

Acknowledgments

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Introduction

This guidebook is intended to serve as a companion piece to the video *Access Management: A New Response*. The contents outline what access management is, the benefits of incorporating access management into local planning (and the associated disadvantages of not doing so), the need for cooperation between government agencies at various levels and the public, and basic land use planning and design principles and guidelines associated with access management.

Access management is a large and voluminous topic. This guidebook is in no way meant to serve as a comprehensive analysis of access management or the tools and techniques available to local decision makers regarding transportation and land use planning. A list of current access management resources is provided as an appendix for the reader to gain a more in-depth understanding of the topics addressed in this publication.

What is Access Management?

Management of access to arterial roads is vital to creating a safe and efficient transportation system for motorists, bicyclists, and pedestrians. Arterial roads, according to the National transportation Research Board, are streets that serve primarily through traffic and provide access to abutting properties as a secondary function. According to the New York State Department of Transportation's Corridor Management Group, "arterial/access management is an approach that addresses roadway congestion, capacity and accident prevention while simultaneously providing reasonable access for land development". While this is one definition, there are several others currently being used in the literature and discussions of access management. Other definitions of access management include:

- Access management is "... the planning, design, and implementation of land use and transportation strategies that control the flow of traffic between the road and surrounding land" (Elizabeth Humstone and Julie Campoli, "Access Management: An Overview," *Planning Commissioners Journal*, Winter 1998).
- "Access management is a new way of addressing the problems of congestion, capacity loss, and accidents along the nation's roadways. Modern access management, in broad context, requires that land-use planning and development be coordinated with transportation" (Institute of Transportation Engineers).
- "Access management is a means to maintain the safe and efficient movement of traffic along arterial highways by controlling the number and location of intersecting roads and driveways" (Wisconsin DOT, *Access Management System Plan for Wisconsin's Highways*, August 1989).

In looking at each of the above definitions, three primary elements are common to all: 1.) planning for transportation must incorporate appropriate land use strategies and site design, 2.) access management can increase the efficiency of roads, and 3.) increased safety can result from good access management. In addition, access management also includes accounting for the adjoining frontage of parcels along an arterial road so as to preserve community character and enhance economic viability.

For our purposes, access management will be defined as a means for improving the safety and efficiency of the flow of people and goods by reducing congestion and decreasing the number of accidents while simultaneously preserving the character of communities through appropriate land use planning and site design.

Why Implement Access Management?

There are numerous benefits associated with access management. Whether access management is being instituted on new arterial roads or retrofitted on existing ones, the benefits include increased capacity along arterial and secondary roads, reduction of traffic congestion and delays, improved safety for motorists, pedestrians, and bicyclists, more efficient use of land, and savings on infrastructure investments among others. Conversely, the disadvantages of not controlling access on arterial roads include the encouragement of strip development, increasing conflict points for drivers leading to more motor vehicle accidents and unfriendly pedestrian environments, increased use of residential streets as thoroughfares, and otherwise unnecessary expenditures on maintenance of existing roads and construction of new roads.

Advantages of Instituting Access Management

- Increased safety for motorists, bicyclists, and pedestrians
- Savings on infrastructure repair and construction
- Reduced congestion and delays
- More efficient use of land
- Increased road capacity

Who Needs to Be Involved?

Within most municipalities, the roads used to serve residential, commercial, industrial, and recreational purposes are a combination of local, county, and state roads and routes. Therefore, multiple agencies need to be involved throughout the planning and implementation process. For example, access management along a state route will require that municipal departments and planning and zoning boards, county departments, the New York State Department of Transportation (NYSDoT), the Genesee Transportation Council (GTC), citizens, merchants and other business owners, and, in all likelihood, engineering and planning consultants work together to design and implement an access management plan.

The need for public input cannot be stressed enough. It is imperative that those who use the road system for commuting, those who live or own businesses along the roads affected, and other local interests be represented throughout the planning process to ensure that the development of access management techniques does not hinder the economic viability, livability, or social character of the road.

A well-designed access management plan gathers and fosters community support and consensus. Ideally, access management should be incorporated in local land use planning regulations and permit approval procedures as part of a collaborative approach to development and corresponding transportation requirements.

Why is Land Use Important?

Recognizing the connection between land use and transportation is vital to access management. The use of land for different types of activity, whether residential, commercial, agricultural, or recreational, determines the amount of trip generation that will occur. Therefore, congestion, safety and other issues associated with traffic result from the uses of land and the capacity of roads to serve these uses. Land use and transportation planning and strategies need greater coordination to ensure an efficient and safe flow of automobiles, bicyclists, and pedestrians.

Access management is based upon the principle of accounting for the abilities of roadways to handle volumes of traffic associated with specific types of land use. Defining the functional class of different types of roads is known as creating a hierarchy of roads. By creating and maintaining a hierarchy of roads, specific roads have standards for access and serve specific land uses with similar access standards.

Zoning and other land use control ordinances and regulations can be used to manage access on arterial roads. At the most basic level, commercial land uses that generate large volumes of traffic should be located at major intersections or village centers. Conversely, the use of land along stretches of roads, particularly in rural areas, should be limited to agriculture, open space, and low-density residential. Compact development along long stretches of an arterial road is known as strip development.

Strip development increases congestion and creates conflict points resulting in decreases in both the efficiency and safety of a road. Figure 1 displays the ideal scenario of compact development as opposed to strip development. By defining development boundaries and appropriate land uses within these boundaries, standards for development and access can be created that optimize the movement of vehicles, bicycles, and pedestrians.

{Insert Figure 1}

The foundation for access management should be laid in zoning ordinances and comprehensive plans as well as specific access management initiatives. According to the NYSDoT Corridor Management Group, many current land use controls can be instituted in response to anticipated growth and increased traffic volumes.

Generic Environmental Impact Statements (EIS), State Environmental Quality Review (SEQR) coordination, subdivision regulations, overlay zoning, site plan review, alternative patterns of development, and incentive zoning are among NYSDoT's recommendations for land use controls and techniques available to manage access. For a more complete description of these techniques refer to the NYSDoT Corridor Management Group's *The Toolbag of Techniques for NYS Arterial Management* that is listed in the reference section at the end of the guidebook.

Standards for development include access to arterial and secondary roads, lot size, density, and setbacks. Whenever possible access to arterials should be served by secondary roads or shared driveways that minimize the number of entrances and exits. Lot sizes should be smaller with higher density at intersections and within village or town centers as opposed to larger lots along arterial roads that minimize access points. Smaller lot sizes and higher density accommodate walking, transit, and shared driveways or other forms of access to the principal arterial road.

Additionally, standards for minimum lot frontage should be established for parcels along principal arterials; narrow lots encourage more driveways while wider lots increase the separation between access points. Mixed uses, including residential between and above commercial establishments, enhance and preserve the character of an area or community. As will be shown below in *How is Access Managed?*, the connection between land use regulations and transportation is a tight one.

How is Access Managed?

Given the close interaction between land use and transportation, principles of access management involve the coordination between land uses and the roads that serve them. The following section discusses the principles that guide access management and corresponding design guidelines that, when implemented, can ease congestion, increase safety, preserve the character of a corridor, and enhance economic viability. It is important to remember that the primary customers or constituents of roads are motorists, bicyclists, and pedestrians. Adjacent residents, businesses, and other landowners benefit from the increased quality of life and economic advantage that safe and efficient access provides in determining trip destinations. Residents want safe streets and businesses want customers not to be intimidated by excess traffic and safety concerns around their establishment; access management can provide both.

As discussed, the development and maintenance of a hierarchy of roads is crucial to access management. By defining the functional uses of roads, an interconnected street system can be planned based on existing and expected development. Local and secondary roads are meant to provide access to parcels while the purpose of arterial roads is efficiency in getting from place to place. Every road cannot be asked to serve every purpose; each road type has a finite capacity. When roads are asked to handle traffic volumes above their capacity congestion is the likely result.

Rather than allowing access from principal arterial roads or highways to businesses and other establishments, secondary roads and streets should be designed and built that allow for shared access to and from multiple establishments and the transport of vehicles to arterials and highways in a safe and efficient manner. Dead end streets, cul-de-sacs, and other street designs with single access points should be avoided. Additionally, special access requirements such as large numbers of commercial trucks should be avoided. The *Land Use and Access Management Plan for Routes 441 and 250* for the Town of Penfield, Monroe County lists one of its earliest successes as the development of an access road network that is privately funded as development occurs.

A primary concern of access management is the balance between efficiency and safety. Conflict points arise as drivers interact with each other, pedestrians, and bicyclists. Think of the decisions required to make a left turn in the face of oncoming traffic or having to decelerate as the driver in front of you turns right on a two-lane road with oncoming traffic. When the decisions made by drivers in these situations is not in accordance with one another accidents occur and the safety of motorists and others is compromised. According to one source, 50% to 60% of all accidents occur at intersections.

Access management limits and separates conflict points by removing turning vehicles from through lanes and controlling turning movements through designated left and right turn lanes. When used in conjunction with well-spaced and designed traffic signals, conflict points are eliminated through dedicated turn-only lanes and traffic signals eliminating the need for drivers to make turns in the face of oncoming traffic and to decelerate and switch lanes to avoid turning vehicles in front of them. Well-spaced traffic signals also emphasize proper traffic movement by relieving congestion and allowing for pedestrian and bicyclist movement. The management and separation of conflict points promotes the safe and efficient flow of traffic along roadways and is vital to enhancing the economic vitality of a community.

However, turning lanes and effectively timed traffic signals are of little use if they are required and placed at every access point along an arterial. Therefore, much of access management is dedicated to the placement and design of driveways in combination with a planned interconnected street network with minimal conflict points, to improve the efficiency of new and existing roads.

Initially, the number of driveways per lot should be limited to one or none if shared access between parcels is acceptable. Shared or joint access minimizes the number of access points and should be considered for as many connecting parcels as possible when secondary or feeder roads are not practical. Allowances can be made for extreme or special circumstances but it is important to remember that every access point along an arterial or principal roadway lessens the impact and corresponding benefits of the interconnected street system discussed above. Accommodations for pedestrian circulation through sidewalks, designated crosswalks, and signage should be included as well. By incorporating shared driveways, motorists, pedestrians, and bicyclists no longer have to reenter the road to access various uses on adjacent or nearby lots.

Driveways should be spaced based on the speed of vehicles and expected traffic volumes along the roads based on their classification. The standards for the spacing of access points based on the posted speed limits of the roads serving them vary by source. The following table provides the minimum spacing standards used in the NYS Route 332 Corridor Management Project in the Towns of Canandaigua and Farmington, Ontario County.

Route 332 Corridor Management - Minimum Driveway Spacing Standards

	Peak Direction Trips	0-50	51-100	101 or more
Posted Speed	<i>less than 45 mph</i>	220 feet, 67 meters	330 feet, 100 meters	550 feet, 168 meters
	<i>45 mph or greater</i>	330 feet, 100 meters	440 feet, 134 meters	660 feet, 200 meters

Source: *Best Practices in Arterial Management*, NYS Association of MPOs and NYSDoT, 1997.

Equally as important as the spacing is the placement and design of driveways. Driveways should be placed away from intersections. Access points near intersections do not allow motorists enough time or space to merge and turn safely; this principle refers to “corner clearance” and is displayed in Figure 2. Techniques for alleviating access points at intersections are requirements in local land use regulations for minimum distances between intersections and driveways, larger lot sizes, larger frontage along arterial roads, or limited uses for parcels at intersections.

{Insert Figure 2}

The design of driveways is also used to manage access and mitigate congestion while simultaneously creating more pedestrian friendly village centers and commercial districts. The width, length, and curb cuts of driveways need to be considered in the design of an access management plan. The combination of width and curb cuts will determine motorists’ speed when turning into driveways. Narrow driveways with sharp curb cuts require drivers to decrease their speed when entering or exiting a driveway more than wider driveways with shallow curb cuts that allow drivers to turn at less of an angle and at a greater speed. The speed at which motor vehicles can enter and exit must be balanced with the needs of pedestrians.

Driveways should be long enough to allow vehicles to completely exit the thoroughfare so as to avoid rear end collisions from other motorists also entering the driveway behind them. As with driveway spacing standards, the width, length, and radii of curb cuts will be determined based on the speed and volume of traffic along a road. According to Humstone and Campoli, driveway grades should be no more than three percent (3%) uphill or six percent (6%) downhill to allow for proper entering and exiting of a lot or group of lots with a shared driveway.

As with driveways, shared parking among businesses and other establishments along an arterial road is fundamental to access management. Some sources suggest shared parking be required for new developments, expansions, or redevelopments. Consolidated parking minimizes paved surfaces while increasing interparcel circulation and alleviating the need for vehicles to reenter and exit a road. Where large parking lots are already present (malls, “big box” development, etc.), a connection to other sites and businesses provides internal access and increases interparcel circulation. Secondary roads should connect parking lots providing a single access point for multiple establishments along a corridor.

Planning for public parking in compact centers should include on street parking which emphasizes walking from site to site. Where on street parking is not feasible, parking lots should be placed at the rear of lots with the buildings in the front. Direct access from a parking space to an arterial or collector road (where backing out would be necessary) should be avoided or eliminated except on roads where compact development is present along with pedestrian activity and lower speed limits.

Pedestrian movement between and among parcels alleviates congestion and can be encouraged through the proper design and location of sidewalks, crosswalks, and pedestrian passageways between buildings. Pedestrian accessibility should be taken into account during all stages of an access management plan. Sidewalks should be located close to the frontage of adjoining lots creating a relationship between pedestrians and the built environment. Crosswalks should be located between buildings and intersections along with corresponding signage. The use of extended curbs or “bump-outs” and medians in between lanes are ideal in spots where pedestrian activity is heavy or would like to be encouraged. All pedestrian accommodations should meet the standards set forth in the Americans with Disabilities Act.

Pedestrian friendly development also includes placing short-term lockers or storage areas near commercial, civic, and recreational areas. Bicycle parking racks should also be provided in these same areas. Where possible, public transit stops located at regular intervals along a corridor also relieve congestion and encourage alternatives to driving. Corridor preservation is dependent on viable commercial districts and centers of employment that tie the built environment to the people who use the buildings and infrastructures present.

Conclusion

Access management provides a benefit to communities through reduced congestion and increased safety while enhancing economic viability and saving infrastructure from costly improvements and replacements. When roads serve their intended use everyone gains. To plan and implement a quality access management plan, a great deal of coordination among various public agencies and the public is required from start to finish. Access management is a way of anticipating rather than reacting to growth in expanding communities and a means to increasing and renewing community resources in areas already developed. Whether starting with a blank page or retrofitting existing development, access management is a vital part in building sustainable, quality communities and commercial and employment districts.

References

For further information and examples of access management plans and techniques please consult the following organizations, agencies, and publications.

Center for Urban Transportation Research (CUTR), College of Engineering, University of South Florida, 4202 East Flower Avenue CUT 100, Tampa, FL 33620-5375 (813) 974-3120.

The CUTR makes many of its publications available for free via the world wide web at www.cutr.eng.usf.edu/research/access_m.htm/intro.htm.

- *A Public Involvement Handbook for Median Projects*
- *Model Land Development Regulations that Support Access Management*
- *Managing Corridor Development: A Municipal Handbook*
- *Ten Ways to Manage Roadway Access in Your Community*

Genesee Transportation Council, 65 West Broad Street Suite 101, Rochester, NY 14614 (716) 232-6240.

Elizabeth Humstone and Julie Campoli, "Access Management: An Overview," *Planning Commissioners Journal*, Winter 1998 (Via the web at www.plannersweb.com)

Institute of Transportation Engineers, 525 School Street SW Suite 410, Washington, D.C. 20024 (202) 554-8050.

St. Clair County Metropolitan Planning Commission, 200 Grand River Avenue Suite 202, Port Huron, MI 48060 (810) 989-6950.

- *Access Management Model Overlay Zone*

New York State Department of Transportation – Corridor Management Group, 1220 Washington Avenue, Albany, NY 12232-0429 (518) 457-3429.

- *Arterial/Access Management* slide presentation
- *Best Practices in Arterial Management*
- *The Toolbag of Techniques for NYS Arterial Management*

Wisconsin Department of Transportation, 4802 Sheboygan Avenue, Madison, WI 53707.

- *Access Management System Plan for Wisconsin's Highways*
- *Corridor Preservation and Access Management Guidance*
- *Planned Access: Protection for Wisconsin's Highways*

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