Technical Report #4

Indiana Statewide Access Management Study

Implementation Plan

DRAFT

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Indiana Department of Transportation
Long-Range Transportation Planning Division

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 EXECUTIVE SUMMARY

(Will be prepared in conjunction with a final draft report incorporating INDOT comments.)

2.0 INTRODUCTION

2.1 Study Description

The overall objective of the Indiana Statewide Access Management Study is to assist INDOT in the development of an access management program that will support the refinement of the INDOT Long-Range Transportation Plan in terms of implementing the Statewide Mobility Corridor Concept. This program is intended to preserve and improve the functional integrity of Indiana's State highway system and is strongly rooted in three of INDOT's six values as stated in the INDOT Strategic Plan:

> *Value: Customer Focus – We will understand and meet the needs of our customers in our policy, program development, and decision making processes.*
>
> *Value: Continuous Improvement – We will continually improve our business processes through better products, practices, procedures and information-based decision making.*
>
> *Value: Safety – We will create, maintain and promote a safe work environment for our employees and continually strive to reduce incidents and severity of traffic related accidents and injuries.*
>
> Source: INDOT website – About INDOT: http://www.in.gov/dot/about/general/sp.html

The work activities for this study involve reviewing Indiana's current access management process and identifying its limitations, as well as opportunities for its refinement. The following highlights some of the key project issues that are addressed in the scope of work:

- Crafting a pragmatic approach that fits Indiana's conditions.
- Reflecting the diversity of transportation conditions in Indiana.
- Addressing Indiana's institutional and policy environment.
- Explaining the benefits of access management enhancements.
- Drawing creatively from lessons learned in other states.
- Assessing what can be accomplished within the existing framework.
- Establishing agreement on recommendations and implementation approach.
- Improving stakeholder understanding about access management.

2.2 Scope of this Report

As part of the Indiana Statewide Access Management Study, the consultant team led by Urbitran Associates has identified the recommendations in this draft implementation plan based on the following tasks that were completed and documented earlier in the study:

- Reviewed the legal framework (including relevant statutes and case law) that currently governs rights of access in Indiana;

- Conducted a comprehensive assessment of current access management practices in Indiana, including both the existing INDOT driveway permit process, as well as its relationship to local land development approval processes; and

- Developed a draft Access Classification System (ACS) for Indiana based on INDOT's Planning Level Corridor Hierarchy concept, and by applying lessons learned in other states and input from the Study Advisory Committee (SAC).

The implementation plan is introduced in this report after providing a general description of access management (Section 3.0 – *What is Access Management?*), as well as an overview of its benefits (Section 4.0 – *Benefits of Access Management*). This report then provides a draft plan for implementing the recommendations and work products from the previous tasks described above. The recommendations associated with the implementation plan are outlined in Section 5.0 – *Access Management Implementation Recommendations*.

3.0 WHAT IS ACCESS MANAGEMENT?

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.

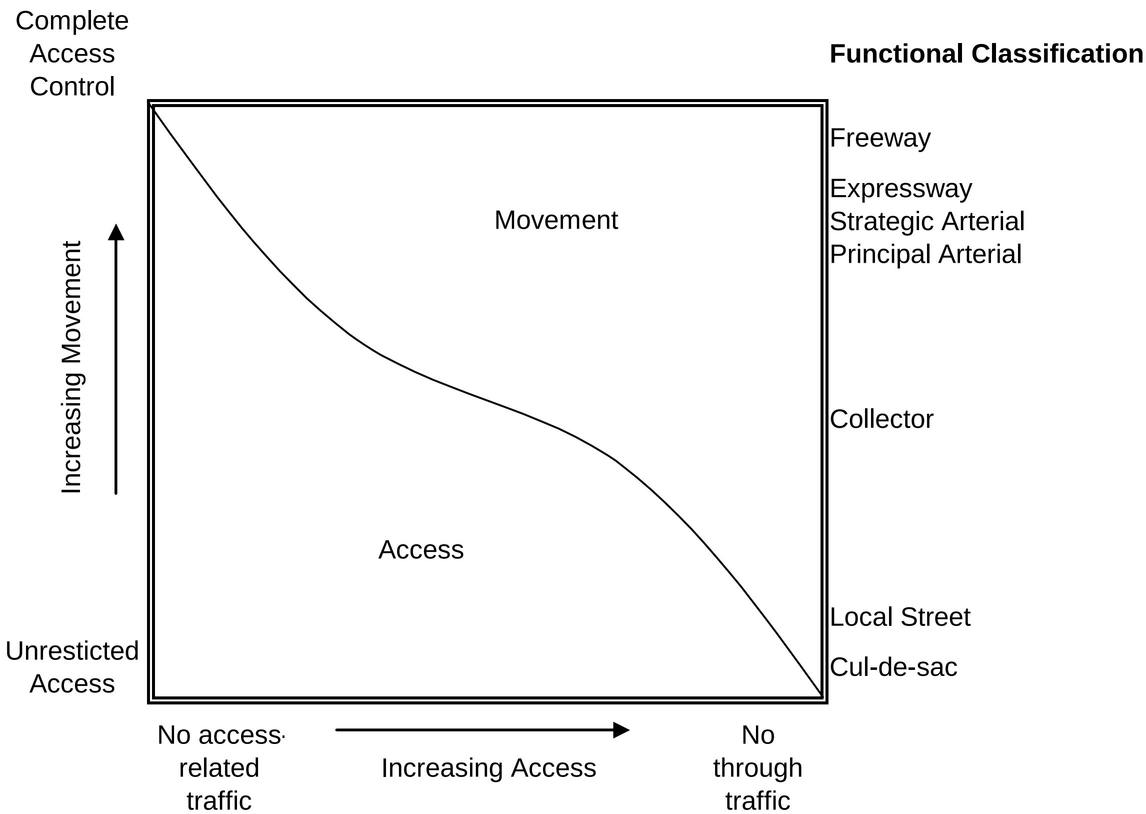
The *Access Management Manual* (Reference 1), published by the Transportation Research Board of the National Academy of Sciences in 2003, is a comprehensive resource that provides research results. The *Access Management Manual* defines access management, and its purpose, as follows:

> *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: moving vehicles and providing direct access to property. The primary purpose 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 3-1 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 3-1 – 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- 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. The agency must decide what level of performance and operational efficiency it is willing to accept in exchange for more frequent and direct property access.

4.0 BENEFITS OF ACCESS MANAGEMENT

This section of the report 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 driver 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;

- *Communities* – who benefit from a safer and more attractive transportation system and from reduced disruptions associated with road widening and construction.

There exists considerable research and experience from other states that demonstrates 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* and *NCHRP Report 420: Impacts of Access Management Techniques* (Reference 2) 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 and traffic operations benefits; and
- Aesthetic benefits.

4.1 System Preservation Benefits

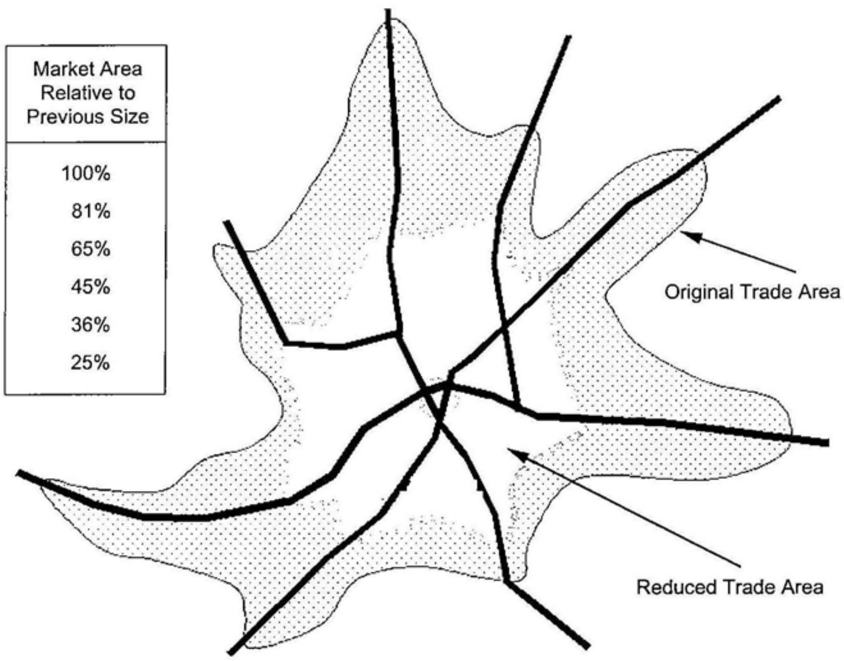
Access management is *asset* management. Roads are an important public resource, and are costly to build, improve, and replace. Because access management preserves the functional integrity of the roadway system, it is an essential tool for maximizing the return on this investment in public infrastructure. 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.

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 4-1.

Figure 4-1 – Effects of Travel Time on Market Area

Reduction in Average Speed	Market Area Relative to Previous Size
0%	100%
10%	81%
20%	65%
30%	45%
40%	36%
50%	25%



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

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.

4.4 Roadway Safety and Traffic Operations Benefits

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

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

4.4.1 Traffic Signal Spacing

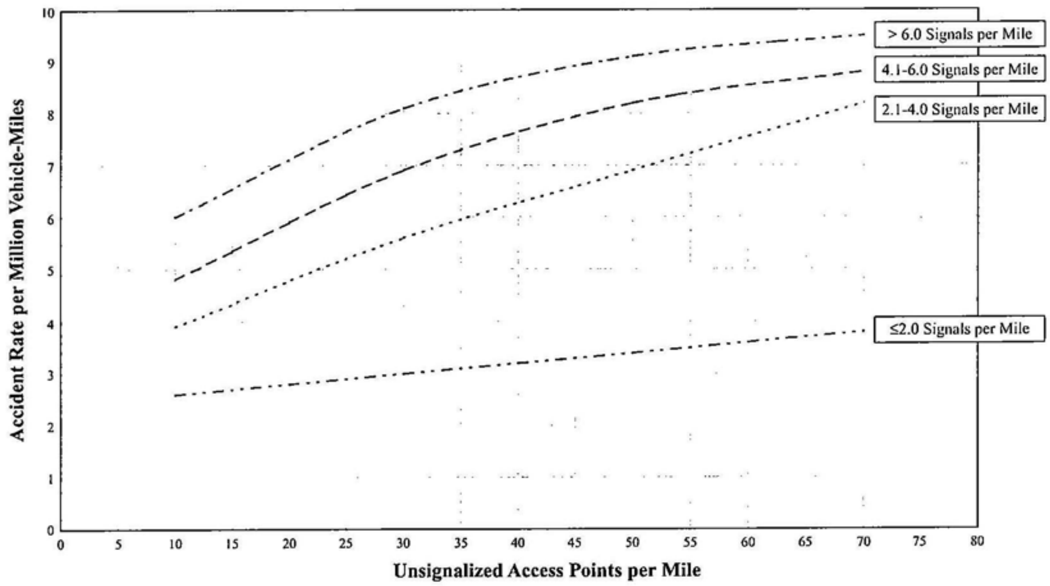
The spacing of traffic signals, in terms of their frequency and uniformity, is a critical parameter that governs the performance of urban and suburban highways. Closely-spaced—or irregularly-spaced—traffic signals on arterial roadways result in frequent stops, unnecessary delays, increased fuel consumption 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 bandwidths[1] (e.g. 50 percent) along higher-speed principal arterial roadways.

Safety Benefits

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 4-2.

[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.

Figure 4-2 – 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.

Travel Time Benefits

Each traffic signal per mile added to a roadway reduces travel speeds by approximately 2 to 3 miles per hour (Reference 1). Table 4-1 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.

Table 4-1 – 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.

Implications for Indiana

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.

4.4.2 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 3):

> *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.*

Safety Benefits

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 4-2 were derived using 10 access points per mile as a base.

Table 4-2 – Relative Crash Rates for Unsignalized Access Connection Spacing

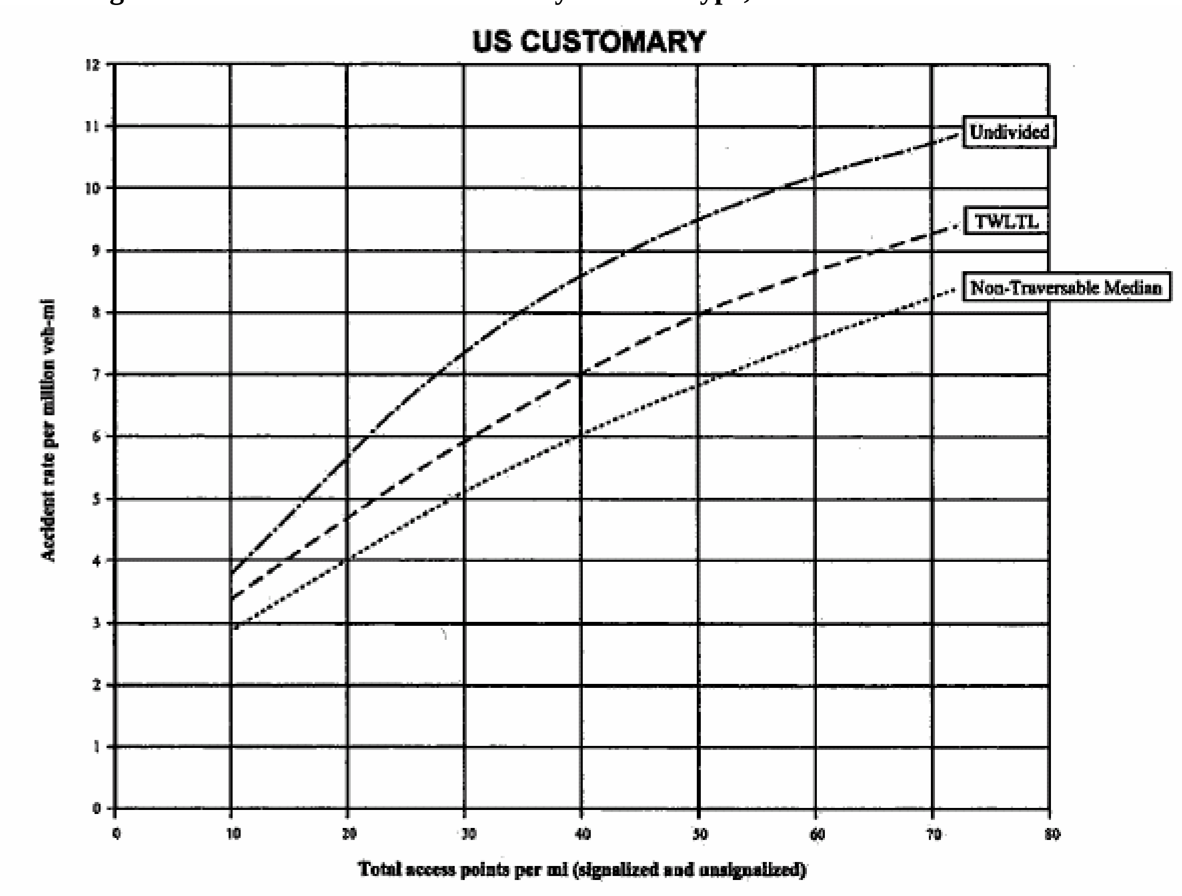
Unsignalized Access Points Per Mile[a]	Average Spacing (feet)[b]	Relative Crash Rate
10	1,056	1.0
20	528	1.4
30	352	1.8
40	264	2.1
50	211	2.4
60	176	3.0
70	151	3.5

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 4-2, 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.

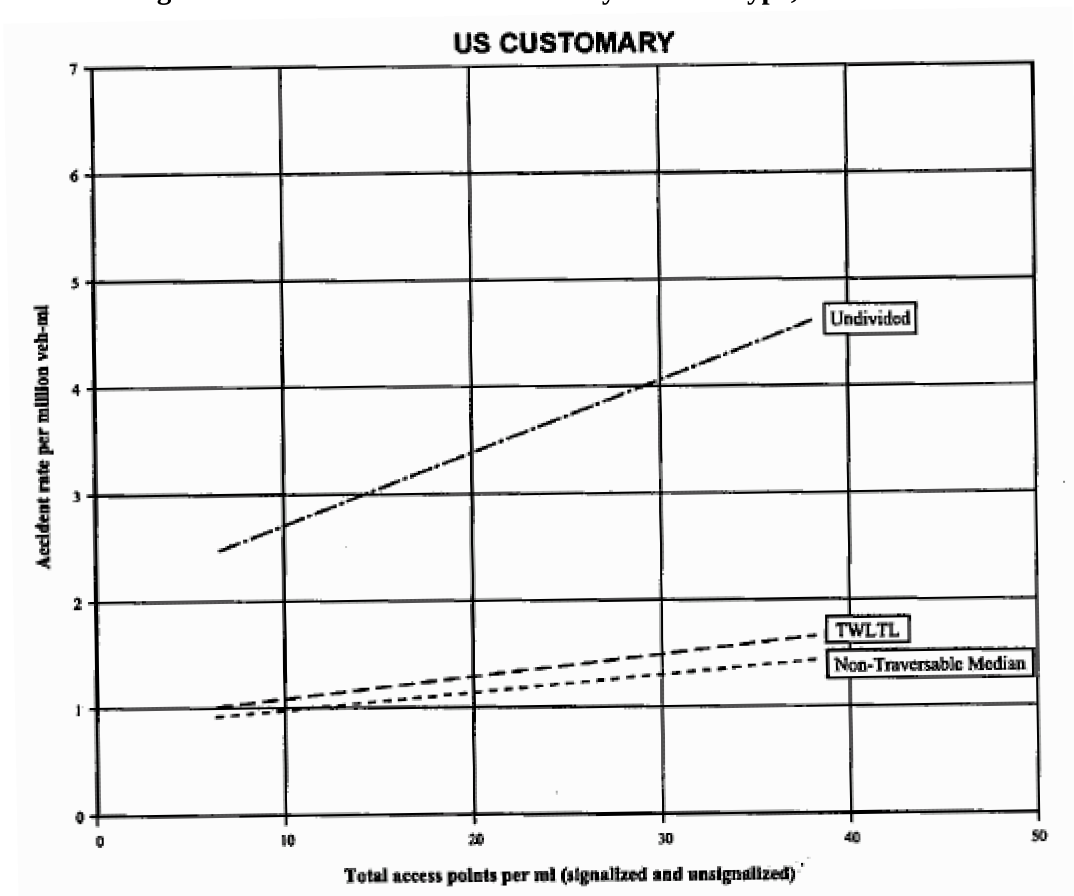
Figures 4-3 and 4-4 present crash rates by median type and total access density (both directions) for urban/suburban and rural roadways, respectively.

Figure 4-3 – 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.

Figure 4-4 – 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 4-3, 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.

As shown in Figure 4-4, 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.

Travel Time Benefits

Travel times along unsignalized multi-lane divided highways can be estimated using procedures set forth in the *Highway Capacity Manual* (*HCM*, Reference 4). 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 4-3). 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 4-3 – 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.

Implications for Indiana

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.

4.4.3 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.

Safety and Operations Benefits

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 4-4 and 4-5 compare crash rates of various access densities by median type for urban/suburban areas, and rural areas, respectively.

Table 4-4 – 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 4-5 – 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 4-4 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 4-5 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 4-6 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 4-6 – 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 4-6, 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 4-7 provides a summary of the results of research efforts on the operational and safety effects of various median treatments.

Table 4-7 – Summary of Research on the Effects of Various Access Management Techniques

Treatment	Effect
1. Add continuous TWLTL	35% reduction in total crashes 30% decrease in delay 30% increase in capacity
2. Add non-traversable median	35% reduction in total crashes 30% decrease in delay 30% increase in capacity
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.

Implications for Indiana

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

4.4.4 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.

Safety Benefits

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.

Operations Benefits

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 4-8.

Table 4-8 – 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 4-8, 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 4-9 provides the following illustrative capacities for two- and four-lane roads at signalized intersections, based on application of *Highway Capacity Manual* methodologies.

Table 4-9 – 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 4-9, 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.

Implications for Indiana

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.

4.5 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 (see Figure 4-5). These aesthetic benefits can, in turn, help attract new businesses.

Figure 4-5 – Roadway Aesthetics With and Without Access Management

(a) With Access Management

(b) Without Access Management

Source: Figure 2-5, *Access Management Manual*, 2003.

5.0 ACCESS MANAGEMENT IMPLEMENTATION RECOMMENDATIONS

This section of the report provides an overview of the recommended actions to enhance the access management program for Indiana. Each of the recommended tasks or actions is described in turn, and a general approach for performing each is also provided. The recommendations described in this report are focused on implementation activities that could be pursued within INDOT's existing statutory authority; actions requiring additional statutory authority are not presented herein. The implementation plan is intended primarily for INDOT State highways, but has relevance for implementing access management by other agencies with jurisdiction over other roadways. The recommendations may also be used by other stakeholders in coordinating access management decisions with INDOT. The recommendations are summarized in the following sections:

5.1 Adopt and Implement the Access Classification System (ACS)

In the absence of an access classification system (ACS), there is no overall plan to guide INDOT with respect to day-to-day decision-making regarding access. With many different INDOT, county, and city employees involved in the decision making, this would make it increasingly difficult to ensure a common purpose and provide consistency in reflection of the stated values of the Department.

The ACS recommended for Indiana—based on the Statewide Mobility Corridor hierarchy, the cross-section of the highway (two-lane or multi-lane), and the area type (urban or rural)—should be adopted. The ACS sets system-level facility objectives for the location, frequency, and spacing of approaches (both street connections and driveways) on the State highway system, based on functional classification and the type of approach. Specifically, the recommended ACS for Indiana provides guidelines for traffic signal spacing (based on distance and bandwidth considerations), unsignalized access spacing (based on roadway speed), and allowable turning movements for each tier of the Statewide Mobility Corridor hierarchy. This provides a basis from which to communicate a clear and consistent message to INDOT employees, counties, cities, and the public regarding the planned level of access for different state highways. In practice, the ACS will be used to help evaluate access permit applications and guide project design.

5.1.1 Perform Initial Classification and Manual Refinement

Implementation of the recommended ACS for Indiana involves the following actions:

- Apply the recommended Access Classification System developed for INDOT to the entire State highway system to establish an initial, proposed access classification for each highway. It is envisioned that this effort would involve the use of INDOT's State highway database, GIS mapping data, and other tools available to the Department. This initial classification effort for State highways in Indiana would be accomplished via an automated process involving a series of database queries.

- Following this initial effort, a detailed review and manual refinement to the assignment of Access Classifications to individual State highways would be undertaken by INDOT staff at the District and/or Sub-District levels, with input and assistance from local government agencies and other INDOT staff and selected participants. The purposes of this detailed review-and-refinement process would be to identify and reclassify any State highways as needed. Four examples where reclassification may be needed are:

1) Short segments with varying (i.e. piecemeal) Access Classifications as a result of the automated classification process;

2) In growing urban areas, where consideration should be given to assigning a roadway to a higher classification because of its potential future function within the larger network of roadways;

3) In very low-density rural areas, where urbanization is not anticipated and a roadway may need to serve a greater access function than normally associated with its functional classification; or

4) An inappropriate access classification when other factors (such as the land use context or a unique role in the overall system) are considered.

- Staff review at the District and Sub-District levels would be followed by a review from INDOT's Central Office staff—and the INDOT Implementation Team and the Access Management Task Force (described in a subsequent section) as needed—to help ensure statewide consistency.
- Establish opportunities for public and stakeholder review of the proposed Access Classifications, and obtain their input.
- Refine and finalize the Access Classifications.
- Adoption of the recommended Access Classification System by the appropriate standards committee within INDOT.
- Incorporating the Access Classification System into INDOT business procedures.
- Establish procedures for maintaining, and periodically updating, Access Classifications for the entire State highway system.

5.1.2 Incorporate Access Classification System into Roadway Design Manual

This work task involves incorporating the Access Classification System, as adopted above, into INDOT's *Roadway Design Manual* (Reference 5), as well as other documents (such as the *Driveway Permit Manual*, Reference 6) by reference where necessary. Incorporating the ACS into the *Roadway Design Manual* will help ensure consistency between INDOT's highway design parameters and the design requirements associated with driveway permit applications. Such an effort also involves communication of the revised *Roadway Design Manual* to appropriate INDOT staff, local jurisdictions, and traffic and design consultants.

5.1.3 Develop a Procedure for Access Classification Revisions

Frequent or piecemeal changes to the Access Classification along individual roadways are strongly discouraged, because such practices degrade the effectiveness of access management on the State highway system. Changes in a roadway's Access Classification should be considered only in cases where it has been determined that the function of the State highway has changed significantly.

However, changes could occur as the result of a systematic planning-level review of the overall State highway system, or because of new construction activities that result in changes to the function of a particular highway. There are also likely to be other cases where either the original classification assignment was not optimal or where significant changes to the surrounding land uses or land use plans warrant a change in classification. It is recommended that a multi-disciplinary review committee within INDOT make the determination with respect to changes in access classification. The INDOT Implementation Team and Access Management Task Force should formalize criteria and develop procedures for Access Classification reviews and revisions.

5.1.4 Define and Identify Special Transportation Areas

The recommended ACS for Indiana includes a special access category for State highways where unique access management and context-sensitive design treatments are desired to meet the particular access and mobility needs of the community. These "Special Transportation Areas" (STAs) could be implemented on State highways of any Tier within the Statewide Mobility Corridor hierarchy, but would typically apply to roadways aligned through cities, towns, or environmentally-sensitive areas. Although design of roadways through STAs would be subject to general guidelines, greater flexibility could be allowed for design and operational parameters such as:

- Signalized and unsignalized access spacing;
- Lane widths;
- Shoulder widths;
- Clear zone widths;
- Median widths;
- Parking lanes;
- Sidewalks;
- Auxiliary lane length;
- Design speed and posted speed;
- Sight distances; and
- Levels-of-Service.

5.2 Implement Access Spacing and Design Standards

The Access Classification System described above includes guidelines for the spacing of signalized and unsignalized intersections and driveways. The spacing guidelines for signalized intersections and driveways should be adopted by INDOT and incorporated into the *Roadway Design Manual* and other documents by reference where necessary. The spacing guidelines for unsignalized intersections and driveways—currently specified in INDOT's *Driveway Permit Manual*—are already in use by the Department, but should also be incorporated into the *Roadway Design Manual*. Both sets of spacing guidelines are described in detail below.

5.2.1 Adopt Signalized Intersection Spacing Guidelines

Table 5-1 summarizes the recommended spacing guidelines for signalized intersections along State highways in Indiana.

Table 5-1 – Recommended Spacing Guidelines for Signalized Intersections

Tier	Ideal Signalized Intersection Spacing Guideline*	Minimum Acceptable Bandwidth for Deviation from Ideal Signalized Intersection Spacing		Functional Area near Signalized Intersections for Right-In/Right-Out Access Only
		Urban	Rural	
1A and 1B	½ mile	45%	50%	400 feet
2A and 2B	½ mile	40%	45%	300 feet
3A and 3B	½ mile	35%	40%	200 feet

* 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 in Table 5-1, the ideal spacing guideline for signalized intersections on all tiers of the State highway system is ½ mile in most cases. This spacing typically accommodates progression speeds ranging between approximately 30 mph and 60 mph, depending on the length of the signal cycle that is selected. However, 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. 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 in Table 5-1, 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.

To reduce potential turning conflicts near signalized intersections, direct property access would be restricted to Right-In/Right-Out (RIRO) movements within a specified distance of such intersections. As shown in Table 5-1, this distance would again depend upon which tier of the State highway system the access driveway is located.

5.2.2 Apply Unsignalized Intersection Spacing Guidelines

The spacing guidelines for unsignalized intersections and driveways, shown in Table 5-2 below, are based on speed and are already in use by INDOT. These guidelines are recommended for application to all State highways, irrespective of tier. The decision-making process with respect to the application of these guidelines for specific design projects or access permit applications 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.

Table 5-2 – Spacing Guidelines for Unsignalized Intersections and Driveways

Highway Speed		Minimum Spacing	
Km/h	mph	meters	feet
50	30	60	185
60	35	75	245
65	40	95	300
75	45	110	350
80	50	120	395
90	55	135	435

Source: Table 8.1, INDOT *Driveway Permit Manual*.

In addition, driveways should not be located within the functional area of intersections, including the lengths of acceleration, deceleration, left-turn, and right-turn lanes. The criteria for these various types of lanes are defined in the *Roadway Design Manual* and the *Driveway Permit Manual,* based on the roadway cross-section, traffic volume, and speed.

5.3 Improve Local Coordination

To improve intergovernmental coordination between INDOT and local agencies, a process needs to be established to encourage two-way communications. INDOT should take the lead in involving local agencies, conducting information meetings, and preparing access management-related training and education materials. This will help educate stakeholders of why there needs to be coordination between local agencies and INDOT in the land development approvals process and why INDOT needs to be involved early in the review process. The emphasis should be on decision making by the review agencies, irrespective of whether state or local, that is coordinated to achieve results that meet the various associated needs. To facilitate communication, consistent notification requirements need to be established, involving property abutting State roadway facilities, to help ensure the decision making is coordinated manner. The notification requirements could involve thresholds established for INDOT referrals based on the location, type, and magnitude of use.

The following implementation actions are recommended to be included in the coordination process between INDOT and local agencies:

5.3.1 Coordinate for Re-zoning Actions and Land Use Approvals

INDOT should be notified in the event of any of the following re-zoning or land use actions at the local level:

- Proposed re-zonings for properties abutting the State right-of-way.
- Proposed re-zonings for properties with access via local crossroads located within ¼-mile of the State right-of-way, and meeting INDOT preliminary warrants for a Traffic Impact Study as stated in Chapter 4 of the INDOT publication *Applicant's Guide to Traffic Impact Studies* (Reference 7). However, because no direct access from the State highway system is involved, INDOT's role would be mainly advisory.
- New land use approvals (including special exceptions, special uses, contingent uses, conditional uses, and use variances) before the local board of zoning appeals for properties abutting the State right-of-way.

5.3.2 Coordinate for Residential Subdivisions

INDOT should be notified in the event of any of the following actions related to the local review-and-approval process for residential subdivisions:

- Proposals for minor residential subdivisions with direct access to State roadways. Notification is required so that INDOT may verify adequate sight distance for the proposed driveway. When the frequency of driveways per mile would exceed a specified threshold (such as 20 driveways per mile), INDOT should have the authority to require joint-use driveways and frontage roads.

- Proposals for all major residential subdivisions of property abutting the State right-of-way.

- Proposals for major residential subdivisions of property with access via crossroads located within ¼-mile of the State right-of-way, and meeting INDOT preliminary warrants for a Traffic Impact Study as stated in Chapter 4 of the INDOT publication *Applicant's Guide to Traffic Impact Studies*. However, because no direct access from the State highway system is involved, INDOT's role would be mainly advisory.

5.3.3 Coordinate for Commercial Developments

INDOT should be notified in the event of any of the following actions related to the local review-and-approval process for commercial developments (including non-single-family developments such as multi-family, retail, office, industrial, or institutional developments):

- Proposals for all commercial subdivisions of property abutting the State right-of-way.

- Proposals for commercial subdivisions of property with access via crossroads located within ¼-mile of the State right-of-way, and meeting INDOT preliminary warrants for a Traffic Impact Study as stated in Chapter 4 of the INDOT publication *Applicant's Guide to Traffic Impact Studies*. However, because no direct access from the State highway system is involved, INDOT's role would be mainly advisory.

5.3.4 Coordinate for Site Plan Review

INDOT should be notified in the event of any of the following actions related to site plan reviews:

- Site plan reviews for property abutting the State right-of-way. Notification is required to allow INDOT to review access to and from the site, and internal circulation to the extent that it influences site access.

- Site plan reviews for property with access via crossroads located within ¼-mile of the State right-of-way that involve full-movement intersections, and meeting INDOT preliminary warrants for a Traffic Impact Study as stated in Chapter 4 of the INDOT publication *Applicant's Guide to Traffic Impact Studies*. However, because no direct access from the State highway system is involved, INDOT's role would be mainly advisory.

5.3.5 Other Intergovernmental Coordination Recommendations

- For all new buildings—as well as expansions or changes to existing commercial uses—there should be coordination between INDOT's driveway permit approval process and the local or State building permit approval process for properties with access via State roadways. This will enable INDOT to provide input earlier in the approval process and help avoid situations where existing commercial driveway entrances cannot accommodate the expansion or change in commercial use.

- INDOT should be notified of dimensional variances (such as structure setbacks and height standards) on corner properties of State/crossroad intersections to ensure the preservation of the corner sight triangle and to avoid inference with traffic control devices.

- INDOT should notify local planning agencies of agreements reached with developers regarding future signalization, roadway improvements, or access control improvements.

5.4 Training for INDOT staff and Educational Efforts for Other Stakeholders

A thorough implementation of any access management program in Indiana must include training and education of engineering and planning staff at both the State and local (i.e. counties, cities, towns, and MPOs) levels. Such activities should include comprehensive information about the operational and safety benefits of access management, the range of design techniques applied, as well as the rationale behind the standards and guidelines that have been developed. Such an approach will give engineers, planners, and other stakeholders an understanding and appreciation of the "why" behind existing standards and guidelines, and form the basis for sound judgments with respect to access management-related decisions in the future. The focus of the training efforts should be on practical aspects of access management applicable to the target audiences of Indiana, rather than focusing exclusively on theory.

5.4.1 Training for INDOT Staff

An INDOT Implementation Team and/or Access Management Task Force (described in a subsequent section of this report) should oversee the development and scheduling of workshops and short-courses for INDOT staff designed to provide both "executive overview"-type training and detailed technical instruction. These training activities would need to be customized to the target audience, but should address the basic access management concepts and design techniques, as well as the specific internal implementation efforts and local coordination activities recommended for INDOT.

5.4.2 Educational Efforts for Other Stakeholders

Education of other stakeholders, including representatives from local governments and the consulting community, will be needed to help establish an environment in which the Indiana access management program may be enhanced. Initially, the education efforts will focus on training, although INDOT efforts could be broadened to include providing local technical assistance. These efforts are recommended in order to help educate other stakeholders about the concepts, procedures, and actions required to address access management issues at a local or site-specific level, and are particularly important given that many jurisdictions do not have staff with a background or knowledge of access management. This education will help ensure that there is an understanding of the importance of access management and the access management-related policies and procedures applicable in Indiana.

To this end, additional work tasks would include developing and implementing a program of technical assistance for local officials and staff about the different implementation elements described in this report. It would include the dissemination of tools and resources that counties and cities could use, including model ordinances and reference materials. This implementation task involves the following steps:

- Provide training sessions and education to local governments on INDOT access management policies, common access management techniques, the INDOT Access Classification System, and the associated administrative rules. Provide training workshops and also special sessions at statewide meetings for the engineering and planning communities.

- Prepare and disseminate a "resource kit" on how to better coordinate access location with the development review process.

- Provide education to key public officials and local staff members on the benefits and purpose of INDOT's access management programs.

5.5 Consider Retrofit Techniques

The preferred approach to access management involves closely coordinating the land use and transportation needs of a particular area to ensure that the transportation network is capable of supporting the travel demands of the proposed land uses. The recommended access spacing and design guidelines identified previously in this report describe preferred conditions for access management with respect to roadway design. However, development often occurs without this needed coordination between land use and transportation. The results are often a congested transportation network, and land use and right-of-way constraints that limit the application of access management criteria. Retrofit involves efforts to improve these problem areas where the access management criteria may be only partially achievable. This section provides guidance on access management techniques that should be used to retrofit improvements to at least partially accomplish access policy goals.

5.5.1 Apply General Principles for Improving Access Management in Retrofit Projects

There are a variety of design techniques that can be applied to retrofit situations to support Indiana's access management objectives. These techniques are based on the following basic access management principles:

- Limit the number of conflicts;
- Separate basic conflict areas;
- Reduce the impedance of through traffic resulting from turns into or out of a site;
- Provide sufficient spacing between at-grade intersections;
- Maintain progression speeds along arterials;
- Provide adequate storage areas for queued vehicles;
- Encourage access to streets with the lowest functional classification, where this option exists.

The goal of these basic principles is to reduce the number of access connections (i.e. conflict points) and their associated adverse effects through design techniques. These design techniques are divided into two categories—roadway design, and access/driveway location and operation—and are discussed below. Where feasible, these techniques should be applied during both access permit review and as part of retrofit during reconstruction projects.

5.5.2 Implement Retrofit Techniques for Access/Driveway Location and Operation

The following techniques should be considered:

- Consolidate driveways/create shared access
- Coordinate driveway locations on opposite sides of roadways
- Maximize corner clearance
- Provide left-turn lanes and auxiliary lanes
- Install median barriers
- Install channelizing islands

5.5.3 Implement Retrofit Techniques for Roadway Design

The following techniques should be considered:

- Construct or modify median to allow only left-turns from a major roadway
- Install two-way left-turn lane
- Provide left-turn deceleration lane
- Provide right-turn deceleration lane
- Install right-turn deceleration lane to serve several driveways
- Install non-traversable median with left-turn deceleration lane

The design techniques listed above will be described in more detail in an appendix to this report.

5.6 Other Actions

In addition to considering retrofit techniques on existing and upcoming projects, INDOT can undertake a variety of other actions to begin implementing access management in Indiana right away. This section of the report describes such actions.

5.6.1 Prepare Access Management Plans for Selected High Priority Segments and Identify Access Management-related Improvements Eligible for Project Funding

Corridor-specific Access Management Plans could be prepared for emerging areas where future development is anticipated, or for built-up areas where retrofit would be required, although the expected outcomes under each scenario would be clearly different. Nevertheless, such actions would focus efforts directly on potential or existing problem areas to secure real benefits, by first identifying corridors that INDOT and local government agencies view as the highest priority, and where the jurisdictions can work jointly on corridor preservation and management. This implementation element would involve INDOT partnering with local government agencies to develop corridor-specific Access Management Plans that could be eligible for project funding and would compete with construction projects for funding. The scope and specific objectives of the proposed Access Management Plan should be identified up front by INDOT and the participating local government agencies. For example, an Access Management Plan for a State highway in an urbanized area may be quite different from one in a developing area.

The implementation of this task would require close collaboration with locals in the affected corridors. One approach would be to establish a corridor management plan that identified access purchase, retrofit, and other project priorities. This could include joint project planning where the state and local jurisdictions' project improvement roles and responsibilities are jointly planned. Ideally, the program would reserve funds for purchasing access rights, driveway consolidation, and other activities.

This work element involves the following steps:

- Partner with local units of government and identify candidate corridors and projects for pilot Access Management Plans/projects.
- Nominate pilot Access Management Plans.
- Prepare pilot Access Management Plans.
- Assess the success of the pilot plans and prepare technical guidance materials describing "how to prepare Access Management Plans".
- Prepare Access Management Plans as part of on-going project development and planning work.

5.6.2 Purchase Access Rights

INDOT has had projects to purchase access rights for major road reconstruction projects on Statewide Mobility Corridors or on National Highway System routes. In addition, INDOT has obtained access rights from property owners in exchange for a driveway permit. These efforts could be expanded to focus on higher priority corridors on the State highway system. The corridors could be selected based on the Access Classification System to reflect the Statewide Mobility Corridors in the Long-Range Transportation Plan. Another approach for purchasing access rights could involve INDOT District or Sub-District offices identifying potential corridors in developing areas where proactive access management strategies should be applied.

5.6.3 Adding "Access Management Benefits" as a Criterion for the Purposes of Prioritizing Reconstruction Projects

In general, there is little direct focus on using the programming process to prioritize and implement projects directly related to access management. Although access is a factor in the design of projects, access management may or may not be a factor in prioritizing projects. The implementation of projects that address access management could be facilitated by including this element in the programming process. Projects that implement access improvements could receive prioritization during the evaluation process in terms of both funding and timing.

Project selection to support access management can be achieved by setting aside funds for implementing stand-alone access management projects, for integrating access management enhancements in other capacity or maintenance projects, or for developing other project categories that are supported by access management strategies (e.g., safety, air quality mitigation, economic development, or aesthetic and other targeted community enhancements). Additionally, setting aside funds to address issues identified in the Congestion Management System process, typically addressed through operational improvements, can support the implementation of access management projects.

More typically, project selection mechanisms take the form of weighted formulas that distribute emphasis either to corridors that hit a certain threshold (e.g., high crash locations) or to a segment of roadway with a projected failure in level-of-service. Examples of mechanisms for supporting access management strategies in a weighted project selection formula include, but are not limited to, giving extra weight to alternatives that:

- Are relatively low cost;
- Require no or limited right-of-way;
- Limit potential impacts to the environment or the community;
- Can be implemented relatively quickly;

- Limit conflicts;
- Remove turning vehicles from through lanes;
- Improve traffic progression;
- Enhance safety; or
- Preserve the public investment in the existing infrastructure.

5.7 Recommended Implementation Process

5.7.1 Define Internal Organizational Structure, and Establish Implementation Roles and Responsibilities

The implementation plan described in this report involves some changes to the work functions performed by INDOT in its Central Office, as well as at the District and Sub-District levels. Successful implementation of an access management program for the State of Indiana will require executive commitment on behalf of INDOT with respect to both resource (time and money) allocations, and establishing responsibilities and accountability for implementation of the program. It will also require the education of the involved INDOT employees about the Department's access management policies and objectives, the new Access Classification System and associated access management procedures, and the related applications to their individual job functions. Changes of this nature need to be carefully managed.

Prior to implementation, INDOT should clearly define roles, responsibility, and accountability for implementation tasks. The consultant team suggests the following approach with respect to organizational roles and responsibilities:

- Assign responsibilities for initial implementation based on existing responsibilities.

- Appoint a dedicated Access Management Implementation Project Manager at INDOT who is responsible for initial implementation efforts. The Implementation Project Manager also would serve as an on-going source for maintaining and disseminating INDOT's body of knowledge with respect to access management, and provide advice, coaching, quality assurance, and guidance regarding access management.

- Establish both an INDOT Implementation Team, including INDOT staff from the involved divisions—as well as a separate Access Management Task Force, including interested stakeholders—to oversee the implementation (detailed below).

- The Implementation Project Manager should report implementation progress periodically to the Implementation Team, Task Force, and/or INDOT executive management over the course of at least one year. Success should be measured as progress against the implementation plan.

- Communicate to INDOT employees what is new, what is required of them, and how they can do what is required. This may require preparing and distributing educational materials, and hosting workshops and training sessions.

Implementation management and communication will require the following work steps:

- Establish responsibilities and accountability for implementation.

- Communicate the implementation plan, recommendations, and responsibilities to INDOT employees.

- Manage and report implementation progress.

Accountability should be addressed in two stages. First, accountability for implementing the recommendations and ensuring that they are institutionalized needs to be established. Second, on-going responsibility for ensuring that INDOT's new access policies and procedures are effectively implemented will need to be assigned. This involves the following steps:

- Adoption of recommendations by INDOT management as draft policy recommendations.

- Executive commitment to resource the implementation.

- Establish responsibilities and accountability for implementation

5.7.2 Form an INDOT Implementation Team and an Access Management Task Force

A critical initial action in the implementation process is formation of both an internal Implementation Team at INDOT, as well as an Access Management Task Force consisting of both INDOT staff and other interested stakeholders from around the state. The primary objective of these groups is to essentially pick up where this study ends and continue efforts to integrate the access management-related recommendations described in this report.

The Implementation Team's efforts should focus on integrating the recommendations of this study with INDOT's existing policies, programs, and organizational structure. In conjunction with the Implementation Team, the Task Force will be charged with assisting in any public involvement, formulating subsequent educational efforts and training activities, and resolving any outstanding issues beyond the scope of this study.

The Implementation Team should represent a diverse group of individuals at INDOT. Representation from the following offices is recommended:

- Long-Range Transportation Planning Division
- Engineering Assessment Section
- Design Division
- Land Acquisition Division
- District Permit Offices
- Legal Division

The Task Force may include all or a sub-set of the Implementation Team representatives, as well as non-INDOT representatives throughout Indiana that have an interest in access management. Representation on the Task Force may be requested from the following agencies/groups:

- Federal Highway Administration (FHWA)
- Metropolitan Planning Organizations
- Local planning and engineering divisions
- Indiana chapter of the American Planning Association (APA)
- Indiana Local Transportation Assistance Program (LTAP)

- Consulting engineering firms

5.7.3 Establish Procedures for Non-Conforming Access

The access management recommendations described in this report apply to new access requests and to significant changes in existing access. Access that currently exists, although not conforming to the new criteria, would be unaffected. However, when changes are made in access configuration, land use, or intensity of development, there is an opportunity for the access to be modified to be consistent with the new criteria. In cases where full compliance is not practical because of development that has already occurred, efforts should be made to increase access spacing and improve access design.

6.0 REFERENCES

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