

## DIVISION HIGHLIGHTS: TRANSPORTATION PLANNING AND INFORMATION SYSTEMS

### MANAGING ROADWAY ACCESS

**Project partners:** *Iowa Department of Transportation, Iowa Access Management Task Force, University of Northern Iowa*

#### Access: Background

One of the most difficult problems in roadway administration and design is balancing roadways' dual function: serving through traffic and providing access to property. Providing inappropriate or excessive access to property on arterial roadways can lead to accidents, delays, and congestion.

Good access management practices—efficiently managing vehicles' access to and from major arterial roadways—can reduce accidents and generally improve traffic flow. Where access is well managed, motorists experience better fuel economy, reduced vehicle emissions, and fewer delays. In addition, incorporating sound access management strategies into existing arterials often increases their capacity, reducing the need to build costly new roadways and providing a maximum return on the investment in existing roadways.

#### Access: An Iowa Study

Because of rising levels of congestion and rising costs for new roadway construction, local and state transportation agencies are increasingly interested in access management techniques and projects. The extensive literature on access management indicates that access management projects often significantly improve traffic safety and operations without negatively affecting local businesses. However, most of the studies cited in the literature are from states considerably more urbanized than Iowa.

A recent project by CTRE, the Iowa Department of Transportation, the Iowa Access Management Task Force, and the University of Northern Iowa studied seven completed access management projects in Iowa. The projects represented a variety of access issues, geographic situations, and management strategies. Suburban, urban, small city, and rural access management projects were included. Most of the access improvements studied were completed in the mid-1990s. Where possible, at least three years of before-and-after data were used.

The Iowa case studies confirmed and expanded on the findings of the extensive North American literature on access management. The Iowa projects have had significant, positive effects in terms of improving traffic safety and roadway functioning, with generally no adverse effect on businesses along the studied corridors and, in some cases, an improved business environment along the corridors.

#### Access: Typical Improvements

According to the Federal Highway Administration, the basic elements of access management include limiting the number of driveways with access to roadways, providing plenty of space between driveways, and improving the design and location of driveways.

Typical access management projects in Iowa include one or more of the following specific improvements:

- consolidating or closing selected driveways to reduce conflicts associated with turning traffic
- adding continuous left-hand turning lanes to generally separate turning and through traffic

- adding frontage roads and backage roads to completely separate turning traffic from through traffic
- adding raised medians near major intersections to prevent some turning movements
- adding raised medians along entire roadways to eliminate many conflict points

The Iowa study focused primarily on the measured effects of access management on traffic safety and on adjacent business vitality, as well as the reaction of motorists to the improvements.

The study team used four methods to examine the seven selected case studies.

(1) Each case was examined in the field and as much historic information as possible was gathered, generally via project files from the Iowa Department of Transportation.

(2) Detailed before-and-after accident studies were conducted using the Iowa DOT's computerized Accident Location and Analysis System (PC-ALAS).

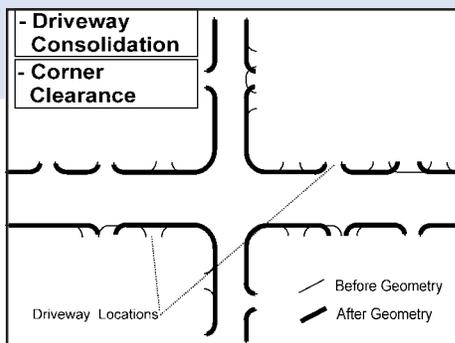
(3) Business trends for the studied corridors were analyzed, primarily using retail sales tax data.

(4) Opinion surveys of business owners and managers, as well as motorists and customers, were conducted along the corridors.

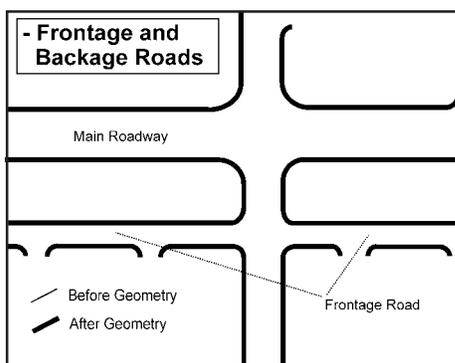
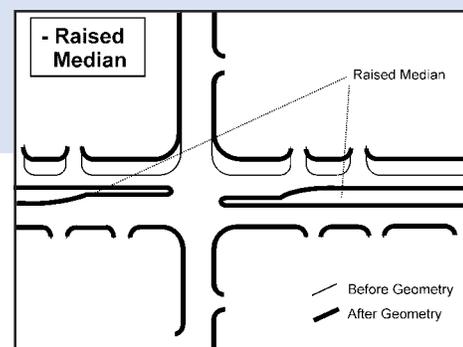
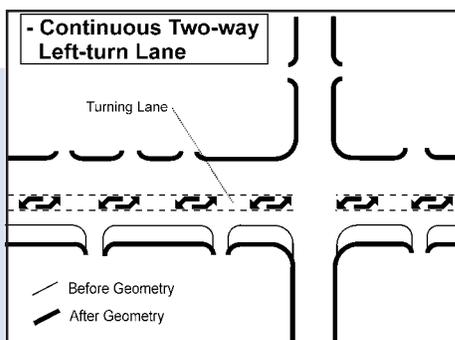
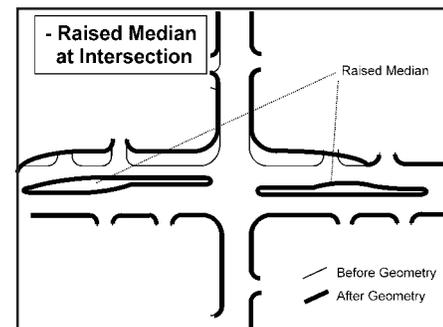
### Access: Study Findings

The results from the Iowa case studies were overwhelmingly positive.

**Traffic safety.** A typical access management project in Iowa may be expected to



The illustrations depict five popular and effective access management strategies used in Iowa. Graphics by Chris Albrecht, graduate research assistant.



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reduce accident rates by 10 to 65 percent. The average reduction in accident rates for the seven projects was 40 percent.

Personal injury accidents and property damage accidents were reduced significantly, but property-damage-only accidents were reduced by a greater percentage.

At the same time, the access management projects raised the level of traffic service to motorists along the improved corridors during the peak hour by one level. Motorists could travel faster with less traffic congestion and fewer delays.

**Business vitality and corridor development.**

Corridors with completed access management projects performed better in terms of retail sales than the surrounding communities. Business failure rates along access management corridors were generally at or below the statewide average for Iowa.

Eighty percent of businesses along access management corridors reported sales at least as high after access improvements were finished. Relatively few business owners (about five percent) felt they were hurt by the project.

About 80 percent of businesses reported no customer complaints about access to their businesses after the access projects were completed. Those businesses that tended to report complaints were highly oriented toward automobile traffic (e.g., restaurants, auto sales, and auto service).

Furthermore, some evidence from the Iowa case studies shows that business redevelopment, investment, and revitalization begins to occur along a corridor a few years after access management projects are completed.

**Motorist opinions.** Ninety to 100 percent of motorists surveyed in this study had favorable opinions about the roadway improvements. The vast majority agreed that the improved roadways were safer, easier to drive on, and more efficient.

**Access: Barriers**

A major obstacle to implementing access improvements, not only in Iowa but across the country, can be the lack of communication between the agencies responsible for roadways and agencies responsible for local land use planning and regulation.

In addition, the Iowa study found that a minority of businesses and motorists along a corridor proposed for access management improvements will not support the proposal because of feared sales declines and traveling inconvenience. Their perceptions can lead to difficulties for the agencies that must implement access management projects.

**Access: Implementation**

A vital first step in improving cooperation and support for access management

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**Left-turn lanes can effectively manage roadway access.**

Photo courtesy of Snyder & Associates.



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national database and response network supported by the National Institute of Occupational Safety and Health (NIOSH).

### ITS: Implementing the Plan

Supporting decision making regarding ITS requires more sophisticated decision-making tools than those currently available to Des Moines agencies. Two computer tools are recommended for development. The first is a more precise travel demand model. The Des Moines Area MPO's current travel demand model estimates travel volumes for the entire day, and the model does not estimate the time of day trips are made. The model needs to be improved so that peak travel demand estimates can be made. The second recommendation is that a high-fidelity traffic simulation model be generated for Des Moines so that designers of the reconstructed I-235 and other transportation improvements can estimate the impacts of modifications to the transportation system.

ITS can provide Des Moines area travelers and goods transporters with enhanced transportation productivity, reliability, and safety. Implementing the ITS strategic plan will require strong leadership from public and private stakeholders. Unlike improvements to physical transportation infrastructure like a new bridge, a widened roadway, a new overpass, or a new fleet of buses, ITS improvements do not provide very visible signs of improvement that the general public can see, understand, and appreciate. At the same time, ITS improvements often compete for funding with physical infrastructure. Therefore, if ITS is

to be deployed, influential individuals and/or organizations must champion ITS improvements.

The Des Moines Area MPO will serve as champion for the deployment of ITS in the Des Moines metropolitan area. In partnership with the MPO's member governments, the Iowa DOT, and the U.S. DOT, the MPO will champion ITS deployment in the metropolitan area. To guide the deployment of the plan, the steering committee for the ITS deployment study has become a standing committee and will now help steer implementation of the recommendations. **end**

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strategies is to identify and communicate the benefits of access management to all stakeholders. The study group is taking several actions to educate and inform the various constituents interested in and affected by access management.

- A May 1998 statewide conference brought together a variety of Iowa stakeholders to focus on the benefits of access management and identify best access management practices.
- The study group has published three reports: *Access Management: A Review of Recent Literature*; *Access Management: Current Policies and Practices in Iowa*; and *Access Management: Phase II Report* (as well as a *Phase II Summary Report*). These reports are online at the Iowa Access Management Project World Wide Web site: <http://www.ctre.iastate.edu/access>. Limited printed copies of the reports are available through CTRE.
- A brochure and videotape have been developed, and a how-to handbook will soon be available. **end**