

Missouri: A Comprehensive Process for Developing a Statewide Access Management Program

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The Missouri Department of Transportation (MODOT) is responsible for one of the largest state-jurisdiction road systems in the United States. Missouri has recently decided to embark on an access management program and has focused on utilizing access management mainly to meet safety, traffic operations, and economic development goals. The Missouri Access Management program development process involves a number of key steps. These include:

- Stakeholder identification and participation.
- Participant education on access management principles and impacts.
- Development of specific statewide goals for access management.
- Development of an easy to understand (and communicate) access management roadway classification system based on MODOT's existing functional classification system.
- Development of a detailed set of access management standards and guidelines in the form of a guidebook.
- Development of administrative processes (such as the driveway permitting process).
- Identification of current and likely future access management problem corridors.
- Identification of promising "pilot" project corridors where access management principals could be applied.
- Access management awareness and training for stakeholder groups identified through a marketing plan.

This paper will provide an overview of the start-up and development of the Missouri access management program. It will also briefly cover a process for the identification of problem corridors using management information system data and geographic information systems (GIS) technology. This paper will be useful to other states and state DOTs wanting to address access management in a comprehensive fashion.

INTRODUCTION

(NOTE: The Missouri Comprehensive Access Management Planning Process is an ongoing project. All materials presented in this paper are subject to change.)

In all states, the roadway system plays a dual role. It provides service to through traffic while also providing access to adjacent properties, residences, and businesses. When these two roles are not properly balanced and managed, safety problems and operational issues result. These negatively impact both the traveling public and

the adjacent landowners. Access management involves striking the proper balance between the dual roles roadways must play. This is done through the application of access management standards, which involve such features as spacing between driveways, driveway geometric design, internal circulation design for land developments, and installation of medians.

An extensive amount of access management research and programmatic activity is currently taking place in the Midwestern states. For example, Kansas is pursuing an aggressive corridor management program, while Minnesota and South Dakota are developing comprehensive access management programs. Iowa has commissioned several research projects designed to explore the relationships between access management and safety, traffic operations, and business vitality.

Missouri is the latest state in the region to begin working on an access management strategy.

The Missouri Department of Transportation (MODOT) is responsible for managing a far more extensive system of roads than its neighbors—over 30,000 miles in all. Unlike most other states in the Midwest, MODOT manages rural roads that are functionally classified as collectors and some routes that would be classified as local service routes in other states. Missouri's "peer states" were identified based on the nature and extent of their road systems. These peer states are identified in Table 1 and were contacted to obtain their access management standards, classification systems, and administrative policies. States that are considered to be leaders in access management based on their presentations at the three past National Access Management Conferences were contacted for similar information.

Missouri's State Constitution gives the Highways and Transportation Commission the authority to manage highway access:

"The highways and transportation commission shall have authority over all state transportation programs and facilities as provided by law, including but not limited to, bridges, highways, aviation, railroads, mass transportation, ports, and waterborne commerce, and shall have authority to limit access to, from, and across state highways where the public interest and safety may require."⁽¹⁾

Missouri has historically had a tax on motor fuel that is well below the average. This has led to a situation where Missouri's roadways are replaced on a longer cycle than those in other states. This is important for access management for a number of reasons, not the least of which is that Missouri's highways often have more curvature and greater profile change than other, nearby states. Combined with the rough topography of the state, this means that sight distance is often a major concern in locating driveways in both rural and urban areas. Missouri has not practiced access management in a comprehensive manner until now. Instead, it has largely approved or

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TABLE 1 Missouri's Peer States in Terms of State Highway System Extent

State	Rural Highways, State Administration						
	Miles	Lane Miles	DVMT 2/	AADT/Lane 3/	Percent of Statewide Total Rural 4/		
					Miles	Lane Miles	DVMT 2/
North Carolina	68,715	142,253	87,982	618	91.2	91.8	79.0
Texas	68,298	153,219	159,616	1,042	31.9	34.5	89.7
Virginia	48,662	103,798	73,580	709	95.5	96.4	86.2
South Carolina	34,609	72,454	62,004	856	63.9	64.8	87.8
Pennsylvania	32,388	68,703	85,804	1,249	37.9	39.1	72.2
West Virginia	30,850	63,083	30,849	489	96.1	96.1	84.3
Missouri	30,649	64,321	66,267	1,030	28.8	29.8	85.6
Kentucky	25,031	53,242	52,453	985	40.4	41.9	76.2
Ohio	15,275	33,312	73,245	2,199	18.7	19.8	66.7
Arkansas	14,999	33,722	43,816	1,299	17.8	19.8	86.2
Georgia 1/	14,843	32,457	73,407	2,262	17.4	18.6	68.4
Louisiana	14,643	32,599	47,635	1,461	31.3	33.6	81.2

Source: Federal Highway Administration

Notes for Table 1:

1/ Travel is estimated by FHWA; other data are for 1996.

2/ DVMT means Daily Vehicle Miles of Travel

3/ AADT means Annual Average Daily Traffic. AADT/Lane is a system-wide average.

4/ Statewide totals for mileage, lane miles, and travel are found in HM-20, HM-60, and VM-2.

disapproved individual driveway permits along its routes on the basis of desirable or minimum sight distance standards. Several types of variances to the sight distance standards have been issued at the district level in situations where only a minimum stopping sight distance standard could be met.

PROJECT OBJECTIVES

Missouri is taking a comprehensive approach to access management. Access management is being integrated into MODOT's overall enterprise strategic plan. In particular, access management will be one of the most important strategies in the agency strategic plan for achieving improved highway safety. The main objectives of the Missouri access management comprehensive plan are to:

- Develop a comprehensive approach to access management in Missouri.
- Develop all necessary classifications, standards, guidelines, and administrative processes.
- Identify current and likely future corridors with access management problems.
- Provide access management training for the MODOT staff and other stakeholders.

STAKEHOLDER ANALYSIS

Key stakeholders for access management in Missouri were identified prior to the initial meeting for the project. Important groups to involve in the develop in access management planning and outreach for Missouri were: Missouri DOT District staff, Missouri DOT

Central Office/Support Center staff from a variety of disciplines (including traffic engineering, right of way, planning, and highway design), land developers, economic developers, and city government officials. A key feature of the planning process involves the identification and involvement of local land use planning officials and private developers. These groups can either help or hinder the application of access management standards through their decisions.

PLANNING PROCESS

Separate oversight and technical committees were formed to guide the planning process. The oversight committee was established to:

- Provide high-level guidance for the study (e.g. setting goals)
- Direct the technical committee to address issues
- Discuss policy issues
- Consider different viewpoints, including business vitality, economic development, and land development, in developing the access management plan.

The oversight committee includes managers from various Missouri DOT divisions and district offices, plus experienced land developers and economic developers as well as city elected officials.

By contrast, the technical committee was established to:

- Develop technical standards and guidelines for access management
- Report these back to the oversight committee.

The technical committee is made up of Missouri DOT staff from several divisions and district offices plus local transportation planning and engineering professionals who are involved in access management.

ACCESS MANAGEMENT GOALS

The following access management goals, shown in order of importance from highest to lowest, were set during an initial meeting by the oversight committee:

- **Increased safety.** Fewer crashes and lower crash rates are the main measures of success for this goal.
- **Improved traffic operations.** The expectation here is that access management can help reduce congestion, shorten travel times, improve mobility, and help protect the environment through salutary effects on energy use, air pollution, and land use.
- **Protection of the taxpayers' investment.** Access management is hoped to be able to preserve past and present investments in expensive roadway assets and to defer the need for future investments.
- **Better operating conditions for non-auto modes.** Pedestrians, bicyclists and public transportation users as well as motorists are expected to be beneficiaries of access management.

The MODOT access management project has already been closely integrated with the Department's overall strategic plan. One of the main goals for the enterprise strategic transportation plan is safety. A strategy under safety in the enterprise plan is now to:

"Integrate access management at the local, regional, and statewide levels."

The Division Engineers and the Traffic Division of MODOT have joint responsibility for this strategic element of the MODOT enterprise strategic plan.

CLASSIFICATION SYSTEM

Classification systems are a key part of the access management process. They allow access management standards to properly fit the present and future functional roles of highways. Classification systems are also useful for helping to explain access management concepts to the public and land and business owners.

Several other states' access management classification systems were reviewed for applicability to Missouri's highway system, current functional classification system, and jurisdictional arrangements. The technical committee adopted a system partially modeled on Colorado's access management classification system. The main reason for adopting this system is that it is relatively simple to understand and explain; yet it reflects the continuum of roles that roadways must play. The proposed classification system is shown in Table 2.

DETERMINATION OF FEATURES TO BE MANAGED

A determination of features to be included in the access management standards for Missouri was made jointly by the oversight committee and the technical committee. The features for which standards are being developed are:

- Distance between interchanges on Interstates and other Freeways.
- Clearance of functional areas of interchanges.
- Distance between at-grade interchanges.
- Distance between traffic signals.

TABLE 2 Proposed Missouri Access Management Classification System

(Ten Classification Levels—Based on the Current MoDOT Functional Classification System)

	Urban	Rural
Interstate/Freeway	U1	R1
Principal Arterial (A)	U2	R2
Principal Arterial (B)	U3	R3
Minor Arterial	U4	R4
Collector	U5	R5

A Principal Arterial (A) is a key, non-freeway or non-interstate intercity or inter-regional route intended to serve long-distance travel. An example is US 63, which runs north to south across Missouri, between Iowa and Arkansas.

U indicates Urban: the highway is within census current urbanized or urban area or is forecast to be urban within 20 years. Future urban highways will be planned as such in terms of access management.

R indicates Rural: the highway is **not** currently urban and is **not** in a 20-year forecast urban area.

- Driveway spacing and density.
- Corner clearance and clearance of functional areas of intersections.
- Sight distance for driveways.
- Driveway geometrics and surfacing.
- Median openings.
- Guidelines for using two-way left-turn lanes, three-lane cross sections, versus raised medians.
- Dedicated right and left turn lanes.
- Frontage and backage road spacing from mainline routes.
- Parking on facilities.
- Accommodations of non-auto modes in conjunction with managing access.
- Connection depth (throat length) standards for major traffic generators.

These standards are currently being developed by the technical committee for presentation to the oversight committee. In addition, the technical committee is developing a set of recommendations for local governments that have to do with matters that they control that impact access management. This set of guidelines includes such things as minimum lot frontages, encouraging joint and cross access, and avoidance of development practices such as "flag lots."

PROBLEM AND PILOT PROJECT IDENTIFICATION USING GIS

An additional task of the planning process has involved the identification of problem highway corridors using geographic information system (GIS) technology and existing Missouri DOT safety management data. Right-turn and left-turn crash density and crash rates have been mapped statewide in Missouri using ArcView 3.1. Several of the maps produced are shown below in Figures 1 and 2. These maps are being used to identify places where access management retrofit projects would be most beneficial and also to identify places where past projects have had a positive impact.

ADMINISTRATIVE PROCESS

Once standards are in place, the next step will involve laying out an administrative process for applying them. A preliminary set of goals has been discussed with the oversight committee. These include:

- Making safe and operationally beneficial access decisions.
- Protecting the public investment in roadways.
- Providing a timely and predictable decision making process for landowners and developers.
- Encouraging uniformity of application of standards statewide, especially on interstates, other freeways, and strategic principal arterial routes.
- Making decisions based on clear and logical access standards.
- Allowing flexibility and engineering judgement where warranted (this can lead to stricter controls when they are needed).
- Keeping the number of variances at a reasonable level
- Providing for an efficient appeals process.
- Setting good precedents for future access decisions.

Administrative process guidelines such as driveway permit fees, centralized versus decentralized decision making, and timelines for making permit and variance decisions will be established as a part of this phase of the project.

The concept of a hierarchy of features to be managed through the variance process has been adapted from a paper on variances presented at the second National Access Management Conference in 1996 (2). Some features, such as sight distance requirements, should be given the most scrutiny in reviewing potential variances since they are critical to maintaining a safe road system.

EDUCATION, OUTREACH, AND MARKETING

The Missouri access management project began and will end with education. The first completed task involved educating the oversight committee about the benefits and impacts of access management. National and regional information on access management and its

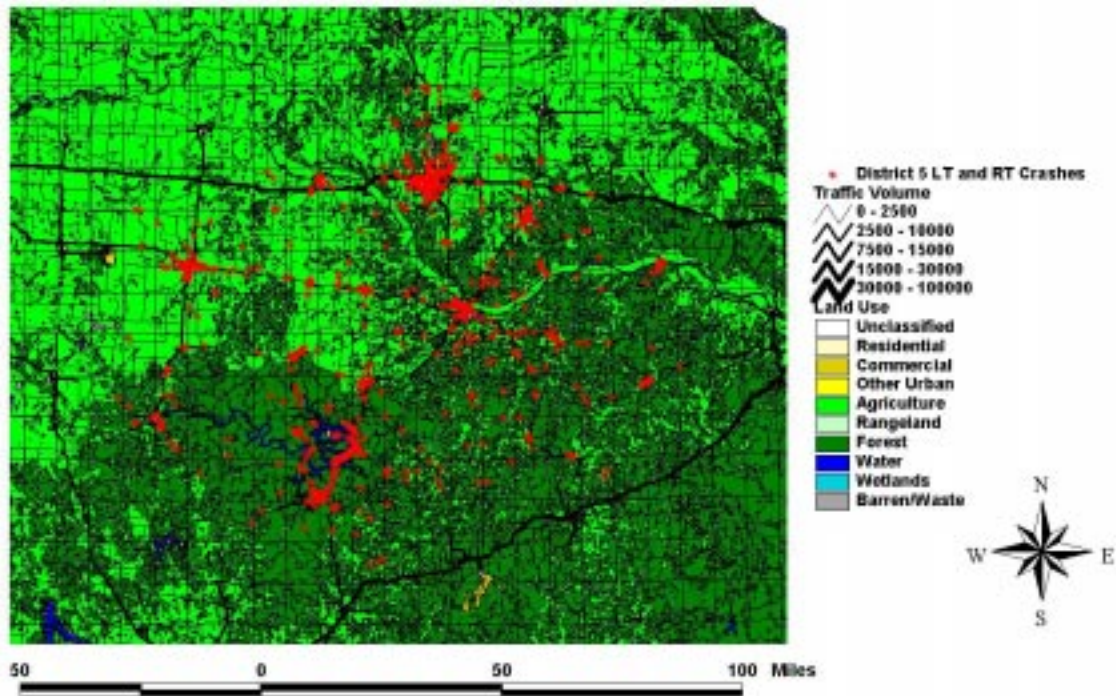


FIGURE 1 Left-turn and right-turn crashes in Missouri DOT District Five in the past three years

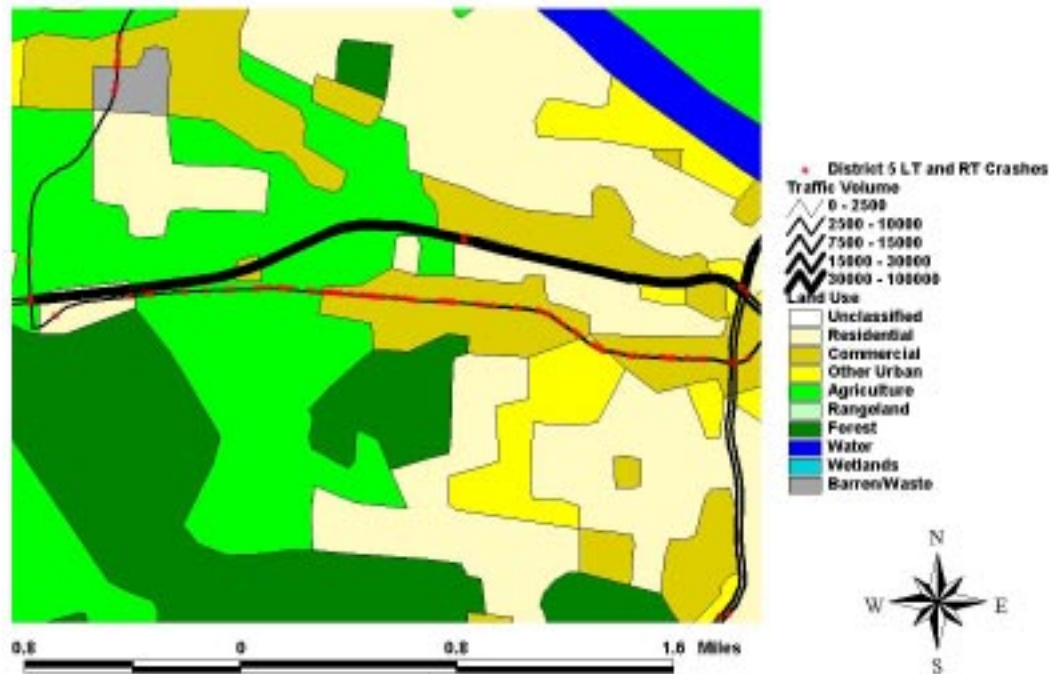


FIGURE 2 Missouri Boulevard Detail

benefits were presented; in particular information from neighboring Iowa about the safety and business vitality impacts of access management was highlighted.

One of the last phases of the project will involve the development and use of educational materials designed to teach access management concepts and raise awareness. The educational materials will be targeted both internally within MODOT and externally to key stakeholder groups such as city officials, local land use planners, local transportation professionals, and developers.

RESULTS AND CONCLUSION

The Missouri DOT's comprehensive access management planning process is ongoing. Considerable work remains to be completed. The success of Missouri's access management plan will depend on

three main factors. These include the ability to coordinate implementation within MODOT, the ability of MODOT to coordinate and cooperate with local governments on access management, and the ability of MODOT to persuade the development community of the value and importance of access management.

REFERENCES

1. Missouri Constitution, Article IV, Section 29, Highways and Transportation.
2. Eisdorfer, A. and R. Siley. Variances—An Important Part of Access Management Decisions. In *Proceedings of the Second National Access Management Conference*, Vail, Colorado, August 11-14, 1996, published by the Federal Highway Administration, US Department of Transportation, pp. 289-297.