

GENERAL

Access Management (1 of 3)

DESCRIPTION AND DEFINITION

Access management is a process that provides reasonable access to land development while simultaneously preserving the mobility of traffic and safety on the roadway system.

A comprehensive access management program typically consists of two components:

1. A traffic engineering component to control how, when, and where vehicles turn on and off the road.
2. A land planning component to encourage or require agencies to include access management in planning developments and building the roadway network.

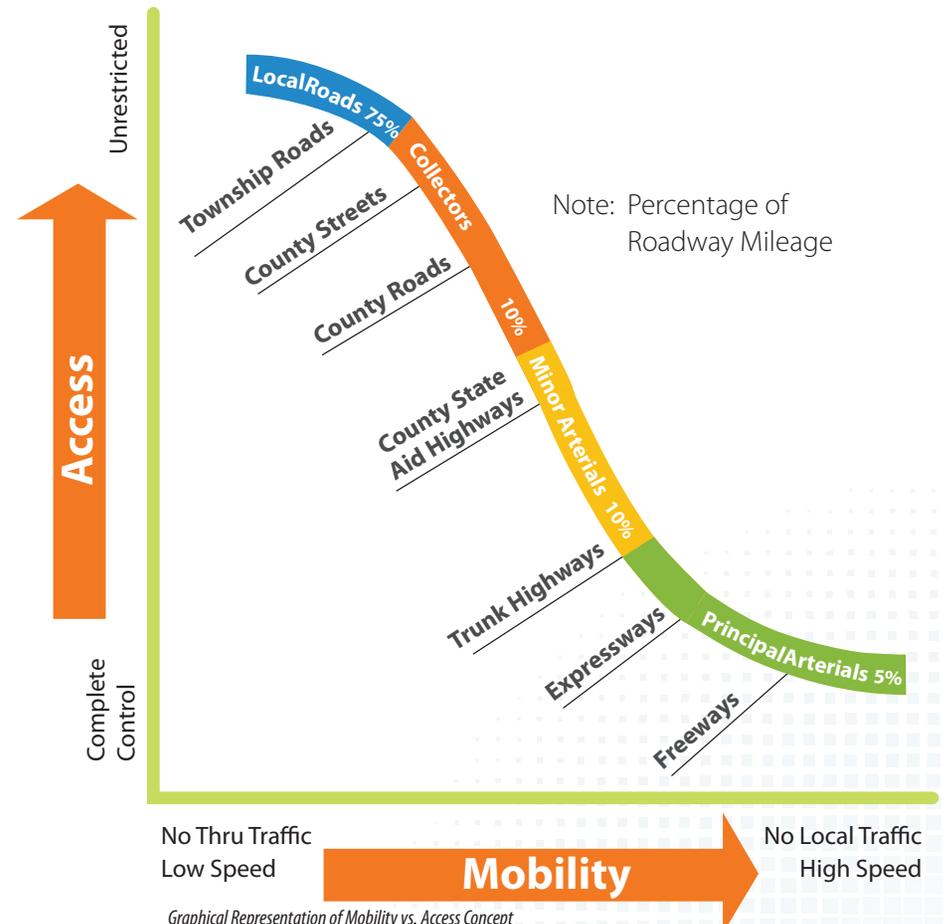
The basic principles of access management include the following:

- Consider access management strategies early in the land planning process
- Incorporate access management strategies in all major highway development projects
- Limit the total number of access points along a segment of roadway based on roadway type
- Interconnect local streets as appropriate to support the proper balance of access to the major highway
- Limit the number of conflicts at intersections, when applicable (see Intersection Treatments Practice Summary)
- Separate conflict points so that the influence areas of adjacent intersections do not overlap
- Separate turning volumes from through movements
- Maintain a hierarchy of access based on functional classification with major arterials having highly managed access, minor arterials and collectors providing a moderate level of access, and local streets being the primary provider of access
- Provide sufficient spacing between at-grade signalized intersections

ROADWAY OPERATIONS

Mobility vs. Access

- Major arterials are primarily intended to move traffic and access should be closely managed to optimize efficiency and safety.
- Local streets are primarily intended to provide access to abutting property and the roadways should be designed to minimize speeds, volumes, and through traffic with only minor access-related restrictions.



Graphical Representation of Mobility vs. Access Concept



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- Minor arterials and collectors have to serve the dual functions of moving traffic and providing land access. A moderate level of access management, including features such as turning lanes, medians, and minimum driveway separations, is appropriate to mitigate the adverse effects associated with closely spaced driveways and high levels of turning traffic.

TYPICAL CHARACTERISTICS OF CANDIDATE LOCATIONS

Most agencies have spacing guidelines for roadways based on functional classification and rural or urban location as part of their transportation plans.

SAFETY CHARACTERISTICS

Research has demonstrated that on state highways in Minnesota, there is a statistically significant relationship between access density and crash rates: the greater the number of access points, the higher the crash rate.

Phase II of the County Roadway Safety Plans has produced information that proves that the same access effect is present along the county highway system— as the access density increases, the crash and severity rates also increase.

County roadways in Minnesota with lower than average access density (8 to 10 access points per mile or less) have crash rates 20 percent below the average crash rate (0.9 crashes per 1 million vehicle miles) and 40 percent less than roadways with higher-than-average access density.

TYPICAL COSTS

Typical implementation costs range from \$20,000 to greater than \$1 million. The wide range in implementation costs is associated with the different types of access management strategies. The strategies can range from a low-cost median closure on a divided roadway to multiple access closures along a corridor on which frontage roads are necessary.

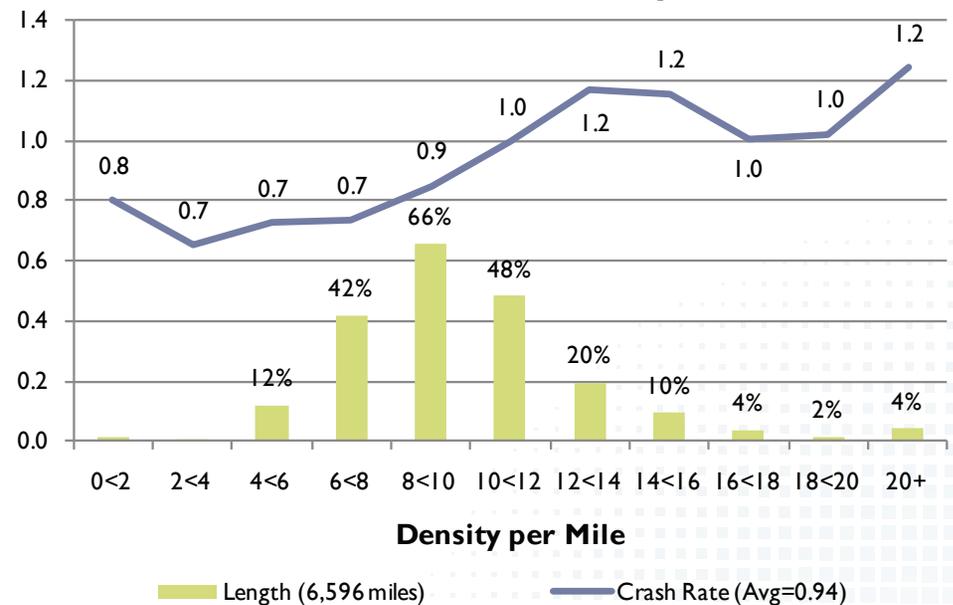
Access Spacing Guidelines

Type of Access	Major Arterial	Minor Arterial		Collector	Local
		More than 7,500 ADT ^(a)	Less than 7,500 ADT ^(a)		
Private Driveways	No direct access	No direct access	Variable ^(b)	Variable ^(b)	Variable ^(b)
Commercial Driveways	No direct access	Allow for Combined Commercial Access with Integrated Street Network	1/8 mile	1/8 mile	Variable ^(b)
Local Street and Collector Streets	1/2 mile full, 1/4 mile partial	1/4 mile	1/4 mile, 1/8 mile partial	1/8 mile	1/8 mile

(a) Average Daily Traffic (ADT) is the 20-year forecast.

(b) Spacing is based on criteria such as sight distance, speed, traffic volumes, etc.

Phase II Access Density



Source: Phase II, MnDOT County Road Safety Plans, 2011.



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DESIGN FEATURES

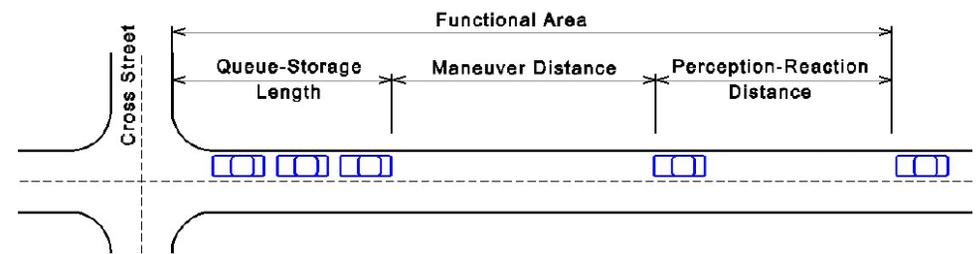
The location and design of a local street connection or driveway should consider the following access-related elements of the roadway (see MnDOT's *Access Management Manual*, Chapter 3):

- Number of existing driveways
- Sight distance
- Spacing between driveways
- Corner clearance and access within the functional area of an intersection
- Offset driveways and streets
- Restricted movements and median openings
- Shared driveways
- Interim access
- Auxiliary or turn lanes

PROVEN, TRIED, INEFFECTIVE, OR EXPERIMENTAL

- Research completed by MnDOT and Iowa DOT concluded that access management is a **PROVEN** safety strategy with an average crash reduction rate of 30 to 40 percent.
- NCHRP 500 series considers access management a **TRIED** strategy.

The one 5-star rated study in the FHWA Crash Reduction Clearinghouse had a 25 to 30 percent reduction in all crashes with modification of access, including access removal and reconfiguration.



Example of Intersection Functional Area

Statutory Authority

In Minnesota, access to a roadway from an abutting property is considered a property right. Road authorities have the following rights:

- Usually have to allow a reasonable access unless the control of access is purchased
- Do have the right to regulate the number, location, and the design of accesses
- Have the right to close medians because reasonable access has been defined as to only one direction of travel

SOURCES

Access Management Manual, MnDOT.

Access Management Manual, Transportation Research Board, 2003.

MnDOT's County Road Safety Plans, Phase II Analysis, 2011.

Technical Guidelines for the Control of Direct Access to Arterial Highways, Volume II: Detailed Description of Access Control Techniques, Report No. FHWA-RD-76-87, Glennon, J. C., et al., Federal Highway Administration, 1975.

NCHRP 420 – *Impacts of Access Management Techniques*, Gluck, J, et al, 1999.

Statistical Relationship between Vehicular Crashes and Access, LRRB Report 1998-27, Preston, H., 1998.

Access Management Awareness Program Phase II Summary Report, Iowa DOT, Center for Transportation Research and Education, Iowa State University, Maze, T and Plazak, D, 1997.

Iowa's Statewide Urban Design Standards Promote Improved Access Management Iowa DOT, Center for Transportation Research and Education, Iowa State University, Plazak, D and Harrington, D, 2003.



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Access Management Policy (1 of 2)

POLICY PURPOSE/INTRODUCTION

The purpose of this policy is to establish uniformity and consistency in the application of access management on the <Insert Agency>'s roadway system. A comprehensive access management program typically consists of two components: (1) a traffic engineering component to control how, when, and where vehicles turn on and off the road, and (2) a land planning component to require or encourage inclusion of access management in the projects.

DEFINITIONS

Major Arterials—Roadways primarily intended to move traffic and access to the roadways; should be highly managed to optimize efficiency and safety.

Local Street—Roadways primarily intended to provide access to abutting property; should be designed to minimize speeds, volumes, and through traffic with only minor access-related restrictions.

Minor Arterial or Collector—Roadways that have to serve the dual functions of moving traffic and providing land access. A moderate level of access management, including features such as turning lanes, medians, and minimum driveway separations, is appropriate to mitigate the adverse effects associated with closely spaced driveways and high levels of turning traffic.

POLICY

It is the policy of <Insert Agency> to manage access on its roadways by maintaining a hierarchy of access based on functional classification. Major arterials will have highly managed access, with minor arterials and collectors providing a moderate level of access and local streets being the primary provider of access within <Insert Agency>.

POLICY CRITERIA

Access guidelines are separated into rural roadways and urban roadways (roadways located within a municipality).

Rural Roadways

<Insert Agency> will have ¼-mile spacing of residential, farm, field, and commercial entrances. Closer spacing requires investigation and approval of <Insert Agency> engineer. Upgrade or reconstruction roadway projects will consolidate driveways whenever possible to achieve the desired spacing of ¼ mile.

Urban Roadways

<Insert Agency> will follow the access spacing guidelines shown in Table 1. Distances shown are minimums. <Insert Agency> reserves the right to increase the minimum distances based on other criteria. The guidelines help inform decisions about the proper location and type of access to the roadway system as development or redevelopment occurs adjacent to <Insert Agency> roadways or when roadways are widened or reconstructed.

Table 1—Access Spacing Guidelines

Type of Access	Major Arterial	Minor Arterial		Collector	Local
		More than 7,500 ADT ^(a)	Less than 7,500 ADT ^(a)		
Private Driveways	No direct access	No direct access	Variable ^(b)	Variable ^(b)	Variable ^(b)
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(a) Average Daily Traffic (ADT) is the 20-year forecast.

(b) Spacing is based on criteria such as sight distance, speed, traffic volumes, etc.



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Land Planning Component

<Insert Agency> will not allow urban land uses to be located in the agricultural districts of the county. Rezoning of land for commercial, industrial, or platted residential subdivisions anywhere in the county except immediately adjacent to municipal boundaries where they can receive municipal services will not be accepted. This restriction will allow our cities to grow in an orderly manner, and will also allow farms to continue farming without the encroachment of large developments of non-farmhouses adjacent to farming operations. <Insert Agency> will allow one new dwelling per quarter in all the districts outside of the cities, provided that the building lot has access to a public road. This type of development will also assist in the management of access provided that the residence would have one access, which would equal eight access points per mile.

Other items to consider when planning for the location of access along a <Insert Agency> roadway include:

- All accesses onto county right-of-way should be aligned to be straight and perpendicular to the centerline of the adjacent county roadway.
- All facilities, such as signs, entrances, medians, fencing, etc., should be placed or constructed outside the county right-of-way.
- Culverts constructed or placed within county right-of-way, or as part of an access, should be a minimum of 15 inches or a size determined by the <Insert Agency> Department of Public Works, whichever is greater
- Plastic pipe will not be used on accesses within the county right-of-way.
- Whenever possible, the location of new access points should be aligned with street accesses or entrances on the opposing side of the roadway to create four-way intersections. Offset intersections within the spacing criteria are to be avoided.
- Wherever possible, access points to commercial areas should be combined through service roads or common access points.
- Wherever possible, access locations should be directed onto roadways with a lower functional classification or lower traffic volume.

- The stacking distance back from an intersection on an arterial or collector will be considered when determining if a new access point will be allowed. A new full access will not be allowed within a fully developed left turn lane, right turn lane, or bypass lane.
- A right-in/out access may be required for safety and traffic flow purposes if other access options are not consistent with public safety and traffic flow.

Access Design Criteria

Table 2 provides design criteria for private access onto <Insert Agency>'s roadway, including width, grade, landing size, and side slopes.

Table 2—Design Details for Access onto <Insert Agency> Roadways

Design Criteria	Residential			Commercial - Industrial - Farm			Field Approaches		
	Min	Max	Desired	Min	Max	Desired	Min	Max	Desired
Entrance Angle / skew (degrees)	70	110	90	70	110	90	70	110	90
Width ^(a) (feet)	16	24	24	24	32	32	20	32	20
Corner Clearance ^(b) (feet)	60	See Note b	See Table 1	60	See Note b	See Access Spacing	60	See Note b	See Table 1
Radius (feet) ^(c)	5 to 15	35	25	5 to 25	40	25	5 to 10	40	20
Entrance Grade (percent) ^(d)	0	± 14	-2.5	0	± 8	-2.5	0	± 14	-2.5
Landing (feet) (at 0.5 percent)	25		50	25		50	15		50
Side Slope ^(e) (feet:feet)	1:4 (6)	1:10	1:4 (6)	1:4 (6)	1:10	1:4 (6)	1:4 (6)	1:10	1:4 (6)

See MnDOT's Road Design Manual and Standard Plate 9000D for additional information

Notes:

- (a) Urban residential widths are restricted to 24 feet wide. 32-foot double-wide field approaches are allowed at property lines when the access is shared between the two landowners.
- (b) The closest access point to an intersection may need to be outside the functional area of that intersection depending on the local geometric and traffic characteristics of the county roadways. Functional areas of an intersection may be up to 820 feet.
- (c) Minimum radius dependant on angle of driveway approach; see MnDOT's Road Design Manual.
- (d) Entrance surface out to culvert or ditch line shall have a minimum drop of 6 inches at 20 feet from the edge of the driving lane. Maximum elevation drop is 15 inches at 20 feet from the edge of the driving lane.
- (e) New side slopes of 1:6 are required when other approaches on the roadway are 1:6.

