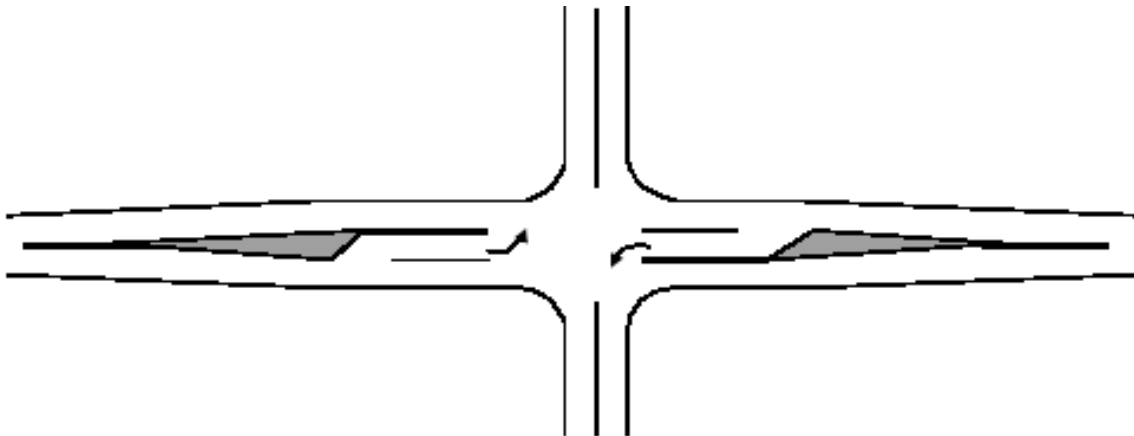
Applications

- 1) Where it is desirable to provide a protected area for left-turning vehicles.
- 2) To improve traffic safety where there is a pattern of rear-end collisions or collisions involving left-turns.

Implications

- Lanes may be provided by widening roadway, by placing lane within a median, or by re-striping roadway with narrower lanes, depending upon physical conditions.
- Improves traffic operations and safety by removing turning vehicles from through lane.
- Increases capacity at signalized intersections.

Figure B-10: Left-Turn Deceleration Lane



2.4 Provide right-turn deceleration lane

Description

An auxiliary right-turn lane on the roadway to remove the right-turning vehicles from the through travel lanes.

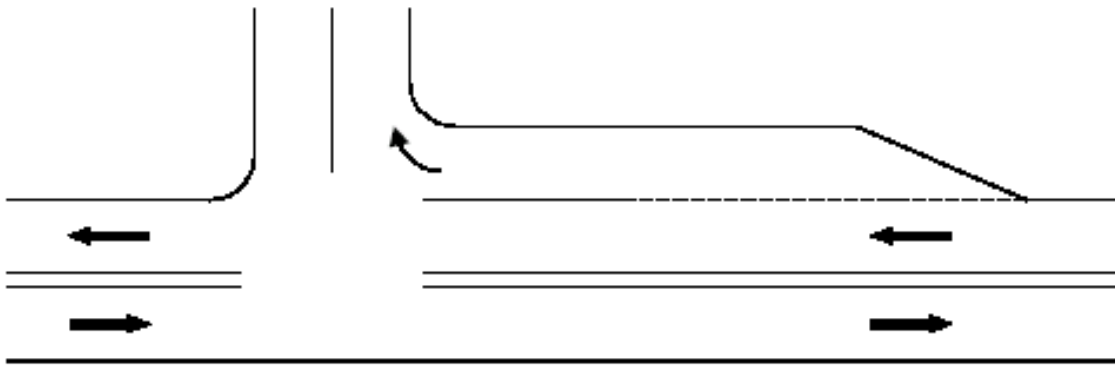
Application

Where it is desirable to provide a protected area for right-turning vehicles. To improve traffic safety where there is a pattern of rear-end collisions or collisions involving right turns.

Implications

- Increases capacity at signalized intersections.
- May not be desirable along multi-lane roads where a high volume of pedestrians are present (i.e. to avoid excessive width).

Figure B-11: Right-Turn Deceleration Lane



2.5 Install right-turn deceleration lane to serve several driveways

Description

An auxiliary lane that removes right-turning vehicles for a series of driveways from the through travel lanes.

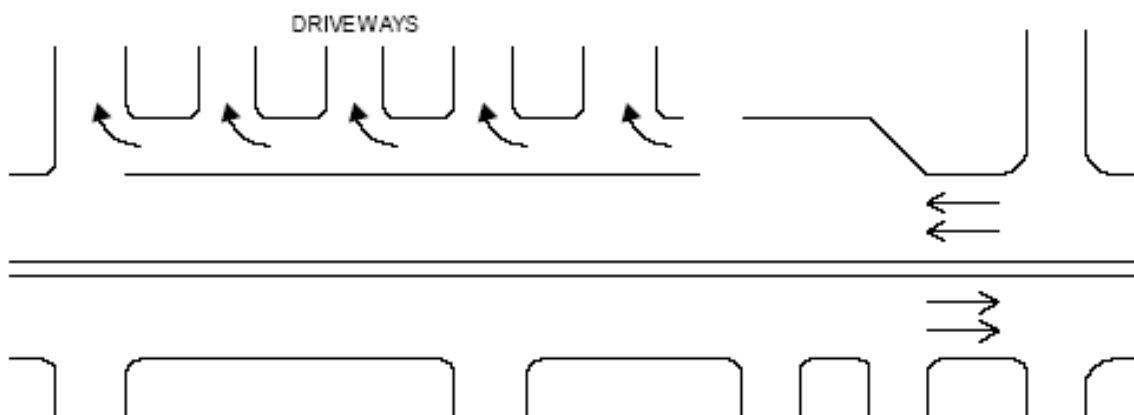
Applications

- 1) Sections of roadway where the spacing of direct access connections makes the construction of separate right-turn lanes impractical.
- 2) Where it is desirable to remove the right-turn movements from the through travel lane to reduce delays to the through traffic.
- 3) Where there has been a problem with rear-end conflicts caused by right-turning vehicles along a roadway section with numerous access connections.

Implications

- Reduces speed differential between through and right-turning vehicles.
- Reduces delay to through vehicles.
- Length should be limited to discourage use by through traffic.
- Allows for right-in and right-out.

Figure B-12: Right-Turn Deceleration Lane Serving Several Driveways



2.6 Install non-traversable median with left-turn deceleration lane

Description

The installation of a non-traversable median on multilane roadways prevents left-turns and U-turns across the median except at a few designated locations.

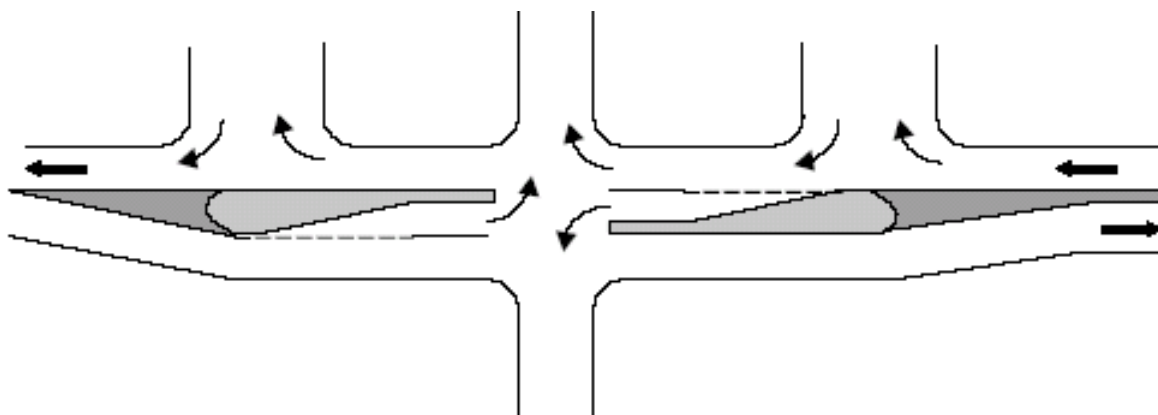
Applications

- 1) Where there are safety and operational problems caused by left-turn movements at minor access connections that are located near major intersections.
- 2) Where there is a need to allow for the deceleration and storage of left-turning vehicles outside of the through travel lanes.
- 3) High-accident experience associated with mid-block, left-turning vehicles.

Implications

- Reduces head-on conflicts.
- Reduces accident rate as compared to an undivided roadway section.
- May limit access to some developments to right-turns only.
- Where a continuous median is installed, property owners may express concern over possible loss in business. Generally, effects are greatest on drive-by activities. Economic impacts tend to decrease as traffic volumes increase because safe access is enabled by medium openings.

Figure B-13: Installation of Non-Traversable Median



Author's note: The materials in this appendix were adapted from Chapters III-F and III-G prepared by Urbitran Associates, Inc. of the *Review of SDDOT's Highway Access Control Process, Study SD99-01: Final Report*, prepared by Dye Management Group, Inc. in February 2000.

APPENDIX "C"
COVENANT LIMITING LAND USES

Covenant Limiting Land Uses

This covenant is made and entered into this _____ day of _____, 20____, by _____ (hereinafter referred to as OWNER) and the State of Indiana, acting by and through the Indiana Department of Transportation (hereinafter referred to as INDOT).

In consideration for INDOT granting commercial driveway permit # _____ for the construction of an approach from the property described in Attachment _____ onto State Highway _____ at reference post _____, the property owner hereby warrants that there will not be any development of the site that would generate traffic in excess of that which would result in the following:

Based on the submitted Traffic Analysis dated _____, the following land use densities are permitted:

Land Use	Size
• _____	_____
• _____	_____
• _____	_____
• _____	_____
• _____	_____
• _____	_____

This covenant does not limit the owner from a change in land uses, subject to a new Traffic Analysis that would support that the total traffic volumes of the proposed changes do not exceed the total traffic volumes identified in the original Traffic Analysis dated _____.

The OWNER further covenants that no access will be granted to adjacent parcels.

These commitments may be enforced by INDOT, and INDOT may seek any legal or equitable remedy, including specific performance available under Indiana law. Any dispute with respect to these commitments shall be litigated in Indiana.

It is understood and agreed that this covenant shall run with the land and shall be binding upon the parties and all persons claiming under them.

District Regulatory Supervisor

Name of OWNER – Print or Type

District Deputy Commissioner

Signature of OWNER

Address (number and street)

City, State, Zip Code

Phone number

ACKNOWLEDGEMENT

State of Indiana, County of _____ SS:

Before me, the undersigned Notary Public in and for the said County personally appeared

Name of Signer (print or type)

and acknowledge the execution of the foregoing contract this _____ day of _____, 20__.

Witness my hand seal the said last named date.

My Commission Expires:

Notary Public

County of Residence

ACKNOWLEDGEMENT

State of Indiana, County of _____ SS:

Before me, the undersigned Notary Public in and for the said County personally appeared

Name of Signer (print or type)

and acknowledge the execution of the foregoing contract this _____ day of _____, 20__.

Witness my hand seal the said last named date.

My Commission Expires:

Notary Public

County of Residence

This Instrument reviewed by: _____
INDOT Attorney

APPENDIX "D"
FUTURE TRAFFIC SIGNAL COMMITMENT



FUTURE TRAFFIC SIGNAL COVENANT

State Form 48176 (R / 3-00)

Approved by State Board of Accounts, 2000

This covenant is made and entered into this _____ day of _____, 20____, by
(hereinafter referred to as OWNER)

(Property Owner's Name - Print or Type)

and the State of Indiana, acting by and through the Indiana Department of Transportation
(hereinafter referred to as INDOT)

In consideration for INDOT granting commercial driveway permit # _____
for the construction of an approach from the property as described in Attachment "A" onto highway # _____
at reference post # _____, INDOT in
its sole discretion may require OWNER and his/her successors, or assigns to design and install a traffic
signal at the above location when the minimum warrants for a traffic signal are met. INDOT shall perform
or cause to be performed a traffic signal analysis at the intersection of the driveway with the highway.
The traffic signal analysis shall be performed in accordance with the Indiana Manual on Uniform Traffic
Control Devices.

The cost to design and prepare plans and specifications, cost of warrant analysis, cost of construction of
traffic signal and appurtenances, cost to acquire and required right-of-way, cost of reimbursable utility
expenses, cost to solicit and let bids, cost to inspect construction, and cost of electrical energy shall be
borne by the OWNER. The cost of maintenance shall be borne by INDOT. All of the work shall be done as
per current INDOT standards and by INDOT approved Registered Professional Engineer/Contractor.

It is understood and agreed that this covenant shall run with the land and shall be binding upon the
parties and all persons claiming them. This covenant shall automatically terminate ten (10) years
from the date of its execution.

A separate agreement shall be prepared by INDOT to be entered into by OWNER for the installation of a
traffic signal.

District Regulatory Supervisor

Name of Owner - Print or Type

Signature of Owner

District Traffic Engineer

Address (number and street)

City, State, ZIP Code

District Director

Telephone

FUTURE TRAFFIC SIGNAL COVENANT

State Form 48176 (R / 3-00)

Approved by State Board of Accounts, 2000

ACKNOWLEDGMENT

State of _____, County of _____, SS:

Before me, the undersigned Notary Public in and for the said County personally appeared

(Name of Signer)

and acknowledged the execution of the foregoing contract this _____ day of _____, 20____.

Witness my hand seal the said last named date.

My commission expires

Notary Public

County of Residence

ACKNOWLEDGMENT

State of _____, County of _____, SS:

Before me, the undersigned Notary Public in and for the said County personally appeared

(Name of Signer)

and acknowledged the execution of the foregoing contract this _____ day of _____, 20____.

Witness my hand seal the said last named date.

My commission expires

Notary Public

County of Residence

This Instrument Reviewed by:

INDOT - ATTORNEY

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APPENDIX "E"
MEMORANDUM OF UNDERSTANDING FOR
INTERGOVERNMENTAL COOPERATION IN ACCESS MANAGEMENT

MEMORANDUM OF UNDERSTANDING
FOR INTERGOVERNMENTAL COOPERATION
IN ACCESS MANAGEMENT

BETWEEN
THE INDIANA DEPARTMENT OF TRANSPORTATION
AND
(insert of name of LOCAL PUBLIC AGENCY)

This MEMORANDUM OF UNDERSTANDING (“MOU”) is entered into this _____ day of _____, 2009, by and between the Indiana Department of Transportation (“INDOT”) and the _____ insert name _____ (hereafter referred to as the LOCAL PUBLIC AGENCY), and collectively referred to herein as “Party” or “Parties”.

RECITALS

WHEREAS, INDOT is responsible for building, maintaining and operating a superior State transportation system for enhancing safety, mobility and economic growth; is responsible for access management on the State Highway System to preserve transportation carrying capacity and to improve safety; and is responsible for issuing driveway or right-of-way encroachment permits affecting access to the State Highway System; AND

WHEREAS, the LOCAL PUBLIC AGENCY is responsible for the review and approval of the subdivision and development of lands abutting and in proximity to the State Highway System; AND

WHEREAS, INDOT and the LOCAL PUBLIC AGENCY find that it is in the mutual interest of both parties to coordinate the approval of the location, manner and design of access to and from properties abutting and in proximity to the State Highway System with the review and approval of development and subdivision of land;

NOW, THEREFORE, the parties agree as follows:

1. INDOT’s Agreements.
 - a. INDOT agrees to notify the LOCAL PUBLIC AGENCY of applications for driveway or right-of-way encroachment permits from developers to ensure the developer has or will comply with local land use regulations relative to local development review and approval. *(Note: This is intended to coordinate the review of INDOT and the LOCAL PUBLIC AGENCY to ensure the approval of one Party does not occur without the knowledge and input of the other.)*
 - b. INDOT agrees to notify the LOCAL PUBLIC AGENCY of agreements with developers concerning future signalization, roadway improvements and access control restrictions. *(Note: This will enable the LOCAL PUBLIC AGENCY to help INDOT with agreement enforcement.)*

- c. INDOT agrees to notify the LOCAL PUBLIC AGENCY about planned roadway improvements prior to the execution of design contracts so that existing and planned crossroad improvements, and access management to abutting properties, may be addressed in the scope of design.
- d. INDOT agrees to involve the LOCAL PUBLIC AGENCY in design plan review before the roadway design is finalized, and prior to any public meetings or hearings, so that the treatment of existing and planned crossroad improvements and access management to abutting properties may be reviewed.

2. LOCAL PUBLIC AGENCY Agreements.

- a. The LOCAL PUBLIC AGENCY agrees to notify INDOT in the event of any of the following land use actions:
 - i. Proposed major residential subdivisions or land use re-zonings of properties --
 - 1. abutting the State right-of-way, or
 - 2. with access via a local crossroad that has property with access within a ¼-mile of the State right-of-way, and meeting INDOT warrants for a Traffic Impact Study.
 - ii. New land use approvals (including special exceptions, special uses, contingent uses, conditional uses or use variances) before the local board of zoning appeals when properties abut the State right-of-way.
 - iii. Proposals for minor residential subdivisions with direct access to State roadways. *(Note: INDOT needs to verify adequate sight distance and driveway spacing. If the road is limited access, INDOT must verify entrance location is permitted and may require joint-use driveways or frontage roads if proposed entrance is not permitted or violates spacing requirements.)*
- b. The LOCAL PUBLIC AGENCY agrees to notify INDOT of
 - i. any local site plan reviews, and
 - ii. any local review actions concerning commercial developments (apartments, retail, office, industrial or institutional)
 - 1. if the site abuts the State right-of-way, or
 - 2. if the site access is via a local crossroad that has property with access within a ¼-mile of the State right-of-way and the site trip generation meets INDOT warrants for a Traffic Impact Study.
- c. For all new buildings abutting State right-of-way (as well as expansions and changes to existing commercial uses), the LOCAL PUBLIC AGENCY agrees to coordinate the local building permit process with INDOT to ensure the existing driveways can accommodate or be improved to accommodate additional site traffic. *(Note: Sometimes, commercial drives cannot be improved to accommodate additional site traffic.)*

d. The LOCAL PUBLIC AGENCY agrees to notify INDOT of dimensional variances (such as structure setbacks and height standards) on corner properties of State/crossroad intersections to ensure preservation of corner sight triangles and to avoid conflicts with traffic control devices.

3. Duration and Renewal of MOU. This MOU shall have no termination date, unless amended or terminated as provided herein.

4. Amendment. No alteration, modification, or amendment to this MOU is permitted, except by written agreement signed by the parties.

5. Dispute Resolution. Any dispute arising hereunder shall be submitted to the Indiana Department of Administration for final resolution.

6. Captions. All captions, section headings, paragraph titles and similar items are provided for the purpose of reference and convenience and are not intended to be inclusive, definitive or to affect the interpretation of this MOU.

7. Integration. This MOU and any documents or exhibits incorporated into this MOU represent the entire understanding between the Parties. Each Party hereby represents that it will not rely upon any agreement, contract or understanding not reduced to writing and incorporated into this MOU prior to the execution hereof or not reduced to writing and incorporated into written amendments of this MOU.

Non-Collusion and Acceptance

The undersigned attests, subject to the penalties for perjury, that he/she is the contracting party, or that he/she is the properly authorized representative, agent, member or officer of the contracting party, that he/she has not, nor has any other member, employee, representative, agent or officer of the contracting party, directly or indirectly, to the best of the undersigned's knowledge, entered into or offered to enter into any combination, collusion or agreement to receive or pay, and that he/she has not received or paid, any sum of money or other consideration for the execution of this MOU.

In Witness Whereof, the PARTIES have, through their duly authorized representatives, entered into this Contract. The PARTIES, having read and understood the foregoing terms of this Contract, do by their respective signatures dated below hereby agree to the terms thereof.

OFFERED BY STATE OF INDIANA:
Indiana Department of Transportation

ACCEPTED BY:
(Insert Name of Local Public Agency)
Known as LOCAL PUBLIC AGENCY

By: _____
(insert Name and Title)

By: _____
(insert Name and Title)

Date: _____

Date: _____