

# APPENDIX J

CMPO 2025 Long Range Transportation Plan

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Access Management Techniques

## Appendix J

# Roadway Access Management

### I. Introduction

This Appendix is provided as a service to local planning and elected officials, transportation agencies, private developers and other interested parties. The intent is to promote and support cooperative efforts of UDOT and local agencies to better manage access between community development and the state highway system. This process is referred to as "Access Management."

### II. What is Access Management?

Access management is defined as "a process that provides or manages access to land development while simultaneously preserving the flow of the traffic on the surrounding road system in terms of safety, capacity and speed." As communities grow, it is sometimes difficult to get the most value from each parcel of land as it is developed. For example, property that does not abut a public street or highway is referred to as "landlocked." The value of the landlocked property is usually much lower than property with direct access to a public road or street. On the other hand, parcels with driveways too close to an intersection are not easily accessed if traffic frequently backs up and blocks the entrance. Clearly, property has a much higher value if its driveway locations are well planned and designed. So the goal of access management is to achieve a safe and efficient flow of traffic along a roadway while preserving reasonable access to abutting properties. Achieving this goal requires a careful balancing act in the application of access design standards and regulations.

### III. Where is Access Management Used?

The need for better access management is most obvious in strip commercial areas where driveways are found every few feet. Too many driveways can confuse drivers, who become uncertain as to when turns into or out of driveways will be made. Too many driveways result in a large number of turning movements and conflict points, increasing the potential for traffic accidents. In addition, when there are no turn lanes, each turning vehicle slows traffic and reduces the carrying capacity of the road. Unfortunately, once an access management problem is obvious, it is often too late to correct. By managing access to the highway system during project planning stages, safe access can be provided while preserving traffic flow. Access management can benefit properties in all communities and along all types of roads. Access management principles have been a part of roadway design for many years. For example,

freeways function to move large volumes of traffic at high speeds for long distances because access is limited. In contrast, residential streets function only to provide access to homes. The key to effective access management is linking appropriate access design to roadway function. Successful access management protects and enhances property values while preserving the public investment in our roads. The principal design techniques used in access management focus on the control and regulation of the spacing and design of:

- driveways and streets,
- medians and median openings,
- traffic signals, and
- freeway interchanges.

### Goals of Access Management

Safe and efficient flow of traffic along a roadway  
while preserving reasonable access to abutting properties.

## IV. Benefits of Access Management

Transportation officials and planners are showing more interest in access management because of increasing traffic congestion, traffic safety issues, and the rising costs of road improvements. Good access management can:

- Reduce crashes and crash potential,
- Preserve roadway capacity and the useful life of the roadway
- Decrease travel time and congestion,
- Improve access to properties,
- Coordinate land use and transportation decisions,
- Improve air quality, and
- Maintain travel efficiency and related economic prosperity.

### A. Reduce traffic crashes and crash potential

For more than two decades, various studies have documented how good access management can significantly reduce the number of traffic crashes, including fatal, injury and property damage crashes. Studies in Colorado and Florida have shown that the crash rate can be 50 percent less on good access management roads. In Georgia, installing medians with protected left turn lanes decreased crashes by 25 percent, while similar measures reduced crashes by 45 percent in New Jersey. In a 1988 Michigan study, there were half as many crashes on four or six-lane divided highways as there were on undivided four and six-lane roads. Other studies typically have found 30 percent to 45 percent fewer crashes on roads with access management improvements. In Michigan, there were nearly 390,000 crashes in the three-year period from January 1,

1992 to December 31, 1994. If crashes on limited access facilities are excluded from the count, there were nearly 318,000 in the three-year period. Nearly 68 percent of these crashes are access related, having occurred at intersections or driveways (including driveways in interchange areas). More than 33,000 crashes in the three year period were recorded as driveway related, accounting for 69 fatalities and nearly 13,900 injuries. The average annual cost associated with these driveway-related crashes, based on National Safety Council more than \$220 million.

B. Preserve roadway capacity and useful life of roads

Congestion angers motorists, prevents roads from functioning as they were designed, and is a source of air pollution. One major contributor to congestion is unnecessary or uncontrolled points of conflict caused by too many opportunities to turn onto or off the road. As cars slow to turn, the capacity of the road to move cars at the posted speed is diminished. Stated another way, poor access management and too many driveways contribute to the functional deterioration of a road. Good access management preserves a road's capacity to move vehicles at the posted speed and extends the useful life of the road. A Florida Department of Transportation study found that the typical four-lane arterial road with good access management can handle almost 10,000 more vehicles per day than the same four-lane road with poor access management.

C. Decrease travel time

Good access management helps motorists get to their destinations with fewer delays. How? Vehicles tend to travel closer to posted speeds on roads where access is managed. For example, a comprehensive Colorado study showed conclusively that delays were considerably less during peak hours on roads with good access management. A Florida study found that travel delays decreased between 8 percent and 76 percent during peak travel hours after half the median openings were closed.

D. Improve access to property

Good access management programs provide uniform standards and procedures, and promote their fair and equal application. The quality of site access and the protection of private investments are more than a function of the number of driveways. They also depend on the design and spacing of driveways, the ease and safety of pulling off or onto a road, distance from intersections, and traffic signal sequencing. Highly managed site access results in a carefully designed and safe means of access to each property. In some cases this may not be direct access from a major arterial, but controlled access from a side street or frontage

road. Businesses with safe and easy access are more inviting to shoppers and visitors, and are the scenes of fewer traffic crashes.

Source: Colorado Access Control Demonstration Project, 1985.

E. Coordinate land use and transportation decisions

Approving new developments without adequately managing access guarantees future conflicts and reduced road capacity. In contrast, land use decisions that are coordinated with access management usually assure quality developments that protect the public's investment in roads and streets. These benefits occur only if a coordinated review takes place between the transportation and local land use approving authorities. Too often, land development approval is given without coordinating with the responsible transportation agency.

F. Access Management Benefits for Stakeholders:

Motorists:

By reducing traffic crashes and congestion, and decreasing travel delays.

Land Owners:

By increasing economic development potential of land associated with an efficient transportation system, and enhancing property values by decreasing travel time that extends market areas.

Developers:

By establishing access design criteria in advance, thereby preventing the high cost of delay and redesign.

The Public:

By prolonging the functional life of existing roads. By maintaining or increasing a road's design capacity, funds that might otherwise have to be spent for expensive road widenings can be spent on road maintenance and operations.

V. Consequences of Not Managing Access:

- The efficiency of our transportation system will deteriorate, and traffic and land use conflicts will increase.
- Poorly planned strip commercial development will be encouraged.
- The number of private driveways will proliferate.
- More driveways mean more traffic conflicts, crashes and congestion.

- The public's investment in roadways will be diminished.
- Roads will have to be widened at great public expense to make up for capacity lost to inefficient traffic operations.
- The incompatibility of providing land service and traffic service will become more severe.
- Neighborhood streets will be used to bypass congested intersections.

## VI. Basic Principles of Access Management

Six basic principles are used to achieve the benefits of access management:

- Limit the number of conflict points.
- Separate conflict points.
- Separate turning volumes from through movements.
- Locate traffic signals to facilitate traffic movement.
- Maintain a hierarchy of roadways by function.
- Limit direct access on higher speed roads.

### A. Limit the number of conflict points

When the number of potential conflict points between turning vehicles increases, so do the opportunities for traffic crashes. Intersections typically have the most points of potential conflict. For example, there are 36 conflict points (22 if signalized) where a four-lane road intersects with a two-lane road. A driveway that provides access across a median as well as to the abutting road has six points of potential conflict, while a driveway with only right-turn-in and right-turn-out has just two points of potential conflict. Good access management techniques can reduce the number of conflict points. Medians eliminate many conflict points by limiting opportunities for left turns. Directional median openings can also safely provide for controlled access with few conflict points. When medians are used, nearly every driveway becomes right-in and right-out only with just two conflict points. A business with three driveways on a typical four-lane road (without a median) produces numerous conflict points. Reducing three driveways to one achieves a 66% reduction in conflict points. Fewer driveways also means there is more space for good design for the remaining driveway.

B. Separate Conflicts

Traffic conflicts can also be reduced by separating conflict points. Effective ways include establishing minimum distances between intersections and driveways and establishing corner clearance standards that separate driveways from the critical approach areas of intersections. Each of these techniques permits a longer, less cluttered sight distance for the traveling motorist, which increases traffic safety. More separation distance also gives motorists a longer reaction time. A 10 mph speed differential is desirable to give motorists adequate time to react. To achieve this goal, minimum separations between driveways should be 93.2 meters (300 feet) on roads with 35 mph speed limits, 130.5 meters (420 feet) on roads with 40 mph speed limits, and 170.9 meters (550 feet) when the speed limit is 45 mph. Higher traffic speed requires greater driveway separation. A single driveway can serve multiple businesses if a frontage road is used.

C. Separate turning volumes from through movements

Vehicles typically slow before turning. When turning vehicles are removed from the main flow of traffic, traffic speed is better maintained. In addition to maintaining speed, roadway capacity is preserved and accident potential is reduced. The differences in speed between through vehicles and turning vehicles is also reduced, which also creates safer driving conditions. Separate right and left turn lanes, carefully spaced median openings, and frontage roads are access management design tools that serve this purpose.

D. Locate traffic signals to facilitate traffic movement

When an arterial road has poorly spaced and uncoordinated signals, traffic safety, road capacity and traffic speed can be severely hampered. Distances of one-half mile or more between signals are desirable. Good access management includes evaluating signal spacing and developing a program to maintain or change spacing or signal progression to achieve safety, travel speed and capacity objectives.

E. Establish a Hierarchy of Roadways

Most communities have a variety of roads designed to function in different ways. Few communities, however, recognize the significance and value of preserving the investment in a particular roadway function. Access is most limited when the principal function of the road is high speed, high volume or long distance travel. In contrast, the primary function of local roads (such as in residential neighborhoods) is to provide access to abutting properties. Arterial and collector roads are traditional roadways between

these two extremes. Access management standards consistent with roadway function protect investments in existing roads, businesses and residential areas. When a road combines high traffic volumes with too many conflict points, roadway function and quality decline, along with the ability to safely access abutting properties.

F. Limit direct access on higher speed roads

The greatest benefit of access management is preserving the functional integrity of high speed, high capacity roads. This benefit is achieved, of course, by limiting direct access to these roads. By permitting access only at signalized intersections or other public streets along the road-rather than at each abutting property-the public investment in the road is best preserved. Fewer road widenings will be needed in the future, traffic speeds will be maintained, and crashes will be reduced. Providing direct access to these roads essentially confers a private benefit at great public cost. Only where no other alternative exists, should such a benefit be conferred. Michigan law requires reasonable access to abutting property, but does not require direct access. Freeways are the best example of this principle.

VII. Existing State, county & Local Access Management Programs

Good access management is frequently achieved when state and local units of government cooperate in land use and transportation management decisions. There are many examples of access management cooperation between state and local governments, and opportunities exist for even greater cooperation. To best understand how state and local governments can cooperate in the access management process, it is important to be familiar with UDOT's driveway permit program, and similar county road commission programs. It is also important to understand how the permit review process can be coordinated with local access management decisions.

VIII. Local access management programs

More local governments are developing access management programs. Many new access management efforts are being pro-actively adopted to head off problems before they occur. This is an important point: the best access management programs are launched before problems develop, thereby reducing traffic crashes and preserving existing road capacity. Local access management programs range in sophistication from simple standards that separate and reduce the number of new driveways, to requirements for shared driveways and frontage roads, to remediation programs in areas where access-related problems are severe. Most local access management requirements are embodied in zoning regulations and are based on corridor access management plans.

## IX. Benefits of coordinated decision making

Coordinated land use and access management decision-making can:

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

## X. Acknowledgment

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