TRC1805

# Access Management Implementation Guidance

J.L. Gattis
Philip B. Demosthenes

University of Arkansas

Final Report

November 2019

TRC1805

# Access Management Implementation Guidance

J.L. Gattis
Philip B. Demosthenes

University of Arkansas

Final Report

November 2019

**Arkansas Department of Transportation**

**Notice of Nondiscrimination**

The Arkansas Department of Transportation (ARDOT) complies with all civil rights provisions of federal statutes and related authorities that prohibit discrimination in programs and activities receiving federal financial assistance. Therefore, the Department does not discriminate on the basis of race, sex, color, age, national origin, religion (not applicable as a protected group under the Federal Motor Carrier Safety Administration Title VI Program), disability, Limited English Proficiency (LEP), or low-income status in the admission, access to and treatment in the Department's programs and activities, as well as the Department's hiring or employment practices. Complaints of alleged discrimination and inquiries regarding the Department's nondiscrimination policies may be directed to Civil Rights Officer Joanna P. McFadden (ADA/504/ Title VI Coordinator), P. 0. Box 2261, Little Rock, AR 72203, (501) 569-2298, (Voice/TTY 711), or the following email address: joanna.mcfadden@ardot.gov.

Free language assistance for Limited English Proficient individuals is available upon request.

This notice is available from the ADA/504/Tittle VI Coordinator in large print, on audiotape and Braille

**Disclaimer:**

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of ARDOT and they assume no liability for the contents or use thereof. This report does not constitute a standard, specification, or regulation. Comments contained in this report related to specific testing equipment and materials should not be considered an endorsement of any commercial product or service; no such endorsement is intended or implied.

**Technical Report Documentation Page**

| | | |
|---|---|---|
| 1. Report No. | 2. Government Accession No. | 3. Recipient's Catalog No. |
| 4. Title and Subtitle<br>**Access Management Implementation** | | 5. Report Date<br>**November 2019** |
| | | 6. Performing Organization Code |
| 7. Author(s)<br>**J L Gattis and Philip Demosthenes** | | 8. Performing Organization Report No. |
| 9. Performing Organization Name and Address<br>**4190 Bell, Department of Civil Engineering**<br>**University of Arkansas**<br>**Fayetteville, AR 72701-1201** | | 10. Work Unit No. (TRAIS) |
| | | 11. Contract or Grant No.<br>**TRC1805** |
| 12. Sponsoring Agency Name and Address<br>**Arkansas Department of Transportation**<br>**P.O. Box 2261**<br>**Little Rock, AR 72203-2261** | | 13. Type of Report and Period covered<br>**FINAL(09/17 – 11/19)** |
| | | 14. Sponsoring Agency Code |
| 15. Supplementary Notes<br>**Conducted in cooperation with U.S. Department of Transportation, Federal Highway Administration** | | |

16. Abstract

The broad objectives of this project were to (1) examine and document the current access management practices in Arkansas; (2) present current access management practices in other selected states, as well as the state-of-the practice, so they can be compared with current access management practices within Arkansas; (3) develop new policies or rules for access management that ARDOT could adopt, along with considerations when implementing such rules; (4) develop materials to explain a more robust access management program to a technical audience and to the public.

| | |
|---|---|
| 17. Key Words<br>**access management, access, driveway, permit** | 18. Distribution Statement<br>**no restrictions** |

| | | | |
|---|---|---|---|
| 19. Security Classification (of this report)<br>**(none)** | 20. Security Classification (of this page)<br>**(none)** | 21. No. of Pages<br>107 | 22. Price |

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

# SI* (MODERN METRIC) CONVERSION FACTORS

## APPROXIMATE CONVERSIONS TO SI UNITS

| Symbol | When You Know | Multiply By | To Find | Symbol |
|---|---|---|---|---|
| | | **LENGTH** | | |
| in | inches | 25.4 | millimeters | mm |
| ft | feet | 0.305 | meters | m |
| yd | yards | 0.914 | meters | m |
| mi | miles | 1.61 | kilometers | km |
| | | **AREA** | | |
| $in^2$ | square inches | 645.2 | square millimeters | $mm^2$ |
| $ft^2$ | square feet | 0.093 | square meters | $m^2$ |
| $yd^2$ | square yard | 0.836 | square meters | $m^2$ |
| ac | acres | 0.405 | hectares | ha |
| $mi^2$ | square miles | 2.59 | square kilometers | $km^2$ |
| | | **VOLUME** | | |
| fl oz | fluid ounces | 29.57 | milliliters | mL |
| gal | gallons | 3.785 | liters | L |
| $ft^3$ | cubic feet | 0.028 | cubic meters | $m^3$ |
| $yd^3$ | cubic yards | 0.765 | cubic meters | $m^3$ |
| | | NOTE: volumes greater than 1000 L shall be shown in $m^3$ | | |
| | | **MASS** | | |
| oz | ounces | 28.35 | grams | g |
| lb | pounds | 0.454 | kilograms | kg |
| T | short tons (2000 lb) | 0.907 | megagrams (or "metric ton") | Mg (or "t" |
| | | **TEMPERATURE (exact degrees)** | | |
| °F | Fahrenheit | 5 (F-32)/9<br>or (F-32)/1.8 | Celsius | °C |
| | | **ILLUMINATION** | | |
| fc | foot-candles | 10.76 | lux | lx |
| fl | foot-Lamberts | 3.426 | $candela/m^2$ | $cd/m^2$ |
| | | **FORCE and PRESSURE or STRESS** | | |
| lbf | poundforce | 4.45 | newtons | N |
| $lbf/in^2$ | poundforce per square inch | 6.89 | kilopascals | kPa |

## APPROXIMATE CONVERSIONS FROM SI UNITS

| Symbol | When You Know | Multiply By | To Find | Symbol |
|---|---|---|---|---|
| | | **LENGTH** | | |
| mm | millimeters | 0.039 | inches | in |
| m | meters | 3.28 | feet | ft |
| m | meters | 1.09 | yards | yd |
| km | kilometers | 0.621 | miles | mi |
| | | **AREA** | | |
| $mm^2$ | square millimeters | 0.0016 | square inches | $in^2$ |
| $m^2$ | square meters | 10.764 | square feet | $ft^2$ |
| $m^2$ | square meters | 1.195 | square yards | $yd^2$ |
| ha | hectares | 2.47 | acres | ac |
| $km^2$ | square kilometers | 0.386 | square miles | $mi^2$ |
| | | **VOLUME** | | |
| mL | milliliters | 0.034 | fluid ounces | fl oz |
| L | liters | 0.264 | gallons | gal |
| $m^3$ | cubic meters | 35.314 | cubic feet | $ft^3$ |
| $m^3$ | cubic meters | 1.307 | cubic yards | $yd^3$ |
| | | **MASS** | | |
| g | grams | 0.035 | ounces | oz |
| kg | kilograms | 2.202 | pounds | lb |
| Mg (or "t") | megagrams (or "metric ton") | 1.103 | short tons (2000 lb) | T |
| | | **TEMPERATURE (exact degrees)** | | |
| °C | Celsius | 1.8C+32 | Fahrenheit | °F |
| | | **ILLUMINATION** | | |
| lx | lux | 0.0929 | foot-candles | fc |
| $cd/m^2$ | $candela/m^2$ | 0.2919 | foot-Lamberts | fl |
| | | **FORCE and PRESSURE or STRESS** | | |
| N | newtons | 0.225 | poundforce | lbf |
| kPa | kilopascals | 0.145 | poundforce per square inch | $lbf/in^2$ |

*SI is the symbol for the International System of Units. Appropriate rounding should be made to comply with Section 4 of ASTM E380.
(Revised March 2003

# CONTENTS

Page

## LIST OF EXHIBITS

# CHAPTER 1: INTRODUCTION

This report documents the procedures, findings, and discussions related to a project with the following objectives, conducted for the Arkansas Department of Transportation (ARDOT).

- Examine the present access management practices at the state and local level in Arkansas.
- Compare the current Arkansas practices at the state and local levels with those in other states, and with the state-of-the-practice.
- Develop and propose revisions in current ARDOT policies and practices to enhance the application of access management techniques to roadways in Arkansas.

Access management concepts were well known by the 1970s, and state departments of transportation began to implement access management programs in the 1980s. Since then, research and experience have contributed to the evolution of the concepts and the implementation mechanisms. Even though access management can improve safety, traffic flow, and capacity – and more indirectly, provide economic benefits – the extent to which state and local agencies have applied access management varies widely. Adoption and implementation of access management is challenging because it cuts across organizational lines and involves a number of interrelated practices.

Chapter 2 of this report presents an abbreviated review of literature, mainly focusing on the documented effects and benefits of access management techniques. Chapter 3 summarizes the current state of access management practice in Arkansas, at the state level and at selected local levels. Chapter 4 relates access management practices and experiences of other states. Chapter 5 raises issues to consider and decisions to make before proceeding. Chapter 6 offers a limited comparison of access management benefits and costs. Chapter 7 contains considerations when preparing to implement an access management program.

Exhibit 1-1 provides a partial list of abbreviations used in this report, and Exhibit 1-2 defines a number of terms used herein.

EXHIBIT 1-1 Partial list of abbreviations

| Abbreviation | Meaning |
|---|---|
| AASHO | American Association of State Highway Officials |
| AASHTO | American Association of State Highway and Transportation Officials |
| ADT | average daily traffic volume |
| AMAG | *Access Management Application Guidelines* |
| AMM2 | *Access Management Manual*, 2nd ed. |
| ARDOT | Arkansas Department of Transportation |
| CA | control-of-access |
| Chp | chapter |
| CMF | crash modification factor |
| DOT | Department of Transportation |
| dway | driveway |
| FHWA | Federal Highway Administration |
| ft | foot |
| HSM | *Highway Safety Manual* |
| ITE | Institute of Transportation Engineers |
| mi | mile |
| mph | miles per hour |
| MPO | metropolitan planning organization |
| NCHRP | National Cooperative Highway Research Program |
| NHI | National Highway Institute |
| NHS | National Highway System |
| p | page |
| PE | professional engineer |
| RCUT | reduced conflict U-turn intersection |
| ROW | right of way |
| TIA, TIS | traffic impact analysis, traffic impact study |
| TRB | Transportation Research Board |
| TWLTL | two-way left turn lane |
| VMT | vehicle miles traveled |
| vph | vehicles per hour |

EXHIBIT 1-2 List of terms and definitions

| Term | Definition |
|---|---|
| Abutting property | Real property bordering the right-of-way of a public way. |
| Access | Egress and/or ingress, either direct or indirect, between a property and the public roadway. |
| Alternative access | For situations in which there are multiple means of providing access to a property, usually refers to providing access by a means that is not the requested choice of the property owner. |
| Access | A way that approaches a state roadway, such as a driveway, a city street, or an access ramp. |
| Access break | A place where access to a state roadway is allowed. ARDOT's policy per Minute Order 2017-112 governs the granting of access breaks. |
| Channelize | Using traffic islands or pavement markings to regulate or separate conflicting traffic movements into defined paths of travel. (see 2011 Green Book, Chp 9) |
| Conflict | Meaning depends on context.<br>Potential conflict: a situation in which traffic paths intersect or cross each other.<br>Actual conflict: an event in which one or more parties takes evasive action to avoid a collision, or in which a collision occurs. |
| Connection | The junction of the subject roadway with a source of traffic to or from the side (e.g., a driveway, roadway, or ramp). |
| Controlled-access highway | A highway or street especially designed for through traffic over, from, or to which owners or occupants of abutting land or other persons have no right or easement, or only a controlled right of easement of access, light, air, or view, by reason of the fact that their property abuts upon the controlled-access facility or for any other reason. |
| Corner clearance | The distance between an intersection and the nearest unsignalized access connection, either upstream or downstream of the subject intersection. (see *Access Management Manual*, 2nd ed, Chp 15) |
| Crash modification factor | A number that indicates the effect that a specific treatment will have on the expected number of crashes, relative to some assumed baseline condition. For instance, a CMF of 0.90 means that on average, the treatment will result in the number of crashes decreasing from a base condition of 100% to 90% of the previous number, or a drop of 10%. |
| Driveway | The way extending from the traveled way of a public roadway into an abutting property. (In the context of access management, it may not include the full length of a way that provides access between public ways and the activities or buildings on abutting land.) |

EXHIBIT 1-2 List of terms and definitions

| Term | Definition |
|---|---|
| Dust pan | A driveway entry or exit shape with the plan view designed with a flared or tapered edge. With this design, the curb height along the roadway edge transitions from full height to no curb height. Thus, the design incorporates a taper in both the plan and in the front elevation views. |
| Functional area (of an intersection) | The space that includes not only the physical area where roadways cross each other, but also the areas upstream and downstream of the physical intersection in which perception-reaction, maneuvering, deceleration, queue storage, and acceleration occur that are related to the operation of the intersection. (see 2011 Green Book, Chp 9) |
| Grandfathered | The condition of allowing a situation that does not conform to new rules or regulations to continue to exist. |
| Green Book | *A Policy on Geometric Design of Highways and Streets*, by the American Association of State Highway and Transportation Officials (AASHTO) |
| Joint-use driveway | A driveway that provides access to multiple properties. When this technique is employed, a common pattern is the driveway straddles the boundary between the two adjacent properties served by the driveway, with a legal instrument in place allowing both properties' traffic to use the driveway. (see AMM2, Chp 9) |
| Landlocked | A property that has no legal direct access to a public way. In practice, the concern is usually access by motor vehicles to a public roadway. |
| Median | The portion of a roadway separating opposing directions of the through lanes of the traveled way. Note that left turn lanes, two-way left turn lanes, and inner shoulders lie within the median. (see 2011 Green Book, Chp 4)<br>Non-restrictive median: one such as a two-way left-turn lane (TWLTL), designed to be easily crossed by a motor vehicle.<br>Restrictive median: one such as a raised or depressed median, designed not to be crossed by a motor vehicle except at selected locations. |
| Median opening | A space in a median intentionally created to allow one or more traffic movements to fully cross said median.<br>Full median opening: one at which all applicable crossing and left turn maneuvers are accommodated.<br>Directional or partial median opening: one at which some but not all applicable crossing and left turn maneuvers are accommodated. Such designs often employ channelizing techniques to deter unauthorized maneuvers. |

EXHIBIT 1-2 List of terms and definitions

| Term | Definition |
|---|---|
| Police power | The government's inherent authority to exercise reasonable control over persons or property in order to safeguard the welfare of the public. |
| Roadway | The portion of a highway for vehicular use, including shoulders; a divided highway has multiple roadways. (see 2011 Green Book, Chp 4) |
| Spillback | When a situation exists such that the traffic conditions at the subject driveway influence or affect the operation of vehicles in the outside through lane at or in advance of the driveway upstream of the subject driveway. |
| Throat | The length of a driveway from the outer edge of the traveled way of the intersecting roadway to the first point along the driveway at which there are conflicting vehicular traffic movements. Also known as the driveway connection depth, driveway reservoir length, driveway stacking distance, driveway storage length, driveway stem. (see NCHRP Report 659) |
| Traffic impact study, Traffic impact assessment | Strictly defined, a requirement by a jurisdiction that a developer or the developer's agent present a report that evaluates a new development's effects on the transportation network, and offers suggestions to ameliorate anticipated problems. In practice, the scope of such studies may be expanded to include an examination of other development-related traffic issues, including access management. |
| Traveled way | The portion of a roadway for the movement of motor vehicles, excluding shoulders and bicycle lanes. (see 2011 Green Book, Chp 4) |
| Trip | A one-directional vehicle movement between two end points. A vehicle leaving the highway and entering a property is one trip, and the same vehicle leaving the property and entering the highway is a second trip. |
| Variance | A permission intentionally granted by a government agency that allows the receiving entity to comply with a rule or requirement at a level that is below the level stated in rule or regulation. |
| Waiver | An exemption to comply with a rule or requirement, intentionally granted by a government agency to some entity, e.g., a land developer. |

# CHAPTER 2: LITERATURE REVIEW

For lists of abbreviations and definitions, see Chapter 1.

Task 2 of this project is to summarize existing literature that assessed effects of access management, chiefly reflecting content from the recently published the *Access Management Manual*, 2nd ed. (AMM2), and the *Access Management Application Guidelines* (AMAG).

The term "access management" defies a concise definition. The first edition of the *Access Management Manual* (AMM1, p 3) defined access management 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 authors of the second edition developed a markedly different description (AMM2, p 3).

> "Access management is the coordinated planning, regulation, and design of access between roadways and land development. It encompasses a range of methods that promote the efficient and safe movement of people and goods by reducing conflicts over the roadway system and at its interface with other modes of travel."

Inherent in the difficulty of offering a straightforward definition of the term is that access management is not a single "thing", but (as implied in the second edition's definition) instead is a body of policies and practices that work in concert to improve both safety and flow of traffic on roadways, by broadly managing the movements to and from a subject roadway. Among the elements that a comprehensive access management program will affect are:

- The location, spacing, and design of driveways and side street connections;
- Where and what type of left-turn movements are allowed;
- The type of median treatment, and median opening locations; and
- Spacing between successive signalized intersections.

A comprehensive and effective access management program affects policies and practices broadly across an agency, including those of right-of-way, legal, planning, design, and operational divisions.

Over 70 years of research documents the effects of access management. In 1943, the Public Roads Administration (a precursor of FHWA) reported the adverse impacts of frequent access: "While many of our newer improvements are of the latest engineering design, compelling evidence indicates that some of these roads will become functionally obsolescent long before they deteriorate physically. This condition persists despite attempts at its correction because of the absence of effective control of access". The AMM2 groups these effects of access management under the categories of safety, operations, economics, and the

environment. Two of the core access management techniques, requiring a minimum spacing between successive connections (side streets, driveways), and placing a median that allows relative infrequent crossing movements (i.e., "restrictive median") tend to be a focus of many of the studies.

**SAFETY**

One of the benefits of access management is a reduction in collisions. A number of safety comparisons among roadways with various levels of access control have been conducted in a variety of environments. Only a few typical findings are presented herein.

Considering the combined effects of various access management treatments on urban roadways, the *Highway Safety Manual* states "a high level of access control appears to reduce injury and non-injury crashes and may also reduce angle and sideswipe crashes at intersections and midblock areas. However, the magnitude of the crash effect is not certain at this time" (HSM p 17-12).

**Number of Access Connections and Safety**

Exhibit 2-1 displays a general trend of crash frequency along a roadway corridor fluctuating to a considerable degree with the access frequency. The data are from a 29 mile segment of US 101 in Oregon, which had a mixture of two-lane, TWLTL, and non-traversable median cross sections. Note that the part with the non-traversable or restrictive median (labeled "parkway") is an exception to the general trend, in that in this part the crash rate does not increase markedly as access density increases. This study also found that the crash rate increased as the number of access points per mile increased, and the rate of increase for both rural and urban parts increased when access densities exceeded 50 per mile. Similar trends have been mirrored by many other studies over the years.

Exhibit 2-2 displays relationships between the number of access points and numbers of crashes, with 10 access points per mile as the baseline (AMM2, p 26). The relationships in columns 2 through 7 are copied from the *Access Management Manual*, 2nd ed., while the proportions in column 8 are from a separate research study of Arkansas roadways (Gattis). For reference, connections on both sides of the road spaced at 300 ft on center equals approximately 35 access points per mile. Each of the sources indicates that as the access density increases, the number of crashes increases; for instance, in column 2, increasing the number of access points per mile from 10 to 40 more than doubles the number of crashes. The Arkansas proportional relationships (column 8) do not escalate as rapidly as those from the other sources, but do indicate a marked deterioration in safety as access frequency increases.

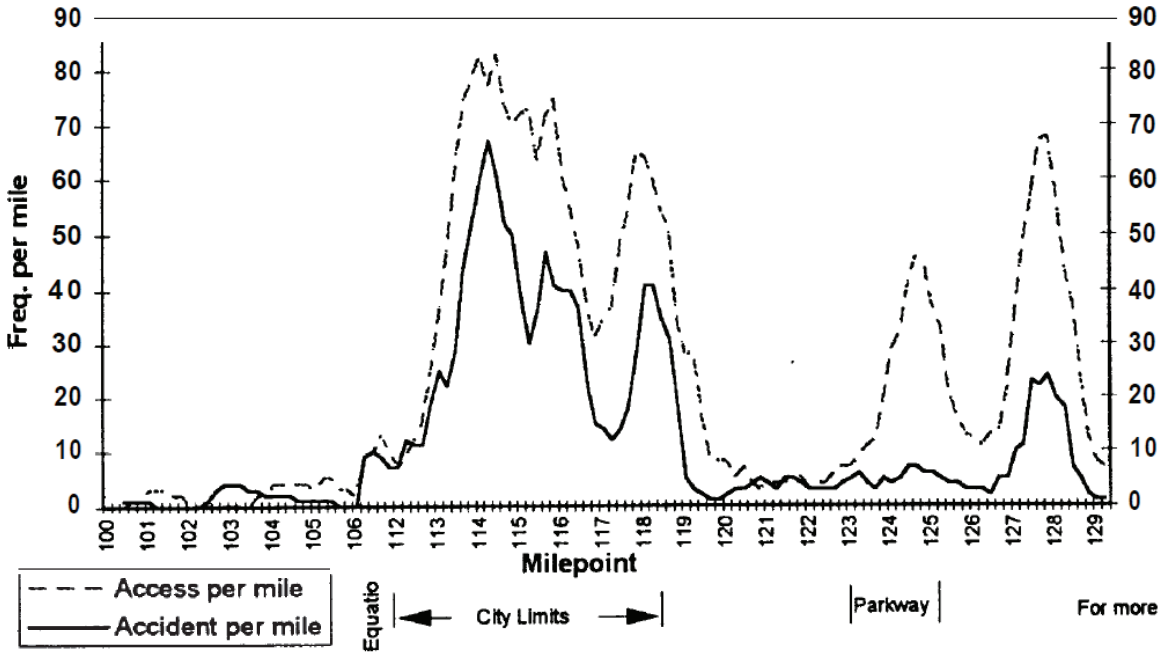


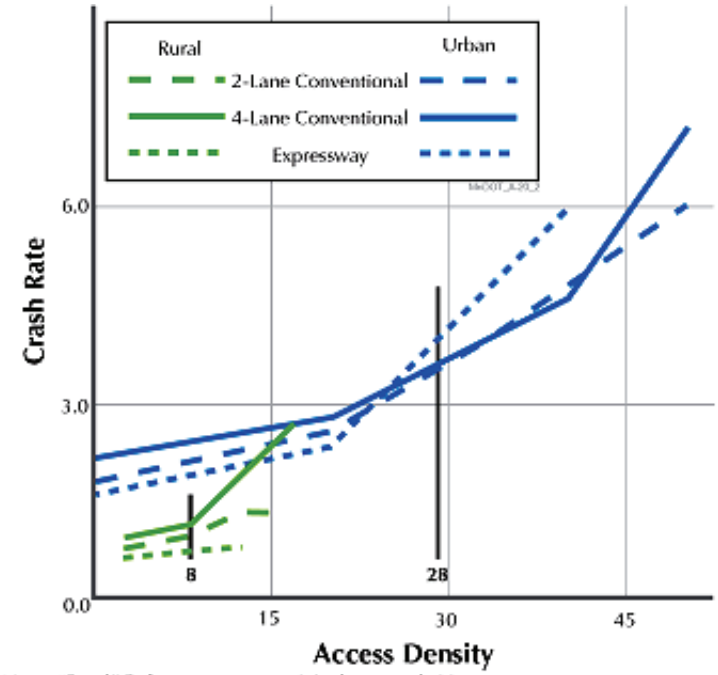

EXHIBIT 2-1 Densities of crashes and access points for a 29 mile segment of US 101 in Oregon

EXHIBIT 2-2 Comparing crash rate indices based on access density

| (1) Access points per mile | (2) All roads (literature synthesis) | (3) Urban & suburban roads (safety analysis) | (4) Urban & suburban 4-lane, no Lt turn lane (Minnesota) | (5) Urban & suburban 4-lane, w/ Lt turn lane (Minnesota) | (6) Urban & suburban roads (Indiana) | (7) All roads (Square root rule) | (8) Urban & suburban 4-lane roads, 15,000 ADT (Arkansas) |
|---|---|---|---|---|---|---|---|
| 10 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 20 | 1.3 | 1.4 | 1.4 | 1.4 | 1.2 | 1.4 | 1.1 |
| 30 | 1.7 | 1.8 | 1.7 | 1.6 | 1.5 | 1.7 | 1.3 |
| 40 | 2.1 | 2.1 | 2.0 | 1.8 | 1.8 | 2.0 | 1.4 |
| 50 | 2.8 | 2.3 | 2.5 | 2.3 | 2.1 | 2.2 | 1.6 |
| 60 | 4.1 | 2.5 | 2.8 | 2.9 | 2.5 | 2.7 | 1.8 |

NOTES: Column 7, square root rule, from examination by Levinson
Column 8, from MBTC 2067, roads with either TWLTL or restrictive median

Exhibit 2-3 shows relationships between access density and crash rates, based on data from a 766-mile sample of the Minnesota trunk highway system (Preston).




Note: "Rural" Refers to a non-municipal area and cities with a population less than 5,000.

*Source: MnDOT Research Report 1998-27 "Statistical Relationship between Vehicular Crashes and Highway Access"*

EXHIBIT 2-3 Minnesota crash rates and access densities

**Access Patterns and Safety**

A synthesis of studies (Rawlings) of driveway-related collisions found a number of consistent patterns among the findings. Note that "driveway" in this context refers to the area where the driveway connects to the public roadway. The Skokie, Indiana, and Springdale columns reflect urban roadways, while the Texas and Arkansas columns show statewide data. The percentages in Exhibit 2-4 show that the percentage of all urban crashes that are driveway related is in the teens; that large majority of driveway related crashes occur at commercial sites; and that a disproportional number of driveway related crashes involve left return maneuvers.

The Springdale study involved individual examinations of the 2227 reported collisions in a given year. At the time of the study, all arterial roadways were either undivided or divided with a TWLTL; restrictive medians were practically nonexistent. The summary data, based on categorizations by the reporting officer, listed 16.2% of all crashes as driveway-related, but the detailed examination of individual reports found that this percentage was 18.5%. This raises the possibility that there may be a tendency for those involved in crash coding to not recognize some driveway related crashes as such.

EXHIBIT 2-4 Comparing driveway-related collision studies

| Attribute | Skokie | Indiana | Texas | Arkansas | Springdale |
|---|---|---|---|---|---|
| percent of urban crashes that are driveway-related | 11 | 14 | 15 | 13 | 19 |
| percent of driveway-related that occurred at commercial sites | 75 | 72 | – | – | 73 |
| percent of driveway-related that involved left turns | 60 | 65 | – | – | 63 |
| percent of driveway-related that resulted in injury | 31 | 14 | 11 | 38 | ? |

Exhibit 2-5 presents the vehicle movement patterns found in the Springdale driveway crash study. Over 40% of such crashes involved a vehicle making a left-turn maneuver out of the driveway.

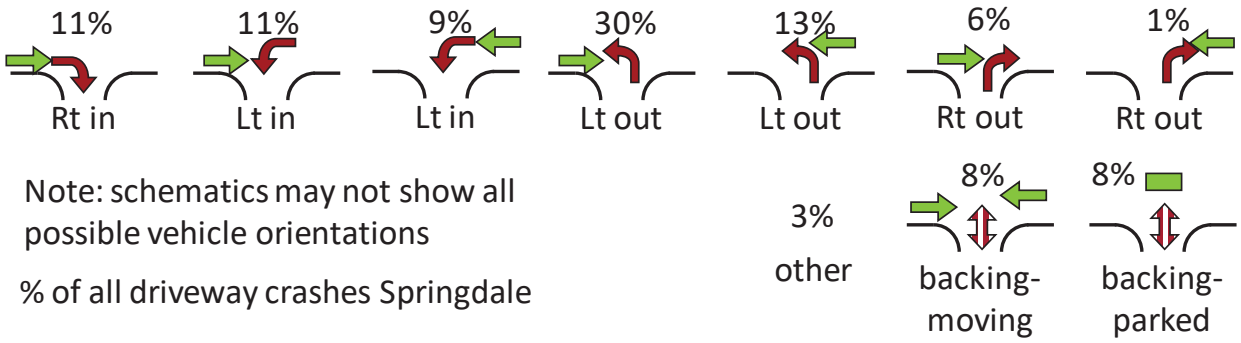



EXHIBIT 2-5 Vehicle maneuver patterns in urban driveway crashes

**Median Types and Safety**

A 2010 Federal Highway Administration (FHWA) publication stated that the presence of raised medians or pedestrian refuge areas at pedestrian crossings with marked crosswalks reduces pedestrian crashes by 46%, and at unmarked crosswalk locations by 39%.

The following Exhibit 2-6 draws from a number of studies examining crash rates to present a comparison of safety between roadways having two-way left-turn lanes and roadways with raised or depressed medians (Gluck, p 75). Exhibit 2-7 shows comparisons of representative crash rates on roadways with undivided, two-way left-turn lane (TWLTL) and restrictive (raised or depressed) median cross sections; both exhibits were adapted from NCHRP Report 420 (Gluck).

EXHIBIT 2-6 Comparing different road segments

| Location | Year | Crash rate TWLTL | Crash rate restrictive median | Crash rate percentage difference |
|---|---|---|---|---|
| Jimmy Carter Boulevard, Atlanta | 1990 | 8.1 | 6.5 | -20 |
| Memorial Boulevard, Atlanta | 1996 | 11.9 | 7.9 | -34 |
| Phoenix | 1989 | 5.9 | 5.7 | -3 |
| Tucson | 1989 | 5.2 | 4.0 | -22 |
| Virginia | 1983 | 6.1 | 4.4 | -28 |
| Michigan four lane arterials | 1988 | 9.6 | 4.1 | -57 |
| Michigan six lane arterials | 1988 | 11.07 | 5.63 | -49 |
| Georgia four lane sections | 1989 | 9.0 | 7.7 | -15 |
| Georgia six lane sections | 1989 | 10.8 | 8.2 | -25 |
| Florida four lane arterials | 1993 | 3.2 | 2.1 | -35 |
| Florida six lane arterials | 1993 | 4.3 | 3.2 | -25 |
| Tennessee | 1995 | 6.5 | 6.0 | -8 |

NOTE: crash rates expressed per million vehicle miles of travel (VMT)

EXHIBIT 2-7 Representative crash rates by type of area and median treatment

| Total access points per mile | Rural areas | | | Urban and suburban areas | | |
|---|---|---|---|---|---|---|
| | Undivided | TWLTL | Restrictive | Undivided | TWLTL | Restrictive |
| > 30 | 4.6 | 1.7 | 1.5 | – | – | – |
| 15.01 – 30 | 3.6 | 1.3 | 1.2 | – | – | – |
| < 15 | 2.5 | 1.0 | 0.9 | – | – | – |
| > 60 | – | – | – | 10.6 | 9.2 | 8.2 |
| 40.01 – 60 | – | – | – | 9.4 | 7.9 | 6.8 |
| 20.01 – 40 | – | – | – | 7.3 | 5.9 | 5.1 |
| < 20 | – | – | – | 3.8 | 3.4 | 2.9 |

NOTE: crash rates expressed per million vehicle miles of travel (VMT)

A before-and-after comparison of 18 sites, totaling 17.5 miles, converted from TWLTLs to raised medians found that the six-lane locations experienced an aggregate 37% reduction in crashes, while the seven four-lane sites had a 5% decrease (Alluri).

The 2010 *Highway Safety Manual* (HSM) includes factors to suggest the safety effects of medians. The HSM's crash modification factors (CMF) indicate the effect of a given treatment on the predicted number of crashes.

For rural multilane roadways without a median barrier, the following CMFs (HSM p 11-31) apply to total crashes, but represent only the effect of median width in reducing cross-median collisions. They do not reflect effects of reducing left turn movements. To illustrate, these

factors indicate that decreasing a rural median width from 30 ft to 10 ft would produce an expected 4% increase in the number of crashes.

| Median width | 10 ft | 20 ft | 30 ft | 40 ft | 50 ft |
|---|---|---|---|---|---|
| CMF (Rural) | 1.04 | 1.02 | 1.00 | 0.99 | 0.97 |

Next are the factors for urban and suburban arterial median widths (HSM p 12-42).

| Median width | 10 ft | 15 ft | 20 ft | 30 ft | 40 ft |
|---|---|---|---|---|---|
| CMF (Urban and Suburban) | 1.01 | 1.00 | 0.99 | 0.98 | 0.97 |

For both the rural and the urban/suburban divided roadway settings, cross-median collisions are said to comprise 12% of crashes.

The CMFs in Exhibit 2-8 reflect a broader range of the effects of having a median on rural multilane highways and urban arterials (HSM p 13-14). The base condition of CMF = 1.0 is for not having a median. The source did not state the range of volumes or numbers of through lanes. All standard errors are 0.03 or less. These values indicate reductions in injury crashes of 10% to 20%. Note that in the urban environment, non-injury crashes increased.

EXHIBIT 2-8 Safety effects of a median

| Road setting | Crash severity | CMF |
|---|---|---|
| Rural | All injury | 0.88 |
| Rural | All non-injury | 0.82 |
| Urban | All injury | 0.78 |
| Urban | All non-injury | 1.09 |

**U-turns and Safety**

A discussion of the safety effects of a raised or depressed median logically leads to questions about the safety of U-turn movements necessitated by the installation of such a median. NCHRP Report 524, *Safety of U-Turns at Unsignalized Median Openings*, examined U-turns and crash data from both rural and urban arterial corridors. The study computed crash rates for mid-block median openings where only U-turns were allowed, and crash rates for both directional (some movements prohibited) and conventional (all movements allowed) three- and four-leg intersections.

At the 103 urban unsignalized median openings studied, there were an average of 0.41 U-turn plus left-turn crashes per year. At the 12 rural locations, this figure was 0.20. At all of these openings combined, 58% of the movements were U-turns. Major road average daily traffic volumes (ADTs) ranged from 13,000 to 42,000.

In the urban corridors, mid-block median openings had substantially lower median opening crash rates than did three- and four-leg intersection median openings. The rural sample size was too small to allow firm conclusions to be made.

At three- and four-legged urban intersections, two or more directional median openings are needed to serve the same movements as one conventional median opening. For three-leg intersections, the combined directional crash rate was markedly less than the rate for conventional openings. For four-leg intersections, the combined directional crash rate was about the same as that for the conventional openings (Potts).

**Turn Lanes and Safety**

Crash modification factors (HSM p 11-34, 12-43) in Exhibit 2-9 demonstrate the safety benefits of providing turn lanes on through roadway uncontrolled approaches.

EXHIBIT 2-9 Safety benefits of providing turn lanes at intersections

| | Three-leg intersection | Four-leg intersection, one major approach | Four-leg intersection, two major approaches |
|---|---|---|---|
| Rural multilane: left turn lane, total crashes | 0.56 | 0.72 | 0.52 |
| Rural multilane: left turn lane, fatal + injury crashes | 0.45 | 0.65 | 0.42 |
| Rural multilane: right turn lane, total crashes | 0.86 | 0.86 | 0.74 |
| Rural multilane: right turn lane, fatal + injury crashes | 0.77 | 0.77 | 0.59 |
| Urban and suburban arterial, left turn lane, total crashes | 0.67 | 0.73 | 0.53 |
| Urban and suburban arterial, right turn lane, total crashes | 0.86 | 0.86 | 0.74 |

**OPERATIONS**

A number of sources reflect the concept that frequent driveway access to roadways increases delay and reduces capacity. Such effects may be insignificant on a local or collector roadway, but have more pronounced implications on higher volume, higher speed arterials. For instance, the 2010 *Highway Capacity Manual* procedure called for reductions in free-flow speed as access points per mile increased.

It is rather obvious that the presence of a raised median creates greater delay for drivers wanting to turn left into a specific driveway than does a TWLTL, although the driver may be oblivious to the better overall travel time from the trip origin to the point of the left turn afforded by more restrictive access management.

In 1981, Colorado became the first state to adopt a modern, comprehensive access management program. They conducted a study to compare and analyze travel efficiency on arterials with and without access management. Using traffic model TRANSYT7F and two theoretical five-mile roadway segments, travel time and travel delay was measured. The access controlled roadway assumed full movement signalized intersections every one-half mile and right-in right-out intersections at one-quarter mile points. The unrestricted roadway assumed full movement signalized intersections every one-quarter mile, with lesser access points every 600 feet. Exhibit 2-10 contrasts the simulation outcomes (Colo.).

EXHIBIT 2-10 Estimated savings in travel time and delay for a five-mile roadway segment

| | Total Travel Time (vehicle-hours per hr) | Total Delay (vehicle hours per hr) |
|---|---|---|
| Uncontrolled access - 1/4 mile signal spacing with typical commercial driveways | 942 | 675 |
| Access-managed - 1/2 mile signal spacing | 542 | 275 |
| Percent change: Uncontrolled to Access-managed | -42% | -59% |

Using traffic simulation software to model different scenarios and determine delay for driveway users, a Michigan DOT study found that the delay for a driveway close to the intersection was greater than delay at a driveway farther away from the intersection.

NCHRP Report 420 (Gluck p 79) stated simulation "models show TWLTLs resulting in lower delays than raised medians". The authors noted that part of this modeled delay resulted from blockages created by inadequate design of the left turn bays.

Fewer and better-spaced signalized intersections make it more likely that a signal timing plan with improved two-way progression can be achieved. NCHRP Report 420 (Gluck, p 28) contained an estimate of the effects of increased numbers of traffic signals on travel time (Exhibit 2-11). Exhibit 2-12 illustrates that for 40 to 45 mph arterials, a lower signal density helps move vehicles along. Conversely, as signal density goes up, speed goes down (Gluck p 28).

EXHIBIT 2-11 Effect of signals on travel time

| Signals per mile | Travel time increased over a base condition of two signals per mile |
|---|---|
| 3 | 9% |
| 4 | 16% |
| 6 | 29% |
| 8 | 39% |

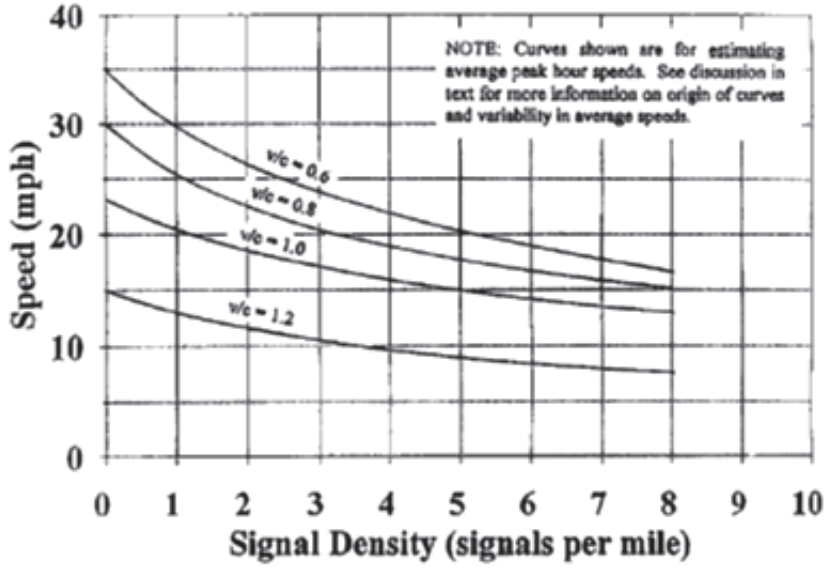



EXHIBIT 2-12 Effects of signal density on speed of 40 to 45 mph arterials

Gan and Long identified the following eight operational problems caused by access points too close to a signalized intersection. These factors adversely affect both throughput efficiency and safety.

1. Blocking driveway egress movement – The through vehicle queue extends upstream so as to block an access point, preventing a vehicle from exiting the driveway.
2. Blocking driveway ingress movement – The through vehicle queue extends upstream so as to block an access point, preventing a vehicle from entering the driveway.
3. Incomplete turning movement – A driver intends to make a right turn from a driveway into a roadway, followed by a left turn at a nearby signalized intersection. The driver is not able to complete the maneuver due to queued cars in the left turn lane and is thus left exposed to traffic in through lanes.
4. Insufficient weaving section length – A driver exiting a driveway is required to immediately maneuver across multiple lanes to make the next turn.
5. Conflicts with intersection turning movements – A driver exiting a driveway is often not able to see turning vehicles at a nearby intersection because these vehicles are hidden behind other queued vehicles at the traffic signal. Also, having to monitor for vehicles coming from multiple intersection approaches complicates the driving task.
6. Misinterpretations of right turn signals – Vehicle B is on a driveway or side street, about to turn onto the through roadway. The driver of vehicle B may think that approaching vehicle A on the through roadway displaying a right turn signal will turn right before or at their location. Instead, the driver of vehicle A intends to turn somewhere downstream of vehicle B.

7. Merging bay vehicular conflict and reduced merging length – A driver who turns right from a traffic signal into a merging lane may be too distracted by the merge maneuver to notice a vehicle turning from a driveway immediately downstream.
8. Emerging vehicular conflicts from driveways on right turn bays – A driver is required to turn across a right turn bay into the through lane when performing a right turn maneuver.

## ECONOMICS

The transportation network supports a wide range of economic activities occurring in both rural and urban environments. The efficiency – or inefficiency – of the network has broad impacts on attributes such as reliability and costs that affect a wide range of manufacturing, agricultural, and wholesale trade activities. The network's attributes affect travel time from residential areas to job locations, and therefore in part influence the availability of labor. Traffic crashes result in economic losses. However, the primary concern when roadway projects propose restrictive medians and driveway modifications has been the potential economic impact on retail roadside businesses.

Researchers have found it more challenging to quantify the economic effects of access management on roadside businesses than on other attributes, because private businesses are not prone to release their financial statements. The following economic studies were reported in the *Access Management Manual* (AMM2, p 33-36).

### Economic Impacts on Roadside Business

The Kansas DOT examined 15 roadside businesses that had previously filed inverse condemnation lawsuits based on access related factors, in which a common complaint was that access management would have a detrimental impact on their business or land-use. In 14 of the 15 cases, the plaintiff was either still operating the business, a different entity was operating the same business, or the property had been upgraded. The one business failure involved a gasoline station for which the access change caused drivers to incur about two miles of additional travel to reach.

An innovative Iowa effort collected data on businesses in eight corridors that had undergone access management treatments, along with other statewide data for comparisons.

- In all but one case studied, the five-year business loss rate for the access-managed corridors was substantially lower than that for their overall communities.
- In the access-managed corridors, retail sales grew at an average annual rate of 7.3%, compared to only 3.3% in the overall community.
- In the study corridors after construction was completed, sales growth exceeded that of the overall community by 10% to 20%.

- Most business owners and managers reported after-project sales were either the same (53%) or greater than (33%) their before-project sales; while 5% reported a sales decline after completion of the project.

A Texas study investigating the economic impacts of restricting left-turn movements to and from businesses due to installing a median found the following.

- Most of the negative impacts occurred during median construction.
- Perceptions of business owners were more pessimistic before the median installed, but improved after.
- Most types of roadside businesses (including specialty retail and restaurants) reported increases in customers and gross sales. Gasoline stations and automobile repair shops reported decreases.
- Except for during construction, overall employment in the corridor trended upward.
- The value of most tracts in the corridor stayed the same or increased.

A North Carolina DOT study collected perceptions of access management from 789 business owners. After project completion, general business owner perception of the medians was more favorable than before their construction.

**Broader Economic Impacts**

The economic impacts that can be easily overlooked are the impacts on the general public and on a range of business sectors that depend on roadway transportation. By preserving the functionality and utility of the roadway (i.e., higher levels of mobility and safety), and being less susceptible to degradation, access management helps preserve the public's investment in the public's infrastructure.

The Virginia DOT's access management program has five established goals, enumerated by the state's legislature (Connelly). The following three of the five have an economic focus.

3. Support economic development in the Commonwealth by promoting the efficient movement of people and goods.
4. Reduce the need for new highways and road widening by improving the performance of existing systems of state highways.
5. Preserve the public investment in new highways by maximizing their performance.

A given roadway that has better mobility and less congestion allows potential customers to travel to a site within a specified number of minutes from a greater distance; this has the effect of creating a larger potential market area for any given tract of land. Improve mobility and less delay also makes the hauling and distribution of freight more economical. Specifically, the trucking industry is impacted by congestion, traffic signal delay and lowering of speed limits – any factors that result in more time to deliver goods to their destination (Torrey).

One of the largest overnight package delivery companies, UPS, is known for studying and refining its vehicle routing to improve efficiency, operations, and profits. The company implemented a routing strategy consistent with basic access management principles. By routing trucks to make right turns and minimize the number of left-turn movements, the company is saving millions of dollars on its gasoline bill. It recognized that the time the trucks spent in left-turn lanes leads to more engine idling, fuel consumption, and traffic delays. The company also recognized that left turns are not as safe as right turns. This conclusion was reached based on the extensive experience of its drivers and reconfirms the crash analysis findings in the access management research (Gattis & Gluck).

**ENVIRONMENT**

Numerous sources that discuss the fuel efficiency of automobiles and light trucks show, within the range of speeds normally encountered on urban and suburban roadways, improved fuel economy as speeds increases. The exact values vary among different makes and models, but it is not uncommon to see fuel efficiencies steadily rise up to speeds of 25 to 35 mph and then plateau. Access managed roadways are less likely to incur stop and go driving, and more likely to allow drivers to maintain a steadier range of speeds, thus producing better fuel economy. Reducing the amount of deceleration and acceleration in the stream of traffic also reduces both air and noise pollution.

**CLOSING**

Numerous studies conducted by different groups, in different environments across the country tend to show that implementing comprehensive access management strategies and treatments leads to improved conditions, as compared to roadways with little or no access management.

- Safety: fewer crashes
- Operations: less delay, greater mobility
- Economics: broad economic benefits; impacts on specific businesses may be negative, neutral, or positive
- Environment: access management creates operating conditions conducive to less pollution, better fuel economy

The operational and safety examination of suburban multilane roadways reported in NCHRP Report 282 (Harwood) reached somewhat different conclusions. Using data from California and Michigan highways, a number of cross section alternatives were compared for roadways with over 7000 ADT, speeds in the 35 to 50 mph range, and at least ¼ mile between signalized intersections. A four-lane divided section was recommended for major arterials with high through volumes, and only with less than 45 driveways per mile (p 17). It was noted that in a developing area, selecting a divided section could “influence the course of future

development, so that the traffic movement function is preserved". The stated expectation (p 25) that six-lane lane roadways with either a median or a TWLTL would have similar safety performance has been challenged by some subsequent studies.

The second edition of the *Access Management Manual* (p 30) summarizes benefits of access management techniques, as Exhibit 2-13 shows. The AMM2 did not report any context or assumptions these findings were based on, so one cannot assume that all of them are broadly applicable. Note that the current CMFs for providing left turn lanes range from 0.73 to 0.52 for total crashes, and for right turn lanes range from 0.86 to 0.74, generally agreeing with the "percent decrease" numbers in the table.

EXHIBIT 2-13 Summary of effects of access management techniques

| Treatment | Effect |
|---|---|
| Add continuous TWLTL | 35% reduction in total crashes<br>30% decrease in delay<br>30% increase in capacity |
| Add nontraversable median | ≥55% reduction in total crashes<br>30% decrease in delay<br>30% increase in capacity |
| Replace TWLTL with nontraversable median | 15% to 57% reduction in crashes on four-lane roads<br>25% to 50% reduction in crashes on six-lane roads |
| Add left-turn bay | 25% to 50% reduction in crashes on four-lane roads<br>25% increase in capacity |
| Add right-turn bay | 20% reduction in total crashes<br>Limit right-turn interference with platooned flow, increased capacity |
| Long signal spacing with limited access | 42% reduction in total vehicle hours of travel<br>59% reduction in delay<br>57,500 gal of fuel saved per mile per year |

Source: S/K Transportation Consultants, Inc. Participant notebook for National Highway Institute Course No. 133078: Access Management, Location, and Design. National Highway Institute, FHWA, U.S. Department of Transportation, 2000.

Exhibit 2-14, from the AMAG (p 243), offers the following evaluation of three choices for cross sectional treatments.

The nature and location of connections to through roadways can contribute to significant problems if not administered by staff trained to have a firm grasp of these issues, and supported by a well-developed set of policies and regulations. In a 1969 paper examining driveway crashes (Box), the late Paul Box remarked "Data such as this verifies the need for careful design studies at commercial driveways. The day should be long past when junior

engineers or building department clerks can process driveway permit applications on a routine basis similar to water or sewer main connections."

EXHIBIT 2-14 Comparing attributes of roadway median treatments

| Effect | Undivided | TWLTL | Restrictive Median |
|---|---|---|---|
| KEY: ● = most effective, most preferable<br>◘ = somewhat effective, somewhat preferable<br>○ = least effective, least preferable | | | |
| Safety | | | |
| Reduce vehicular crashes | ○ | ◘ | ● |
| Pedestrian refuge | ○ | ○ | ● |
| Positive guidance, effective communication to motorists | ○ | ○ | ● |
| Operational | | | |
| Reduce the delay to major roadway traffic | ○ | ● | ● |
| Improve capacity | ○ | ● | ● |
| Reduce the delay to major roadway left turns | ○ | ● | ● |
| Reduced the delay to minor roadway left turns | | | |
| on low-volume major roadway | ○ | ● | ◘ |
| on high-volume major roadway NOTE 1 | ○ | ○ | ○ |
| Other | | | |
| Aesthetics | ○ | ○ | ● |
| Snow removal | ● | ● | ○ |
| Construction costs | ● | ◘ | ◘ |

NOTE 1: have low capacity for direct left turns due to few adequate gaps in traffic; a non-traversable median accommodates these left turns by a right turn followed by a U-turn

**REFERENCES**

Alluri Priyanka Alluri, Albert Gan, Kirolos Haleem, Stephanie Miranda, Erik Echezabal, Andres Diaz, and Shanghong Ding. *Before-and-After Safety Study of Roadways Where New Medians Have Been Added*. Florida International Univ., Miami, FL (December 2012).

AMAG Karen K Dixon, Robert D Layton, Mark Butorac, Paul Ryus, J L Gattis, Lacy Brown, and Del Huntington. *Access Management Application Guidelines*. Transportation Research Board, Washington, DC (2016).

AMM1 Kristine M Williams and Committee on Access Management. *Access Management Manual*. Transportation Research Board, Washington, DC (2003).

AMM2 Kristine M Williams, Virgil G Stover, Karen K Dixon, Philip Demosthenes. *Access Management Manual*, 2nd ed. Transportation Research Board, Washington, DC (2014).

Box Paul C Box. "Driveway Accident and Volume Studies, Part I-General Relationships," *Public Safety Systems* (May/June 1969) pp 18-22.

Colo Colorado Dept. of Highways. *Colorado Access Control Demonstration Project*. Denver, CO (1985) and P Demosthenes and J Dolan, "Access Control Demonstration Project", in the U.S. Congressional Record, Washington DC (January 1986).

Connelly John P Connelly, Lester A Hoel, and John S Miller. *Access Management Performance Measures for Virginia: A Practical Approach for Public Accountability*, FHWA/VTRC 10-R2. Virginia Transportation Research Council, Charlottesville, VA (April 2010).

FHWA Federal Highway Administration. "Safety Benefits of Raised Medians and Pedestrian Refuge Areas", FHWA-SA-10-020. U S Department of Transportation, Washington, DC (2010).

Gattis & Gluck J L Gattis and J S Gluck. "Effects and Impacts of Access Management," *ITE Journal*, Vol. 80, No. 1 (January 2010) pp 40-45. Institute of Transportation Engineers.

Gattis J L Gattis, L K Duncan, M S Tooley, A S Brewer, M Q Le, and P Muthu. *Roadway Median Treatments*, MBTC DOT 2067. Mack-Blackwell Transportation Center, Univ of Arkansas, Fayetteville, AR (2010).

Gluck Jerome Gluck, Herbert S Levinson, and Vergil Stover. *Impacts of Access Management Techniques*, NCHRP Report 420. Transportation Research Board, Washington, DC (1999).

Harwood Douglas Harwood. *Multilane Design Alternatives for Improving Suburban Highways*, NCHRP Report 282. Transportation Research Board, Washington, DC (1986).

HSM American Association of State Highway and Transportation Officials. *Highway Safety Manual*, 1st ed. Washington, DC (2010).

Lall B Kent Lall, Del Huntington, Ali Eghtedari. "Access Management and Traffic Safety", *Second National Access Management Conference Proceedings*, Federal Highway Administration, Washington, DC (1996) pp 249-267.

Levin David R. Levin. "Public Control of Highway Access and Roadside Development," Public Roads Administration, Federal Works Agency, Washington, DC (1943).

Potts I B Potts, D W Harwood, D J Torbic, K R Richard, J S Gluck, H S Levinson, P M Garvey, R S Ghebrial. *Safety of U-Turns at Unsignalized Median Openings*, NCHRP Report 524. Transportation Research Board, Washington, DC (2004).

Preston H Preston, M Barry, and W Stein. *Traffic Safety Fundamentals Handbook*. Office of Traffic, Safety, and Technology, Minnesota Dept. of Transportation, St. Paul, Minnesota (August 2008) p A-21.

Rawlings J Rawlings and J L Gattis. "Detailed Study of Driveway Collision Patterns in an Urban Area," *Compendium of Papers*, 87th Annual Meeting, Transportation Research Board (2008).

Torrey W Ford Torrey and Dan Murray. *An Analysis of the Operational Costs of Trucking: 2016 Update*. American Transportation Research Institute. Arlington, VA (September 2016).

# CHAPTER 3: CURRENT ACCESS MANAGEMENT IN ARKANSAS

For lists of abbreviations and definitions, see Chapter 1.

Task 3 of this project is to document the current state of access management practice in Arkansas, both at the state and local levels; it consisted of the following sub-tasks.

a. Review applicable state laws and regulations;
b. Conduct interviews with ARDOT right-of-way and legal staff about access-related case law;
c. Conduct interviews in ARDOT central office divisions most involved in access management, and review permit processing procedures;
d. Conduct interviews with ARDOT Permit Officers in five of the ten districts;
e. Conduct interviews in selected locales where there are state-numbered access managed roadways; and
f. Conduct interviews with selected local government staff and with metropolitan planning organizations (MPOs).

Understanding and documenting the current procedures and practices in Arkansas, both at the state and local levels, is a requisite step in order to construct a path from "where we are now" to "where we could be".

The discussion of current practices can be broadly grouped into two major categories:

1. Administrative organization and procedures; and
2. Specific requirements (e.g., standards, guidelines for roadways and developments).

## ROADWAYS CURRENTLY EXHIBITING ACCESS MANAGEMENT

Transportation Policy & Planning staff named the following state routes as having fully-executed multi-party access management agreements. The road names and general descriptions have been added.

- SH 60, Conway: Dave Ward Drive, 4-lane with curbed median;
- SH 100, Maumelle/North Little Rock: Maumelle Boulevard, 4-lane with curbed median;
- SH 265, Fayetteville: Crossover Road, 4-lane with curbed median; and
- SH 391, North Little Rock: Galloway Road, 1300 ft long, 4-lanes plus TWLTL.

The ARDOT district cooperates with local governments in enforcing locally-adopted plans for a short length of SH 183 in Bryant, and for SH 165 in North Little Rock, which is currently a two-lane road.

A few roadway corridors that exhibit access management elements, either by design or unintentionally, have existed for decades. In more recent years, this list has grown. Some of the urban corridors in Exhibit 3-1 are very short.

EXHIBIT 3-1 Urban roadways exhibiting access management elements

| City | Roadway name | State route number |
|---|---|---|
| Bella Vista | Hwy 71 | US 71 |
| Bentonville | SW "I" St. | SH 112 |
| Bryant | Bryant Pkwy. | na |
| Bryant | N. Reynolds Rd. | SH 183 |
| Cabot | Hwy 5 | SH 5 |
| Camden | Dr. Martin Luther King Exp. | SH 7 |
| Camden | Branyan-Hunnicutt Bypass | US 278 |
| Conway | Dave Ward Dr. | SH 60 |
| Fayetteville | Crossover Rd. | SH 265 |
| Fayetteville | Razorback Rd. | SH 112 |
| Ft. Smith | Hwy 71 | US 71 |
| Helena | Martin Luther King, Jr. Dr. | US 49 |
| Jacksonville (Air Force base) | Vandenberg Blvd. | na |
| Little Rock | Chenal Pkwy. | na |
| Little Rock | S. University Ave. | US 67 |
| Maumelle / North Little Rock | Maumelle Blvd. | SH 100 |
| North Little Rock | Riverfront Dr. | formerly SH 100 |
| North Little Rock | Valentine Rd. | SH 391 |
| Pine Bluff | Martha Mitchell Exp. | US 65 |
| Sherwood | Brockington Rd. | na |
| Siloam Springs | Hwy 412 | US 412 |

A few multilane routes crossing expanses of rural areas reflect access management elements, such as the following.

- SH 1: Lee, St Francis Counties;
- SH 7: Union, Ouachita Counties;
- US 64: Faulkner County;
- US 65: Boone County;
- US 65: southeast part of state;
- US 71: Little River County;
- US 71: Sebastian County;
- US 79: Calhoun, Dallas Counties;
- US 167: south-central part of state;
- SH 226: Craighead County; and
- US 412: Benton, Washington, Madison Counties.

ARDOT staff commented that some two-lane highways (e.g., US 71 Waldron Bypass) have partial control of access.

## ACQUIRING INFORMATION

To better understand the current state of policies and practices that affect access management, the research team conducted interviews and acquired a range of documents. The scheduling of interviews with ARDOT, MPO, and city government staff began in late August 2017. The research team conducted the initial interviews from late October through early December. Some follow-up and clarification telephone discussions occurred later.

The process began with preparing a list of interview topics and questions, then sending the list in advance to the person or persons to be interviewed. The duration of an interview was typically 60 to 90 minutes. Some interviews were audio-recorded, while the records of other interviews were kept with written notes. In many of the interviews, the staff supplied the research team with relevant supporting and explanatory documents.

## STATE DEPARTMENT OF TRANSPORTATION POLICIES AND PRACTICES

The control of access along ARDOT's roadways is a cooperative endeavor, involving a number of offices. To learn about these interactions, the research team scheduled interviews with the following ARDOT personnel. In some instances, additional staff were present.

ARDOT Central Office

Legal: Rita Looney and Maria Schenetzke

Maintenance: Joe Sartini

Right-of-Way: Perry Johnston and Jennifer Williams

Roadway Design: Trinity Smith

Transportation Planning and Policy: Jessie Jones

ARDOT District Offices

District 3, Hope: Mike Calhoon; District 4, Ft Smith: James Vaught; District 6, Little Rock: Daniel Ivy; District 9, Harrison: Doug Mears; District 10, Paragould: Rick Carmack

### Current Practices for New Roadways and Major Redesigns

Presently, there are a number of possible mechanisms that can initiate a study to consider proposed roadway construction or reconstruction. A local body may come to ARDOT with a request, or study may be initiated in-house. The scope and limits of such studies can range from considering a specific intersection and its approaches to considering a lengthy roadway corridor.

When a proposed project is programmed for study, representatives from a number of divisions provide input that will define the scope and general design parameters for that specific project. Examples of things that may affect these parameters include the master street plan for the local area, and whether the roadway being considered is a component of the city bicycle plan. Recently, many of these studies have included a general access management consideration as part of the findings.

After scoping, the project development proceeds to Roadway Design. There, decisions are made that can affect access spacing. If a higher level of access management is applied, Roadway Design would work with Planning on the level of access control and on coordination with local governments about access management criteria.

A discussion of access management with local parties may generate intense opposition, especially from local business interests who are fearful that applying access management to a roadway abutting their property will have a negative financial impact on their operation. This is in spite of countless examples across the country of businesses thriving in an access-managed environment. Such opposition can make it politically challenging to apply access management, and thus deny its safety and operational benefits to the broader public.

In December 2017, the Arkansas State Highway Commission adopted Minute Order 2017-112 establishing the following criteria for access control and median openings to "clarify the Department's policy and as a guideline for future projects involving these issues".

| ACCESS CONTROL | | | |
|---|---|---|---|
| A. | Full Control | | Access allowed at interchanges only |
| B. | Partial Control | Two Lane Facilities | • At-grade access allowed at selected intersecting public roads/streets<br>• Each abutting property ownership to have access based on amount of frontage, as follows:<br>-- Less than 1200 feet frontage - 1 break in the Control of Access<br>-- 1200 feet or more frontage - 1 break in the Control of Access for each FULL 600 feet of frontage<br>-- Criteria applies to each side of highway when highway divides a parcel |
| | | Four Lane Divided Facilities | High Type Control<br>• At-grade access provided at selected intersecting public roads/streets<br>• No direct private access permitted |

| | | |
|---|---|---|
| | Four Lane Divided Facilities | Low Type Control<br>Access control provided as set out for "Two Lane Facilities" |
| | Others | • As established by the Arkansas Highway Commission<br>• Access control is within the discretion of the Arkansas Department of Transportation, with consideration given to the design, safety, location and terrain of the specific facility. |
| MEDIAN OPENING SPACING | | |
| Rural | | • Openings to be spaced generally at ½ mile intervals. |
| Suburban/Urban | | • Openings may be spaced generally at ¼ mile intervals. |

Appendix A presents selected excerpts from the Arkansas Code related to access management. Appendix B discusses the following topics.

- The authority to regulate access;
- Access related statutes;
- Case law regarding access changes;
- Violations; and
- Records.

**Legal Division - Current Role Access Permitting**

The role of the Legal Division in day-to-day permitting is mostly limited to the occasional call for legal advice from ARDOT staff dealing with unhappy owners relative to access permit application processing and difficult permit terms and conditions. In the rare instance that there is an appeal of a driveway permit decision, the Department is represented by an attorney from the Legal Division.

The *Rules for Access Driveways to State Highways*, 2017, (Driveway Rules) was updated primarily to provide an administrative appeal process in line with the state Administrative Procedure Act (APA, § 25-15-201). An appeal of a driveway permit decision a few years earlier went directly to county circuit court, as ARDOT did not have an administrative appeal process in the Driveway Rules.

When an administrative appeal is made it passes to the Director. The Director can choose a Hearing Officer to hear the appeal and prepare an analysis and recommendation. There have been no recent hearing requests. Such a hearing is semi-formal, with attorneys and a court reporter, where both sides put on evidence. The applicant has the burden of proof if the DOT has made a denial or has required terms the applicant does not wish to abide by.

In regards to project access changes of existing driveways, it is not clear if a project access change would follow an administrative process or eminent domain. The answer might be eminent domain if a taking of property is involved, and the administrative procedures if no property acquisition is involved and access modifications are within the existing ROW.

**Legal Division - Role in Project-Related Access Management**

The primary Legal Division role in access matters is during ROW acquisition when private access is closed or modified in the course of a highway improvement project. Property is taken for highway purposes under the authority of the Commission. In a contested access related legal proceeding, a typical claim to the court is that the action be enjoined (stopped) on the basis that the actions of the Department constitute a taking, or were not included in the acquisition papers, or that it is an inverse condemnation and without due process of law or without compensation.

Changes in property access due to highway projects do not require legal support unless there are legal problems that require Legal Division involvement. It is important that a right of way agent is not authorized to agree to provide an access during a right-of-way settlement. But the ROW agent can work with the Legal and Roadway Design Divisions to include the access in the plans if the design engineer agrees.

During a project, an access permit is not issued for a new or modified driveway as the access change is in the ROW papers and on the design plans. As a result, the owner does not have a permit to use the driveway. The owner can assume the DOT approves of the driveway as it was provided. The access provided by a project, or a ROW agreement, is provided without terms, conditions and noted responsibilities. Absent a permit handed to the owner, the owner has no knowledge of their responsibilities under the Commission Driveway Rules.

Projects have built new driveways at owner's request for future private development. The driveway is only built to the ROW line, and again, no permit is issued and unless in the future the owner needs to modify a portion in the ROW, no permit is required to connect to the driveway once development proceeds. In addition, adding a new driveway where there was not a driveway before is considered a 'betterment' yet it is usually not part of the valuation to off-set acquisition costs. There are enhancement provisions in the law but appraisers are reluctant to use them in their valuation calculation.

There has been some confusion on the use of the term "driveway" in settlements. In one ROW settlement case the DOT promised to build a driveway. The DOT meant the "access" connection from the pavement to the right of way line but the owner, in accepting the settlement, assumed the DOT meant it would build the entire driveway, a long one, to the residence. In court, the owner won. In part, the problem was that there was no plan showing the DOT intention. The DOT had to build the driveway at a significant project cost. Any construction mentioned in acquisition papers should always include an illustration as to what will be constructed for the benefit of both the owner and the DOT contractor.

What is approved on design and right of way plans and in agreements may not be what is installed by the project. Based on DOT experience, access conditions and location may change in the field from time to time during construction and design and ROW are not informed and documents are not updated and there is no record of the changes.

When it is necessary for a project to modify a driveway, it sometimes impacts on-site circulation such as requiring a change in parking lot circulation. In these cases, the DOT pays for on-site improvements called "cost to cure", as necessary to adjust for DOT project changes and impacts. This is not considered a change in value; it is a method to avoid damages.

There must be a taking of property to get compensation. When there are impacts due to road design changes without touching private property, there is no compensation. But from time to time there can be a need to provide some sort of compensation due to unique circumstances and in these cases the DOT includes a "TCE" (temporary construction easement), to provide a legal vehicle for compensation where there will be a specific impact. An example might be a very old highway and property conditions dating back hundreds of years and more than standard adjustments are necessary to prevent the highway changes from overwhelming historical property conditions.

Access control has also been an issue in areas of the State where the topography makes it more expensive for a property owner to develop access. It is sometimes discovered that while the access opening "break in access" looks good on two-dimension paper, in the field it has unacceptable topographic problems. A "break in access" in the ROW settlement is not always field checked for feasibility. Some access control projects have left access openings at locations that are too difficult or expensive to build or do not meet the site plan anticipated by the owner. Paperwork changes are then necessary to move the opening in the access control line.

To a certain degree, access changes can be made without compensation. But there are certain legal constraints on the Department in the taking or changing of private access. Police powers, the authority of the regulations without compensation, generally end when the action of the Department can be shown to cause a substantial impairment of property access. This is fact driven by the specific conditions at the location and sometimes by prior Department actions such as access control by deed or the existence of an official opening in the deed granted to the owner. In addition, some owners consider any impairment compared to existing conditions as warranting compensation, such as reducing three driveways to two driveways in the course of a new project.

**Maintenance Division**

The electronic, connected permit system, implemented in 2017, is housed in the Maintenance Division. Prior permits have not been entered into the new system, but records from the recent past are kept in paper form. Each district has read-only access to statewide

data; one benefit of this is that a person in one district can see how a situation has been handled in other districts. Among the benefits of the new system is improved consistency among districts.

The Maintenance Division staff located in the Central Office complex (central office) runs queries periodically to check a variety of items, such as if a bond has been held too long. Our understanding is that there is not day-to-day oversight from the central office. Quarterly meetings between central office and district personnel are held to discuss how situations are being addressed.

With this system, an applicant can access and download forms, but not submit them online. There are two general driveway permit categories, Non-commercial and Commercial. The Non-commercial group includes single family residences, fields, and farms, even if it is a corporate farm. The applicant is responsible for submitting any required design plans, which are reviewed by ARDOT and returned for correction as needed.

The system stores not only the permit application, but also supporting documents such as 11" x 17" plan sheets. This facilitates communication between the district and central office personnel.

The 2017 *Rules for Access Driveways to State Highways*, approved by the Commission, addresses a number of aspects of the driveway permit process. When staff are processing an application, if a possible sight distance restriction is observed, then they make physical measurements. Consideration of a left turn lane is typically initiated by the developer, not the Department. If an applicant requests a right turn lane, it is not normally allowed.

The property owner is responsible for the costs associated with a new or revised driveway. Once installed, the Department does not maintain Commercial driveways or their drainage pipes.

There is nothing currently to automatically inform a permit officer of the existence of an access management plan in effect for a roadway. The officer has to know or suspect of a need to manually search the system to determine this.

If the land use changes from Non-commercial to Commercial, but the land owner does not wish to change the driveway, then the Department would not require a new permit.

It was noted that grass medians create additional maintenance work, and inner curb-and-gutter requires more sweeping. Commitments by a local government or other organization to maintain a median may fade over time.

**Right of Way Division**

This section summarizes information gathered from Right of Way Division staff to gain insight regarding the policies, standards and issues related to management of access in right of way procedures. Comments are grouped by related topics.

| Topic | | Right of Way Division (ROW) interview responses |
|---|---|---|
| A. | Staff | The majority of access matters relative to highway projects is handled in-house. When right of way work is contracted out, such as for larger corridor projects, in-house staff closely monitors the work of the consultants.<br>Right of way staff contributing to access decisions includes agents, appraisers and managers. |
| B. | Agents | ROW agents are the primary contact with property owners. Agents are not authorized to authorize driveways, but do facilitate the process by working with the owner and designers to determine mutually agreeable access in the after condition (roadway completion). District permitting officers are typically not involved. |
| C. | Property owner access change requests | When the property owner wants to modify the proposed driveways in the design plans, the agent takes the proposal to ROW. For minor adjustments, ROW does the design review and checks with designers to confirm. If the proposed changes are significant the proposal goes directly to the Roadway Design Division for consideration. |
| D. | Promise of direct access | While the ROW and design process does not promise access, it is more or less implied. There is rarely an owner-agent discussion regarding closure of access. The driveways will be shown on the ROW plans and the design plans which are shown to the owner.<br>However, on partial control of access projects, there is a guarantee of access in terms of the settlement papers showing "breaks in access" along the acquired control of access line (CA). |
| E. | Frontage Road Access | On a fully controlled highway, the CA line is at the outer limits of the right of way. If a frontage road exists, breaks in the CA line are noted for access. If a frontage road will not be built, the settlement paperwork says access will be allowed should a frontage road be installed at a later date consistent with whatever driveway policy is in place for frontage road access permits. |

| Topic | | Right of Way Division (ROW) interview responses |
|---|---|---|
| F. | Openings in CA line | Where a "break in access" will be given, the normal width is 50 feet. This distance can accommodate almost any activity. When it is later necessary to shift an opening to accommodate development, an "access modification agreement" is processed. There is no before and after appraisal or a determination of change in property value. There is a procedure for before and after appraisals due to requested CA changes but it is so rare that there is no recollection of the last time it occurred. Part of the assumption is that it would be difficult to determine if a change in value occurs and if so, the value of the change. |
| G. | No new break in access | For highways with access control, an access change will not be made and a new break in access will not be allowed to accommodate further subdivision of property. Shifts are allowed, but not additional breaks. |
| H. | Current policy on partial access | Guidance on access breaks provided by appendix C of the roadway manual has resulted in some confusion as to if a "break" means a driveway or just a written description in the settlement. The 600' is used to grant more openings than are necessary and some are granted at locations that are not feasible to construct. A better approach would be look at reasonableness and necessity for access to find reasonable locations and a reasonable level of access to serve the property which might mean access to a local street. |
| I. | 600 foot spacing | Part of the purpose of the 600' guidance is in part to support access for subdivision developments. |
| J. | Mostly low type partial control corridors | Partial control includes 'high' type and 'low' type. ROW is mostly doing low type. Who determines when to do 'high' or 'low' is not known but assumed to be part of the design process. |
| K. | Circuity of Route | When a median project changes local travel patterns or a left turn opening is closed, the courts have determined that circuity of route is not compensable. So far the issue before the courts has only been for a few blocks. Longer circuity of route changes has not been tested. |
| L. | Loss of left turns | No compensation for loss of left turns is included in appraisals. However, sometimes the loss of left turns is determined by the appraiser to require property changes, or damage to the remainder such as on-site circulation changes, and the appraiser discusses the value issues in their report. |

| Topic | | Right of Way Division (ROW) interview responses |
|---|---|---|
| M. | Access damages | Access damages to the remainder of the property are listed separately from property acquisition costs. |
| N. | Cost to cure | "Costs to cure" is a process where the Department fixes or pays for on-site changes necessary due to the highway project such as parking lot modifications. This is not a value change payment. |
| O. | Access compensation | There is no "rule of thumb" as to when ROW determines that compensation for changes in access will be paid. Usually observation of conditions is applied and the question is what will happen to the property, not the effect on the business. The question is "what will a reasonable buyer pay" for the property in the after condition compared to the before condition". They look for an effect overall. |
| P. | Highest and best use | Appraisers look for value change in the highest and best use. |
| Q. | Keep current driveways | There is an assumption that a change, a limitation, in access such as a reduction in the number of driveways, is a limitation on property use and is compensable. |
| R. | Provide in and out access | There is an assumption that a property needs an "in" and an "out" and that typically means two driveways. The idea to only provide one driveway does not seem reasonable. |
| S. | Fix old driveways | Existing driveways are brought into compliance, improved, to current standards such as widening an older 16' commercial to the new minimum of 24'. "Betterment" value is not added. |
| T. | Excess property disposal | When disposing of excess property, retaining access rights along the frontage is not a consideration unless on a partially controlled highway. There is no access feasibility check. |
| U. | CA on approach roads | It would be rare to wrap a CA line around the corner and down a local connecting street to protect the intersection. The limit of controlled access is the depth of the right of way line, or the end of the "turn-out" radius whichever is greater. |
| V. | CA at interchanges | The standard on interchange cross roads is to extend the CA line for 150 to 300' beyond the ramp unless designers request a greater distance. When they acquire CA down a local street cross road, that portion of the local road is maintained by the Department. |
| W. | CA at interchanges | The CA distance down the cross-road may be based on the recommendation in the IJR. (interchange justification report). |

| Topic | Right of Way Division (ROW) interview responses |
|---|---|
| X. Access permits | In the ROW process with property owners, no access permits are issued and normally the district permit person is not consulted. Documentation of allowed access is in the design and ROW plans and in settlement paperwork. |

**Roadway Design Division**

Many Roadway Design Division (Roadway) practices are influenced by the content in national publications, such as those by AASHTO. The Arkansas Highway Commission has adopted AASHTO guidelines as policy. The nature of a project (e.g., roadway speed, funding source) will affect design choices. Roadway Design observed that sometimes, AASHTO minimums do not adequately address a particular design situation, such as spacing at interchanges.

In the design process, Roadway determines what the access will be. The Right of Way agent makes contact with and conveys this to property owners, and if a property owner wants something different, then the agent conveys this to Roadway for reconsideration. If a tract already has access, then Roadway puts it back, but tries to comply with newer criteria. If a project alters an existing driveway, there is not a mechanism to record that in the permit records. For a new road on a new right-of-way, and if the abutting owner has access to other existing roads, an abutter does not automatically have right of access.

Determining when to design a TWLTL and when to choose a restrictive median occurs during the planning and environmental process, and incorporates input from abutting owners along the route. It is not uncommon to receive pushback against restrictive medians from abutting owners and political powers.

Perhaps criteria that would give district staff more guidance as to when to send a situation to Roadway would be beneficial. Having adequate sight distance is not always sufficient to evaluate an access location. Larger safety and operational aspects are also factors, and can be somewhat akin to intersection control evaluations (ICE).

In response to questions about terminology, Roadway is not currently employing the terms “variance” or “waiver”, so using them in proposed access management applications would not create term-use duplication. There has been confusion both internally and externally about the meanings of terms “access”, “driveway”, and “access break”.

**Transportation Planning and Policy (TPP) Division**

Among the many activities performed by TPP are playing major or leading roles with safety, transportation demand management, congestion management, bicycle and pedestrian planning, and access management. Corridor preservation has not been a major departmental focus.

ARDOT has a statewide bicycle and pedestrian plan, which identifies a preliminary network. Some parts of the state do not have identified routes, but instead have identified corridors which have potential for development. The policy called for bike lanes on curb-and-gutter sections, and shoulder use on sections with shoulders. Separate bike paths have been installed where local government have supplied funding.

Access points are not presently included in roadway inventory data. There is no current activity that routinely queries for driveway locations with safety problems.

There is no mechanism to require the local governments to work with the State in addressing land use issues that as a byproduct make it more difficult to effectively manage access on the state network.

The Commission recently adopted a long range plan that included a statement about developing and implementing more access management guidelines for better safety and efficiency of the highway system. This implies a need to develop more detailed access management policies and procedures.

Access management plans, such as three-party agreements among a city, the MPO, and ARDOT, require Commission approval.

Presently, decisions of how much access management to apply to a given project are made on an ad hoc basis. The issue may be raised in a planning study. However, by the time a project has been designed, the usual practice is to accept a default low level of access control. A more structured, formalized access decision early in the process would be beneficial. In the same manner, a defined policy as to when developers are required to fund improvements related to their developments (e.g., left turn lanes) would provide state-wide consistency.

**District Interviews**

This section lists discussions of procedures and insight from the interviews conducted with Permit Officers in five of the ten districts. Comments are grouped by related topics.

| Topic | District interview responses |
|---|---|
| A. Permit volume | The numbers of driveway permits and of total permits issued per year vary greatly among districts, which means that the district workloads vary. From the districts we sampled, driveway permits constituted roughly ⅙ to ⅓ of all permit applications processed.<br>Most driveway permits issued are for new locations, not for modifying (e.g., widening) existing driveways.<br>A permit for one site may include multiple driveways. During interviews, logging each of the driveway locations was mentioned. |

| Topic | | District interview responses |
|---|---|---|
| B. | Application and permit process | District Permit Officers process Commercial permits themselves, while Area Maintenance Supervisors (AMS) also process some Non-commercial permits. District Engineers (DE) and District Construction Engineers (DCE) are more likely to be involved if it is a Commercial situation. The extent of DE and DCE involvement with Commercial permit applications seems to vary somewhat among districts; one factor that may influence this is the length of time the Permit Officer has been in that position.<br>It seemed common to meet applicants in the field to discuss locations and the permit application.<br>When evaluating permit applications, two of the major concerns of Permit Officers are sight distance and drainage in the ditch. Considering crash history seemed to vary among districts. None of those interviewed indicated they consider projected future year volumes when evaluating permit applications (unless a traffic signal is involved), or considered likely design vehicles for a site.<br>We did not identify guidance for Permit Officers about requiring a turn lane on the state roadway. |
| C. | Time to process permit application | Processing times seem to vary among districts. This may reflect workload variations. |
| D. | Fees and bonds | There are no fees to apply for a driveway permit, but Commercial applicants do have to post a bond that is refunded upon completion and approval of the driveway.<br>Bond amounts vary among districts. Some expressed concerns that the bond amount may not be enough to pay for a remedy if a driveway installation does not conform to the permit conditions, or to be an incentive for contractor compliance.<br>One interviewee noted that requiring a bond for temporary driveway permits might insure a better clean-up on the part of the applicant. |
| E. | Permit denial | Denying a permit application is uncommon; the Permit Officers try to work with applicants to find a solution that can be approved. One scenario that does generate denials is applications along roadways with partial access control. Another is insufficient frontage for a third driveway. |

| Topic | | District interview responses |
|---|---|---|
| F. | Deviations and Variances | One common cause of not being able to meet desired minimum access spacing is that the lot is too narrow.<br>One Permit Officer mentioned encountering access easements that were too narrow. |
| G. | Applicant not conforming with permit terms | Depending upon district workload, it may not be possible to inspect a site during construction, to spot and correct non-compliance in earlier stages.<br>The practice was mentioned of, for large developments, requiring the owner's engineer to sign that construction conformed with the requirements.<br>It seems that Permit Officers regularly see certain types of non-compliance. In response:<br>1. Some districts have prepared their own explanatory drawings and additional notes to attach to permits.<br>2. One district has prepared standard "fix-it letters" to send for applicants. |
| H. | Requiring driveway modification due to changed conditions (e.g., increases in crashes, volume). | We did not find instances of requiring changes to existing driveways in response to increased crashes or traffic volume. However, we did hear of an instance in which another driveway was requested, so required closure of an existing problematic driveway.<br>Responses to land use changes from Non-commercial to Commercial seemed to vary. |
| I. | Record keeping | The new electronic permit system stores records at the central office. Practices for storing old permits vary among districts.<br>If a construction project entails driveway changes, is that information entered into the permit system? |
| J. | Working with local governments. | Commonly, the driveway applicant will also need a municipally-issued building permit. One Permit Officer mentioned that some building permits are contingent upon receiving driveway permit from the DOT.<br>Sometimes a municipal government may not want access at a location at which Departmental rules allow. |

| Topic | | District interview responses |
|---|---|---|
| K. | Knowing where there is "control of access". | We were not able to identify a resource to inform Permit Officers where access was already controlled, such as locations at which access rights had previously been purchased. If dealing with a new project, then plans will show control-of-access. Otherwise, the only way to know this seemed to be institutional knowledge, or interpreting gaps in a fence to be a break in access control. |
| L. | Right-of-way acquisition and new projects | When right-of-way negotiations occur, a property owner may assume they will receive a free driveway; emphasize to owners that they will be responsible for costs of new or expanded driveways.<br>Owners seeing new construction in progress will sometimes suddenly want a new driveway. |
| M. | Miscellaneous | There is general consensus that the relatively new online permit system is a significant improvement.<br>There may be different understandings about what level of approval (i.e., Commission, Legislature) is required in order to revise the Manual.<br>There were some suggested minor changes.<br>1. On the form, change "owner" to "applicant".<br>2. On the form, have place for owner if not the same as the applicant.<br>3. On the form, change "address" to "applicant's mailing address". Retain physical address of the site.<br>4. On the form, include an inset map showing driveway location.<br>5. A single entry for right-of-way width is inadequate in instances where the width varies.<br>6. Is a one-year duration sufficient time for driveway permits? (A somewhat longer term could reduce the number of extension requests and paperwork.)<br>7. The desire for requiring a bond for Non-commercial driveways was expressed, because without it, enforcement can be challenging.<br>8. Link the permit system to MMHIS, so can view the driveway location.<br>9. Is there a form for and record kept of a driveway removal? |

In response to questions about compliance with the four multi-party access management agreements in effect at this time, Permit Officers did not report any significant problems. One officer mentioned the creation of a large development after the agreement and road reconstruction, for which a new street connection was allowed.

**LOCAL GOVERNMENT POLICIES AND PRACTICES**

The interviews with selected local government and MPO staff were conducted in locales where there are either state-numbered access managed roadways or where ARDOT staff had identified some level of access management activity. These interviews from a sample of local governments within the state provide the basis for understanding and assessing current access management practices. Interviews were scheduled with the following personnel; sometimes, other staff were present.

Bryant – Truett Smith, Planning & Community Development

Cabot – Bill Cypert, Mayor

Conway – Bryan Patrick, Planning & Development; Finley Vinson, Street & Engineering

Fayetteville – Chris Brown, Engineering; Andrew Garner, Planning

Little Rock – Bill Henry, Traffic Engineering

Maumelle – Mayor Mike Watson; Jim Narey, Planning & Zoning

Metroplan – Casey Covington

Northwest Arkansas Regional Planning Commission – Tim Conklin

Siloam Springs – Ben Rhodes, Planning; Justin Bland, Engineering

Springdale – Patsy Christie, Planning; Brad Baldwin, Engineering

The following Exhibit 3-2 lists a number of access management techniques, and the extent to which local agencies were found to be employing them. The exhibit contents focus on commercial sites and arterial roadways within cities. The responses made during interviews and information found in agency documents are the basis for entries in the table.

We found no evidence that comprehensive access management has been broadly applied by local governments within the state, but some locales have taken steps to preserve safety and mobility through access management. For instance, in their 2014 *Master Street Plan*, North Little Rock called for access management plans on four of their arterial roadways.

There have been a few Arkansas access management success stories, such as Bryant's Bryant Parkway, or Conway's Dave Ward Drive. These could serve as examples in presentations, or perhaps local government staff could be part of a presentation.

EXHIBIT 3-2 Access management techniques and requirements of local governments

| Access management technique | Local government policy or practice |
|---|---|
| **Access number and location** | |
| Require approval for a driveway connection | Most require property owners to obtain permits for new driveways and for major redevelopment. |
| Strongly limits or prohibits access to major arterials | Different agencies do this to varying degrees. |
| Limits number of driveway connections to public roadway per lot | The main mechanism employed is minimum spacing requirements, which bases the number of connections allowed on the length of the frontage. |
| If corner lot, only allow access from side/lesser street | Few agencies seem to employ this technique. |
| Joint access | In general, agencies encourage but do not require this. In one instance, various practices of the local government act in concert to in effect require it. |
| **Spacing** | |
| Corner clearance | For those agencies reporting corner clearance requirements, distances range from 100' to 300'. |
| Between driveways, same side | This requirement is common. Reported distances range from 50'to 440'; both average and median values are in the lower 200' range. |
| Between driveways, opposite side | Separate requirement generally not found. |
| Between signalized intersections | Some address this; require ½ mile. |
| **Driveway dimensions** | |
| Width and radius | Width requirements for two-way drives generally range from 20' to 40'. Minimum radii range from 20' to 25', with one agency specifying a minimum of 10', but tailored to the design vehicle. |
| Throat length | A few agencies address this, with requirements from 40' to 200'. |
| **Medians** | |
| Require restrictive median | The policy of most agencies is a preference for a restrictive median on major arterials. |
| Distance between full openings | Seldom addressed. |
| Distance between partial openings | Seldom addressed. |
| **Turn lanes** | |
| Left turn | Seldom addressed. |

| Access management technique | Local government policy or practice |
|---|---|
| Right turn | Seldom addressed. |
| **General policy** | |
| Do you have roadway design standards or guidelines? | These are common in one form or another. |
| Do you locate crashes on a map, then study to seek solutions? | Most local governments are not conducting engineering examinations of crashes. |
| Do you regulate frontage of commercial lot along street | Most local governments are not addressing this issue, which when unregulated, can adversely affect attempts to manage access. |
| Do you require developers to submit traffic studies, under some circumstances? | To some extent, local governments do require these. |

In recent decades, some municipalities have begun attempting to apply desirable driveway spacing standards, and requiring joint access in certain situations. But it is unreasonable to expect these recent efforts to, in a short time, significantly "change the landscape" – or in this case, "change the roadscape". Thus, past practices which allowed access levels unsuited for the traffic volumes and speeds found in both large and small cities across the state have created a legacy that will remain. The application of access management techniques is more likely to be visually apparent in areas more recently developed.

There was some dissatisfaction expressed about the amount of time it takes to process local requests.

We did find that some local governments label their driveway spacing programs as "access management". While driveway spacing is a key component of access management, it is just one of the many components of access management.

The interviews created the impression that, based on the proportion of major routes to which a city wished to apply access management, the city of Cabot had in the past exhibited considerable interest in access management. This interest was derived from their experience with the land development and resulting traffic patterns along Highway 89 between downtown and the US 67 freeway. The sentiment expressed by Cabot leadership was "we know there is a better way to do this".

# CHAPTER 4: ACCESS MANAGEMENT PRACTICES OUTSIDE OF ARKANSAS

For lists of abbreviations and definitions, see Chapter 1.

Task 4 of this project is to present information to allow a comparison among Arkansas' access management practices, the state-of-the-practice as presented by the *Access Management Manua*l, 2nd ed. and the *Access Management Application Guidelines*, and the access management practices of six other states, of which at least two abut Arkansas.

As before, these comparisons may be grouped into two major categories:

1. Comparisons of specific standards and guidelines, and
2. Comparisons of administrative organization and procedures.

Each state's transportation agency structures its own access program to fit, as best they can, the capabilities and constraints of their own environment. Therefore, while certain or similar practices may be commonly found among the access management programs of many states, no one state's program can be considered as typical. Said another way, while descriptions of access management practices and examples from other states can help one understand and appreciate the possibilities, such descriptions from any one state should not be construed as typical.

## CONDUCTING INTERVIEWS AND DOCUMENTING PRACTICES

The researchers employed a variety of means to obtain information about other state's departments of transportation access management programs. They sought information that described the administrative policies and practices, and the specific requirements that land developers are to comply with.

To obtain information from the requisite two adjacent state, in-person interviews were scheduled with staff of the Louisiana Department of Transportation and Development (LADOTD) and the Mississippi Department of Transportation (MDOT) in December 2017. Telephone interviews were the means by which the interviews were conducted with DOT representatives of the other four states (Georgia, Iowa, North Carolina, Virginia).

Georgia DOT: Daphne Cuautela, State Access Management Supervisor

Iowa DOT: Willy Sorenson, Traffic & Safety Engineer, Office of Traffic & Safety

Louisiana DOTD: Ryan Hoyt, Traffic Engineering Management Administrator

Mississippi DOT: James Sullivan, State Traffic Engineer

North Carolina DOT: Joe Hummer, State Traffic Management Engineer; James Dunlop, Congestion Management Engineer, Transportation Mobility & Safety Division

Virginia DOT: Robert W. Hofrichter, Assistant Division Administrator, Transportation & Mobility Planning

These discussions were supplemented by identifying and acquiring relevant documents, such as those detailing policies or specific requirements for land developers. Also, in addition to the practices from the listed six states, some information from access-related documents found on websites of other state departments of transportation was incorporated.

The following discussion presents transportation agencies typical policies and stated requirements. From time to time, scenarios can arise that involve one or more factors that make it difficult to provide reasonable access and still adhere to the stated norms; in such cases, agencies grant variances. In fact, it is common for a state's access management program to explicitly describe a process by which a land owner can appeal an access-related decision, and a process for granting variances. Also, all state agencies operate in an environment influenced by public opinion, politics, and political pressures. The communications with access-program managers informed the researchers than some degree of flexibility, and occasionally accepting less than ideal outcomes, is to be expected.

## EXAMPLES OF ACCESS CLASSIFICATION AND SPACING

Exhibits 4-1, 2, 4, 5, and 6 show examples of the various ways in which different state DOT's have chosen to classify their roadways for access management purposes. These classifications affect, among other things, access spacing requirements.

Some states have not developed classifications for access management purposes, but instead employ other criteria as a basis for access decisions. For instance, Georgia bases their access spacing upon speed, with rural/urban environment affecting median openings.

> "Spacing between driveways should be at least equal to the distance traveled, at the posted speed limit, during the normal perception and reaction time plus the distance traveled as the vehicle decelerates to a stop."
>
> Source: Ga. *Regulations for Driveway and Encroachment Control*, p 3-1, 2016

EXHIBIT 4-1 Iowa DOT primary system access classification

| Category | General Description | Spacing |
|---|---|---|
| I | Fully controlled-access multi-lane highways | na |
| II | 2-lane or multilane with high degree of control | 1 mile |
| III | 2-lane or multilane | 1000 ft |
| IV a | primary highway constructed as a 2-lane facility | 600 ft |
| IV b | primary highway constructed as a 2-lane facility | 300 ft |
| V and VI | primary highway where access rights to it were acquired between 1956 and 1966 | varies |

Source: *Iowa Access Policy*, 2012

The table listing the Kansas access classes and control levels is supplemented by color-coded maps (Exhibit 4-3) which offer some insight into the degree to which the DOT applies the various access classifications. The upper map shows an entire district, while the lower map shows a subpart of that same district. These maps show that for some parts of the state, the application of higher levels of access management is extensive.

EXHIBIT 4-2 Kansas DOT access classification matrix

| Class | Description | Percent of Miles | Access control options for this class | | |
|---|---|---|---|---|---|
| A | Fully controlled-access routes | 8 % | Full | | |
| B | Routes that serve as the most important statewide corridors … These routes average 5,100 vehicles per day. | 21 % | Partial access control 1, for routes that may be upgraded to freeway in future.<br>• Intersection spacing at 2 mi, only for public roads.<br>• Consider wider median. | Partial access control 2, for routes that will not become freeways.<br>• Intersection spacing at 1 mi, only for public roads.<br>• Eliminate access where there are passing lanes. | |
| C | … for regional travel and connect to higher-speed, limited-access roads…The average number of vehicles per day on these routes is 3,800. | 23 % | | | Partial access control 3, for arterials likely to remain 2-lane.<br>• Minimize access; deny new access if alternate exists.<br>• Eliminate access where there are passing lanes. |
| D | The routes are important for intercounty movement … 1,800 vehicles per day. | 31 % | | No access control. Access *spacing criteria* do apply. | |
| E | Primarily for local service only … typified by very short trips … 800 ADT. | 17 % | | | |
| | | Note: If a route is part of the National Highway System (NHS) or a designated planned area/corridor, then will be upgraded to Class B. | | | |

Sources: *Access Management Policy*, 2013; percent miles from 2016 data

The KDOT policy was reported to be well-followed for new and totally-redesigned roadways, and for requests for new access. If a tract has access to both a local roadway and a KDOT highway, then the agency does not have to pay for removing access to the state route.

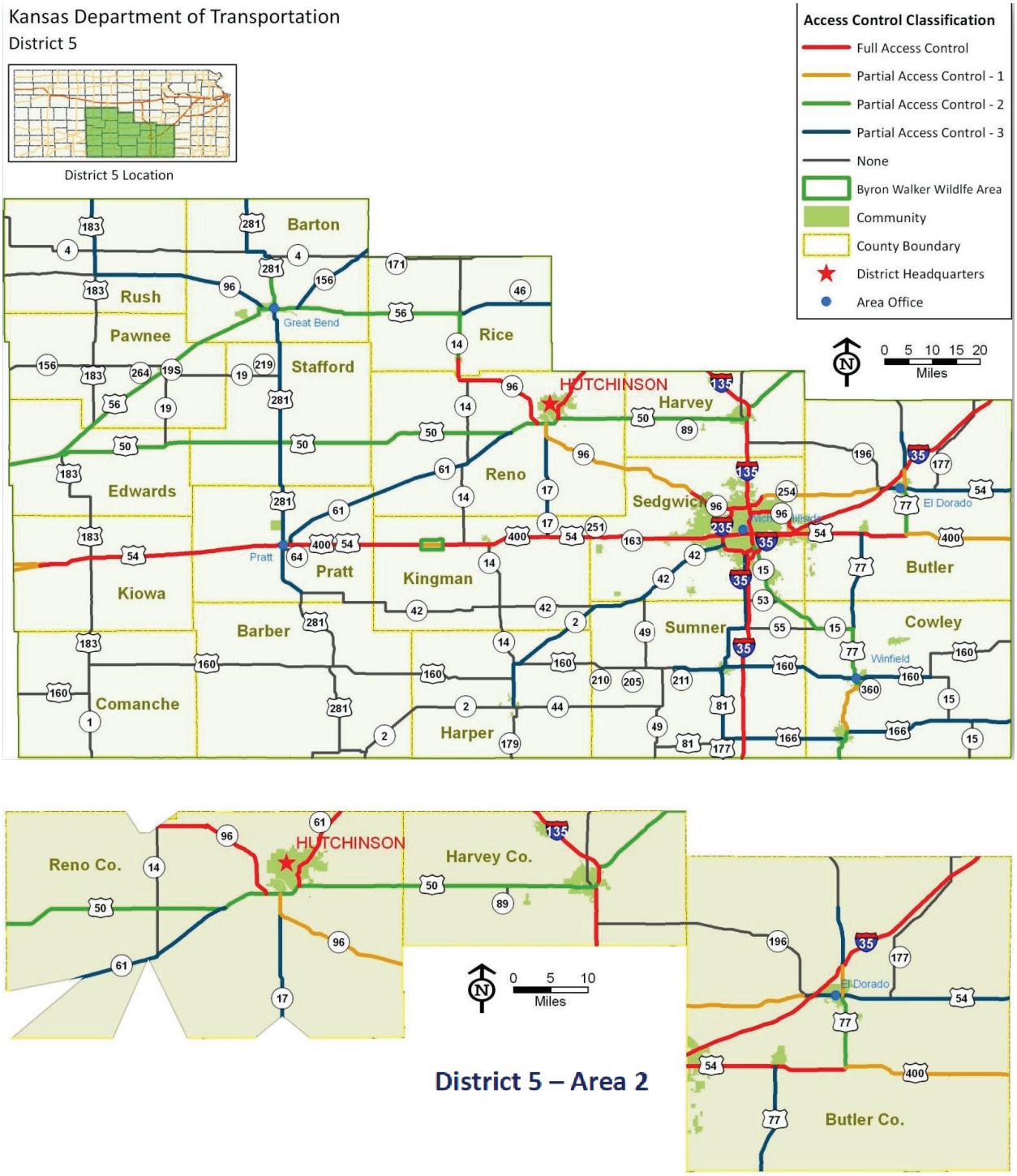



EXHIBIT 4-3 Kansas District 5 route access management classes

EXHIBIT 4-4 Mississippi DOT access classification

| Access class | Description | Minimum unsignalized spacing |
|---|---|---|
| Type 1 – Freeway | fully access control | na |
| Type 2A – Partially controlled | eventual frontage road access | ? |
| Type 2A – Partially controlled | purchase access rights | ? |
| Type 3 – Conventional | "consisting of two (2) traffic lanes or divided highways with two (2) or more lanes in each direction without frontage roads … direct access may be restricted for safety and / or as indicated in the *Access Management Manual* and the Department's Rules" | Varies by road speed, road and driveway volumes.<br>ADT 2000, 50 mph, driveway > 50 trips/peak hr: 425 ft<br>≤ 50 trips/peak hr: 100 ft |

Source: *Access Management Manual*, 2012

EXHIBIT 4-5 South Dakota DOT access classification

| Access class | Description | Approximate proportion of non-freeway system | Minimum unsignalized spacing |
|---|---|---|---|
| Interstate | fully access control | na | na |
| Expressway | high-speed divided highways serving interstate and regional travel needs | 4% | 2640 ft |
| Free flow urban | higher speed facilities with access subordinate to through traffic movement. | 1% | 1320 ft |
| Intermediate urban | serves through traffic while allowing moderate access density | 1% | 660 ft |
| Urban developed | traffic artery with high access density; access and through movement have equal priority | 4% | 100 ft |
| Urban fringe | developing area immediately adjacent to a city or town | 2% | 1000 ft |
| Rural | low volume, high-speed facility | 88% | 1000 ft |

Source: *Road Design Manual*, accessed April 2018

EXHIBIT 4-6 Virginia DOT access classification

| Highway functional class | Description | Full access commercial entrance spacing |
|---|---|---|
| Rural principal arterial | ≥ 50 mph | 750 ft |
| | 35 to 45 mph | 565 ft |
| Rural minor arterial | ≥ 50 mph | 590 ft |
| | 35 to 45 mph | 470 ft |
| Rural collector | ≥ 50 mph | 445 ft |
| | 35 to 45 mph | 335 ft |
| Urban principal arterial | ≥ 50 mph | 750 ft |
| | 35 to 45 mph | 565 ft |
| Urban minor arterial | ≥ 50 mph | 590 ft |
| | 35 to 45 mph | 470 ft |

Source: Background on the Revisions to VDOT's Access Management Spacing Standards, 2011

**EXAMPLES OF ACCESS TYPE CLASSIFICATIONS**

Exhibit 4-7 lists the access classification types used by a selection of states. Such classifications affect the type of permit required. Note that a number of these states have created more than two driveway access classifications.

EXHIBIT 4-7 Access types found in agency documents

| State | Permit types | | | | |
|---|---|---|---|---|---|
| Georgia | Residential | | Commercial | | Temporary |
| Iowa | < 20 veh/hr (residential, farm) | 20—150 veh/hr (2 lane driveway) | > 150 veh/hr (multi-lane approach) | | |
| Kansas | 0-49 ADT (four types) | 50-499 ADT and < 50 hr | ≥ 500 ADT or ≥ 50 veh/hr | | |
| Louisiana | Single family residential | Non-commercial agriculture | Traffic generator | | Temporary |
| Mississippi | Non-commercial | | Commercial | Side street | |
| North Carolina | Traditional neighborhood development | Residential subdivision | Commercial | Educational; Emergency service | Temporary |
| S. Dakota | Agricultural | Residential | Business | Other | |
| Virginia | Private (two residential; agricultural) | Low volume commercial (< 50 ADT) | Commercial (≥ 50 ADT) | | Temporary |

Note: NCDOT does not require permit for single family residential.

Sources:

GA *Regulations for Driveway and Encroachment Control*, 2016
IA https://iowadot.gov/traffic/access-management/entrancetypes
KS *Access Management Policy*, 2013
LA https://www.ltrc.lsu.edu/ltc_11/pdf/New%20access%20connections%20rule%20LAC%20Ch.%2070,%20Part%20II,%20531.pdf
MS interview
NC *Policy On Street and Driveway Access to North Carolina Highways*, 2003
SD https://www.state.sd.us/eforms/secure/eforms/S_E2232V2-ApplicationforHighwayAccessPermit.pdf
VA *Access Management Regulations*, 2013

**COMPARING SPECIFIC ACCESS MANAGEMENT REQUIREMENTS**

Comparing requirements among agencies is challenging, because there is great variation in the criteria that different agencies select upon which to base a requirement. For instance, one state may establish a spacing requirement based on the access classification of a given roadway, while another state may base the requirement on roadway speed. To work toward an "apples to apples" comparison, we sought the requirements that most closely met those for a commercial driveway to a suburban Arterial with a 40 to 45 mph speed, unless stated otherwise. The access management requirements presented for comparison are subdivided into the following categories.

a. Access number and location (how many driveways and where)
b. Spacing (separation distance between features)
c. Driveway dimensions (width, radius, throat length)
d. Medians
e. Turn lanes
f. Traffic study

Exhibit 4-8 presents side-by-side comparisons among six states, and with nationally recognized guidelines contained in two Transportation Research Board publications, the second *Access Management Manual* and the *Access Management Application Guideline*s.

To supplement the information gleaned from contacts made during these interviews, we have also included results from a survey conducted by Virginia DOT, and transmitted to ARDOT in late 2017. Exhibit 4-9 presents responses from states whose standards differentiated between full and partial (or directional) median openings. Summarizing, the more common minimum spacing for full openings on principal arterials with speeds of 40 mph or more was 1320 ft (¼ mile). On rural arterials with speeds in excess of 50 mph, three of the six states required 2640 ft (½ mile).

EXHIBIT 4-8 Access management techniques and requirements of selected states

(for a commercial driveway to a suburban Arterial with a 40 to 45 mph speed, unless stated otherwise)

| | **AMM 2, AMAG** | **Georgia** | **Kansas** access type 4,5 | **Louisiana** | **Mississippi** | **North Carolina** | **South Dakota** intermediate urban |
|---|---|---|---|---|---|---|---|
| **Access number and location** | | | | | | | |
| require approval for a driveway connection | AMM2 p243 | 1.4, 2.1 yes | p5-9 yes | yes | yes | p1 yes | p17-4 yes |
| strongly limits or prohibits access to major arterials | AMM2 p295 | not addressed | not addressed | yes | no | see p36 | yes |
| limits number of driveways per lot | AMM2 p180, | | telephone call | | | p39 | p17-5 |
| Number; Frontage for >1 driveway | | rely on spacing | rely on spacing | 1 ; 550' | 2; 300' | normally 1 | rely on spacing |
| if corner lot, only allow access from side/lesser street | AMM2 p278 | 3.1 | not addressed | Title70 p44 | no | p26 | p17-5 |
| | | | | Major Rd: Rt turn only | | yes | can vary |
| joint access | AMM2 p325 | 3.1.2 | p5-10 | | | p40 | p17-6 |
| | | mentioned | preferable | encouraged | allowed | encouraged | encouraged |
| | | | | | | | |
| **Spacing** | | | | | | | |
| corner clearance | AMM p382 | | p4-29 | Title70 p33 | MsAMM p17 | p52 | p17-13 |
| | 45 mph: 660' 40 mph: 330' | not addressed separately from spacing | not within functional area; always ≥ 155' | not within functional area | 125' | 100' from radii tangent | 45 mph: 280' 40 mph: 250' |
| between driveways, same side | AMM2 p375 | 3.1 | p4-19 | Title70 p44 | MsAMM p28 | p51 | p17-5 |
| Minor Arterial | 660' | | 245' - 300' | 550' | 300' - 350' | 100' - 600' | 660' |
| Divided Minor Arterial (Rt only) | 330' | | | 225' | | | |
| Speed-based | | 185' - 230' | | | | | |

| | **AMM 2, AMAG** | **Georgia** | **Kansas** access type 4,5 | **Louisiana** | **Mississippi** | **North Carolina** | **South Dakota** intermediate urban |
|---|---|---|---|---|---|---|---|
| between driveways, opposite side | AMM2 p345 | 3.1 | p4-27 | | MsAMM p14 | p 42 | p17-15 |
| for 45 mph | ≥ 600' | 230' | 275' | 550' | 150' - 300', per dway vol | 100' - 600' | ? |
| between signalized intersections | AMM2 p358 | 3.4 | p4-19 | | MsAMM p27 | not addressed | p17-5 |
| Major Arterial | 1/2 mi | 1320' | 2640' - 3960' | | 1760' | | 1/2 mi |
| **Driveway dimensions - commercial** | | | | | | | |
| width W and radius R of driveway (2-way driveway) | AMM2 p322 AMM2 p312 design W and R for specific site | 4.2 | p4-37 | per interview design W and R for specific site | per interview design W and R for specific site | p34, 50 | p12-10 |
| width | | 24' - 40' | 24' - 36' | | | 20' - 36' | 24' - 40' |
| radius | | 35' | 25' - 35' | | | 20' - 50' | NA or ≥ 15' |
| throat length or driveway stem | AMAG p143 | 3.1.3 | do not address | Title70, Chp 15, p49 (2013) | MsAMM p18 | p33 | |
| Medium volume driveway | 80'-150' | 100' - 200' | | 60' | 80' | based on dway volume | none |
| Lower volume driveway | 20'-60' | 100' - 200' | | 20' | 30' | | |
| **Medians** | | | | | | | |
| median type (if ≥ 4 lanes) | AMM2 p410 | DPM 6.12.2 | p4-80 | EDSM IV.2.1.4 | MsAMM p18 | | p17-11,14,19 |
| Restrictive median required when? | 1. all rural 2. all new urban | 1. ≥ 50 mph & multilane 2. ≥ 3 lanes per direction | 1. ADT >20000 | restrictive | 1. ADT >30000, speed >40 mph | not addressed | 1. ADT >24000, speed >45 mph, > 60 accesses / mi |

| | **AMM 2, AMAG**<br><br>3. Urban ADT >24,000 | **Georgia** | **Kansas** access type 4,5 | **Louisiana** | **Mississippi**<br><br>2. also, where appropriate | **North Carolina** | **South Dakota** intermediate urban<br><br>2. if safety problems |
|---|---|---|---|---|---|---|---|
| distance between median openings | AMM2 p420 | 3.3 | p4-56 | EDSM IV.2.1.4 | MsAMM p27 | M-10 | p17-5 |
| Full | 2255' | 1000' - 1320' | 2640' | signal warrant | 1760' | ≥ 1200' | 1/2 mile |
| Partial | | | 660' | 1/2 mi. | 880' | < 1200' | 1/4 mile |
| **Turn lanes** | AMM2 p390 | 4.9 | p4-67 | | per interview | p49 | p15-10 |
| left turn lane (see NCHRP Rep 745) | based on 1. rural/urban; 2. thru vol.; 3. turn vol. | based on 1. vol., speed, number of lanes | based on 1. vol. & speed | NCHRP Rep 457 | | based on 1. volume; 2. safety or congestion | based on 1. vol. & speed; 2. safety |
| right turn lane | | based on 1. vol., speed, number of lanes | based on 1. vol. & speed | | If is a significant land development | based on 1. volume; 2. safety or congestion | based on 1. vol. & speed; 2. safety |
| **Traffic study** | | 2.4 | p5-12 | p12; other doc | p24 | p16 | p15-33 |
| threshold to require a traffic study | | > 500 trips/day; rd ADT > 25,000 | hwy. type, or other | 100 trips/hr in peak hr | 100 trips/hr in peak hr | > 3000 trips per day | 100 trips/hr in peak hr |

NOTES: When an agency requirements vary based on site particulars, the listed requirements reflects Suburban Arterial 40-45 mph, unless stated otherwise.
Since agencies base standards on different criteria, used judgement to "convert" some agency standards.

SOURCES:

Georgia DOT - *Regulations for Driveway and Encroachment Control*, rev 4.0, 2016; Design Policy Manual, rev 5.1, 2018

Kansas DOT - *KDOT Access Management Policy*, 2013

Mississippi DOT - interview and documents

Louisiana DOTD - interview and documents

North Carolina DOT - *Policy on Street and Driveway Access to North Carolina Highways*, 2003

North Carolina DOT - Median Crossover Guideline Statement M-10, 2003

South Dakota DOT - *Road Design Manual*

– remainder of page blank –

EXHIBIT 4-9 Survey on unsignalized intersection and median opening spacings

| State | Roadway functional class or area type | Speed (mph) | Unsignalized intersection or full median (ft) | Directional median (ft) |
|---|---|---|---|---|
| AL | | > 45 | 1320 | 660 |
| | | ≤ 45 | 1320 | 440 |
| FL | Class 2 | -- | 2640 | 1320 |
| | Class 5 | > 45 | 2640 | 660 |
| | | ≤ 45 | 1320 | 660 |
| | Class 7 | -- | 660 | 330 |
| NM | Urban Principal Arterial | ≥55 | 1320 | 625 |
| | | 45 - 50 | 1320 | 450 |
| | | 35 - 40 | 1320 | 325 |
| | | ≤30 | 1320 | 200 |
| | Urban Minor Arterial | ≥55 | 1320 | 600 |
| | | 45 - 50 | 660 | 400 |
| | | 35 - 40 | 660 | 275 |
| | | ≤30 | 660 | 175 |
| | Rural Principal Arterial | ≥55 | 2640 | 775 |
| | | 45 - 50 | 2640 | 500 |
| | | 35 - 40 | 1320 | 350 |
| | | ≤30 | 1320 | 225 |
| | Rural Minor Arterial | ≥55 | 2640 | 725 |
| | | 45 - 50 | 1320 | 450 |
| | | 35 - 40 | 660 | 325 |
| | | ≤30 | 660 | 200 |
| NV | Principal Arterial | 60 - 70 | 5280 | 800 |
| | | 50 - 55 | 2640 | 450 |
| | | 35 - 45 | 1320 | 250 |
| | Minor Arterial | 50 - 55 | 2460 | 450 |
| | | 35 - 45 | 1320 | 250 |
| SC | Urban | -- | 500 | 500 |
| | Rural | -- | 1320 | 1000 |
| VA | Principal Arterial | ≥ 50 | 1320 | 750 |
| | | 35 - 45 | 1050 | 565 |
| | | ≤ 30 | 880 | 440 |
| | Minor Arterial | ≥ 50 | 1050 | 555 |
| | | 35 - 45 | 660 | 470 |
| | | ≤ 30 | 660 | 355 |

Source: a survey released by Virginia DOT in 2017

## ACCESS MANAGEMENT ADMINISTRATIVE POLICIES AND PRACTICES

The following section relates other states' processes to develop their access programs, the criteria and mechanisms they established to accomplish the objectives, their access permitting procedures, and insight from their experiences.

### Georgia

Georgia topography varies from the mountains in the northwest to the flat seacoast in the southeast. The 159 counties are divided among seven DOT district offices. The DOT manages 19,250 miles of state highways.

Before the access management program was first adopted in 2004, the AASHO "Blue Book" (1965), and the "Red Book" (1973) were the primary references for making access permitting decisions. The 2004 access management program is authorized by statute, and the Commissioner of the DOT has promulgated "Regulations for Driveway and Encroachment Control". The fifth and most recent edition of their current regulations is December 2015.

The 2015 edition has a total of 127 pages including appendixes. Chapter topics include procedures, spacing, design, signing and marking, drainage, special encroachments, with separate chapters on residential, mailboxes, and school driveways. Appendixes include contact information, applications, impact studies, required documents, a waiver form, and movie production encroachment forms.

It is important to note that Georgia chose to include 36 pages of location and design requirements in the regulation. This consists of text, tables and figures. Tables establish standards for spacing, intersection sight distance, and warrants for left and right turn-lanes. In addition, a separate document, the *Design Policy Manual* has about 12 pages that address access control at the project level.

The access program does not use functional classes to affect the application of access standards; criteria are based on rural/urban environment and speed. Driveway design is based on use. Turn lanes include a full storage length plus a transition taper.

The access policy allows the denial of direct access to the highway when the property has other reasonable access. The DOT is obligated to provide reasonable access, but access to the side street is considered reasonable. This restriction is not always applied, but is an option when necessary. Restricting left turns, such as the installation of a restrictive median, is allowable without compensation for the loss of left turns. But consideration of commercial impacts and community concerns will sometimes result in project modifications. They do not allow strip commercial development, and insist on internal circulation to minimize and number of driveways.

The District Offices handle commercial driveways and the District Area Offices (3 to 5 per district) process residential and temporary use driveways. A property owner completes a "Permit Application information sheet". Performance bonds are required; a table shows a range

of $40,000 to over $170,000, with additional amounts for special conditions such as traffic signals. If turn-lane improvements are not required, the bond is reduced by half. The bond for a residential driveway is a minimum of $20,000. Each applicant must sign an indemnification and hold harmless agreement prior to the permit being issued.

The DOT requires a traffic impact study for any site estimated to generate more than 500 gross trips per day based on ITE trip generation rates, or along corridors with substantial existing development and/or adjacent to a state route with an existing ADT greater than 25,000. They may also require the study for other reasons, such as when the functional limits of the proposed access impact the functional limits of nearby intersections. Site and driveway design plans and traffic impact studies are optional for lower-volume sites.

An employee in the traffic operations office under a permit engineer supervises the access program from the central office in Atlanta. The office does not directly supervise permit managers at District of Area offices. The central office is a resource and coordinates permit review activities at central offices such as right-of-way and design. The position does not require a PE. There is a PE supervisor available when there is an engineering question. The employee had conducted internal training for the access program in the past, but not in recent years. At the present, most training for District and Area offices is "on the job".

They have a strong statewide document retention policy. Districts hold copies of permits for ten years. The central office retains permit records; they have permit records back to 1918.

**Iowa**

Iowa is similar to Arkansas in a number of ways. Iowa's land area and population are slightly greater than those of Arkansas. Agriculture plays a major role in the state's economy. The largest and capital city is located near the center of the state. A city with a population greater than any within the state lies immediately across a large river at the state's edge.

The state has 115,000 miles of public roads; the Iowa DOT manages 8,870 miles these. There is an extensive statewide system of expressways with four lane cross sections and wide grass medians. In Iowa, state gas tax revenue is apportioned as 55% to the DOT, 30% to counties, and 15% to municipalities. This distribution helps support and improve the secondary system and reduces the need for direct highway access. The DOT has six district offices.

The state has had an access program for many years, authorized by statute. The current access rule was adopted in 2012 by the Director and was considered a significant update from previous rules. Iowa State University works closely with nearby DOT offices providing engineering and policy recommendations, and conducting access management-related research, such as crash analyses.

The current regulations address the following topics: access control by deed, permitting procedures and conditions, appeal processes, access design by three entrance types, construction, drainage and maintenance.

Iowa has a six-level functional priority system. Granting access and determining location and access limitations are determined in part by the assigned priority. When a state route is within a municipality, the statute requires that the access also be approved by the municipality.

- On freeways and expressways, access is usually controlled by deed.
- On lower priority routes, access is managed by regulatory requirements for spacing and design.

Access can be denied where other alternative reasonable access is available. There is no legal right to a left turn, although the addition of restrictive medians can be controversial. Turn lanes may be required.

Iowa develops access management agreements, which are access management plans, usually within municipalities, applied to critical or growing state routes that need coordinated land use, highway design, and managed access points to ensure long term arterial performance.

Each of the six district offices has an engineering operations technician (EOT) who handles a variety of permits, including those for access. A policy administrator in the central office provides support, training, travels to districts to help with specific problems, and assists with roadway improvement projects having access modifications and acquisitions of access control.

The DOT requires a permit for any encroachment into the right-of-way. There are no permit fees, nor are construction bonds required. The permit applicant is responsible for all construction and maintenance. The DOT may also require traffic signals by the applicant, but signal maintenance is a DOT responsibility. An increase in the use of the access, such as due to a change in land use, may require a new permit application and conformity with current standards. Violations are acted upon quickly.

The DOT is in the process of updating their 2012 rules. Their proposed new regulations will be shorter than the current ones. They are also preparing a new access management manual to provide guidance and information; it will be the primary working reference for applicants and DOT staff. The new program increases the number of access classifications, adding more to urban areas, and adding an access type for very low volume field entrances. Access location criteria remain in the rules, but most access design elements will be moved to a special chapter in the roadway design manual. The design chapter in the roadway design manual will be updated based on recommendations from the AMM2.

**Louisiana**

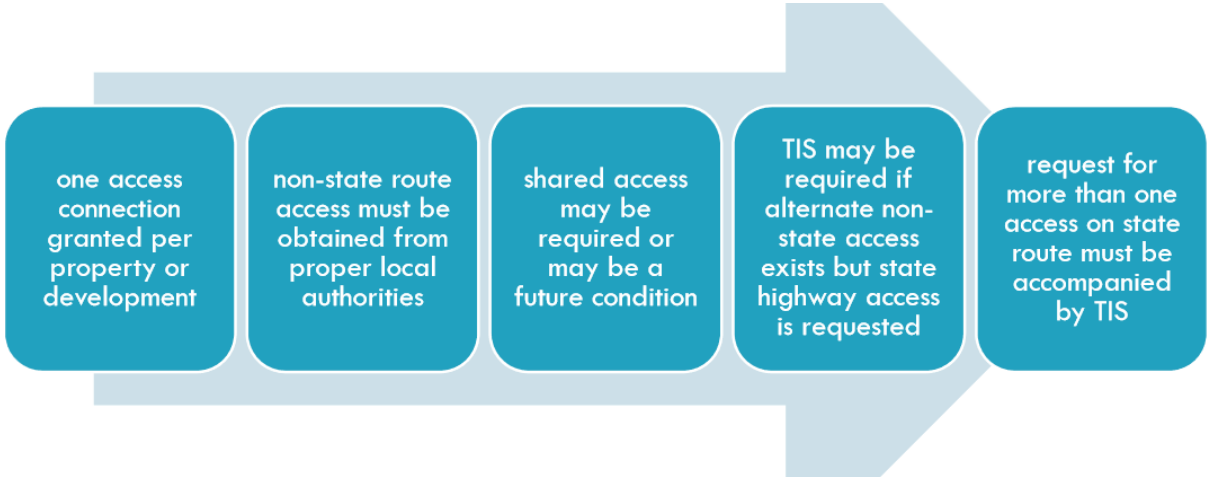
The Louisiana Department of Transportation and Development (LaDOTD) operates their 16,000 mile-plus state network with nine districts. Roadway design is conducted both in the central and in the district offices.

An official access management policy became effective in the mid-2000s. The current incarnation of the access management program is authorized by 14 text pages in the Louisiana

Administrative Code, Chapter 70, with a December 2013 date. The Department's applicable rules and practices are contained in a number of separate documents on their website.

LaDOTD's access management program is housed in the Traffic Engineering Division. Applications for driveways are handled by Permit Specialists in each district; many districts have at least two specialists. After the permit is processed, it goes to headquarters for issuance. Bonds are not required. A departmental board handles applicants' appeals of denials, and attempts to resolve issues. Techniques for the department to address a "trapped" site include the department constructing U-turns or roundabouts.

Louisiana currently requires developers to present a traffic impact study if their proposed development is expected to generate more than 100 trips per weekday. Exhibit 4-10, taken from a presentation prepared during the rollout phase of their program, presents their decision-making sequence.




Source: New Access Connections Rule

EXHIBIT 4-10 Louisiana access location decision hierarchy

LaDOTD may respond to roadway safety or traffic problems by conducting a corridor study. Recommendations to address identified problems may include changing existing access patterns, reducing the number of access connections, reducing the number of traffic signals, and constructing an intersection treatment such as a J-turn, RCUT, or roundabout. An example is US 90, a six-lane facility with an ADT approaching 40,000, from Pinhook to Billeaud Overpass (coordinates $30.153008^{O}$, $-91.959366^{O}$). Lack of funds has limited the implementation of such designs.

One policy LaDOTD has adopted is to construct multilane roadways with a restrictive median, not with TWLTLs. They do purchase access rights on high-functioning arterial roadways.

LaDOTD has contracted for training of staff and consultants with National Highway Institute and other providers. Turnover generates a need for repeating training sessions.

Persuading local governments to accept access management requires ongoing effort. It helps to get key local people involved early in the process, and try to persuade them with the data. Sometimes, the prospect of losing a project if access management is not incorporated will encourage local officials to accept change.

One bit of wisdom from Louisiana's experience was that it takes time to implement an access management program – a full-blown program cannot be implemented instantaneously. "You just have to jump into it, and start somewhere".

**Mississippi**

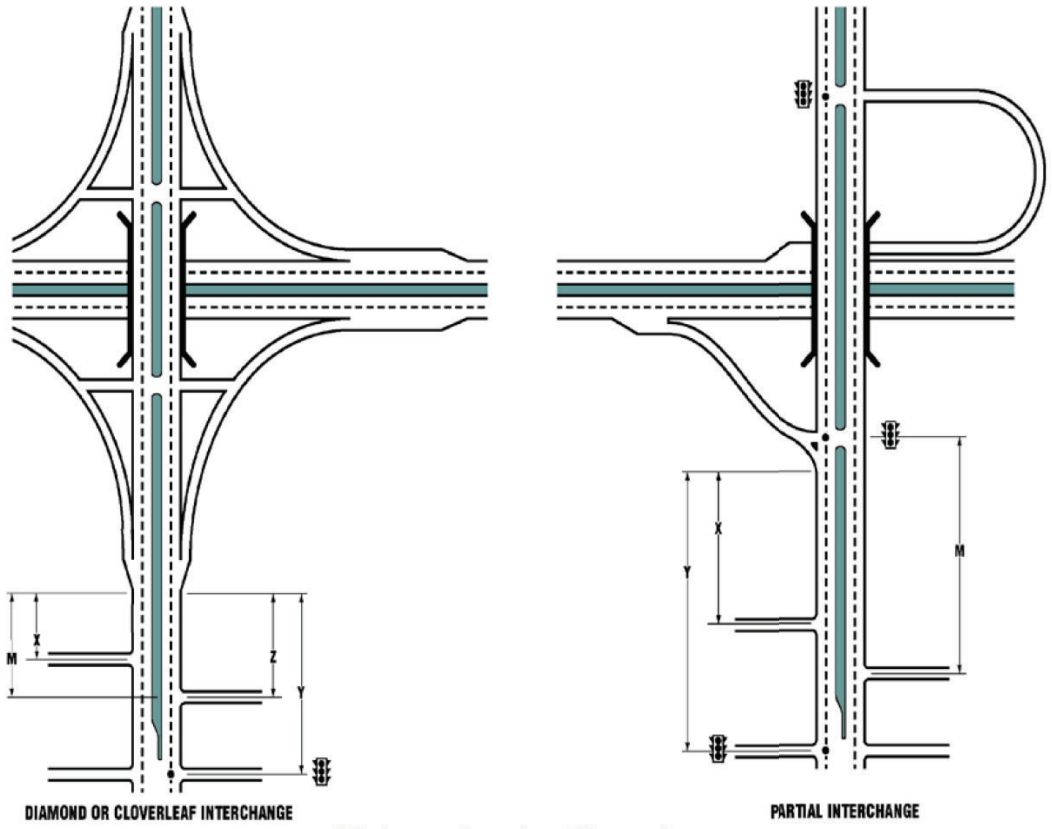
The Mississippi Department of Transportation (MDOT) system contains almost 11,000 miles of highway. Their roadway design is conducted in the central office. The state is divided into six districts.

In the 1990s, the Federal Highway Administration was encouraging state departments of transportation to pursue access management programs. By the early 2000's, MDOT was considering access management. A volunteer committee, with members from many divisions, was formed in 2005 to prepare a program. It produced a draft in 2006, a final draft in 2007, and a program for the transportation commission to consider in 2008. Approvals by the commission and the Secretary of State occurred in 2010 and 2011.

To adopt an access management program, MDOT had to go through a rulemaking process handled by the Secretary of State; this process included a public comment period. Before 2003, such an action would have been considered adopting a standard operating procedure.

The program was revised somewhat in 2012, so MDOT is currently operating under their second iteration of an access management program. MDOT did not have to go through the Secretary of State approval process to make these changes.

The Maintenance Division houses MDOT's *Access Management Manual*. The document references the classifications identified in MDOT's *Roadway Design Manual* of Type 1 – Freeway, Type 2 – Partially Controlled Access Highway, and Type 3 - Conventional Highway. Type 2 involves frontage roads or acquisition of access rights. MDOT policy states "driveways shall not be permitted to connect ... at a location if it does not meet the minimum stopping sight distance". Corner clearance minimums for Types 2 and 3 are the greater of 125 ft or the length determined by a queueing analysis. For freeway interchange area spacings, the Manual presents the drawings copied in Exhibits 4-11 and 4-12. Minimum throat length distances vary according to the size of the commercial development.




**Minimum Spacing Dimension**

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

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

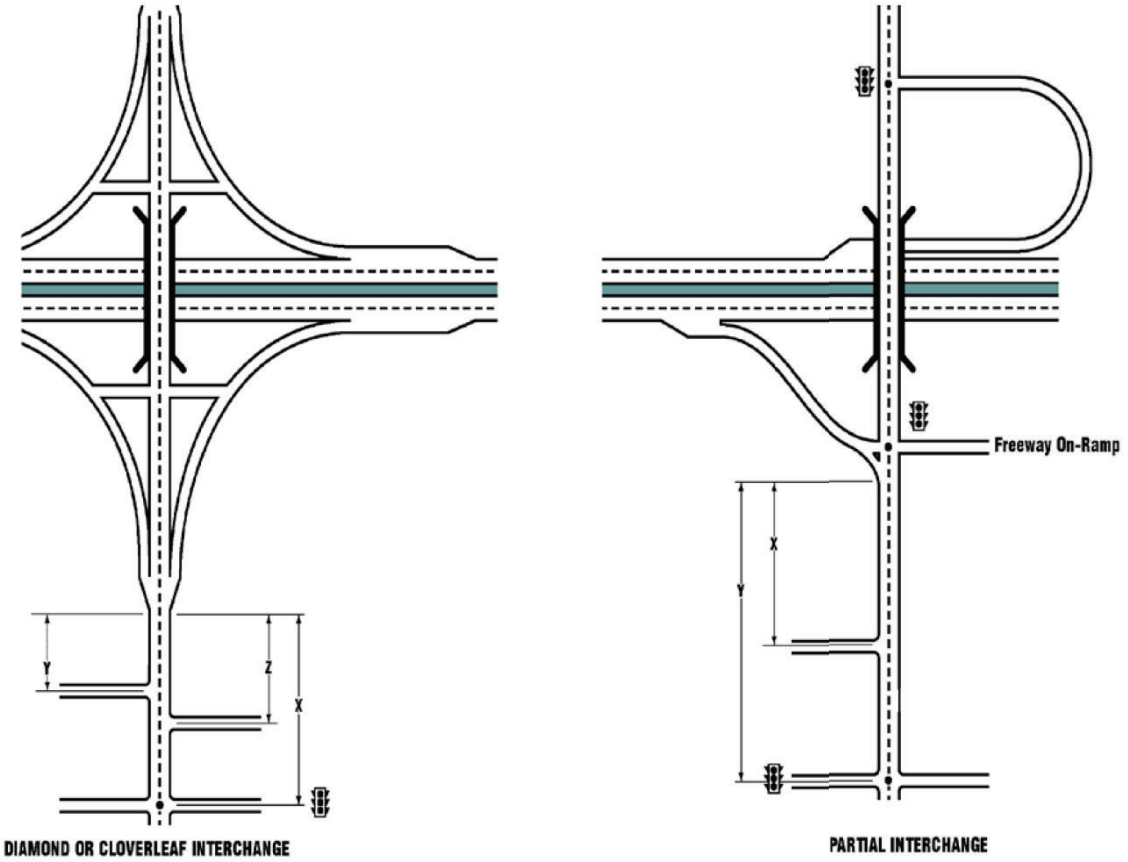
**Y =** Distance to first major intersection. No four-legged intersections may be placed between ramp terminals and the first major intersection.

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

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

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

EXHIBIT 4-11 Mississippi spacing for multilane crossroads at freeway interchange




**Minimum Spacing Dimension**

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

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

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

Source: Mississippi Access Management Manual, ver 2.0

EXHIBIT 4-12 Mississippi spacing for two-lane crossroads at freeway interchange

Each district has one or more Permit Officers and a limited support staff who handle applications for driveways. They report to the District Maintenance Engineer. Applications with more complexity may also involve the Roadway Design Division, Maintenance Division, and/or the Traffic Engineering Division at the central office. The District Engineer may require a bond for a minimum amount of $5,000. If the land use has changed (e.g., from residential to commercial) since a permit was issued, the landowner must submit a new permit application.

The Manual states that a site that will generate 100 trips in a peak hour will require a traffic impact study. A table presents the threshold development sizes by type that will typically be expected to generate 100 peak hour trips.

If a driveway applied for does not meet the criteria in the Manual, such as minimum spacing requirements, then the Permit Officer will send the applicant a denial letter. The applicant has 10 days to file an appeal. An access management review committee considers the appeal; it can recommend denial, approval, or approval with conditions. MDOT's philosophy is to try to work with property owners to find a solution; even if the outcome is not ideal, the outcomes are now generally better than they were before the access management program went into effect.

An initial internal challenge was to change the agency culture in order to bring an access management program to fruition. Upon implementing the access management program, MDOT hired a consultant to provide training for staff. Due to employee turnover, the need arises for continued training.

Externally, a challenge has been now holding a property owner to a different standard than someone with a long-standing development whose driveway was "grandfathered". Another challenge is partnering with local governments to obtain desirable outcomes, such as effecting access control on local crossroads at freeway interchanges.

**North Carolina**

The North Carolina DOT manages 15,000 miles of primary and interstate roads, and an additional 65,000 miles of county roads. The highway division has 14 regional design offices with 2 to 3 districts within each region for a total of 40 district maintenance offices that issue access permits. The central office does not have a position to oversee the access program, but central office personnel have access management experience and provide assistance statewide.

The 2003 "Policy on Street and Driveway Access to North Carolina Highways" is a regulation authorized by statute and adopted by their Board of Transportation. This was a significant update to their previous Policy from 1987. It applies to all state routes and county roads the DOT manages. Including appendices and exhibits, the Policy is 88 pages.

The Policy includes procedures, application and permittee requirements, requirements for studies and plans including traffic impact studies, location and design criteria, permit terms and appeals. The policy does not include a functional classification system but does include a

driveway classification system of commercial and non-commercial uses. They are considering a seven-level functional classification system.

The Policy recommends but does not require access to the side street when a side street is available. To help protect intersection operation, the document provides a table and figure to convey the distances for the functional area of an intersection. However, this is not absolute, and full movement and restricted driveways may be permitted. Access location also requires meeting intersection and stopping sight distance values.

While the Policy establishes driveway types, there are no detailed design values in the Policy according to driveway volume, vehicle type, highway volume, speed or highway function. For many design elements, the Policy establishes minimum and maximum limits, such as 20 to 50 ft for driveway radius.

Both right- and left-turn lanes may be required. The determination is based on a warrants figure, which is from a traffic model (equations) developed in Ontario Canada in about 1965 and published in 1967 by M. D. Harmelink. For turn lane length, NCDOT calculates a taper and storage distance based on the 95 percentile queue as calculated by a traffic model such as Synchro.

Commercial permits are issued by the regional offices, not by districts. Residential permits may be issued at districts. Permits for residential driveways are optional, but there is no written documentation for not issuing residential permits. However, the property owner is encouraged to contact the District Engineer to identify safety and design issues, coordinate with construction projects affecting the proposed driveway, and to arrange for installation of DOT provided driveway drainage pipe.

All design plans, information, site plans, traffic impact studies, signal studies and drainage studies are the responsibility of the applicant. Permit and all related plans and documents may be required to be recorded in county deed records by the district engineer. They do not collect permit fees. If a driveway pipe is necessary, the DOT is required to provide the pipe at a charge of $50.

Bonds are required but the Policy does not establish values, leaving that to each permitting office. Bonds under $500 can be satisfied with a certified or cashier's check. Personal checks are not accepted. Bonds are held for one year following completion of the work.

Access permits are evaluated based traffic volumes predicted for 20 years in the future, and those of the future build out of the site served. The DOT mandates a traffic study for sites generating in excess of 3,000 trips per day. If the roadway AADT is greater than 15,000, the study must be reviewed by the traffic engineer. A 2016 examination determined that about 10% of applications required traffic studies. The more urban districts have sufficient experience and expertise to review traffic studies, but the more rural regions and districts rely on the central office for assistance.

The appeals process has several steps. The initial appeal is to the division engineer (DE) at the regional office. The DE reviews and responds within seven days. The second level is to a central office driveway permit appeals committee that meets monthly if an appeals has been filed. The committee is multi-disciplinary, including traffic engineering, planning, right-of-way and roadway design personnel. The committee reports its findings and recommendations to the Chief Engineer for a final decision.

When a permit will be within a municipality, most NCDOT districts seek concurrent review. Developers will sometimes play the system, but good communication between municipal and DOT staff usually prevents confusion and cross-purpose problems.

Currently, there is no central data base on access permits. Each district retains documents to some degree and copies are not provided to the central office. There is not a state record retention policy. They are working on establishing a statewide data system that will include access and other encroachment permit types.

NCDOT is reconsidering their 2003 regulations and program content, and may reduce the size of their regulations to state only permit requirements. They would then develop a separate "best practices guide", which would serve to provide day to day guidance; the guide would not contain any requirements.

**Virginia**

The Virginia DOT is responsible for much of the state's public road system; what in other states are county roads are in Virginia the responsibility of the DOT. The DOT oversees 57,870 miles of roadway, which includes 9,230 miles of primary and interstate, and 48,300 miles of secondary roads.

Legislation in 2007 established the present authority for managing access in Virginia. Note that the following excerpt clearly states a number of access management principles and practices.

*§ 33.1-198.1. Comprehensive highway access management standards.*

*B. The General Assembly declares it to be in the public interest that comprehensive highway access management standards be developed and implemented to enhance the operation and safety of the systems of state highways in order to protect the public health, safety, and general welfare while ensuring that private property is entitled to reasonable access to the systems of state highways. The goals of the comprehensive highway access management standards are:*

*1. To reduce traffic congestion and impacts to the level of service of highways, leading to reduced fuel consumption and air pollution;*

*2. To enhance public safety by decreasing traffic crash rates;*

*3. To support economic development in the Commonwealth by promoting the efficient movement of people and goods;*

*4. To reduce the need for new highways and road widening by improving the performance of the existing systems of state highways; and*

*5. To preserve public investment in new highways by maximizing their performance.*

*C. The Commonwealth Transportation Commissioner shall develop and implement comprehensive highway access management standards for managing access to and preserving and improving the efficient operation of the state systems of highways. The comprehensive highway access management standards shall include but not be limited to standards and guidelines for the location, number, spacing, and design of entrances, median openings, turn lanes, street intersections, traffic signals, and interchanges.*

A number of branches in the central office play major roles in the access management program.

- The Office of Land Use: prepares access rules; oversees the permitting processes; provides guidance to districts and residencies
- Traffic Engineering: oversees signal approvals, provides assistance with review of some safety situations
- Location & Design: maintains and interprets the Road Design Manual (which includes access design standards); oversees design waivers
- Transportation and Mobility Planning: provides funding and assistance for corridor studies

VDOT has nine district offices. At the district level, there is a Transportation and Land Use Director, who directs planning and land use. Below the district level, there are 29 residency offices, where driveway permits are handled by technicians under the direction of a PE. There are about 180 land use staff at both the district and residence levels.

VDOT charges no fee for residential permits, but there is a $150 base fee for commercial (i.e., any entrance where the traffic volume will exceed 50 trips per day) permit applications, plus additional amounts based on linear distances. VDOT can deny direct access, and may limit access to only right turns. The rules list measures that the DOT may require of the applicant to mitigate safety and traffic operations impacts, such as:

reconstruction of existing highway to provide required sight distances;

relocation or consolidation of existing driveways;

constructing auxiliary lanes, transitions and tapers;

constructing new crossovers, or the relocation, removal, or consolidation of existing crossovers.

If conformity is not feasible, the developer has the responsibility to document the inability to conform. DOT staff attempt to work with developers to find solutions; the degree of flexibility can vary among districts. If a developer appeals to the District Engineer or the Commission, it is

often the case that all acceptable solutions have been considered, and the appeal will not be approved at higher levels.

The DOT will not issue a permit absent local government land use, subdivision, or zoning approvals. When local access requirements are more restrictive than VDOT's, local standards govern.

Changes such as zoning, plating, or property use that can affect volume can trigger a review. Localities notify VDOT of most land use changes, allowing VDOT to review and comment at the early stages of land use changes.

For training, the technology transfer program offers two traffic study classes and two access management classes a year, and also offers classes on geometric design, drainage, and other road design-related topics. There are also annual conferences that address various facets of transportation and land use planning, to which MPO staff, consultants, and developers are sometimes invited.

**CLOSING**

The interviews from this small sample of state departments of transportation show that access management programs vary considerable among states, both in terms of the way an agency administers the program and of the rules for developers to follow. A few general statements follow.

1. While evaluating practices and criteria from an agency, be mindful that from interviews or agency documents, one does not obtain a complete understanding of the degree to which desirable or aspirational policies and practices are actually implemented.
2. After a transportation agency has gained experience with an access management program, it is common for the agency to make revisions to the program.
3. Due to context, a typical functional classification system may not be totally suitable for purposes of access classification. For instance, an existing roadway passing through a rural area with little access may, upon entering a town, have much more access. The desirable level of access control may not nicely fit with the functional class.
4. When developing Colorado access classifications, videos were viewed to identify logical and defensible breakpoints. This method allowed breakpoints to be set not at intersections, but instead at midblock locations. One reason for this was the desire to avoid categorizing the two sides of an intersection differently.
5. Encouraging shared access was found to be a common practice.
6. Coordination and cooperation with local levels of government in the land use regulation (e.g., establishing adequate lengths for minimum dimensions of parcels abutting a state route) greatly improves the outcomes of an access management policy.

7. The probability of success is enhanced by having in place an access management plan that has been adopted by the local government; this can be a precondition of moving ahead with a proposed project.

# CHAPTER 5: PROJECT DIRECTION

For lists of abbreviations and definitions, see Chapter 1.

Task 5 of this project is to prepare an interim report that presents the findings from preceding tasks, and influenced by them, begin the discussion of possible alternative access program frameworks and implementation strategies with the Department. At the end of Task 5, the Department will provide direction to the project contractor.

To develop and implement a comprehensive access management program, there are a number of broad issues to consider, some in sequence, and others in an iterative fashion.

A. Does ARDOT wish to develop any revised policies or practices pertaining to access management?

B. If ARDOT does wish to develop revised policies or practices, then determine the scope of such changes. This decision affects the nature of the access management program. It is also related to establishing a roadway classification system that would affect what access management requirements are applied to a given roadway.

   Said more directly: Would the decision-making process and outcomes be improved by creating some type of rubric or classification scheme to act as a guideline, applied during preliminary project scoping, that identifies when/where and to what extent to apply access management?

C. If ARDOT does proceed, then what internal organizational structure is desired to develop and implement an access management program?

After addressing these issues during Task 5 work, subsequent tasks would accomplish other required work, including the following examples.

D. Develop the access requirements for the various roadway classes to which access management will be applied. One example of this category is minimum spacing requirements.

E. Develop the administrative rules and procedures, including procedures for appeals, and for variances and waivers. Some of these documents may go to the Secretary of State for public comment, before they can be implemented. Part of this consists of determining what aspects to include in documents of any formal rule, and what aspects can be left for the Department to control and change without review.

F. Discuss the internal access management program administration and procedures. This identifies which positions are tasked with performing which job duties.

G. Develop plans to inform the public of the program and its requirements. Target audiences may include the following.

   1. metropolitan planning organizations

2. local government staff and elected officials
3. the architects and engineers with whom developers commonly contract to prepare plans for proposed developments

The following sections provide an outline of the choices to be made, in order to provide the research team with direction for accomplishing subsequent tasks.

**ESTABLISH THE SCOPE OF THE PROGRAM**

The decision as to how broadly to apply access management may affect organizational and decision-making structures within the Department. To initiate discussion, the following two options are presented.

| Option 1 | Option 2 |
|---|---|
| Include all state numbered highways in the program. A classification system would apply more rigorous requirements to be more critical roadways in the state, and minimal requirements to roadways at the other end of the spectrum. | Applied access management only to certain targeted roadways. |
| If Option 1, then determine how many tiers, and the bases for classification.<br>a. volume<br>b. speed<br>c. volume and speed<br>d. other | If Option 2, then determine bases for selection.<br>a. National Highway System (NHS)<br>b. corridor with current or anticipated growth, congestion, or safety concerns<br>c. corridors at edges of urbanized areas<br>d. freight routes<br>e. roadways eligible for special funding category |

With any option, a related question is to what extent the Department wishes to initiate and prepare corridor access management plans? Does the Department wish to proactively prepare such plans in the developing fringes of urban areas, and by so doing designate access locations with desirable spacing, before the occurrence of development patterns that preclude desirable spacing?

**DEVELOP ACCESS REQUIREMENTS AND CRITERIA**

The following Exhibit 5-1 is presented to initiate a discussion of what elements to manage, and what the appropriate criteria for each element should be. The Department may wish to have different criteria for different environments, or for different roadway classes. A separate set of criteria would be in order for the cross roads at interchanges.

EXHIBIT 5-1 Elements to consider for access management

| | Rural | Urban |
|---|---|---|
| **Access number and location** | | |
| require approval for a driveway connection | | |
| strongly limit or prohibit access to major arterials | | |
| limits number of driveways per lot to state route | | |
| Number; Frontage for > 1 driveway | | |
| if corner lot, only allow access from side/lesser street | | |
| joint access | | |
| require adequate sight distance | | |
| **Spacing** | | |
| from what reference to measure - centerline, edge, property line, other? | | |
| corner clearance along thru road at interchange | | |
| corner clearance along thru road | | |
| corner clearance on side road | | |
| between driveways, same side | | |
| if no restrictive median | | |
| if restrictive median (Rt only) | | |
| between driveways, opposite side | | |
| between signalized intersections | | |
| **Driveway dimensions** | | |
| width W and turning dimensions | | |
| angle | | |
| throat length / driveway stem | | |
| grade | | |
| **Medians** | | |
| median type (if $\geq$ 4 lanes) Restrictive median required when? | | |
| distance between median openings | | |
| Full | | |
| Partial | | |
| **Turn lanes** | | |
| conditions requiring left turn lane | | |
| conditions requiring right turn lane | | |

**Access Classification**

Some states have different spacing requirements based on the roadway access class, while other states base spacing on factors such as speed. Among the states queried in this study, the more common method consists of assigning each road to an access class, which in turn governs minimum spacing between connections. Also refer to Exhibit 4-9.

Access classification schemes

- See AMAG Chp 3

| No special access classification system; based on posted speed, rural or urban | Simple access classification system | More complex access classification system |
|---|---|---|
| Georgia | Mississippi | Iowa, Kansas, South Dakota, Virginia (incorporates speed) |

**Access Type Classifications**

States in the small-sample survey seem to have at least two primary access categories, commercial and non-commercial. Some states have more than one commercial tier, based on the amount of expected peak hour or daily traffic generated. The tier into which a proposed site falls into may be linked with requiring the applicant to prepare a traffic study. The following grid reflects how states designate and require access permits for residential and commercial types of access.

Access type classifications

| Do not require residential permit | Two primary access type classes | Three or more primary access type classes |
|---|---|---|
| North Carolina | Georgia, Mississippi , South Dakota | Iowa, Kansas, Louisiana, Virginia |

**Access Number and Location**

The number of access connections allowed, and their locations, may be linked to other considerations, such as access classification.

Access number

| If access available from other/lesser road, then require applicant to prove need for even 1 connection with state route | Applicant is allowed 1 connection, but require proof of need for more than 1 connection with state route | Applicant is allowed 2 connections, but require proof of need for more than 2 connections with state route | Establish robust spacing criteria, rely on them to limit the number of connections per tract |
|---|---|---|---|

- Could have different criteria for different access class, or rural vs. urban
- State that applicant is responsible for achieving site circulation within the site, general public is not expected to provide this on the public roadway; facilitating site circulation or deliveries is not a justification for additional driveways

Spacing between unsignalized connections

- See AMAG Chp 12, specifically p 160-162, "Evaluation Techniques"
- In our small sample of interviews, did not observe a predominate method or criteria; also see AMAG p 165 table
- Require adequate sight distance
- For rural roadways with higher levels of significance, a ¼-mile spacing between right turn access seems to be somewhere "in the middle of the pack"
- Generate effective standard design detail for right-turn only access
- Addressing connections on opposite sides of roadways without restrictive median
- How to encourage joint access; some incentives are available only with land use control, which requires local government action

Corner clearance

- In our small sample of interviews, did not observe a predominate method or criteria
- Some states regulate corner clearance by prohibiting access within the intersection's functional area
- Some distances in reviewed material seemed insufficient to provide a desirable buffer that a research analysis would suggest

| | | | |
|---|---|---|---|
| No separate requirement, other than connection spacing | Fixed distance | Based on speed, volume, or other traffic attribute | Not within functional area of intersection |
| Spacing from a public road intersection may need to be greater | One size may not fit all | More complex than one fixed distance | If tailored to site-specific attributes (e.g., queue length), then may be more involved to administer |

- Measurement made between what two references? For instance, from near edge of public road traveled way to near edge of driveway
- See Transportation Research Record 2618, p 1-7 for **minimal** downstream corner clearance along urban mid-range speed roadway
- If minimum corner clearance not met along the through roadway, then allow access only from side street

- On roadways with flush median, consider standard design detail for raised median in intersection vicinity, to restrict left turns into driveways near intersection
- In reviewed material, the issue of corner clearance on a roadway that intersects the subject road is more likely to go unaddressed
- A short median strip can restrict left-turn entry and exit movements at driveways near intersections (see Exhibit 5-2)


EXHIBIT 5-2 Short median strip to restrict left-turn access

Spacing between signalized connections

- See AMAG Chp 13
- Requirements vary by environment, such as rural vs. urban, roadway category; Kansas' recommended distances are a function of speed and cycle length
- In our small sample of interviews, did not observe a predominate method or criteria, but for major urban arterials, values of ¼ mi to ½ mi are typical

Spacing along cross road at interchange

- See AMAG Chp 18, specifically, many exhibits with numerical values
- Vary by interchange form, such as whether there are free-flow right-turn movements, or roundabouts
- Vary by cross road speed
- An in-progress NCHRP project is examining this issue

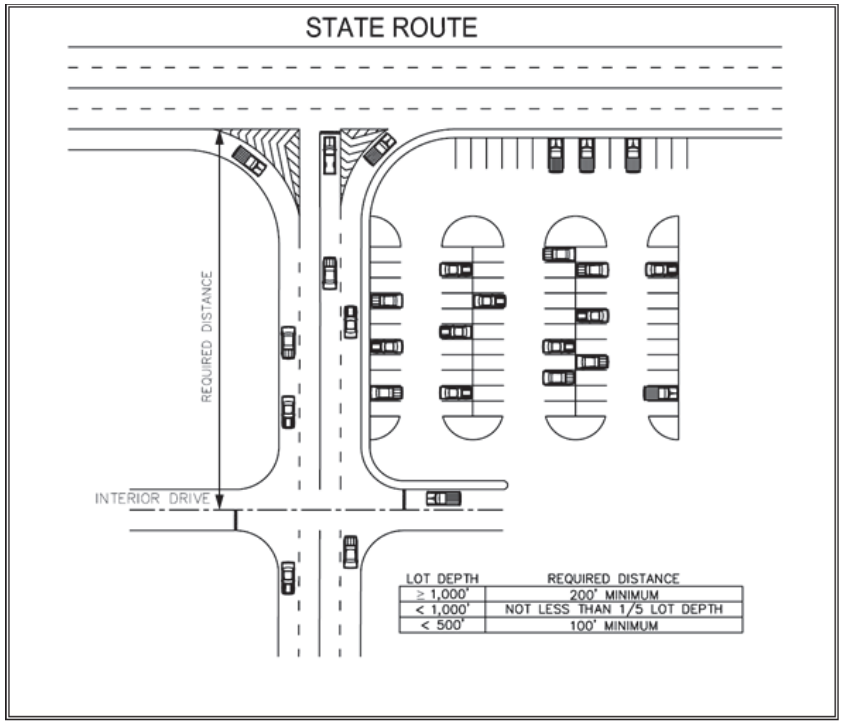
**Driveway Dimensions**

Some jurisdictions establish minimum values for width and turning radius, but then require that the actual dimensions be tailored to the specifics of the site, such as expected design vehicles.

Throat length

- See AMAG Chp 11, NCHRP Report 659
- Affected by size of development: e.g., convenience store vs. regional shopping center
- Affected by traffic control at intersection: signal or stop
- Georgia requirement is based on depth of tract
- North Carolina requirement based on storage required by anticipated volume; may require median in driveway
- Other: lengths for gated driveways; setbacks for gasoline pumps
- Another possible basis is trip generation – a small site such as a fast food restaurant generates a peak period traffic volume far out of proportion to the area of the site
- From where to measure: current edge of traveled way, ROW line, other

Georgia throat length

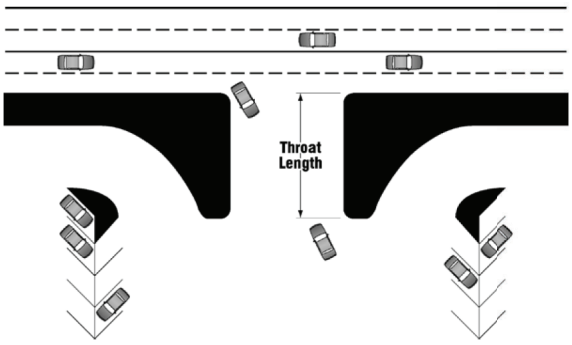



Louisiana throat length

| | |
|---|---|
| High-volume (over 400 peak hour vehicles in both directions) | traffic impact study |
| Medium volume (150-400 peak hour vehicles in both directions) | 60 ft |
| Low volume (below 150 peak hour vehicles in both directions) | 20 ft |

Mississippi throat length

**Minimum Throat Lengths** (5)




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

**Restrictive Medians**

The three median choices are none, non-restrictive flush median (often a TWLTL), and a restrictive (raised or depressed) median. A restrictive median often requires more right-of-way width than the other two forms, which increases costs.

- See AMAG Chp 15
- Factors that were found to influence decisions to have a restrictive medians included volume (ranging from 20,000 to 30,000 ADT), roadway speed, and environment (rural vs. urban)
- Along with median selection comes the issue of width; a raised median with width to accommodate left turn lanes may be in the range of six to twelve feet wider than a TWLTL, depending upon widths of median separators and turn lane offsets
- A restrictive median design may include bulbouts to better accommodate U-turns
- When there are grass medians, an accompanying policy addressing landscaping that may cause safety problems (e.g., restrict sight distance) is in order

Median selection is made more complex by factors such as the roadway environment transitioning from rural to urban transitions, and volume changes over time. There is also the long-term effect of expanding a two-lane road to a "five-lane design": having a TWLTL may encourage the strip development with frequent driveways that Exhibit 5-3 shows. Installing a restrictive median when not demanded by present circumstances may be preferable to waiting until volumes and levels of roadside development increase, only to face much greater opposition to conversion.

EXHIBIT 5-3 Selecting a TWLTL section may contribute to closely-spaced access

Median opening spacing

- See AMAG Chp 16
- The policies of agencies interviewed for spacing of unsignalized median openings varied considerably
- Possible factors to consider include access classification, environment (rural or urban), and speed
- The Green Book clearly recommends bullet-nose median-end opening designs on all but the narrowest of medians

**Turn Lanes**

One of the many elements of access management is when to install left- or right-turn lanes.

- See AMAG Chp 21 and 22; NCHRP Report 745
- Many of the agencies interviewed use volume and speed as criteria
- Other important criteria include number of lanes, types of intersection control
- The CMFs for presence of both left- and right-turn lanes indicate marked safety benefits
- Benefits of a turn lane may be diminished by insufficient length for deceleration, maneuver, and storage

- Work by Potts et al. found that right-turn lanes may increase pedestrian-vehicle crashes if right-turn lane not channelized

**Site Traffic Study Requirements**

- Related: AMM2 p 253, impact study
- The threshold site traffic volume to require a traffic study by the applicant that appears most often in the small sample is 100 trips during the peak hour
- If adopt such a mechanism, consider clause to derail developer attempts to break development into sub-threshold size tracts
- Other possible triggers for a site traffic study are applicant requests for more than a certain number of connections, deviation from stated spacing requirements, median openings, or signals; the objective is for the applicant to demonstrate the necessity of the requested item

**DEVELOP THE ADMINISTRATIVE RULES AND PROCEDURES**

Along with roadway design and related element criteria, an access management program requires a supporting administrative structure and procedures. Issues to discuss include the following.

- To what extent can the Department use police power to control access? To what extent is the Department willing to use its police power?
- What are the Department's performance goals and priorities, relative to safety or accommodating direct access for abutting businesses? What do you want an access management program to achieve?
- What organizational structure within the Department will result in an access management program that is effective and consistent?
- Would the Department find it desirable to relate access standards to roadway functional classes, such as mentioned in certain parts of the Arkansas Code? (See Appendix A for AR Code § 27-66, 2017.)
- In what situations is it preferable to acquire access rights, or when is the exercise of police power for the safety and welfare of the public the appropriate mechanism?
- Would it be desirable that for developments over a certain size, permits be processed by someone in the central office?
- Is it desirable to establish two tiers of Commercial driveway permits, with different requirements for each? If so, upon what should tiers be based: land use, volume, vehicle types, etc.?
- Is it desirable to establish higher amounts for driveway bonds, or more closely link bond amounts to the proposed construction activity and the costs to cure?

- Is there a need for a stronger mechanism to inform the Permit Officer when there is a change in land use, which may change amount of or nature of traffic generated, and therefore require a new permit application?
- What should be the default allowable number of driveways per tract? Should a traffic study be required to demonstrate the need for more driveways per site than the default?
- What factors should require that a developer prepare a traffic study?
- Some states have a formalized, structured process for the property owner to appeal the decision at the district level; is this something to be considered?
- To what extent does the Department have authority to restrict access on a side road, close to an intersection with a state highway?
- What can be done to work with local governments to encourage more joint access, therefore reducing the total number of driveway connections?
- What can be done to work with local governments to ensure that property frontage dimensions along the state highway are large enough to allow adequate spacing between successive driveway connections, or to insure that tracts also have alternate access and circulation via local roadways?
- Is it desirable for the Department to adopt a policy stating if local government access rules are more restrictive, then the local rules govern?

**CHALLENGES**

From the preceding tasks, and especially from interviews with staff in other states, challenges were identified that transportation agencies face when embarking upon access management program. Some of these are presented in the following list.

- Change: Agency and staff may have to learn new concepts and master new techniques, which will require training, guidance materials, and independent learning.
- Change: From interviews with other states – "Getting out of the two driveways per tract mindset".
- Communication: Developing and communicating requirements and expectations to both local governments and developers, while maintaining consistency among districts.
- Maintaining confidence: For Permit Officers to be successful, they must have the backing of district and central office leadership. At some point, "flexibility" can undermine the ability of Permit Officers to perform their jobs well. Can criteria and procedures be developed to manage "flexibility"?
- Opposition: Examples of businesses thriving along access managed roadways can be seen across the United States in places too numerous to count. Yet, in a given town, the prospect of changing from accustomed access patterns can cause great angst among local owners and operators, who in turn pressure local officials to oppose access management

treatments. What can be done to address opposition at the local level, such opposition often coming from a small part of the population who fear the effects of access management, so the broader public can benefit from the application of access management techniques?

- Communication: What can be done to improve awareness of how access management benefits industry, agriculture, retailers, and the general public?
- Communication: In order to provide training to local government staff, what means of communicating the necessity and availability of training will be effective? The April 2019 planning conference was mentioned as one avenue.
- Funding: Can a funding category be established for projects that improve access management along roadways? Can funding priority be given to projects that will implement access management techniques? Can funding-eligibility-status encourage local governments to become a partner on an access managed state route? Can a proposed project "move to the front of the line" when local government participates in access management strategies?

# CHAPTER 6: ACCESS MANAGEMENT BENEFITS AND COSTS

For lists of abbreviations and definitions, see Chapter 1.

Included in Task 6 of this project is for the Contractor to develop limited benefit-cost information that to a degree provides insight about the relative benefits and costs of implementing access management. The Contractor performed the following two separate comparisons of construction costs and crash reduction benefits.

1. The differences between four-lane roadways with center two-way left turn lanes (TWLTL) and four-lane roadways with restrictive medians (but other access management not mentioned)
2. The differences between four-lane roadways with center two-way left turn lanes (TWLTL) and four-lane roadways with restrictive medians and partial access control

Note that the ARDOT list upon which analyses were based does not include construction costs for new 4-lane roadways with a median and partial access control. The ARDOT reviewer requested a comparison using the crash rates for this category with the construction costs of new 4-lane roadways with a median and no access control.

- ARDOT Transportation Planning & Policy supplied July 2016 rural and urban project costs per mile. The alternative of converting an existing two lane roadway to a four-lane roadway with a median assumes reuse of the existing two lines.
- ARDOT Traffic Safety supplied 3-year crash rates over recent time periods for 4-lane roadways.
- ARDOT Traffic Safety supplied 2017 crash data, used to find proportions of crash types to create factors to proportionally weigh crash costs. Reviewing the data, it was found that 9.5% of the records lacked an entry for rural/urban classification. Traffic Safety used geographic information system capabilities to create this missing information. Excluding work zone crashes, this set has 79,271 crash records; 13 of these have 4-digit prefixes in the StateCaseNumber column other than 2017, but the date column lists a 2017 crash date. For the following analysis, the total numbers of Intersection, Intersection related, Driveway, and Driveway related were combined, with "number of vehicles equal one" removed.
- Crash cost calculations were based on the procedure described in the 2010 *Highway Safety Manual*.

The following Exhibits 6-1 and 6-2 analyze costs and benefits over 20 years for a 1-mile long road segment.

EXHIBIT 6-1 Comparing four-lane roadways with center two-way left turn lanes (TWLTL) and four-lane roadways with restrictive medians (but other access management not mentioned)

| | RURAL | RURAL | URBAN | URBAN |
|---|---|---|---|---|
| Volume per day | 10,000 | 10,000 | 10,000 | 10,000 |
| Before condition | 2-lane | new construction | 2-lane | new construction |
| After condition | 4-lane | 4-lane | 4-lane | 4-lane |
| Comparing these alternatives for "After" | TWLTL vs. Restrictive median | TWLTL vs. Restrictive median | TWLTL vs. Restrictive median | TWLTL vs. Restrictive median |
| Project cost difference per mile: Median − TWLTL | $625,000 | $225,000 | -$165,000 | -$100,000 |
| K+A Crash Cost Savings with Median | $2,565,071 | $2,565,071 | $152,442 | $152,442 |
| Crash Benefits / Construction Costs | 4:1 | 11:1 | NA; Median cons't and crash costs are less | NA; Median cons't and crash costs are less |

EXHIBIT 6-2 Comparing four-lane roadways with center two-way left turn lanes (TWLTL) and four-lane roadways with restrictive medians and partial access control

| | RURAL | RURAL | URBAN | URBAN |
|---|---|---|---|---|
| Volume per day | 10,000 | 10,000 | 10,000 | 10,000 |
| Before condition | 2-lane | new construction | 2-lane | new construction |
| After condition | 4-lane | 4-lane | 4-lane | 4-lane |
| Comparing these alternatives for "After" | TWLTL vs. Restrictive median with partial control | TWLTL vs. Restrictive median with partial control | TWLTL vs. Restrictive median with partial control | TWLTL vs. Restrictive median with partial control |
| Project cost difference per mile: Median − TWLTL | $625,000 | $225,000 | -$165,000 | -$100,000 |
| K+A Crash Cost Savings with Median and Partial Control | $1,949,200 | $1,949,200 | $1,832,900 | $1,832,900 |
| Crash Benefits / Construction Costs | 3:1 | 9:1 | NA; Median cons't and crash costs are less | NA; Median cons't and crash costs are less |

**CONCLUSIONS**

1. Calculations based on ARDOT's recent K+A crash rates and construction costs found, for rural environments with as little as 10,000 vehicles per day, a clear advantage for selecting 4-lane roadways with a restrictive median instead of the 5-lane design. As traffic volumes increase, the desirability of a restrictive median becomes even more pronounced.
2. Considering only the effects of median width, crash modification factors in the 2010 *Highway Safety Manual* (p 11-31) indicate that for a rural setting, changing from a 12 ft median (as with a TWLTL) to a 30 ft median (as with a depressed median) would yield a 3% reduction in crashes.
3. Calculations based on ARDOT's recent K+A crash rates and construction costs found, for urban environments with as little as 10,000 vehicles per day, and not considering access management treatments other than a restrictive median, a slight advantage for selecting 4-lane roadways with a restrictive median instead of the 5-lane design. When partial access management is considered, the restrictive median with partial control treatment is clearly superior, within the assumptions of the analysis. As traffic volumes increase, the desirability of a restrictive median becomes more pronounced.
4. Considering only the effects of median width, crash modification factors in the 2010 *Highway Safety Manual* (p 12-42) indicate that for an urban setting, changing from a 12 ft median (as with a TWLTL) to a 18 ft median (as with a raised median) would yield a 1% reduction in crashes.
5. Comparing the safety performance of 4-lane roadways Florida, Alluri et al. found that those with restrictive medians had a crash rate 5% less than those with TWLTLs. (Other studies have found more marked differences, so this constitutes one of the more modest or conservative benefits.) Applying this difference to a hypothetical 1-mile suburban segment over 20 years with 10,000 veh/day, the benefit from reduced crashes is $650,000. Raising the volume to 20,000 increases the benefit to $1,300,000.

Summarizing, a number of different rudimentary comparisons of construction costs and safety benefits all conclude that typically, the crash reduction benefits of a restrictive median and other access management treatments justify any added costs of such treatments.

# CHAPTER 7: IMPLEMENTATION CONSIDERATIONS

For lists of abbreviations and definitions, see Chapter 1.

Task 7 calls for the Contractor to develop a plan for the Department to implement access management in planning, operations, permitting, design processes, and decision making. However, during a June 2019 meeting with the Project Subcommittee, instructions were given that effectively truncated this task. Thus, this chapter is the repository of an enumeration of activities to be accomplished, materials to be developed, and other considerations in order to implement a new access management program. Most of these items should be accomplished prior to any new program's effective date.

## COMPLETE THE PROCESS TO ADOPT NEW COMMISSION RULES

- Complete the project documents, including a draft set of Rules for managing access.
- Obtain approval for access program update from the Director.
- Obtain approval and budget for a central office access program manager.
- Begin an internal review of project materials, including a formal internal review of the draft Rules (distribution to District Engineers and others for comment).
- Districts and central office divisions will need to review their internal policies and guidance materials to determine if any changes are necessary to comply with new rules.
- Determine a possible effective date for the Rules after consideration of a schedule that includes preparation of all materials and completion of training.
- Obtain Commission adoption of Rules by Minute Order.

## MATERIALS NEEDED TO IMPLEMENT THE NEW ACCESS PROGRAM

Prepare all materials in advance of training, so staff can be trained using the new materials.

- Reference materials distributed to each district office: Rule, AMM2, AMAG, trip generation information.
- Maps designating function classifications and context boundaries.
- New application form and applicant instructions.
- New permit forms (DOT use only) and use instructions.
- Site review worksheets used during application review.
- A district notebook of all useful materials. Three-ring binder or similar allowing updates.
- Collection of useful permit terms and conditions covering most needs.
- Permit preparation instructions (internal).

- Design templates for all common access types.
- Construction guidance (specifications) forms, materials, layout design to assist permittee.
- Pavement guidance (specifications, installation issues, temperature, mixes, strength).
- Inspection worksheet (post construction) for district staff.
- Forms and instructions for permit deposits and bonds.

**ON-LINE SYSTEMS**

On-line systems can range from document availability to fully functional processing programs with external and internal components. All external materials should be available on-line.

- Access management explained (training).
- Official publications and documents (Rule, maps, forms).
- Worksheets, sample designs, illustrations, application, instructions, self-help materials of any kind – in PDF format for printing.
- Application forms, any forms applicant will need in both PDF and fillable formats.
- Copies of all adopted AMPs, IMPs.
- Trip generation information.
- State traffic volume map.
- Driveway and intersection crash data by highway.
- Should there be an on-line application system? Will the DOT have a permit program for all DOT permitting processes? If access permits are to be included in a larger on-line program that incorporates all DOT permitting such as utilities, billboards, etc., care should be taken as access permitting has significantly different legal authorities and litigation risks, Commission regulations as well as applicant and property owner rights.

**RECORD KEEPING**

Current record keeping is very limited. Historically, the access permit has been used as a short-term permit to authorize driveway construction. However, a permit is also a state license to use and maintain a private encroachment, to occupy, the public right of way. In the new system, permits are issued with terms and conditions with safety and engineering requirements appropriate for their permitted use. Changes in use can impact both public safety and exceed engineering tolerances.

The Commission and DOT have a responsibility to monitor the safety and engineering impacts of access permits and their encroachment over the life of the use of the permit. As in all assets and properties of the DOT, the DOT has a degree of responsibility for every element

within the state right-of-way. This should include Identification of ALL existing historical and permitted access locations that occupy the state right of way.

Records of all permitting decisions and all signed documents should be retained permanently in an electronic record system. Access to the records should be by districts and central office with appropriate safeguards and editing management.

Every new permit should have at least a geo-code location reference. This allows use of GIS systems for mapping document identification and tracking crash history data. A geo-code will always be valid should there be administrative changes in highway numbering or mileposts, and property and business ownership.

As time and budget allows, all existing access connections, private encroachments in the right-of-way should be located and geo-coded. There should be an estimate of driveway activity and the land use served. Identification process could be as simple as the study of one-mile increments of aerial images, saved with geo-codes and highway route numbering for a historical record. This allows the DOT to match up crash records, monitor driveways for significant changes in activity, and identify illegal driveways installed after the effective date.

**TRAINING**

A new program requires training and will need active support during start-up. Each DOT unit and discipline whose work affects or is affected by access connections should be familiar with the new Commission Rules, new design information and all access program materials. Each DOT unit has a different set of access related tasks and responsibilities as well as different skills. This will require different training materials.

It is recommended that more than one training session be held for each group. Good results with just one day of training should not be expected. The first training needs to occur a month or so before the effective date of the new program and then follow-up training at about three to six months into the program.

**Training for Field Staff**

Field staff, those that work directly with applicants and prepare the permits need to be well versed in the new program. Their work begins before the effective date as applications close to the effective day of the new rule should be processed under the new rule procedures. This training should be a combination of lecture and hands-on experience. All training materials need to be put into a district notebook and all access program participants need on-line internal access to all program PDF documents. Training topics include the following.

- Why modernize the access management program and standards.
- Rule content, understanding and applying new requirements.
- A standard procedure for processing applications.

- Use of new application form, required attachments and helping applicants.
- Application site inspection including: intersection sight distance, stopping sight distance, actual sight distance, grades, drainage, potential hazmat conditions, immediate environment, pavement, culverts, site reviews, functional distances.
- Use of Field work sheets for access location, site documentation, photography.
- Use of new permit forms, permit content including terms and conditions.
- Legal issues- (yes you can deny), what is "reasonable."
- Traffic volumes, traffic studies, trip generation, traffic volume thresholds.
- Assessment of driveway safety potential.
- MUTCD, signs and markings for driveways.
- Construction inspection, confirmation of permit compliance (geometry, drainage, construction materials, paving and specifications).
- Identification of multi-mode, urban, and rural conditions.
- Record keeping, post permit processing.

**Training for Engineering Staff**

Engineering staff in districts and central office will both assist district permitting staff and participate in the design and management of access connections for reconstruction projects. While the primary training topics will be in access design and related traffic operations and safety factors, they will need to have an understanding of Commission Rules and the legal issues to know program parameters and how the Rules and laws determine how driveway relocations and modifications can be accomplished.

- Access design principles (speed, conflicts).
- Safety assessments, introduction in the use of the *Highway Safety Manual.*
- All design elements in access Rule manual.
- Functional and Context classifications.
- Intersection influence area.
- Access near interchanges.
- Access near roundabouts.
- Turn lanes, warrants, median types and design.
- Driveway design.
- Access management plans – content and preparation.
- Dealing with access modification within project limits.

**Training for Legal and Right of Way Staff**

This training may be in a workshop with discussion format.

- A focus on access rights and related legal issues.
- How the new program helps right of way management.
- Appraisal for access limitations.
- Appraisal for access modifications.
- Value of safety.
- Negotiations for access modifications.
- Working with district permit staff.
- External, consultants, developers, commercial realtors.
- Access opening deeds, partial access control issues.
- Access control along interchange cross roads.

**Training for External Groups (such as consultants and land developers)**

Improving their skills and knowledge will help improve the quality of applications and proposed location and design. The higher the quality of their work, the less work will be necessary by DOT staff.

- Why the new program, why manage access?
- How to apply.
- Forms, attachments.
- TIA reports, trip generation, turning movements.
- New driveway and roadway design requirements.
- Typical designs and plans (templates for their use).
- Internal circulation, backage roads, cross parcel connections.
- What to expect during processing.
- Post-permitting responsibilities.

**Follow-Up Training**

In the beginning, the new access program will have a mix of confusion and unanticipated issues. For at least the district permitting staff, there should be follow up training sessions between three and six months. This could be preceded by reviewing a large sample from each of the 10 districts, and a telephone survey, to identify any problematic issues. Follow-up training will include much of the original pre-effective date materials, but much more time for Q&A. Now, with experience, district staff will have a better understanding of the material, but most importantly, we need to hear their feedback to determine program improvements.

It is recommended that Q&A resources be available to respond five days a week for the first three months. This will also help determine the most frequent and serious problems occurring that can be addressed by training or program and Rule modifications. While some will simply be resistant and have discomfort with new requirements, we need to listen for problems that can be fixed and problems we did not anticipate. Repeat training is very important to keep early program implementation from stumbling and causing significant internal and external problems for management.

Ideally, there should be a workshop on the entire program in the first year to listen to concerns, experiences, have everyone share experiences and ideas with the objective to determine modifications to internal guidance and if necessary, consideration of rule amendments. If something is not working, fix it. This is a new program. It would be helpful not to assume it will be perfect during its first year. The new access program will also need to earn the respect of Department staff for the safety and operational benefits it provides whereas program problems and glitches, if not corrected, will distract from overall program goals.

# APPENDIX A: Excerpts from Arkansas Code

2017 Arkansas Code, Title 27 – Transportation, Subtitle 5 - Highways, Roads, and Streets

Chapter 66 - Establishment and Maintenance Generally

Subchapter 3 - Highway, Road, and Street Systems Classification Law

§ 27-66-301. Title

§ 27-66-302. Purpose

§ 27-66-303. Policy

§ 27-66-304. Definitions

§ 27-66-305. Designation, review, and revision

§ 27-66-306. Functional classes

§ 27-66-307. Continuing study

§ 27-66-308. Satisfaction of local planning requirements

AR Code **§ 27-66-301** (2017)

This subchapter may be known as the "Arkansas Highway, Road, and Street Systems Classification Law".

AR Code **§ 27-66-302** (2017)

It is the purpose of this subchapter to promote the general welfare of the traveling public and the Arkansas economy.

AR Code **§ 27-66-303** (2017)

(a) It is the policy of the State of Arkansas to adopt sound modern planning methods, procedures, and techniques for the proper administration, management, and improvement of the state highway, county road, and municipal street systems of the state and to assure continuing study and updating of this planning process.

(b) It is the legislative intent of this subchapter to functionally classify all elements of the public highways, roads, and streets in the Arkansas network according to level of service, with uniform improvement standards for each class.

AR Code **§ 27-66-305** (2017)

(a) All public highways, roads, and streets in Arkansas are designated in accordance with the findings of the functional classification study conducted in 1968 and 1970 and identified by maps on file in the office of the State Highway Commission and the offices of the county road and municipal street administrative officials.

(b) Recommended uniform design standards shall be established for the improvement of each functional class.

(c) The functional classification of public highways, roads, and streets shall be examined and reviewed at least every five (5) years by the commission in cooperation with the local governments.

(d) Revisions shall be made as are found in accordance with the criteria governing functional classification.

AR Code **§ 27-66-306** (2017)

The six (6) functional classes by levels of service that are made applicable to the network of public highways, roads, and streets in Arkansas are as follows:

(1) Class I
Rural Systems: Interstate freeways.
Municipal Systems: Interstate freeways.
Level of Service: Provide basic interstate service; link major cities;
(2) Class II
Rural Systems: Other principal arterial highways.
Municipal Systems: Other freeways and expressways.
Level of Service: Provide high level of interstate and intrastate service; connect major generators of internal city traffic;
(3) Class III
Rural System: Minor arterial highways.
Municipal Systems: Other principal arterial streets.
Level of Service: Serve trans-state travel to and through principal cities; provide a system for the major traffic generators within a city;
(4) Class IV
Rural Systems: Major collector roads.
Municipal Systems: Minor arterial streets.
Level of Service: Provide connections to and through the large centers of population within the state;
(5) Class V
Rural Systems: Minor collector roads.
Municipal Systems: Collector streets.
Level of Service: Provide intercounty service; serve the economic and state park areas not served by a higher system; collect and distribute traffic to and from major streets; provide intracounty service to and into population centers and other recreational and industrial areas; and
(6) Class VI
Rural Systems: Local roads.
Municipal Systems: Local streets.
Level of Service: Service small rural communities; provide access to residential areas, subdivisions, and neighborhoods within cities; provide direct access to adjacent properties in rural areas and within cities.

Chapter 68 - Controlled-Access Facilities

§ 27-68-101. Intent

§ 27-68-102. Definition

§ 27-68-103. Penalties

§ 27-68-104. Powers of highway authorities generally

§ 27-68-105. Design and regulation of access

§ 27-68-106. Designation and establishment of facilities

§ 27-68-107. Regulation of use

§ 27-68-108. Acquisition of property

§ 27-68-109. Agreements with other highway authorities and federal government

§ 27-68-110. Jurisdiction over service roads

§ 27-68-111. Service stations and commercial establishments prohibited.

AR Code **§ 27-68-101** (2017)

The General Assembly of the State of Arkansas finds, determines, and declares that this chapter is necessary for the immediate preservation of the public peace, health, and safety and for the promotion of the general welfare.

AR Code **§ 27-68-102** (2017)

As used in this chapter, unless the context otherwise requires, "controlled-access facility" means a highway or street especially designed for through traffic over, from, or to which owners or occupants of abutting land or other persons have no right or easement, or only a controlled right of easement of access, light, air, or view, by reason of the fact that their property abuts upon the controlled-access facility or for any other reason. These highways or streets may be freeways open to use by all customary forms of street and highway traffic or they may be parkways from which trucks, buses, and other commercial vehicles shall be excluded.

AR Code **§ 27-68-104** (2017)

Acting alone or in cooperation with each other or with any federal, state, or local agency or any other state having authority to participate in the construction and maintenance of highways, the highway authorities of the state, counties, cities, towns, and villages are authorized to:

(1) Plan, designate, establish, regulate, vacate, alter, improve, maintain, and provide controlled-access facilities for public use whenever the authority or authorities are of the opinion that present or future traffic conditions will justify such special facilities, provided that within cities and villages, authority shall be subject to such municipal consent as may be provided by law; and

(2) Exercise, relative to controlled-access facilities, and in addition to the specific powers granted in this chapter, any and all additional authority vested in them relative to highways or streets within their respective jurisdictions.

AR Code **§ 27-68-106** (2017)

(a) The highway authorities of the state, counties, cities, towns, or villages may designate and establish controlled-access highways as new and additional facilities or may designate and establish an existing street or highway as included within a controlled-access facility.

(b) The state or any of its subdivisions shall have authority to provide for the elimination of intersections at grade of controlled-access facilities with existing state and county roads, and city or town or village streets, by separation or service road, or by closing off the roads and streets at the right-of-way boundary line of such controlled-access facility.

(c) After the establishment of any controlled-access facility, no highway or street which is not a part of the facility shall intersect it at grade.

(d) No city, town, or village street, county or state highway, or other public way shall be opened into or connected with any controlled-access facility without the consent and previous approval of the highway authority in the state, county, city, town, or village having jurisdiction over the controlled-access facility. Consent and approval shall be given only if the public interest shall be served thereby.

Source: Justia US Law [ https://law.justia.com/codes/arkansas/2017/ ]

# APPENDIX B: Review of Access Management Legal Elements, Record Keeping

## AUTHORITY TO REGULATE ACCESS

The following four areas of law apply to the ARDOT access management program: (1) state constitution; (2) statutes established by legislation; (3) rules and regulations adopted by the State Highway Commission; (4) published decisions by state courts.

State constitutional amendment 42 of 1952 established the State Highway Commission and vested the Commission with all powers and duties imposed by law for the administration of the DOT. The Commission acts through the Director which the Commission appoints.

> There is hereby created a State Highway Commission which shall be vested with all the powers and duties now or hereafter imposed by law for the administration of the State Highway Department, together with all powers necessary or proper to enable the Commission or any of its officers or employees to carry out fully and effectively the regulations and laws relating to the State Highway Department.

The Constitution authorizes the Commission to adopt rules and regulations. In addition, there are several statutes providing direction to the Commission calling for the management of access to and from state highways and to establish the necessary administrative program. The duties of the Department are described in Title 27 of the Arkansas Code. At ACA §27-1-102, legislative intent includes "enhance the social and economic well-being of the citizenry", and "the effective implementation of a safe and efficient total transportation system". At ACA § 27-65-107. *Powers and duties generally.* The Commission is given a duty to promulgate rules for *"controlling use of, and access to, the highways"*

***(a) The State Highway Commission*** *shall be vested with the following powers and shall have the following* ***duties****:*

***(13) To adopt rules and regulations to implement the commission's powers;***

***(14) To adopt reasonable rules and regulations*** *from time to time for the protection of, and covering, traffic on and in the use of the state highway system and* ***in controlling use of, and access to, the highways****, except that no provision contained herein shall be construed as repealing the existing "rules of the road";*

The Commission adopted its first *Rules for Access Driveways to State Highways* in 1954. It has amended the rules seven times since, the last adoption in January 2017.

In adopting the January 2017 rules, the Commission Minute Order states; ". ..to govern the uniform design and construction of driveways that will allow adequate, safe and reasonable access to the roads and streets on the State Highway System with a minimum of interference and hazard to highway traffic."

At ACA *§ 27-65-107. Powers and duties generally. (a) The State Highway Commission shall be vested with the following powers and shall have the following duties:*

*(17) To establish by properly promulgated and adopted rules reasonable fees that are necessary to carry out the powers and duties of the commission for applications, permits, licenses, and other administrative purposes including but not limited to driveways, logos, billboards, signage, sign visibility, and weight restricted roadway maintenance to support the administration and operation of programs for which the fees are assessed;*

The basis for the Commission driveway rule content has been the *Guide for Preparing Private Driveway Regulations for Major Highways*, an AASHO publication from 1960. Since the 1940s, access activity along the highway roadside had been identified as a significant problem for both highway operation and specifically public safety. Since 1960 more field research and numerous studies have reported and published enumerating the scale of adverse impacts of access activity.

The Director of ARDOT is appointed by the Commission. The Director is the chief executive officer of the Department and, subject to the approval of the Commission, has direct and full control and management of the affairs relating to the state highways. (ACA §27- 27-65-122). The Director has full responsibility to carry out the duties and responsibilities set forth by the Commission in "Rules for Access Driveways to State Highways".

**ACCESS RELATED STATUTES**

At ACA §27-68-104: Controlled-access Facilities. The highway authorities of the state, counties, cities, towns, and villages are authorized to provide and manage controlled-access facilities whenever the authority is of the opinion that present or future traffic conditions will justify such special facilities subject to such municipal consent as may be provided by law; and once designated, exercise, in addition to the specific powers granted in § 27-68-101 to 111, any and all additional authority vested in them relative to highways or streets within their respective jurisdictions.

At ACA §27-67-301: Authority is granted to the Commission to acquire real property or any interest therein for highway purposes, which includes access rights. At ACA §27-67-302: State highway purposes include, [but are not limited to], the maintenance of an unobstructed view of any portion of a state highway, the elimination of public or private crossings or intersections at grade, and for the protection of the highway from both physical and functional encroachments of any kind.

At ACA §27-66-301: There is the *"Arkansas Highway, Road, and Street Systems Classification Law"*. This statute is specifically to promote the general welfare of the traveling public and the Arkansas economy using modern planning methods, procedures, and techniques for the administration, management, and improvement of the state highway, county road, and municipal street systems of the state. The legislative intent is to functionally classify all public highways, roads, and streets in the Arkansas network according to level of service, with uniform improvement standards for each of six classes according to the character of service they are

intended to provide. Recommended uniform design standards are to be established for the improvement of each functional class. The functional classification must be examined and reviewed at least every five (5) years by the Commission.

**CASE LAW REGARDING ACCESS CHANGES**

The state constitution addresses property rights setting certain limits and making policy statements. It is the burden on the Courts to opine on how portions of the Constitution may apply to access permitting or access modifications brought to the Court in a dispute. There are only a few published decisions and these go to very specific facts of each situation. As an example, the State Supreme Court has held that circuity of travel, i.e., being compelled to go a few blocks out of the way to get to property is not compensable. Risser v. City of Little Rock, 225 Ark. 318, 281 S.W.2d 949.

A landowner may be entitled to compensation if access changes by a Department project substantially impair access to the property and cause the value of the property to be diminished. Generally, there is not a compensation claim if the Department does not take any land from the owner in the course of the project. As in the case of a change in the roadway median, in the before and after conditions, the landowner's (and customers) use of the roadway is the same as that of the general public and there has been no physical taking of property rights from a property owner abutting the roadway (Commission v. McNeill). An abutting owner does not have property rights to the operation of the highway.

Police power exercised in the manner of simply making a road one way is not compensable or by the construction or a restrictive median that restricts left turns that existed prior to the project. Generally, changes in roadway operation and traffic controls is not considered a taking. However, the case law is not exactly clear due in part to the facts associated with each case.

While the law might be clear, it is sometimes in the best interests of the Department to offer some compensation for access changes – which helps move a highway project forward more efficiently and the Department prefers to help abutting owners and mitigate the local impacts of new highway conditions. But this is entirely at the discretion of the DOT.

**VIOLATIONS**

There are two types of access violations. First, if the permittee violates one of more terms of their permit and second, an access that is installed without a permit.

If a permittee does not comply with all permit terms, if they violate the permit in some manner, the agency can issue an order to comply. The burden of proof that there is a violation is on the agency. However, if the permit compliance problem occurs during the driveway construction phase, rather than commencing legal proceedings, the district can hold their construction bond (not release it). However, the current bond is only $1,000. This is not

enough to repair a problem. Sometimes the $1,000 is not enough incentive to get permittee to pay attention to DOT demands. A bond may simply be a check that the district staff holds onto until the work is done. There have been instances where district staff releases the check early at the owner's request only to find out too late that the construction has problems.

The bond is often from the property owner, not the contractor, yet it may be the contractor that violated the permit terms during construction. Even with the permit violation, the contractor might be gone, already paid by the owner and the owner can't get their bond back from the DOT until the violation is corrected. Or the problem is simply not fixed. The $1,000 is barely enough to place barricades across the driveway, and not enough to return the ROW to original conditions by DOT maintenance.

Decades ago, the Department took action to close an illegal driveway by placing barriers on it. The property owner filed a complaint in local court, but a favorable decision was finally rendered by the Arkansas Supreme Court in favor of the Commission and the access control regulations were upheld as a proper exercise of the police power.

**RECORDS**

There seems to be a significant problem with records of access locations granted by highway projects. Access deeds only have job number reference and no reference to the access control or locations. No permit is issued. Opening in access control areas (A/C lines), may not be described or poorly described. The access control, if the acquisition goes to court, is in the judgment record but not in the county title records. The absence of county records means the information is not available to title companies and purchasers.

The DOT acquires full access control for freeways and may acquire partial access control on non-freeway routes. A 'declaration' in the acquisition paperwork points to an exhibit, the plans, with stationing reference and the phrase "less and except" in their deeds. But these are not recorded at the county. As a result, neither the current or future property owners nor the Department can easily identify the proper location of an opening, or in the extent of the access control line.

There is no records management policy for access permits. Record keeping is poor. Districts may destroy old permits to make room for more. There seems to be no effort to digitize permit records prior to destroying. When future legal actions are necessary, such as for a new highway project, ROW records for previous projects are missing. For some very old highways, permits including access and utility permits, are often the only records of what the DOT and owner have determined to be the ROW line.

# APPENDIX C: Possible New Central Office Position

It is recommended that a new position be established in the central office to administer the access program. The access manager would be the senior agency authority on access management. It would be necessary to work with Human Resources to allocate a position, assigned responsibilities, and set position title and grade. This should proceed immediately so the position may have the lead role in program implementation. A separate section at the end of this chapter presents position and task information. The position would be responsible for the continuing development, implementation, research and daily administration of the ARDOT statewide access management program, including the following.

- Develop and maintain all program materials
- Develop or revise internal and external procedures
- Develop and advise on revisions to policies and regulations
- Develop and maintain systems to measure, evaluate, and improve program performance
- Be a project related advisor on access management
- Provide for internal and external training
- Provide local government assistance on access issues
- Develop and defend budget requests to achieve access program goals
- Recommend staffing to achieve program goals
- Keep higher levels of management informed of the status of program activities
- Work with legal counsel to coordinate information and proceedings when access management issues are addressed in administrative hearings and in right of way acquisition

## SUGGESTED JOB RESPONSIBILITIES, TASKS, AND JOB DESCRIPTION FOR AN ARDOT CENTRAL OFFICE ACCESS MANAGER

### Executive Management Statement on Position Importance

The access program should be viewed and managed as a critical and essential agency program characterized by the following elements: (1) a major organizational endeavor, with a mission and goals, that fulfills statutory or executive management duties and responsibilities; (2) designated by executive management as critical and essential for implementation and attainment to ensure the agency maintains its mission; and, (3) has internal impact throughout an agency and statewide external impact on the public and special interest stakeholder groups.

**State Access Manager**

The manager of the central office access office is the senior agency authority on access management. They are responsible for the continuing development, implementation, research and daily administration of the ARDOT statewide access management program including; objectives, procedures, policies, regulation revisions, permit program monitoring, project related access management advisor, agency training, and local government assistance on access issues.

This position has the responsibility to maintain the framework for agency access management decisions, regulations and program. The position relies on national research and publications, materials created by others and advice from experts on specific points when working with program standards and procedures and subsequently accomplishing revisions to policy, program, standards and procedures. Normally, available materials containing theories, principles and standards, do not provide specific guidance, and must be analyzed and appropriate ARDOT application formulated.

As Program Manager: (1) establishes goals and provides direction to others to attain program objectives as set forth by the Commission and Director; (2) establishes and executes plans to achieve program mission; (3) develops any necessary revisions to program guidelines, policies, rules, regulations, etc; (4) develops organizational structure recommendations to best meet program objectives; (5) develops and/or approves schedules, priorities, and standards for achieving program goals; (6) develops management and administrative systems to measure, evaluate, and improve program performance; (7) organizes, controls, and coordinates activities (internally or externally to the agency) to achieve program objectives and ensures various interrelated parts of a program are executed in an organized manner; (8) develops and defends budget requests to achieve program goals and is involved in fiscal planning and control as it pertains to program activities; (9) develops staffing, as required, to achieve program goals; and, (10) keeps higher levels of management informed of the status of program activities; (11) and others informed of program activities through records, inspection, meetings, and other forms of communication.

**Position Description**

Title:

Position title should include a key word such as manager (of a program), or administrator (of a program). The title should indicate managerial responsibilities, the top DOT position relative to the day-to-day access program administration. The job description and tasks should call for a mid-level manager and should be structured to balance salary level to managerial scope of work, level of decision making and level of risk to the agency if program is not managed responsibility. The position is not a coordinator.

Knowledge:

The top central office person must know and understand the access program. They must understand the underlying legal, design, safety, planning and engineering principles of all the parts. If the position is limited to only knowing the Rules and procedures and not the principles, then the person does not have a sufficient level of expertise to be the state expert in the subject, and will not be able to further develop, refine or modify the program. They can only operate the current program and will have limited ability to explain the basis. While a limited manager might be able to complete some program adjustments and tweaking minor problems, there is increased risk of not understanding revision outcomes and not being able to advise upper management fully or accurately.

Reporting Level - Should report to a Branch manager:

As a multi-disciplinary program manager, state DOTs have placed such managers in a range of locations including right-of-way; traffic and safety; maintenance and planning.

Supervision:

While it may be necessary to have one or two assistants for this program manager, the management pay level (salary) should not be linked directly to the number supervised. The scale of pay should be tied to program manager's expertise, program management scope (rather than people management), decision responsibility, and degree of risk to the agency should the program have difficulties.

Level of Responsibility:

The program manager has primary responsibility within ARDOT for the development and administration of the Department's regulatory and non-regulatory policies on access management. The position will conduct research, training, program and policy development for statewide implementation. The position prepares annual work plans, section budget and goals.

Decision Making:

Decisions are regularly made at the interpretive level. Within limits of access program responsibilities, choices involve determining tactical plans to achieve specific program objectives established by a higher management level. For example, this position would establish plans to carry out program projects and studies and to ensure program services and activities are carried out timely and cost effectively. This involves establishing what processes will be done, developing the budget, and developing the staffing patterns and work units in order to deploy staff. This position level may include inventing and changing systems and

guidelines that will be applied by others such as, guidelines that govern standards for program activities and for the delivery of services to program clients and users. This is the first management level where the position is not bound by processes and operations in their own programs as a framework for decision making. There are novel or unique situations that cause uncertainties that must be addressed. A person in this position develops and sets guidelines and operating policies, and devises work processes pertaining to specific program activities and the delivery of these services to clients and users, in order to reach program objectives and ensure quality and production goals are met. Through deliberate analysis and experience with these unique situations, the manager is an expert that can determine the systems, guidelines, and programs for anticipated future conditions. As an example, how advanced and automated computer managed vehicles might necessitate changes in access design and traffic operations related to access connections.

Complexity:

The nature of, and need for, analysis and judgment is formulative. Position can evaluate the relevance and importance of management, public administration, and/or operational analysis theories, concepts, and principles in order to tailor them to develop a different approach or tactical plan to fit specific circumstances. While general policy, precedent, or non-specific practices exist, they are inadequate so they are relevant only through approximation or analogy. In conjunction with theories, concepts, and principles, the position uses judgment and resourcefulness in tailoring the existing guidelines so they can be applied to particular circumstances and to deal with emergencies. For example, the position develops and sets guidelines and operating policies and devises work processes pertaining to program functions and activities.

Purpose of Contact:

Regular work contacts with others outside the supervisory chain, and outside the agency. Such contact may include clarifying underlying rationale, intent, and motive by educating others on unfamiliar program concepts and theories. This goes beyond what has been learned in training or repeating information that is available in another format. For example, the position clarifies the intent of proposed and/or revised program guidelines including policies, practices, procedures, and new methods of accomplishing program work to clients and users in order to promote their understanding and ensure program services are delivered efficiently and effectively.

Negotiating as an official representative of the agency in order to obtain support or reach a settlement or compromise where there is no formal rule or law to fall back on in requiring such action or change from the other party. Such negotiation has fiscal or programmatic impact on

an agency. In reaching settlements or compromises, the position does not have a rule or regulation to enforce but is accountable for the function.

Defending, arguing, or justifying an agency's position in formal hearings or court where the position is an official representative of the agency.

Performance Measures

A. Frequency of activities including: training sessions, conference and meeting presentations, contacts with external customers.

B. Completion of various tasks and products identified during the annual planning and budgeting proceedings.

C. Peer evaluation – survey of satisfaction of district and central office staff with performance and support.