

ACCESS MANAGEMENT

Description

Access management is a term for a set of techniques that control several elements of a street, such as the spacing, design, and operation of driveways, turns, medians, and intersections. It serves as an effective congestion reduction technique as it controls where vehicles may enter and leave the road. Access management is a design approach to:

- Improve safety.
- Reduce congestion and increase traffic flow.
- Preserve public roadway investment.

Adequate access management improves safety on roads by limiting the number of locations where cars can slow down or speed up to exit or enter the road. Large variations in speed adversely affect safety and increase crashes when compared to a road with smooth traffic flow. Adequate access management increases driver expectancy and removes speed changes.

This strategy creates safe and efficient street networks that allow drivers to reach their destinations while eliminating headaches by reducing the number of slow-downs they experience. When driveways are too close to intersections, traffic backups also affect cross-street traffic flow and safety. In retrofit situations, public agencies must work cooperatively with property owners to implement access management.

Properly-designed access management reduces congestion and promotes circulation, thereby increasing traffic flow. Closely spaced driveways make it difficult for drivers to enter and exit a road, creating stop-and-go traffic flow, which increases the likelihood of a crash. The elimination of frequent speed changes on a road reduces congestion on a road by allowing better flow by reducing the number of possible collisions on the road.



Cost:	●●○○○
Time:	Short
Impact:	Corridor
Who:	City/State
Hurdles:	Retrofit/Business Perceptions

Freeway and major streets are funded and built for the purpose of moving traffic. Allowing substantial access to these facilities can adversely affect traffic movement. In these situations, the public is not getting what they paid for in terms of transportation service on these roads. The increased drivability and aesthetics often associated with access management programs will preserve public willingness to invest more funds in the roadway system.

Implementing access management is a balance between the traffic mobility needs of the roadway and the needs for access to the property. Access to properties is still available after the implementation of access management.

Target Market

Access management can be applied in many ways, but the following are the most typical.

Reducing the Number of Driveways

Access management includes the development, spacing, removal, and sharing of driveways on a major road. Proper driveway spacing reduces congestion by limiting the number of entrance and exit points and reducing the slowdown experienced in the main lanes of traffic. For example, the number of driveways is reduced by consolidating business entrances into one access point. The consolidation, or elimination, of access points should ultimately still allow for adequate access to developments and other points of interest.

Controlling Turning Movements

Access management improvements such as raised medians, restricted left turns, and/or spacing regulations mitigate left turns and prevent the stop-and-go tendencies caused by these movements. Access management is meant to create a safe and systematic roadway network that is appealing and enjoyable to drive. This can also increase public satisfaction with the road and preserve the public investment.

Installing Turn Bays

A key design element of access management is the installation of turn bays and deceleration lanes. These lanes provide the opportunity to remove turning traffic from the through traffic to improve flow. This technique removes the deceleration of vehicles in the through lanes of a roadway.

How Will This Help?

- Properly spaced driveways and intersections will maximize efficiency by increasing traffic flow and reducing stop-and-go traffic. This is achieved by limiting the number of locations with entering and exiting traffic between major intersections.

- Access management increases safety by limiting drivers' decision points and removing potential conflicts. Fewer driveways allow drivers to focus more attention to the road rather than watching for turning, entering, and exiting vehicles. According to the Transportation Research Board *Access Management Manual*, replacing a two-way left-turn lane with a raised median has resulted in a 15 to 57 percent reduction in crashes on 6-lane roads.
- Proper access management preserves public investment in the roadways. Roadways will operate better because they are properly designed.
- Access management can improve aesthetics. The limited number of driveways preserves the roadway and the surrounding landscape, improving the overall appearance of the area. Some treatments can be decorated or landscaped to add visual appeal.

Implementation Examples

Arlington, Texas, FM 157 (Cooper Street): The 2006–2007 installation of a raised median to replace the two-way left turn lane from Arkansas Street to US 287 (approximately eight miles) resulted in safety improvements, including the crash rate approaching a 50 percent decrease. In some locations, driveways were removed or relocated.

College Station, Texas, FM 60 (University Drive) [see picture on first page]: In 2002, a raised median was installed from Tarrow Street to SH 6 (approximately 1.5 miles). The roadway was also widened from a 5-lane cross-section, including a two-way left-turn lane, to a 6-lane cross section with the raised median. TxDOT and the City of College Station also looked for opportunities to reduce the number of driveways and provide cross access.

Houston, Texas Area: The Houston-Galveston Area Council (H-GAC), in partnership with TxDOT and local agencies along with funding from U.S. DOT, has commissioned corridor access management studies on a number of roadways in the Houston region, including Westheimer, FM 1960, FM 518, and SH 6. A number of access improvements have been made along these roadways using these plans as guidance. The most recent plan was along SH 6 in 2008. To improve safety, the cities of Sugar Land and Missouri City, Fort Bend County, and TxDOT have installed raised medians along SH 6 from Voss Road to FM 521 to replace the previous two-way left-turn lane. The median installation was completed in 2011.

Application Techniques and Principles

City and state officials must work together to identify the optimal locations for access to the roadway. Where possible, consideration of access locations early in the subdivision (platting) stage of development limits the proliferation of driveways as parcels develop in the future. However, once driveways are installed, removing or consolidating them can be difficult. Driveway location on frontage roads should be adequately distanced from freeway entrance and exit ramps to avoid weaving to enter/exit driveways and ramps.

The greater the access spacing, the smoother traffic flows and the safer the road. Along state highways and frontage roads, TxDOT's *Access Management Manual* provides spacing standards. Stopping sight distance should be considered in spacing access points, and it is used in TxDOT's standards. Some cities also have ordinances that regulate access spacing.

Raised medians are commonly used to control the movements of vehicles in the main lanes of traffic and along connecting streets or driveways. This technique of access management restricts cars to turn only at specified areas, and permits vehicles on the side street to only turn right. The raised median

reduces stop-and-go traffic and provides smoother traffic flow.

Issues

The primary implementation issue with access management is retrofitting an existing road with access management techniques. It can be difficult, time consuming, and/or costly. Therefore, it is ideal to consider and plan for access management issues in the subdivision (platting) stages of site development to plan and limit access. Local ordinances that provide for the opportunity to reassess access due to redevelopment provide another method to retrofit existing access. TxDOT and cities should actively engage each other to develop a coordinated review process for new development or redevelopment.

Who Is Responsible?

It depends on who owns the road. State facilities fall under TxDOT's jurisdiction. In this case, TxDOT works cooperatively with the property owner to permit driveways and mitigate access. TxDOT can also coordinate with the city and county to review and discuss access alternatives to find the best access management solution for the roadway to alleviate congestion and improve safety.

On city streets, the city ordinances apply. City officials use the ordinances regarding driveway spacing/design, intersection control, and other access management techniques when building new roads or permitting driveways with property owners.

Project Timeframe

The project timeframe will differ depending on the access management technique used for the roadway and whether the access management options are included in the original design or are part of a retrofit. The project timeframe can be more accurately determined at the time of implementation and when project specifics are decided.

Cost

Below are some sample cost ranges for various access management treatments (actual costs depend upon the exact size of the project, materials needed, and locale—costs below do not include any right-of-way acquisition needs):

- Driveway removal: \$3,000 to \$5,000.
- Driveway installation: \$10,000 to \$15,000.
- Raised median installation: \$40 to \$80 per square yard. \$80,000 to \$170,000 for 0.25-mile of raised median.
- Right-turn bay: \$150,000 to \$300,000.
- Left-turn bay: \$200,000 to \$400,000.

Data Needs

Crash data can provide an indication of high crash locations that could benefit from the implementation of access management treatments. A review of sight distance also provides an indication of proper driveway placement. Operational analysis through micro-simulation can provide an assessment of corridor operation after the implementation of access management treatments and alternatives. Micro-simulation requires traffic counts (mainline and turning movements), signal timing information, and geometric information.

Access Management Best Practice

- Type of Location: Corridor, intersection.
- Agency Practices: Training and coordination of state and municipal personnel. Actively seek opportunities to implement access management.
- Frequency of Reanalysis: After substantial land use changes or development; as travel increases or trips change in the area; at time of roadway widening or reconstruction.
- Supporting Policies or Actions Needed: Understanding and application of TxDOT's *Access Management Manual* and city ordinances and regulations to promote/implement access management at the local level.
- Complementary Strategies: Signal coordination and management, geometric design improvements.

For More Information

Access Management Manual. Transportation Research Board, Washington, D.C., 2003.

Access Management Manual. Texas Department of Transportation, July 2011. Available: <http://onlinemanuals.txdot.gov/txdotmanuals/acm/acm.pdf>.

Crawford, J.A., T.B. Carlson, W.L. Eisele, B.T. Kuhn. *A Michigan Toolbox for Mitigating Traffic Congestion*, Texas Transportation Institute, Texas A&M University, College Station, TX, September 2011.