Chapter 2: Standards for Access, Non-Motorized, and Transit

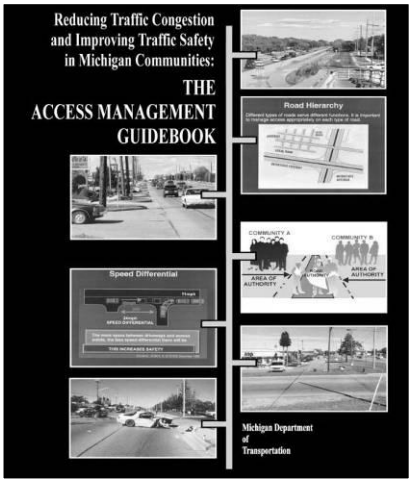
The Washtenaw County Access Management Plan was developed based on the analysis of existing conditions and constraints, and review of MDOT, national, local, and other states' access, non-motorized, and transit guidelines. This chapter summarizes the basic design standards that should be used by the cities, townships, county agencies, and MDOT, in future access deliberations along the plan area corridor and other corridors where appropriate.

Access Management Standards

Due to the significant portions of the corridor that are highly developed, strict application of standards will often be impractical. Even in cases of larger scale development and redevelopment, the site and area transportation conditions often require flexibility in the application of standards so they are effective and equitable while meeting the intent of this plan.

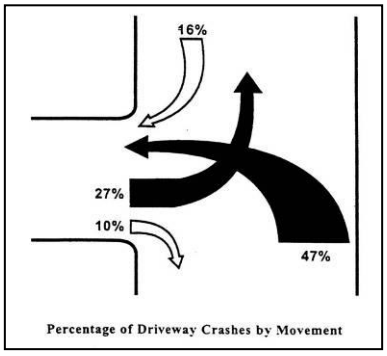
The introduction of this report mentioned several benefits that typically result from consistent use of an access management plan. To achieve those benefits, access standards must recognize the following principles:

- ***Design for efficient access***. Identify driveway design criteria that promote safe and efficient ingress and egress at driveways, while considering the interaction with on- and off-street non-motorized users.
- ***Separate the conflict areas***. Reduce the number of driveways, increase the spacing between driveways and between driveways and intersections, increase clearance and sight distance around transit facilities, and reduce the number of poorly aligned driveways.
- ***Remove turning vehicles or queues from the through lanes***. Reduce both the frequency and severity of conflicts by providing separate paths and storage areas for turning vehicles and queues.
- ***Limit the types of conflicts***. Reduce the frequency of conflicts or reduce the area of conflict at some or all driveways by limiting or preventing certain kinds of maneuvers.



Above: *the access management standards in this plan are based on the standards in the Michigan Department of Transportation's Access Management Guidebook, adopted in 2001.*

- ***Provide reasonable access***. Recognize that property owners have an inherent right to access public roadways, although reasonable access may be indirect in some instances.



Above: *data from the National Highway Institute indicates that most driveway crashes involve left-turn movements.*

Optimum driveway spacing simplifies driving by reducing the amount of information to which a driver must process and react. Adequate spacing between driveways and unsignalized roadways (or other driveways) can reduce confusion that otherwise requires drivers to watch for ingress and egress traffic at several points simultaneously while controlling their vehicle and monitoring other traffic ahead and behind them. Reducing the amount of information related to selecting an access point and avoiding conflicting turns and traffic provides greater opportunity to see and safely react to non-motorized and transit users both on- and off-street.

The following section discusses the key access design criteria that were used during the analysis of the Washtenaw County Access Management Plan area. The specific way in which these criteria or standards have been applied to the corridor is outlined in the following chapters.

Access Design Principles

The following is a summary of access management standards.

- **Number of Access Points:** The number of access points to a development should be limited to one where possible. Every effort should be made to limit the number of driveways; and encourage access off side streets, service drives, frontage roads, shared parking areas, and shared driveways. Certain developments generate enough traffic to consider allowing more than one driveway and larger parcels with frontages of at least 660 feet may also warrant an additional driveway. An additional driveway should only be considered following a traffic impact study that demonstrates the need for additional access.

  Reducing the total number of access points also provides off-street non-motorized facilities. Creating a larger distance to the first access point before and after transit stops is important to prevent conflicts between transit vehicles, through automobile traffic, and on-street non-motorized users. See Transit Access Standards later in this chapter for more detail on location of access points relative to transit facilities, and Non-Motorized Access Standards for more

detail on connectivity and location of non-motorized facilities relative to access spacing and design.

- **Driveway Alignment or Offset:** In order to prevent left turn conflicts, driveways should be aligned with those across the street or offset a sufficient distance to prevent turning movement conflicts. Minimum offsets on the corridor should be determined by posted speeds and range from 325 feet for a 30-mile per hour zone to 750 feet in a 55-mile per hour zone.
- **Shared Driveways:** Sharing or joint use of a driveway by two or more property owners should be encouraged. This will require a written easement from all affected property owners during the site plan approval process. Where a future shared access is desired, the developer should initiate an easement that will be completed to future adjacent uses, and construct a physical connection up to the property line to facilitate an easy completion when opportunities arise on the adjacent property.
- **Driveway Spacing from Intersections:** Driveways need to be spaced far enough from intersections to ensure that traffic entering or exiting a driveway does not conflict with intersection traffic. Typical standards take into account the type of roadways involved (trunkline, arterial, etc.), type of intersection control, and type of access requested.

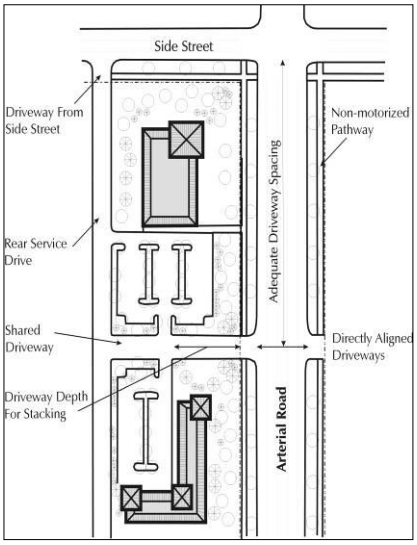
  For a state trunkline roadways such as this corridor that have speed limits of 30 to 40+ miles an hour, full movement driveways should typically be at least 230 feet away from a signalized intersection (460 feet in 40 mph zones) and 115 to 230 feet away from unsignalized intersections.
- **Driveway Spacing from Other Driveways:** Driveways also need to provide adequate spacing from other driveways to ensure that turning movement conflicts are minimized. Generally, the greater the speed along the roadway the greater the driveway spacing should be.

  Spacing standards recommended for this corridor are based upon MDOT guidelines adopted in 1996 (that are based upon numerous national references) and require the minimum distances between driveways (centerline to centerline) given a measured average speed, shown in the table to the right. The posted speed limits for the corridor are illustrated on Figure 2.1.

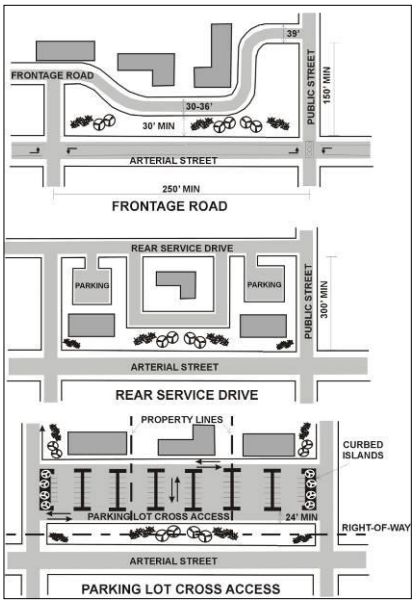
Minimum Spacing Between Driveways

Posted Speed (MPH)	Minimum Driveway Spacing
25	130 feet
30	185 feet
35	245 feet
40	300 feet
45	350 feet
50+	455 feet

Source: MDOT Access Management Guidebook, 2001.



Above: *rear service drives and shared driveways are important techniques to reduce the number of access points, especially near cross streets.* ***Below:*** *the success of different types of shared drives, roads, and parking connections are dependant on lot depth, building placement, and parking configuration.*



- **Wayfinding:** Due to the large quantities of employees, visitors, and students that drive into and through the plan area, the development of simple, high-visibility wayfinding at key points along the corridor will allow more time for drivers to make decisions about their route, avoiding last-minute lane changes or sudden stops in traffic lanes that can lead to crashes.
- **Service Drives:** Frontage drives, rear service drives, and shared driveways, should be used to minimize the number of driveways, while preserving the property owner's right to reasonable access. Such facilities provide customers with access to multiple shopping/commercial sites without re-entering the main roadway and experiencing conflicts and higher speeds. In areas within one-quarter mile of existing or future signal locations, access to individual properties should be provided via these alternative access methods first, rather than by direct connection to a major arterial.

  In areas where service drives are proposed or recommended, but adjacent properties have not yet developed, the site should be designed to accommodate a future service drive, with access easements provided. The city / township / MDOT / WCRC may temporarily grant individual properties a direct connection to an arterial road until the frontage road or service drive is constructed. The direct access point to the main roadway should be closed when the frontage road or service drive is constructed. In any case, care should be taken to minimize any negative traffic impacts of service drive connections to residential side streets.

  A critical design element of service drives, especially frontage roads, is the amount of space between the through traffic lane and the service drive (also known as throat depth or storage space). For shared access drives providing access to two small commercial uses, the throat/storage depth should be at least 40 feet. For drives providing access to more than two small commercial uses, the throat/storage depth should be at least 60-100 feet (potentially more depending on the trip generation of the land uses served).

  Rear service drives are often preferred over frontage drives because they do not create issues with driveway depth and facilitate placing parking to the rear of buildings and moving the buildings closer to the road. Additionally, rear service drives have the potential for integrated access and circulation

with other development further to the rear of deeper development areas, such as office or residential areas.

Service drives are usually constructed and maintained by the property owner or an association of adjacent owners. The service drive itself should be constructed to public roadway standards in regard to cross section (ie. 22-30 feet wide), materials, design, and alignment. Parking along service drives is discouraged, as it can interfere with internal circulation and access to the arterial.

Above: *an example of a sidewalk crossing an access point where the driveway material is uninterrupted.* ***Below:*** *an example of the preferred method of continuing the sidewalk material through the driveway to increase visibility for those crossing.*

Non-Motorized Access Standards

The following section discusses the key non-motorized access design criteria that were used during the analysis of the Washtenaw County Access Management Plan area. The specific way in which these criteria or standards have been applied to the corridor is outlined in the following chapters.

Non-Motorized Access Design Principles

The following is a summary of non-motorized facilities standards related to access management.

- **Design of Access Points:** The geometric design of access points, including the width, throat, radius, and pavement type, should all include consideration of the interaction with off-street non-motorized users. Excessively wide driveways with little or no throat and large radii provide an unprotected non-motorized environment that lacks clear definition for turning movements and increases the amount of time a pedestrian or bicyclist is exposed to traffic.

  Off-street sidewalk or pathway crossings should be aligned in such a way that they cross the driveway or cross street in front of where the outgoing traffic stops to turn. Locating the crossing farther back from the street encourages vehicles to pull ahead of or in front of the crossing, and means that pedestrians and bicyclists that want to cross have to go in between vehicles and are less visible to incoming vehicles.

  Sidewalk or pathway crossings of driveways or streets should physically cut through the drive or have a type or color that is distinctly different than the street or driveway pavement, to alert motorists by visually emphasizing the crossing.

*A "**Road Diet"** is the reallocation of one through travel lane to another function such as bike lanes, parking lane, or sidewalk space. FHWA research shows up to a 6% reduction in crash rates after a road diet is in place. Several segments of the corridor are identified as possible road diet candidates.*

Above: *an example of an on-street bike lane in Ypsilanti Township.*

- **Connectivity:** Connectivity of off-street non-motorized facilities at key locations will keep pedestrians out of the travel lanes and intersections.
- **Internal Non-Motorized Facilities:** Internal non-motorized facilities should be clearly marked and located at a prominent location to encourage use, but clearly separated or otherwise protected from driveway and internal circulation lanes. All developments should offer some bike parking or storage area in locations that prevent conflict and interference with parking, circulation, and foot traffic.
- **Bike Lanes:** Several areas along the plan corridor are known to have significant concentrations of on-street bicyclists. Given the access management goal of increased visibility and reaction time, any on-street bike lanes would improve safety by providing pavement markings and dedicated lane area for bicyclists. For roads that have significant excess capacity and lack the space to expand the roadway to accommodate bike lanes, a "road diet" is one effective way to provide on-street space for bike lanes, center turn lanes, and in some cases parallel parking. On-street bicycle lanes can provide better connectivity to multi-use pathways and bike routes.

Signalized Mid-Block Non-Motorized Crossings

*A **PELICAN** signal, or **PE**destrian **LI**ght **C**ontrol **A**ctivated, uses a standard traffic signal; the signal is always green when not in use and uses a standard yellow to red progression when activated. Usually used for highest volume crossings.*

*A **HAWK** signal, or **H**igh-intensity **A**ctivated **C**ross**W**alK, uses a signal with two red lights side-by-side, and a yellow light below; the signal is off when not in use and uses solid yellow, solid red, and flashing red to warn drivers.*

- **Mid-Block Non-Motorized Crossings:** Two major universities and the county's highest volume transit corridor combine to create a great need for safe non-motorized crossings along the plan corridor. In cases where signalized intersections are a significant distance, additional mid-block non-motorized crossings should be considered at key locations to provide safe, visible crossings while also calming traffic. Candidate locations for new or enhanced non-motorized facilities should be tied to transit stop points whenever practical.

  In addition to various crosswalk markings and textured pavement, some type of signalized non-motorized crossings may be appropriate (such as PELICAN, HAWK, or similar type signals), by existing or future volumes of pedestrians and bicyclists crossing. Those types of non-motorized signal crossings can stop traffic only when needed to allow pedestrians and bicyclists to cross safely.

Above: *a mid-block non-motorized crossing should include multiple elements to increase visibility and distinguish the crossing area from the roadway, similar to the treatment shown here.*

- **Design of Crosswalks:** Crosswalks should be enhanced with textured pavement markings, bulbouts, and other methods identified in the Ann Arbor and WATS non-motorized plans to increase visibility and safety at crossings.
- **Non-Motorized Enhancements:** Often times, the additional area gained by closing and consolidating driveways can be used for landscaping or consolidated signage. Along corridors with high volumes of non-motorized users and transit riders (such as this Plan corridor), this additional area can be used to encourage pedestrian, bicycle, and transit trips through provision of benches, shade trees, and occasional "pocket parks", and help reduce the number of vehicle trips on the street.
- **Existing Non-Motorized Plans and Studies:** This plan is consistent with the efforts of existing local transportation and non-motorized plans, especially the US-23/Washtenaw Interchange Pedestrian Crossing Study, the City of Ann Arbor Non-Motorized Plan, and the Non-Motorized Plan for Washtenaw County. The recommendations and concepts therein support the efforts of this access management plan.

Transit Access Standards

The following section discusses the key transit access design criteria that were used during the analysis of the Washtenaw County Access Management Plan area. The specific way in which these criteria or standards have been applied to the corridor is outlined in the following chapters.

Transit Access Design Principles

The following is a summary of transit facilities standards related to access management.

- **Visibility and Safety of Transit Stop Locations:** The location of transit stops along the entire corridor should be reevaluated by AATA to improve bus stop spacing to meet AATA standards. This process should include consideration of the interaction with nearby access points, the visibility of a stopped bus to approaching traffic, and the proximity of safe crossing points for boarding and deboarding riders to cross the street.
- **Mid-Block Non-Motorized Crossings:** As mentioned in the last section, there is a need for safe non-motorized crossings along the plan corridor, especially in mid-block locations. Several locations have been identified that would benefit from signalized crossings and are aligned to connect transit stops on either side of the street. As the transit stop locations are reevaluated in the future, any opportunity to relocate a stop closer to or adjacent to a crosswalk should be strongly considered.
- **Park and Ride Access:** Access management looks at not only the number and location of driveways, but also the volumes and uses they serve. Efficient, convenient access to park and ride facilities, especially those served by an internal bus stop, must be given priority relative to other access points.
- **Consideration of Alternate Transit Modes:** The access location, design, and parking areas should consider future alternate/advanced transit modes such as bus rapid transit, streetcar, and light rail, through increased driveway spacing, preservation of curb lawn areas to better accommodate transit facilities, and management of capacity to maximize potential of right-of-way for other modes such as transit.

Other Standards

Implementation of the above access management, non-motorized access, and transit access standards will help to maximize the utility of the right-of-way, preserve capacity, increase safety for all modes, and increase the useful life of the plan corridor. A strong access management program also has the benefit of closely coordinating land use and transportation decisions to improve the overall quality of life in the communities. The geometric design of the access points can be as important to the overall operation of a corridor as their location. MDOT's driveway design standards can be supplemented by requirements adopted by the cities and townships.