

What is Access Management?

The Federal Highway Administration’s official definition of access management is “the process that provides access to land development while simultaneously preserving the flow of traffic on the surrounding system in terms of safety, capacity, and speed.” In practical terms, it means managing the number of driveways that a vehicle may encounter without hampering reasonable access to a property and removing slower, turning vehicles from the arterial as efficiently as possible.

- Access management deals with the traffic problems caused by unmanaged development before they occur.
- Access management addresses how land is accessed along arterials.
- Access management focuses on mitigating traffic problems arising from development and increased traffic volume attempting to utilize these developments.
- Access management calls upon local planning and zoning to address overall patterns of growth and the aesthetic issues arising from development. More information on local planning and comprehensive plans is provided in Chapter 5.

What is an Arterial?

An arterial is a highway or major street whose primary purpose is to provide safe and efficient long-distance travel (Figure 8). Providing local access is a secondary function. In Iowa, most numbered state and federal highways and major urban streets are arterials. A city may choose to enact an access management program for local roads and streets as well as arterials.

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Figure 8—North Ankeny Boulevard

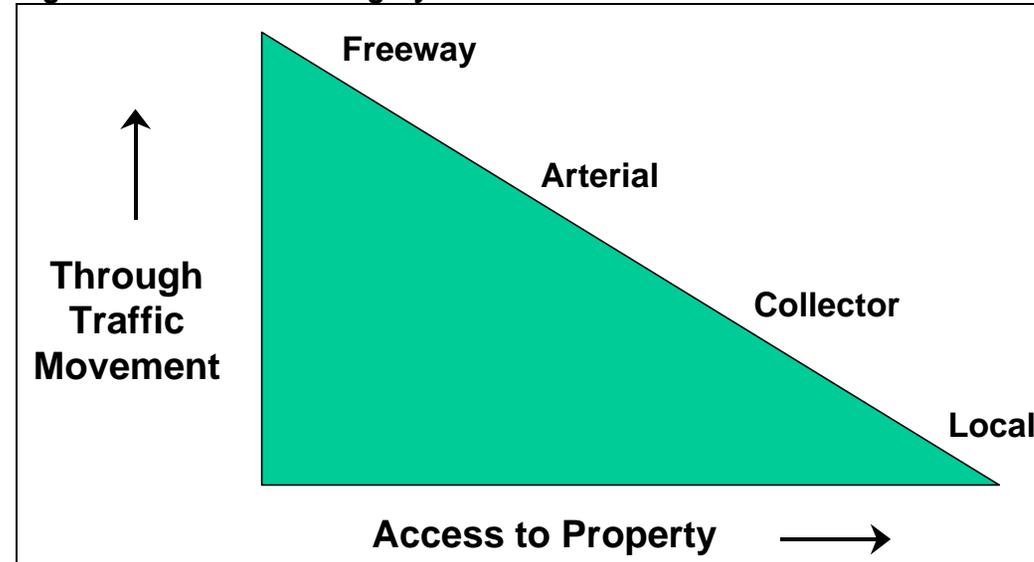


Typically, almost all roadways over which a community has planning and maintenance jurisdiction will fall into one of three classifications: arterial streets, collector streets, or local streets. The difference between the classifications depends on the trade-off between providing mobility to through traffic with higher speeds and traffic volumes and the level of land access that is permitted.

The functional integrity of the street/highway system is the effectiveness or reliability with which it provides personal mobility, freight delivery, cargo transport, and access to land use activities (Figure 9). The preservation of the functional integrity of the highway system is needed to assure that the necessary capabilities of various highway classes are protected so they can accommodate the

transportation needs of society. A well developed street or highway system can provide for the necessary mobility, as well as the desired access to property.

Figure 9—Functional integrity



The priority on arterial streets is to provide mobility to through traffic, while the priority on local streets is to provide access. Collector streets fall in between, with the mobility and access functions sharing the priority equally. To maintain the functional integrity of roadways, it is necessary to identify a “hierarchy” of roads (Table 1).

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Table 1—Hierarchy of roads

Classification	-- Main Function --		-- Characteristics --			
	Traffic Movement	Land Access	Speed Limit (mph)	Minimum Intersection Spacing	Direct Land Access	
Freeway and Expressway	X		Inter-community travel	45 and greater	1 mile	None
Primary Arterial	X	Secondary function	Inter- and intra-community travel	35 to 55	1/2 mile	Limited: major traffic generators only
Secondary Arterial	X	Secondary function	Intra- and inter-community travel	30 to 45	1/4 mile	Restricted: some movements prohibited; number & spacing of driveways controlled
Collector	X	Secondary function	Collect & distribute traffic between local streets & arterials; should not extend across arterials	25 to 35	300 feet	Safety controls; some regulation of access
Local Street		X	Land access	20 to 25	300 feet	Safety controls only; unlimited access

Source: Adapted from Endnotes (4) and (5)

The arterial streets and highways are key to maintaining the utility of the highway systems with their primary responsibility to provide for mobility, capacity, reasonable speeds, and safety; they have limited responsibility to provide access. The design geometrics of each of these facility classes are matched to the functional requirements; that is, the speed, capacity, and operational characteristics.

General Principles of Local Access Management

The overall goal of local access management is to reduce traffic conflicts by

- limiting the number of conflict points that a vehicle may experience in its travel;
- separating conflict points as much as possible (if they cannot be completely eliminated); and
- removing slower turning vehicles that require access to adjacent sites from the through traffic lanes as efficiently as possible.

These three basic means of eliminating or separating conflicts can be achieved in many ways. Good land use planning, sensible regulation, and reasonable site planning guidelines can all help reduce congestion and conflict. These techniques are explored and explained in the following chapters.

Figure 10 illustrates how these concepts can be applied to a major arterial serving a developing area. Property access is restricted by a raised center median and provided at widely spaced intervals by left and right turn lanes. In addition, median openings are restricted at unsignalized intersections.

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Figure 10—Example of excellent access control on an arterial highway



Source: Endnote (6)

Table 2 shows the number of conflicts points at the intersection of different types of roads.

Table 2—Conflict points for standard configurations

Principal Road	Minor Road	Conflict Points
two lanes	single driveway	9
two lanes	two lanes or opposing driveways	32
four lanes	single driveway	11
four lanes	two lanes or opposing driveways	40
four lanes	four lanes	52

Source: Endnote (7)

Figures 11 through 14 illustrate these concepts.

Figure 11—Reduction in traffic conflict points from conversion of a driveway on a four-lane undivided roadway to a driveway on a four-lane roadway with a raised median and a restricted left turn lane

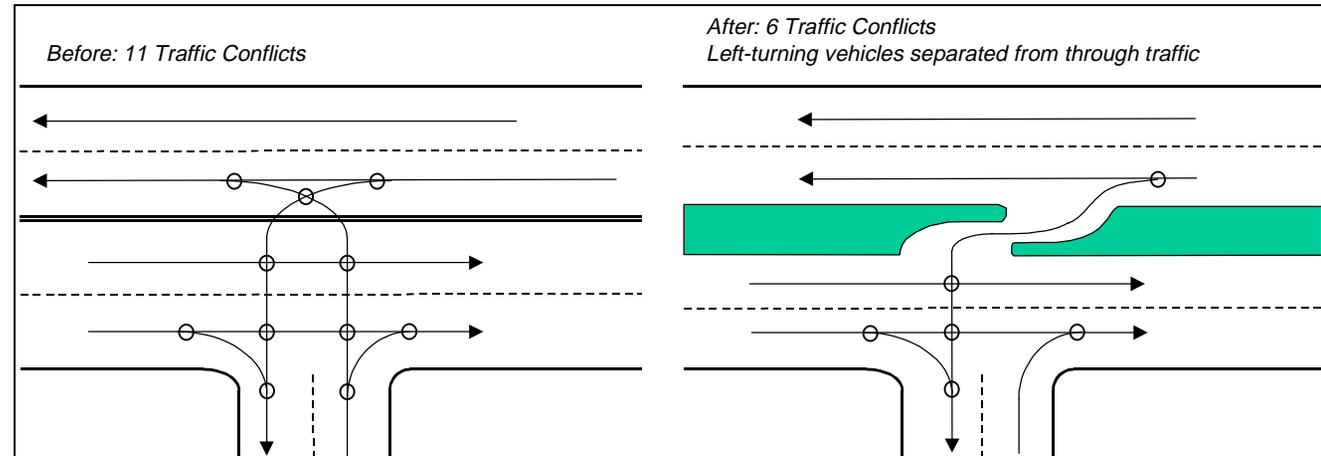
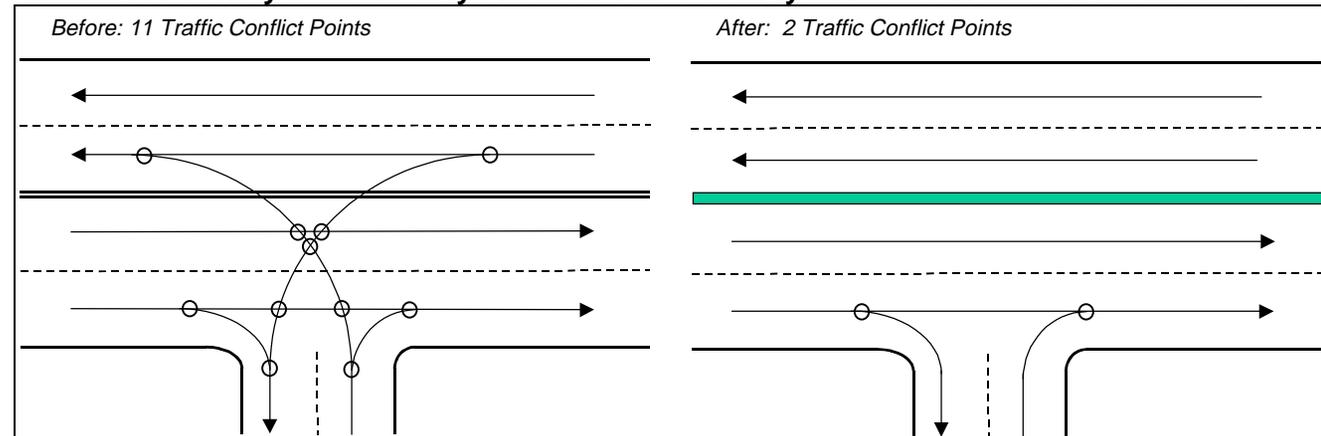


Figure 12—Reduction in traffic conflict points from conversion of a driveway on a four-lane undivided roadway to a driveway on a four-lane roadway with a restrictive raised median



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Figure 13—Reduction in traffic conflict points from driveway consolidation of two closely spaced driveways on a four-lane undivided roadway

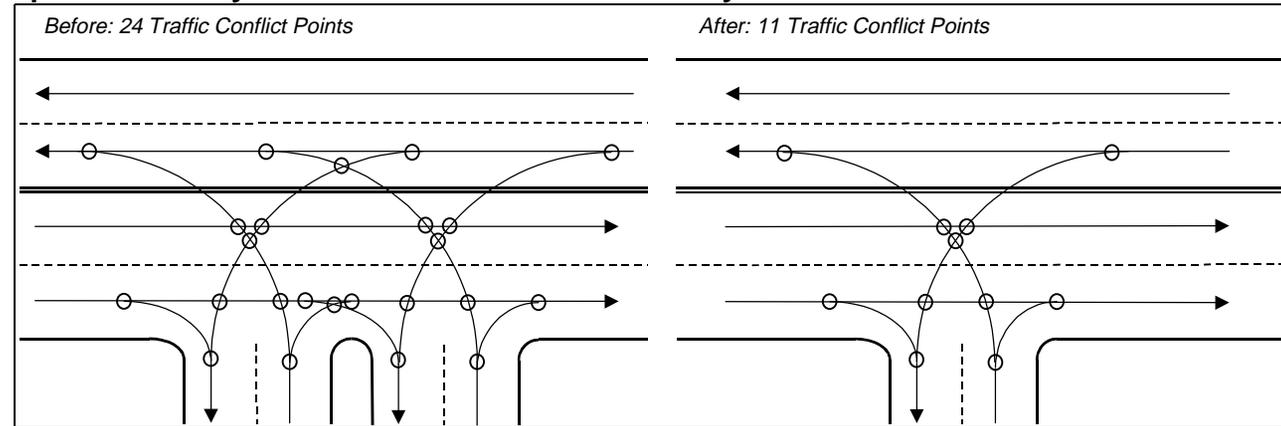
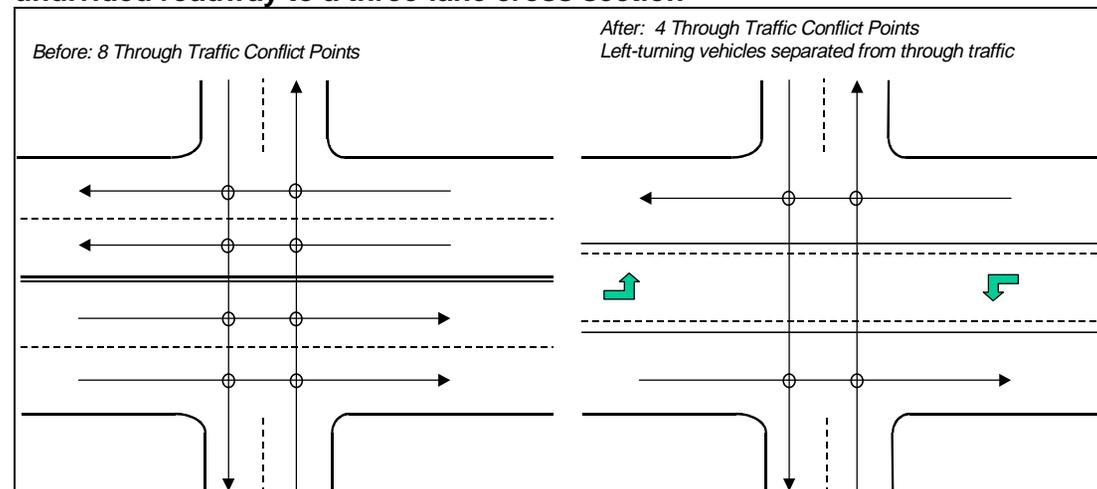


Figure 14—Reduction in through traffic conflict points from conversion of a four-lane undivided roadway to a three-lane cross section



Source: Endnote (8)

Why is Access Management Important?

An effective, local access management program can play an important role in preserving highway capacity, reducing crashes, and avoiding or minimizing costly remedial roadway improvements. The traveling public will benefit from faster and safer travel. Businesses will benefit from increased business vitality along a well managed corridor. Taxpayers will benefit from more efficient use of existing facilities. Public agencies will benefit from the relatively low cost of access management and can use their resources for other needs.

To Preserve Highway Capacity

Each new driveway that is located on an arterial reduces the arterial's traffic carrying capacity. After several new driveways have been installed it often becomes clear that turning traffic has a negative impact on traffic speeds on the arterial. Studies indicate that average travel speeds during peak hours are considerably higher on well managed roads than on roads that are less well managed, even though the two types of roads carry approximately the same number of vehicles. In Iowa, a series of before and after studies of access management projects found that the level of service was raised one full level during the peak traffic hour at sites studied (Table 3).

Table 3—Improvement in peak hour traffic service levels

Project Location	Before Project	After Project
Ames	C	B
Ankeny	C/D	B
Clive	D	B/C
Des Moines	D	B/C
Fairfield	B	B
Mason City	B	B
Spencer	B	B

The capacity of any given arterial is limited, and it is uncertain given the current financial and political constraints exactly how many arterials will be widened or new arterials constructed in the foreseeable future. Most communities will therefore continue to be served by their current arterials.

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Traffic volumes have increased over the past ten years on virtually all of the urban arterials in Iowa, and in areas surrounding these metropolitan areas. It is likely that they will continue to grow in the future. It therefore makes sense to enact minimum controls to preserve the traffic carrying capacity of these arterials as long as possible.

To Reduce Crashes

The most significant benefit associated with the access management projects studied in Iowa involves traffic safety. A typical access management project in Iowa may be expected to reduce annual crashes between 10 to 65 percent. Before and after studies of access management projects in Iowa found that average crashes per vehicle mile traveled was reduced by 40 percent (Figure 15). Personal injury crashes dropped almost 25 percent, and property-damage-only crashes were almost cut in half (Figure 16). No fatalities occurred on the corridors in question during the time frame of the study.

Figure 15—Crash reduction by city along access controlled corridors

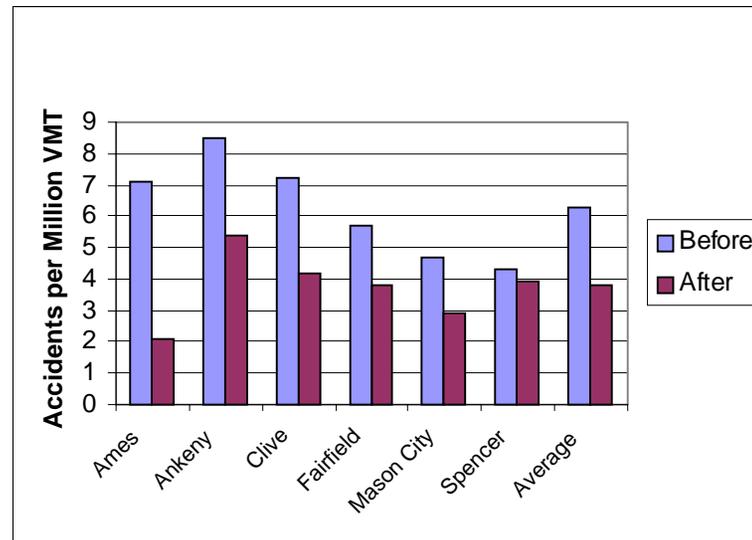
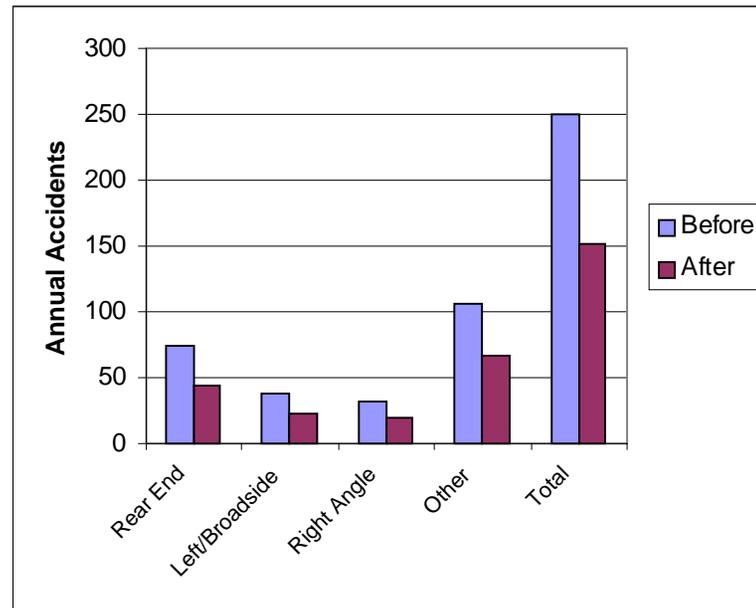


Figure 16—Crash reduction by crash type along access controlled corridors



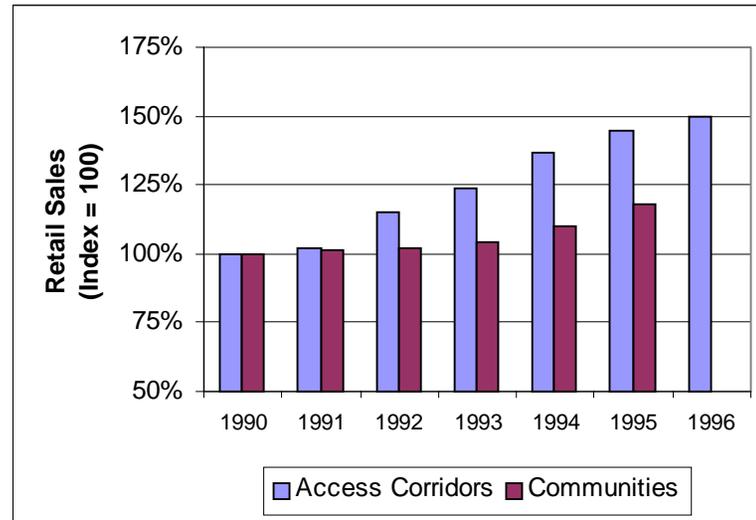
To Enhance the Community Environment and Economy

Business owners often express the concern that access management changes will have temporary or permanent impacts on their sales. They are particularly concerned about access management projects, such as medians, that significantly reduce turning opportunities for motorists. Analysis conducted for five business vitality case studies in Iowa indicates that businesses located within access management corridors generally performed better in terms of sales activities than their surrounding communities.

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The accompanying chart contrasts sales within the access management corridors with the sales in their respective communities (Figure 17). Retail sales within the study corridors outpaced overall community sales activity throughout the period 1992 through 1995, and probably in 1996 as well. At a minimum, these results indicate that access management did not negatively impact business activity.

Figure 17—Retail sales activity along access controlled corridors



Figures adjusted to 1990 dollars. 1996 community sales report numbers not available at time of publishing, but relative trends expected to continue. Figures for Clive removed due to the city's unusually dramatic retail sales performance.

To Save Tax Dollars

An access management program can avoid, minimize, or delay costly road improvements. By preserving traffic carrying capacity and safety, such a program decreases the need for additional traffic lanes, turning lanes, median barriers, bypasses or other traffic control improvements. Poorly managed growth of business activity along an arterial often causes traffic delays and safety concerns. Road improvements satisfy traffic demands and improve traffic conditions, which, in turn, attracts more development. This development draws more traffic, and the cycle continues. By properly managing

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the growth of a corridor, this cycle can be broken. The goal is not to prevent growth, but to rationally plan for it in advance to prevent or minimize congestion.

Everyone benefits by cooperative efforts to provide good access design. Not only is the public investment in the roadways protected by the application of access management techniques, but those using the abutting land and every driver using the roads where these techniques are used benefit as well. Property values remain stable or may increase along roadways that carry significant traffic volumes so long as the traffic can flow smoothly with a minimum of congestion and conflicting movement. Each driver is rewarded with lower vehicle operating costs due to smoother operations and less delay and with greater safety and comfort due to fewer conflicting traffic movements.