

# Table of Contents

## Chapter 1: Introduction

<i>Plan Corridor and Primary Goal</i> .....	1.1
<i>Preparation of This Plan</i> .....	1.2
<i>An Overview of Access Management</i> .....	1.3
<i>Plan Implementation</i> .....	1.6

## Chapter 2: Standards for Access Management, Non-Motorized Users, and Transit Riders

<i>Access Management Standards</i> .....	2.1
<i>Non-Motorized Access Standards</i> .....	2.5
<i>Transit Access Standards</i> .....	2.8
<i>Other Standards</i> .....	2.9

## Chapter 3: Using the Plan

<i>How to Use the Access Management Plan Chapters</i> .....	3.1
<i>Community and Agency Role in the Plan</i> .....	3.2
<i>Implementation of the Plan Standards and Recommendation</i> .....	3.4
<i>Access Review and Approval Procedure</i> .....	3.6
<i>Implementation Opportunities</i> .....	3.7

## The Access Management Plan

### Chapter 4: City of Ann Arbor

### Chapter 5: Charter Township of Pittsfield

### Chapter 6: Charter Township of Ypsilanti

### Chapter 7: City of Ypsilanti

## List of Figures and Maps

<i>Figure 1.1: Access Management Plan Area</i> .....	1.2
<i>Figure 1.2: Number of Lanes and ADT (2006)</i> .....	After Chapter 1
<i>Figure 2.1: Speed Limits</i> .....	After Chapter 2
<i>Figure 3.1 Transition Areas</i> .....	3.3
<i>Figure 3.2 Access Review/Approval Procedure Flow Chart</i> .....	3.6
<i>Figure 3.3 Access Management Ordinance Template</i> ...	After Chapter 3
<i>Figure 4.1: Western Plan Area Limits – Additional Plan Recommendations</i> .....	4.6
<i>Figure 4.2: Washtenaw Avenue Boulevard Simulation</i> .....	4.7
<i>Map Tiles 1-30: Access Management, Non-Motorized, and Transit Recommendations</i> .....	After Chapter 7

## Appendix

Appendix items are available upon request from MDOT and the four plan communities including: Steering Committee Meeting Agendas and Notes, Public Workshop Materials, and Access Management Project Brochure.



# Chapter 1: Introduction

## Plan Corridor and Primary Goal

Collectively, the route formed by Jackson Avenue, Huron Street, Washtenaw Avenue, Cross Street and Hamilton Avenue is the main east-west road connecting points from the western edge of the City of Ann Arbor, through Pittsfield and Ypsilanti Townships and the City of Ypsilanti, and Michigan Avenue and Ecorse Road connect downtown Ypsilanti to Wayne county and Willow Run Airport. Today, tens of thousands of residents, students, employees, and commercial vehicles live, work, shop, attend class, and visit key destinations along the corridor. Among the key destinations are downtown Ann Arbor, the Arborland Mall, the University of Michigan, downtown Ypsilanti, Eastern Michigan University, and Willow Run Airport. The route serves as the key transportation corridor for moving significant automobile traffic, commercial goods, the highest volume of transit riders of any corridor in the county, and many pedestrians and bicyclists.

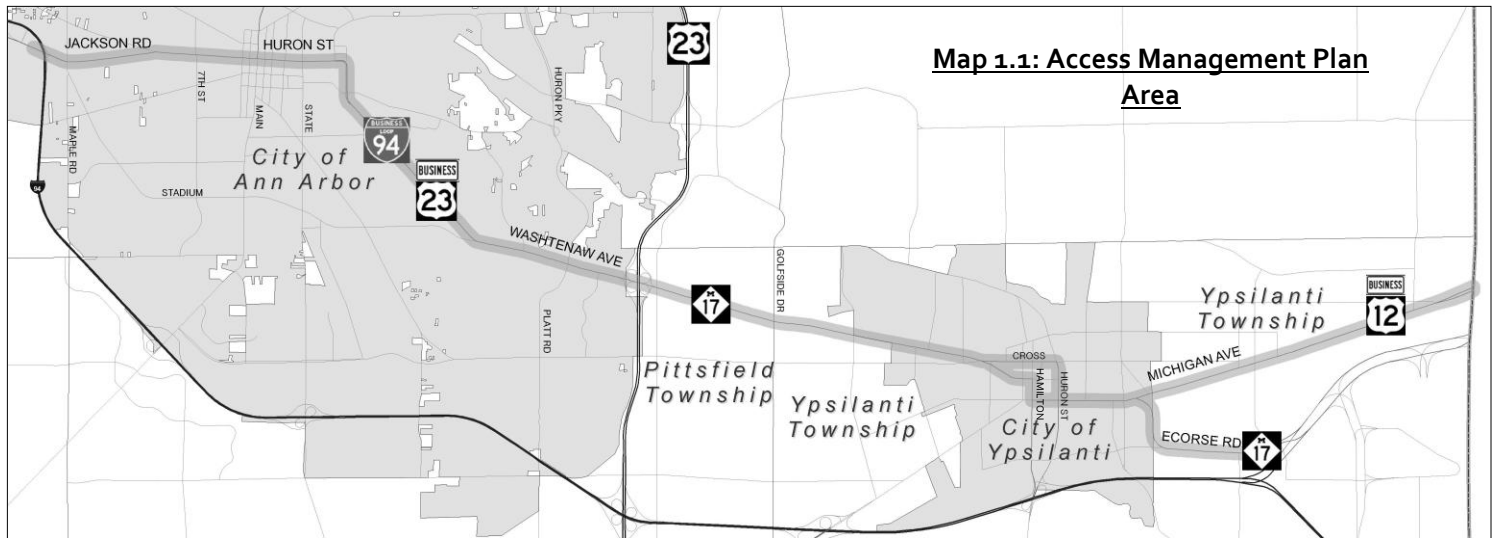
The cities of Ann Arbor and Ypsilanti, the townships of Pittsfield and Ypsilanti, the Washtenaw County Road Commission (WCRC), and the Michigan Department of Transportation (MDOT), all have jurisdiction over or along the corridor. MDOT has recognized that there are opportunities to improve safety along this highly developed corridor by retrofitting the existing access system and improving the interaction between motorists, non-motorized users, and transit users throughout the plan area. All recognize the need for a coordinated approach for efficient and safe travel for motorists, pedestrians, bicyclists, and transit users. In addition, the corridor needs to serve as a catalyst for redevelopment consistent with the intended character. To that end, access management is recognized as a key tool to improve transportation conditions and safety for all users. The plan area is illustrated on the next page.

### Plan Organization



#### ***The questions this access management plan will help address include:***

- *What access-related improvements should be made to existing uses to reduce crash potential and facilitate trips between businesses within shared parking areas?*
- *How can land use/site plan decisions support the recommendations and enhance the effectiveness of this access management plan?*
- *What standards for access and related transit and non-motorized facilities should be adopted to help improve safety and efficiency while still providing reasonable access to adjacent land uses?*



### Primary Goal

#### **Steering Committee Members:**

- City of Ann Arbor
- Pittsfield Township
- Ypsilanti Township
- City of Ypsilanti
- Michigan Department of Transportation (MDOT)
- Washtenaw County Planning and Environment (WCPE)
- Washtenaw County Road Commission (WCRC)
- Washtenaw Area Transportation Study (WATS)
- Ann Arbor Transportation Authority (AATA)

The primary goal driving this access management plan is to improve transportation operations and increase safety along the corridor for all users. Access management improves safety by reducing the number and improving the spacing of conflict points along a corridor. This is accomplished by limiting new vehicular access points and working to close and consolidate existing access, while also paying careful consideration to the interaction between automobile access points and the non-motorized and transit facilities along the corridor. A secondary goal for this plan was to improve access and mobility for non-motorized users (which includes transit riders) of the corridor.

### **Preparation of This Plan**

To oversee the development of this plan, a Steering Committee was formed with representatives from a wide range of stakeholders. The committee met regularly to review the issues, provide suggestions on draft recommendations and assist in obtaining and interpreting comments from the public and local officials. It should be noted that the University of Michigan and Eastern Michigan University were both made aware of the project during the RFP process and at the beginning of the project, but did not participate.

This plan was developed over eight months and included a series of meetings with the public and individual local communities and agencies. The public involvement process included two public workshop/open houses, which were held at the Washtenaw County Community College on Thursday, September 27, 2007, and the

Washtenaw County Service Center Library on Monday, October 29, 2007. These open houses provided formal presentations on the benefits of improved access management, including improving safety of motorists, non-motorized, and transit users in this plan area. Drafts of the plan recommendations graphics and concepts for select intersections (found later in this plan) were on display illustrating the preliminary access management recommendations. Comments and recommendations by the public, local officials and the MDOT staff were considered and incorporated into the final recommendations.

### **An Overview of Access Management**

As noted on page 1.1, the goal behind this access management plan is to improve transportation operations and increase safety along the corridor for all users while maintaining reasonable access to properties. Access management involves maximizing the existing street capacity and improving the corridor for transit riders, bicyclists, and pedestrians by reducing or limiting the number of access points, carefully placing and spacing access points (commercial driveways), and provision of non-motorized facilities where missing.

Numerous studies nationwide have shown that a proliferation of driveways or an uncontrolled driveway environment can increase the number or severity of crashes, reduce capacity of the street, and may create a need for more costly improvements in the future. Areas where access management plans have been adopted and implemented by the communities and road agencies have resulted in 25-50 percent reductions in access-related crashes.

In the State of Michigan, access management has been in practice for over two decades. In 1999, MDOT commissioned a task force to research, discuss, and organize the best practices on access management, and officially adopted a statewide guide, known as *The Access Management Guidebook*, in 2001. That document and its significant national research and statistics form the basis for this plan's standards and recommendations.

#### Benefits

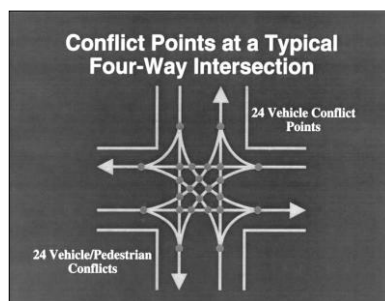
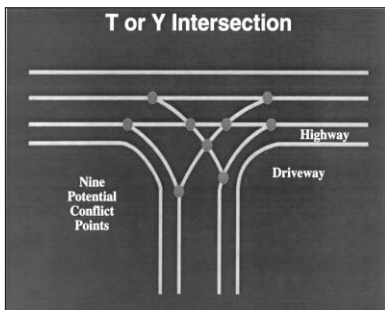
Access management often provides benefits to motorists, non-motorized users, transit riders, communities, residents, businesses, and land uses along the corridor. There are many short and long term benefits, based on national experience and studies of other corridors, including the following:

*Access management involves maximizing the existing street capacity and improving the corridor for transit, bicyclists, and pedestrians by reducing or limiting the number of access points, carefully placing and spacing access points (commercial driveways), and other enhancements.*

*The terms "access" and "access point" are used frequently throughout this document; these terms refer to commercial driveways (e.g. retail, office, industrial, etc.) and platted roadways or private roads but generally do not refer to driveways for individual single family homes.*



*Coordination of access and parking often provides more space for consolidated signs, non-motorized facilities, and transit riders.*



*Each new driveway adds to the number of conflict points along a street at which a traffic crash could occur.*

*Source: MDOT "Improving Driveways and Access Management in Michigan," 1996.*

- Reduces crash potential through regulation on the placement, spacing, and design of future access points and the redesign of existing ones as opportunities arise.
- Provides landowners with reasonable access to their property from the corridor, though in some cases the number of access points may be fewer or more indirect.
- Promotes continued coordination and communication between the MDOT, WCRC, local governments, the public and the transit providers when reviewing development proposals and considering improvements.
- Provides general background and information on the benefits of access management to assist local and county officials.
- Improves air quality.
- Informs the property owners, business operators and potential developers, and the general public about access management, its benefits, the rationale for recommendations, and how it is applied over time.
- Improves access to and from businesses.
- Maintains or increases travel efficiency and corridor vitality.

In addition to the measurable benefits, the public also benefits due to the reduction in roadway improvement costs and reduced environmental impacts. Land owners and developers benefit from the long term enhancement of property values and knowing “up front” that there are established access criteria thereby reducing the need for redesign and the likelihood of a drawn out site approval process.

Techniques

Realization of the benefits listed above can be accomplished through a variety of techniques, both physical and regulatory. Key recommendations of this access management plan, listed below, are explained with greater detail in the subsequent chapters.

- Identify changes to existing access points, including closure or consolidation of existing access points to improve spacing. Specific recommendations are illustrated on a series of drawings for corridor segments.
- Gradually replace selected individual direct access points with access through rear service drives, cross access between parking areas, or shared driveways.
- Establish access standards to both retrofitted existing sites

and to apply to new developments, through the adoption of access management standards into the local zoning ordinances.

- Identify short- and long-term opportunities to improve access, including individual driveways, alternate roadway cross-sections, and future restoration of two-way traffic.
- Identification of locations needing improved non-motorized facilities and transit improvements.



**Left:** One technique recommended by this plan is the use of physical elements to restrict turning movements; this driveway island effectively prevents left turns in- and out-of the parking area. **Right:** Reduction of the overall number of access points is especially important near signalized intersections; gas stations located on corners often have 4 or more driveways where only 1 or 2 are needed.

### Tools

Access management involves tools to increase spacing of access points, to restrict certain turning movements at select access points, and to improve the connectivity of transit or non-motorized facilities along a corridor. Some of these tools are the:

- Reduction of overall number of access points (to reduce the opportunity for conflict between automobiles, transit, and non-motorized users).
- Optimum location of bus stops (relative to sight distance, intersections, non-motorized crossings, and access points).
- Connection of key gaps in non-motorized facilities (to promote safe, off-street movements and provides options for trip making).
- Proper spacing of access points along the same side of the street and from access points on the opposite side of the street (especially spacing between intersections and other access points).

- Geometric design of physical barriers to restrict certain turning movements (usually left turns).
- Shared access systems (connections between land uses, shared driveways, frontage roads or rear service drives).

### **Plan Implementation**

Successful implementation of the plan's recommendations will require continued coordination between the local communities, county agencies, transit agencies, and MDOT. This access management project includes the development and adoption of ordinance amendments for each of the four local communities to provide regulatory support for implementing the recommendations and standards of this plan when development or redevelopment occurs in the corridor. A detailed flow chart to guide the necessary coordination and review process between all agencies for project applications is included at the end of Chapter 3. The plan will be endorsed and used by MDOT, WCRC, WATS, and the local communities to improve the plan corridor.

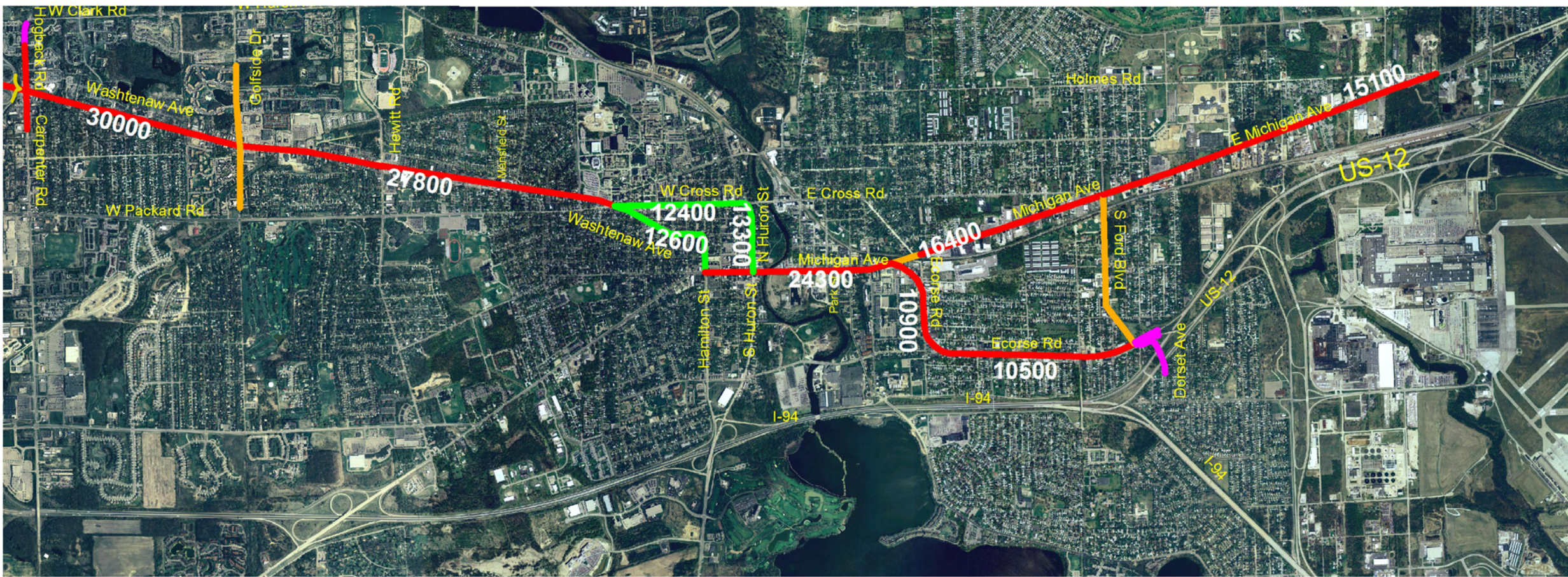
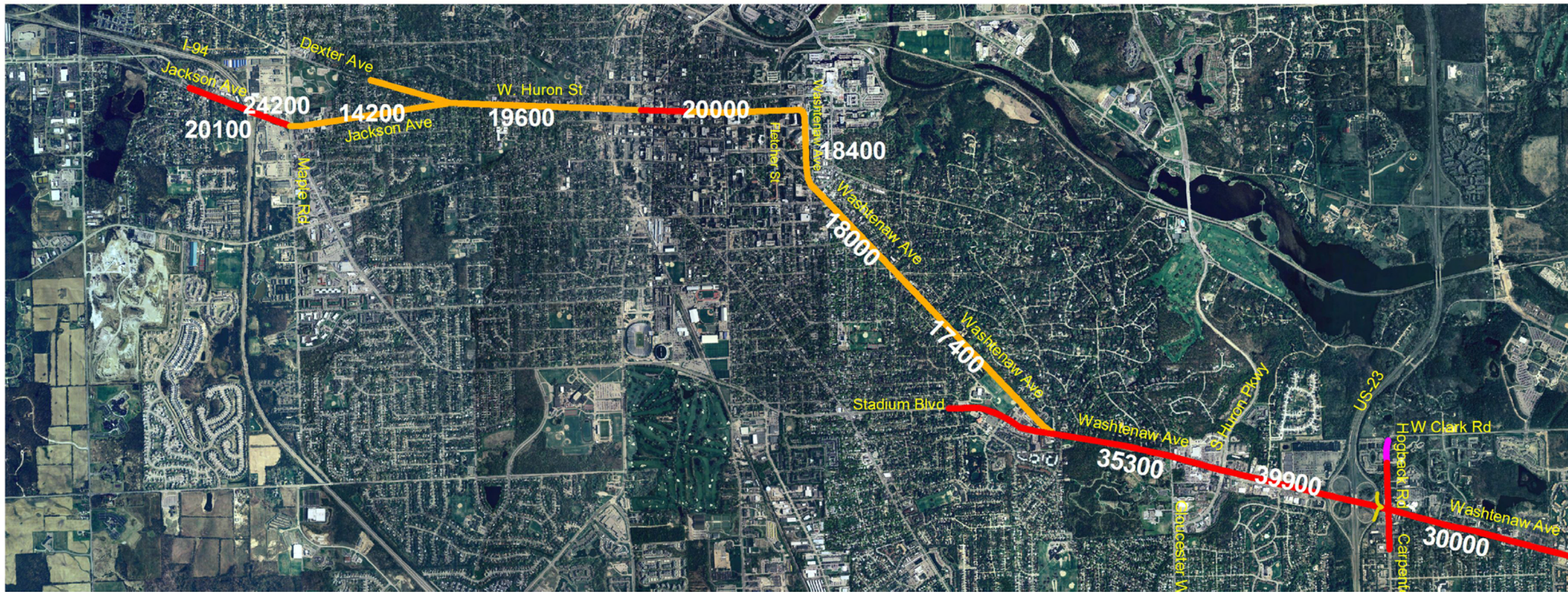
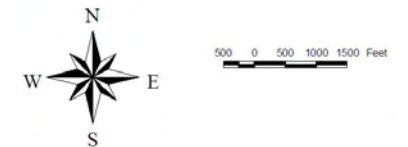
The most important product of this process is the recognition that effective and timely communication between the cities, townships, county agencies, and MDOT is the key to successful implementation.

Following this chapter, Chapter 2 discusses in detail the standards for access, non-motorized, and transit facilities, Chapter 3 identifies process, protocol, and opportunities for implementation, and Chapters 4-7 include specific recommendations for this seventeen mile plan corridor.



# MAP 1.2 Washtenaw County Access Management Plan

Number of Lanes and  
Vehicle ADT (2006)



Map produced by DLZ Michigan, Inc.  
for the Washtenaw County Access  
Management Plan, 2007

Information provided by the Michigan Department  
of Transportation (MDOT), the Washtenaw County  
Road Commission, Ann Arbor and Ypsilanti. Digital  
road and surface water data provided by the  
Michigan Center for Geographic Information (CGI).

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

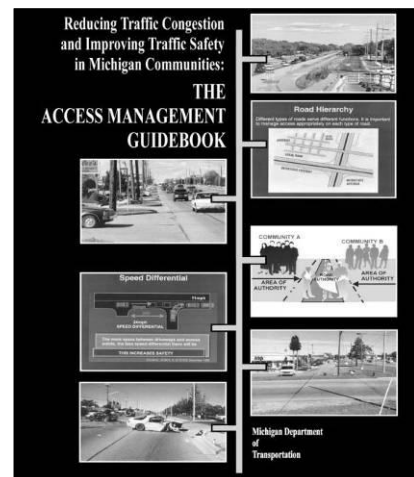
The Washtenaw County Access Management Plan was developed based on the analysis of existing conditions and constraints, and review of MDOT, national, local, and other states' access, non-motorized, and transit guidelines. This chapter summarizes the basic design standards that should be used by the cities, 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.

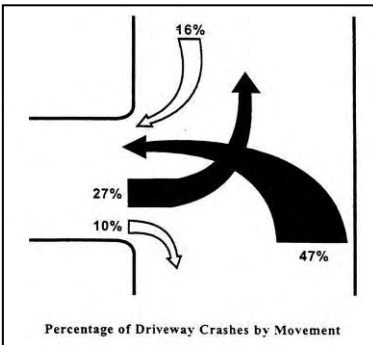
The introduction of this report mentioned several benefits that typically result from consistent use of an access management plan. To achieve those benefits, access standards must recognize the following principles:

- **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.

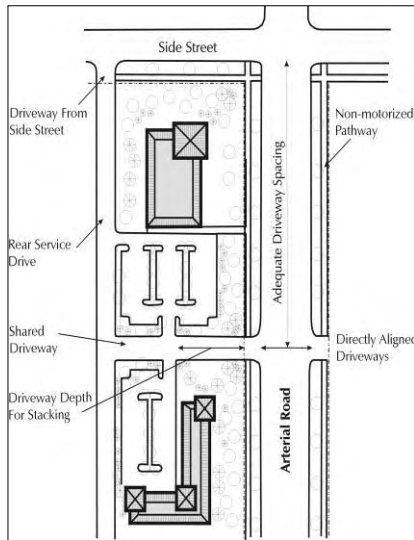
- **Driveway Spacing from Other Driveways:** Driveways also need to provide adequate spacing from other driveways to ensure that turning movement conflicts are minimized. Generally, the greater the speed along the roadway the greater the driveway spacing should be.

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

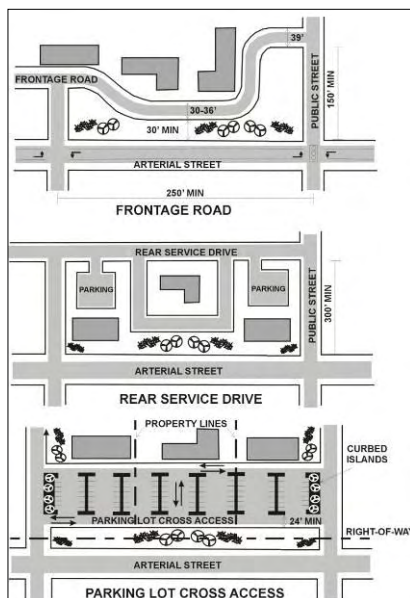
Posted Speed (MPH)	Minimum Driveway Spacing
25	130 feet
30	185 feet
35	245 feet
40	300 feet
45	350 feet
50+	455 feet

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.

### 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.



**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.



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.

- **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.



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

### Signalized Mid-Block Non-Motorized Crossings



A **PELICAN** signal, or **PE**destrian **L**ight **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.

- **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.



**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.



## 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.



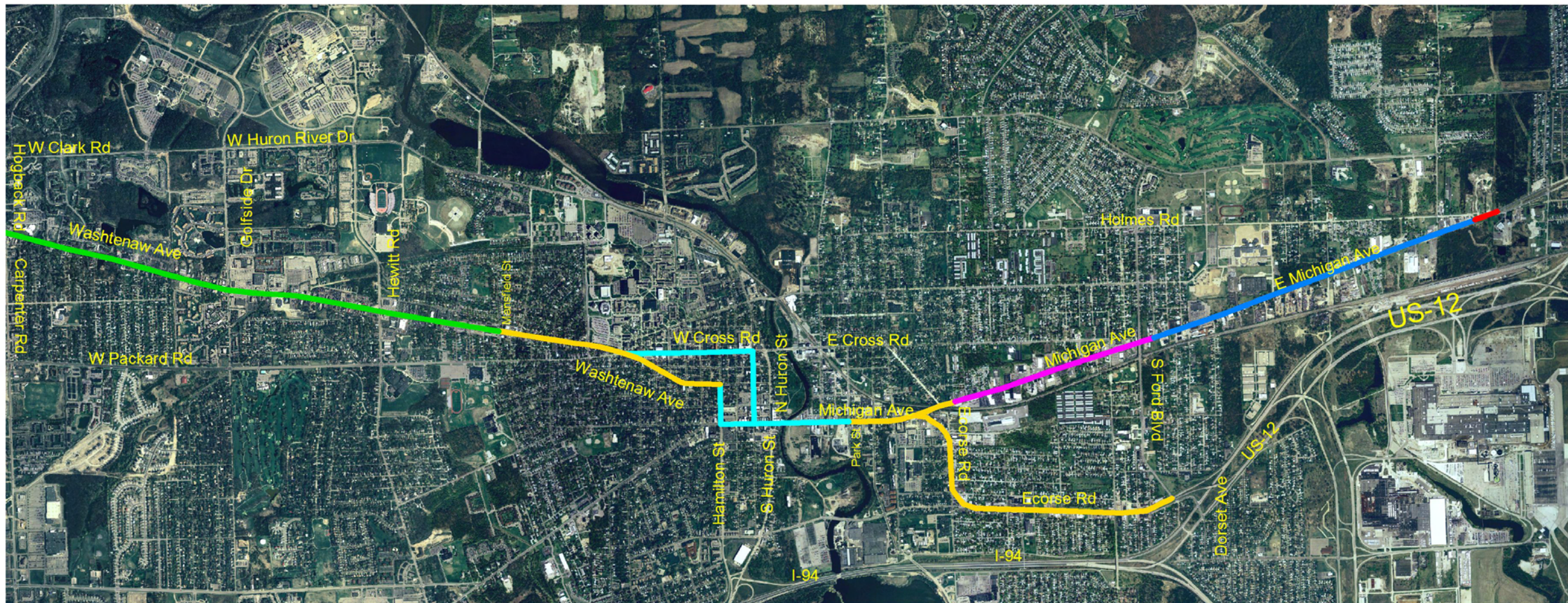
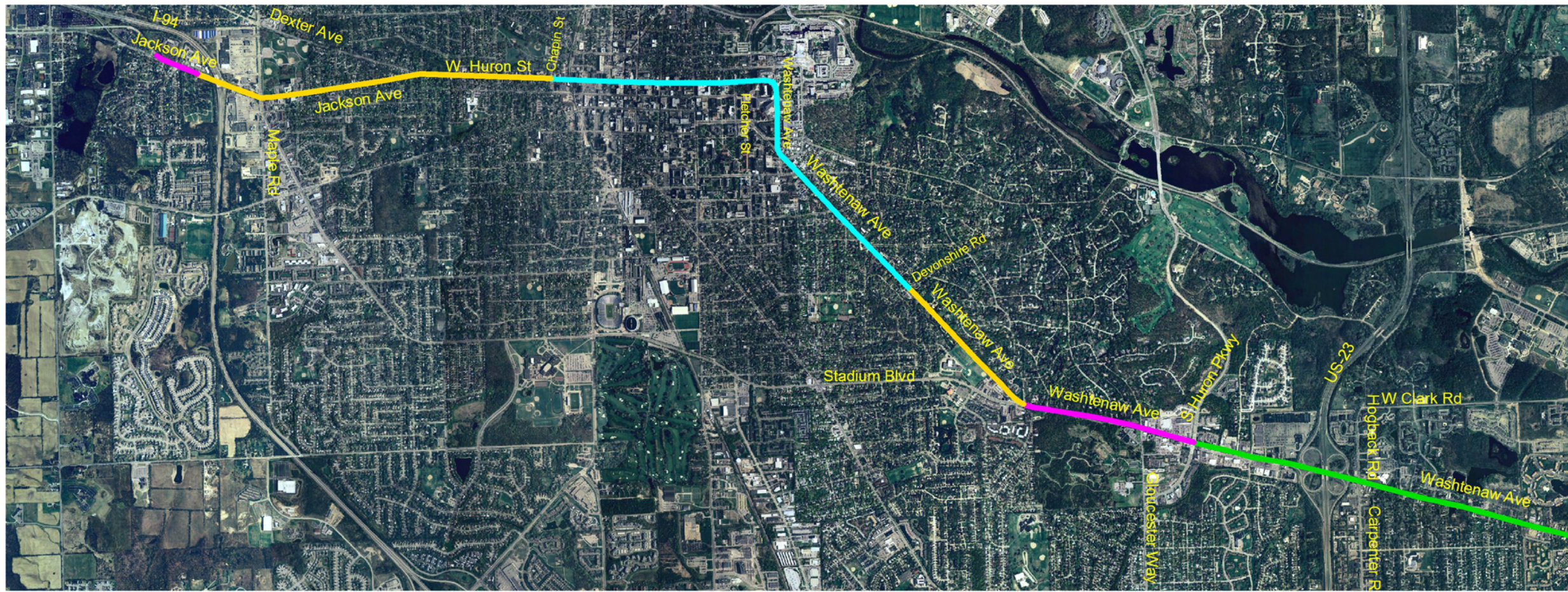
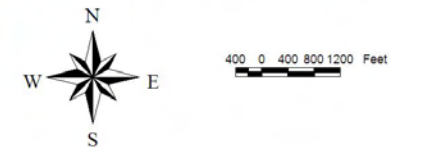
# MAP 2.1

## Washtenaw County Access Management Plan

### Posted Speed Limits

#### Legend

-  Speed Limit 30 mph
-  Speed Limit 35 mph
-  Speed Limit 40 mph
-  Speed Limit 45 mph
-  Speed Limit 50 mph
-  Speed Limit 55 mph



Map produced by DLZ Michigan, Inc.  
for the Washtenaw County Access  
Management Plan, 2007

Information provided by the Michigan Department  
of Transportation (MDOT), the Washtenaw County  
Road Commission, Ann Arbor and Ypsilanti. Digital  
road and surface water data provided by the  
Michigan Center for Geographic Information (CGI).

---

## Chapter 3: Using the Plan

### How to Use the Access Management Plan Chapters

The following chapters and accompanying figures outline how the recommended access management, non-motorized and transit recommendations are applied within the overall plan area. As discussed in the previous chapters, the average speed of traffic along a given corridor is one of several design parameters used to develop driveway spacing standards; other factors that came into play include the roadway design types, intersection traffic control types, sight distance concerns, physical constraints and the type and size of potential traffic generators.

The Access Management Plan is illustrated on a series of 30 map tiles, which show the final recommendations that resulted from numerous discussions with the Steering Committee members and input obtained from other interested/affected persons at the two public open house meetings. The discussion and graphics start at the west end of the plan corridor (Jackson Road and I-94 overpass), and proceed easterly through the plan area. The evaluation of the corridor is organized into 4 chapters, with each chapter representing the plan area of one of the four communities in the project.

The Washtenaw County Access Management Plan is based on both state and nationally recognized standards. Developing and implementing standards to be used for future access considerations are only part of the picture. The other key element for any access management plan is the identification of specific recommendations for improvements to existing access systems that will reduce crash potential and provide better efficiency throughout the corridor. These recommendations are typically referred to as retrofit access improvements.

While the highly developed nature of much of the plan corridor makes it difficult to implement the optimal access spacing standards, the goal still is to minimize the number of driveways as much as possible with additional consideration of the interaction between access points and non-motorized and transit users. Retrofit recommendations in the following chapters of the plan will only be possible when an owner or developer volunteers or triggers an access review with MDOT, the WCRC, and/or local communities during another approval process. Others may be implemented

through other programs and incentives, outlined in the implementation opportunities section, from the townships, cities, County, WATS, and MDOT to assist business with the costs of closing and reconstructing driveways.

Chapters 4-7 focuses on the existing conditions and recommended changes to access, non-motorized, and transit along the corridor that lie within or adjacent to each of the four communities in the plan area. Each chapter begins with an inventory of existing conditions, problems, and opportunities, and concludes with parcel-specific illustrative recommendations for improving access and adjacent non-motorized and transit facilities along the corridor. The illustrative recommendations should be used in concert with *Chapter 2: Standards for Access, Non-Motorized, and Transit*, which provides standards and guidelines for new development or redevelopment not specifically addressed in the illustrative plan. Plan recommendations for standards and specific improvements resulted from numerous discussions with the Steering Committee members, input from the public, and input from local and agency officials and staff.

This plan is a flexible document that is subject to adjustments and improvements as the plan corridor develops or redevelops. Although the basic design parameters should remain in place, exact locations and configurations of driveways and service/frontage roads may shift as development plans come into focus.

The recommendations of the access plan are largely based on parcel configurations and future land use plans in existence at the time this plan was prepared. Property combinations and unified or coordinated development of smaller parcels is strongly encouraged. In addition, existing parcels should only be divided if a coordinated, limited access system is retained through signed agreements and illustrated on a plan.

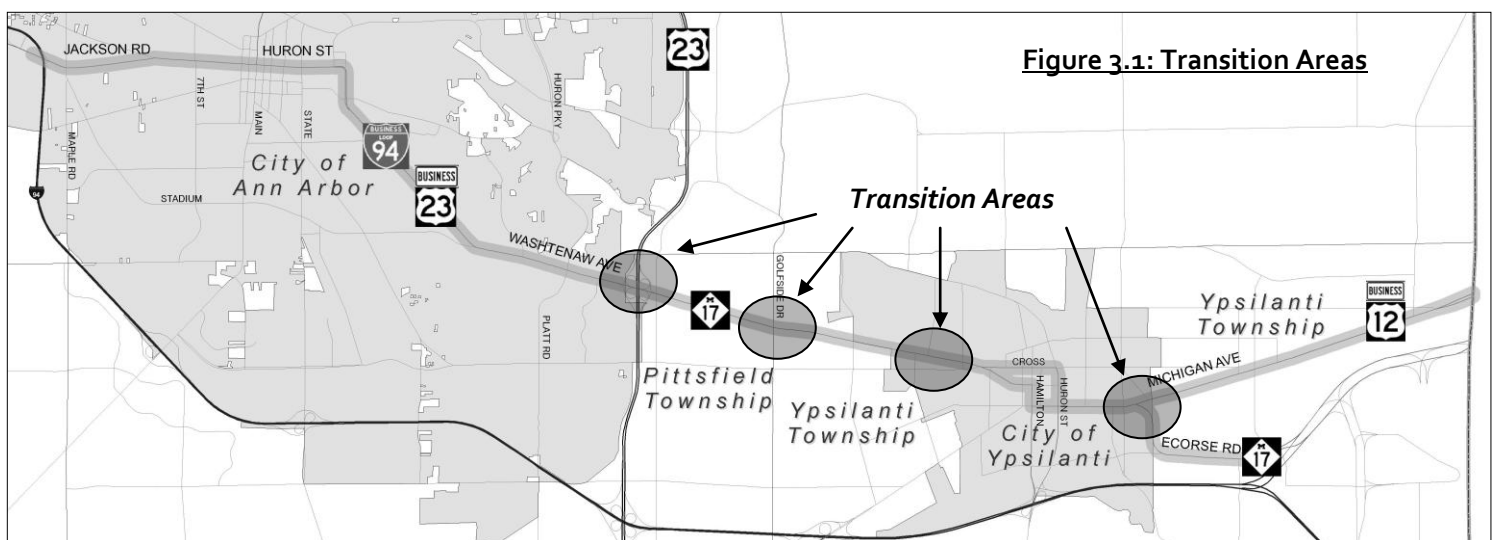
### **Community and Agency Role in the Plan**

Successful implementation of the recommendations in the Washtenaw County Access Management Plan requires a partnership between the City of Ann Arbor, Charter Township of Pittsfield, Charter Township of Ypsilanti, City of Ypsilanti, Ann Arbor Transportation Authority, Washtenaw County Road Commission, Washtenaw County Planning and Environment, Washtenaw Area Transportation Study, and MDOT to accommodate planned development along the corridor while

reducing the negative impacts of unorganized and poorly design access. In addition, all of the agencies and local communities should work closely with AATA to coordinate opportunities that may arise to relocate, upgrade, or reconfigure transit stop locations along the corridor, to improve safety.

This Plan includes specific recommendations for individual properties as well as general recommendations that apply to a number of areas along the corridor. While some of the recommendations can be directly implemented, many are long-term initiatives that will require an on-going partnership and commitment between the Steering Committee members. This requires the local communities' planning commissions, elected bodies, and zoning board of appeals to be aware of the benefits of access management and their role in the Plan's implementation. To this end, one of the products of the Washtenaw County Access Management Plan project is an informational 'road show' that can be presented by Steering Committee members, including an informational project/access management brochure and a PowerPoint presentation of the project and access management in general.

Recognizing that several areas of transition between local communities exist along the corridor, a pro-active approach to collaboration on projects and plans is essential within these transition areas. Successful coordination will help create smoother transition across the boundaries (highlighted in Figure 3.1), while providing for both a high quality image for the corridor and unique identity for each community.



Larger development projects that cross or are within ¼ mile of a community boundary should include a review by both communities early in the project process. This important step is reflected in the Access Review/Approval Procedure Flow Chart later in this Chapter. In addition, special attention should be paid to the interaction of access points, non-motorized facilities, and transit facilities at and around these transition areas when making decisions.

### **Implementation of the Plan Standards and Recommendations**

A model community-wide access management zoning article was prepared and customized to meet the needs of each of the four communities based on input from staff and planning commission. The final draft of the community-wide zoning ordinance template is included as Figure 3.3 at the end of this Chapter. Each community will adopt zoning and other ordinance amendments to incorporate the plan recommendations and standards by reference and to organize and consolidate all access-related standards and review procedures in the local codes. As many of the existing sites along the corridor will not be able to meet the access management standards, the ordinances provide the authority to modify the standards on a case-by-case basis, with the guidance of the plan recommendations where applicable. The ordinance provides planning commissions with the authority to modify the standards and plan recommendations during site plan review, provided the intent of the standards and/or recommendations is being met to the maximum extent practical on the site.

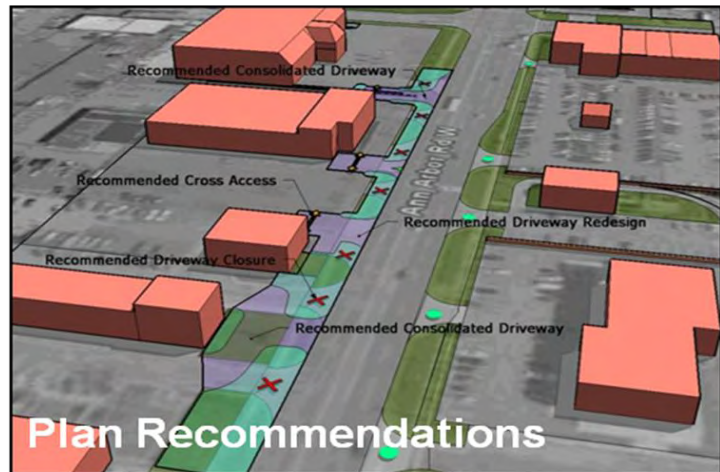
In addition to standards, specific recommendations, and ordinance language for implementation, this project has gone beyond the typical exercises of an access management project both in its incorporation of non-motorized and transit considerations and in conceptualization and consideration of the potential positive impacts of coordinated public and private investment along the corridor. Specifically, a 3-D model was prepared to simulate a concept which includes a potential reconfiguration of M-17 into a 4-lane boulevard, access and intersection reconfigurations, and intensification of land use densities in infill and redevelopment on adjacent parcels in the subarea. This illustrates the potential of this area to support a more robust transportation system that supports increased use of transit, park and ride, and pedestrian connections, to complement a redesigned roadway and access system.



A coordinated and comprehensive access management approach is essential if future development and redevelopment in the plan area is to be accommodated and traffic safety and flow in the area is to be improved. Development decisions along the plan corridor are under the purview of several agencies.

The cities and townships have jurisdiction over land use planning, zoning, site plan and subdivision review outside the corridor rights-of-way. The cities have full jurisdiction on side streets, the Washtenaw County Road Commission has jurisdiction over the township roads, and MDOT has control over improvements within the plan corridor rights-of-way. The Washtenaw Area Transportation Study (WATS) also provides input and nominates projects for programming for improvement and enhancement for all roads, including the plan corridor. This complex network of agencies makes a formal, mutually agreed upon access approval procedure a critical element for the future implementation and success of this plan. The following section establishes a formal access review procedure.

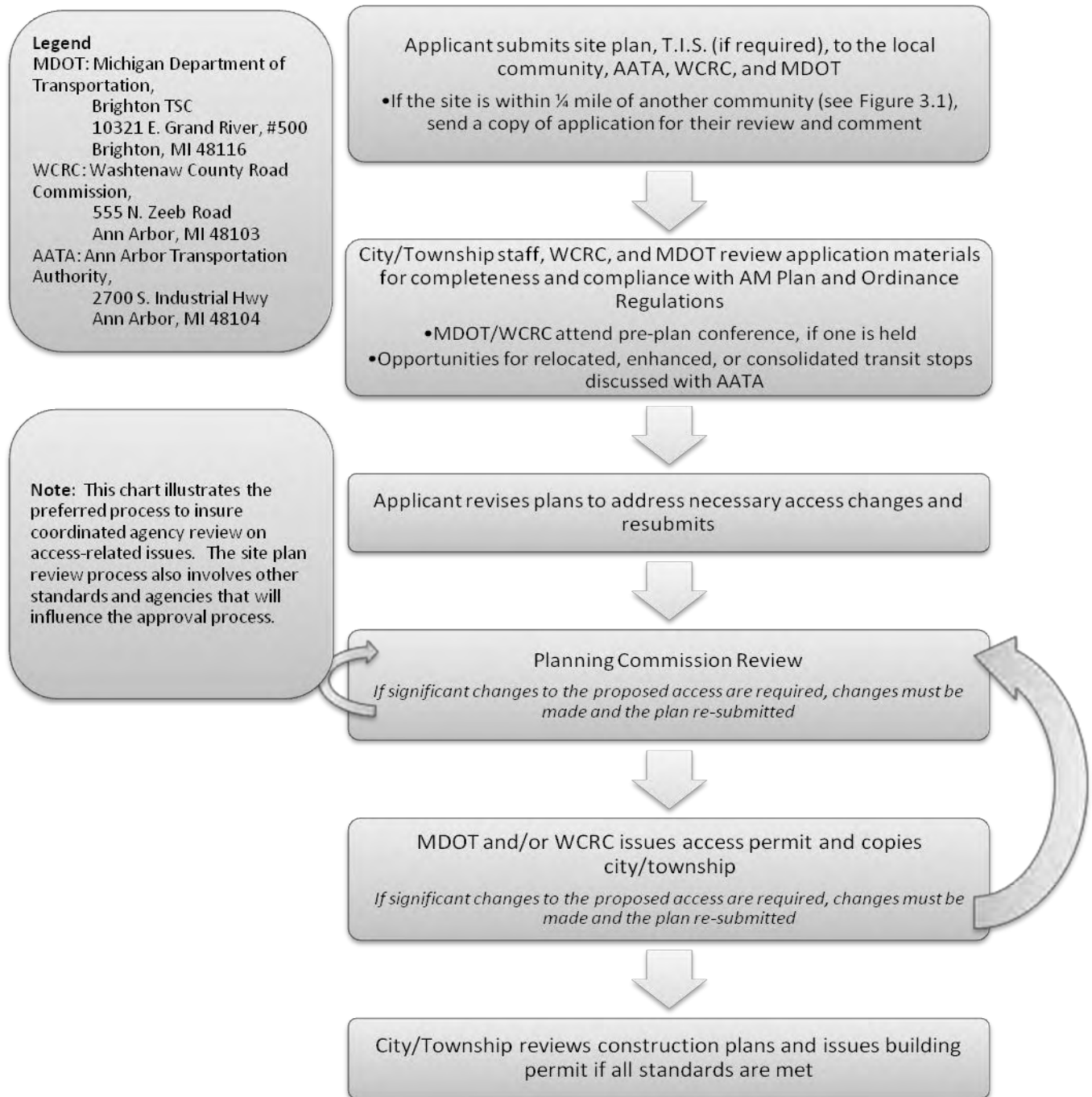
### ***Incremental Implementation Process***



### Access Review and Approval Procedure

The flow chart illustrated in this Chapter outlines the recommended process to be followed in reviewing any development proposal or any project or situation that triggers access review along the plan corridor. It provides for a coordinated review by the cities, townships, WCRC, and MDOT. The intent of the process is to ensure that the local unit's of government review of the access design and the WCRC and/or MDOT's access permit processes are coordinated to implement the recommendations of this plan and realize the maximum benefits of access management. The process provides feedback loops between the planning commissions and WCRC/MDOT as modifications are made to access and circulation.

*Figure 3.2: Access Review/Approval Procedure Flow Chart*



### Implementation Opportunities

To continue the implementation of the Washtenaw County Access Management Plan, the Steering Committee should continue to meet on a regular basis; this plan recommends a quarterly or bi-annual meeting. These meetings will provide a forum to discuss and coordinate major development proposals, traffic impact studies, right-of-way preservation and roadway cross-section designs, rezoning proposals, ordinance text amendments, local master plan updates, roadway improvements or reconstruction, non-motorized transportation, streetscape enhancement, and other issues along the corridors.

There are several types of opportunities that may arise that each offers a chance to speed up implementation of the recommendations of this plan, including:

- Road reconstruction (including resurfacing in some cases).
- Road expansion or reconfiguration.
- New development or redevelopment of a site.
- Streetscape enhancement projects.
- Establishment of a local or county funding source to cover some or all of the expense associated with closing or consolidating driveways.
- Any project that requires a site plan review.

It should be noted that the recommendations outlined in this plan can be used on other area corridors with existing or expected future access management issues. The underlying benefits obtained by maintaining good control of the number and location of commercial access points can be realized on all major roads. The community-wide access management standards in each community's ordinance amendments will allow application of the standards established in this plan throughout all four communities.



**Section \_\_\_\_ Access Management Regulations**

- (a) **Intent.** Continued development along the major roadways in the community will increase traffic volumes and introduce additional conflict points which will further erode traffic operations and increase potential for crashes. Numerous published studies and reports document the relationship between systems and traffic operations and safety. Those reports and experiences of other communities demonstrate standards on the number and placement of access points (driveways and side street intersections) that can preserve the capacity of the roadway and reduce the potential for crashes. The standards herein are based on recommendations published by various national and Michigan agencies that were refined during preparation of the Washtenaw County Access Management Plan.

The WCRC or MDOT has jurisdiction within many of the right-of-way of major roadway corridors that pass through the community, while the (*COMMUNITY*) has authority for land use and site plan decisions within individual parcels along the roadway. The access management standards were created to help ensure a collaborative process between the WCRC/MDOT and the (*COMMUNITY*) on access decisions along major roadways to implement the recommendations of the Washtenaw County Access Management Plan and other adopted (*COMMUNITY*) plans. Among the specific purposes of these regulations are to:

- (1) Preserve the capacity of the road system by limiting and controlling the number, location and design of access points and requiring alternate means of access through shared driveways, service drives, and access off cross streets in certain locations.
- (2) Encourage efficient flow of traffic by minimizing the disruption and conflicts between through traffic and turning movements.
- (3) Improve traffic safety and reduce the potential for crashes.
- (4) Avoid the proliferation of unnecessary curb cuts and driveways, and eliminate or reconfigure existing access points that do not conform to the standards herein, when the opportunities arise.
- (5) Implement the recommendations of the Washtenaw County Access Management Plan.
- (6) Required coordinated access among adjacent lands where possible.
- (7) Require demonstration that resultant parcels are accessible through compliance with the access standards herein prior to approval of any land divisions to ensure safe accessibility as required by the Land Division Act.
- (8) Avoid the need for unnecessary and costly reconstruction, which disrupts business operations and traffic flow.
- (9) Ensure efficient access by emergency vehicles.
- (10) Improve safety for pedestrians and other non-motorized travelers through reducing the number of conflict points at access crossings.

- (11) Provide landowners with reasonable access, though the access may be restricted to a shared driveway or service drive or via a side street, or the number and location of access may not be the arrangement most desired by the landowner or applicant.
  - (12) Promote a more coordinated development review process for the (*COMMUNITY*) with the WCRC and MDOT.
- (b) **Applicability.** Access spacing from intersections and other driveways shall meet the requirements of this section. The number of access points is the fewest needed to allow motorists reasonable access to the site.
- (1) All uses subject to site plan approval under Section \_\_ shall be required to comply with the requirements of this section. No building or structure shall be erected unless the access management regulations are met and maintained in connection with such building or structure.
  - (2) All subdivisions and condominium projects shall comply with the access spacing standards herein is demonstrated. Compliance with this ordinance shall be required to demonstrate that a lot is accessible as required under the Land Division Act (Act 288 of 1967, as amended).
  - (3) Any change in use that requires a site plan review per Section \_\_\_\_ shall identify the extent of compliance with the standards herein and shall submit information to the WCRC or MDOT, as applicable, to determine if a new access permit is required.
  - (4) For building or parking lot expansions, or changes in use, the Planning Commission shall determine the extent of upgrades to bring the site into greater compliance with the access standards. In making its decision, the Planning Commission shall consider the existing and projected traffic conditions, any sight distance limitations, site topography or natural features, impacts on internal site circulation, and any recommendations from the WCRC or MDOT. Required improvements may include removal or rearrangement or redesign of site access points.
  - (5) The access management regulations apply to situations where administrative site plan approval is allowed. Because of limited changes that are usually proposed on such site plans, the administrator of the site plan approval shall determine the extent of upgrades to bring the site into greater compliance with the access standards. In cases where such upgrades can not be agreed upon by the administrator and the site plan applicant, the site plan shall be forwarded to the Planning Commission for review and approval.
- (c) **Additional Submittal Information.** In addition to the submittal information required for site plan review in Section \_\_\_\_, the following shall be provided with any application for site plan or special land use review. The information listed in items (1)-(4) below shall be required with any request for a land division, subdivision plat or site condominium review.
- (1) Existing access points within three hundred (300) feet on both sides of the road frontage, and along both sides of any adjoining roads, shall be shown on the site plan, aerial photographs, plat or survey.

- (2) The applicant shall submit evidence indicating that the applicable WCRC or MDOT sight distance requirements are met.
  - (3) Dimensions between proposed and existing access points.
  - (4) Where shared access is proposed or required, a shared access and maintenance agreement shall be submitted for approval. Once approved, this agreement shall be recorded with the Washtenaw County Register of Deeds.
  - (5) Dimensions shall be provided for driveways (width, radii, throat length, length of any deceleration lanes or tapers, pavement markings and signs) and all curb radii within the site.
  - (6) The site plan shall illustrate the route and dimensioned turning movements of any expected emergency vehicles, truck traffic, tankers, delivery vehicles, waste receptacle vehicles and similar vehicles. The plan should confirm that routing the vehicles will not disrupt operations at the access points nor impede maneuvering or parking within the site.
  - (7) Location of bus stops, sidewalks, pedestrian crosswalks and bike paths.
- (d) **Review coordination.** The applicant shall provide correspondence that the site plan has been submitted to the WCRC or MDOT, as applicable, for their information and comment. Any correspondence from the WCRC or MDOT on the general access design and geometrics shall be considered during the site plan review processes. Once a final site plan has been approved by the (*COMMUNITY*), the applicant shall request an access permit from the WCRC or MDOT. The approval of a land division or site plan does not negate the responsibility of an applicant to subsequently secure access permits from the WCRC or MDOT.
- (e) **Access Management Standards.** Access points shall meet the following standards. The spacing standards specified below shall be required to be measured from all other roads and driveways with the exception of single family residential driveways. If there is a change in use from residential to a non-residential use, the Planning Commission shall require existing access to be brought into conformance with the requirements of this section. These standards are based on considerable research in Michigan and nationally, and were prepared concurrent with guidelines promoted by the MDOT.
- (1) Each lot shall be permitted one access point. This access point may consist of a shared access with an adjacent use or access via a service drive, frontage road or side street. An individual driveway may be permitted where the standards of this ordinance are met, provided such driveway is located to facilitate shared access by adjacent lots.
  - (2) The access point location shall be in accordance with the standards of this section and shall provide the opportunity for shared access with adjoining lots. Each lot developed under this ordinance shall be required to grant shared access easements to adjoining lots to allow for future shared access. Where a proposed parking lot is located adjacent to the parking lot of a similar use, there shall be a vehicular connection where feasible, as determined by the Planning Commission.
  - (3) An additional driveway may be permitted by the Planning Commission upon finding that one (1) of the conditions below exists. The additional driveway may be required to be along a side street or a shared access with an adjacent site.

- a. The site has adequate frontage to meet the spacing standards between access points listed below, and the additional access will not prevent adjacent lands from complying with the access spacing standards when such lands develop or redevelop in the future; or,
- b. A traffic impact study, prepared in accordance with accepted practices as described in this ordinance, demonstrates the site will generate over 300 trips in a peak hour or 3000 trips daily, or 400 and 4000 respectively if the site has access to a traffic signal, and the traffic study demonstrates the additional driveway will provide improved conditions for the motoring public and will not create negative impacts on through traffic flow.

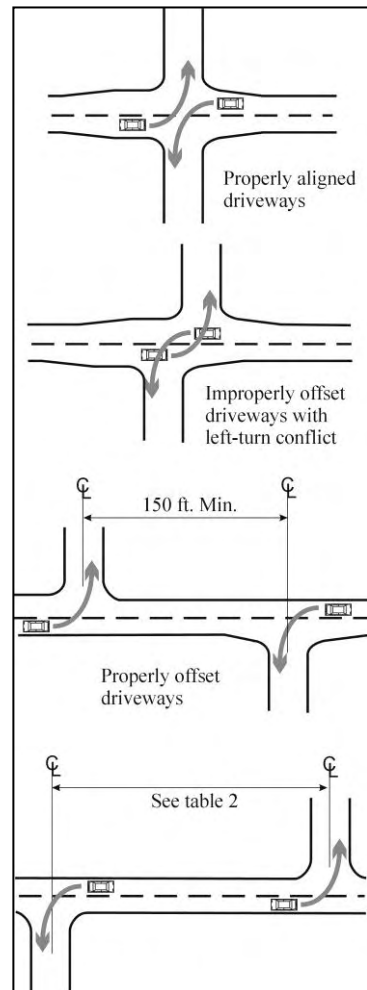
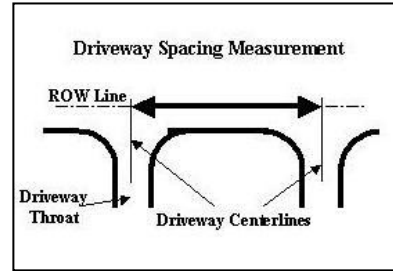
- (4) In order to comply with the accessibility requirements of the Land Division Act (PA 288 of 1967, as amended), land divisions shall not be permitted that may prevent compliance with the access location standards of this ordinance.
- (5) Access points shall provide the following spacing from other access points along the same side of the public street (measured from centerline to centerline as shown on the figure), based on the posted speed limit along the public street segment.

**Table 1  
Minimum Driveway Spacing Same Side of Road**

Posted Speed (mph)	Driveway Spacing (in feet)	
	Arterial Road	Other Roads
25	130	90
30	185	120
35	245	150
40	300	185
45	350	230
50 +	455	275

Unless greater spacing is required by MDOT, WCRC or required to meet other standards herein.

- (6) Where the subject site adjoins land that may be developed or redeveloped in the future, including adjacent lands or potential outlots, the access shall be located to ensure the adjacent site(s) can also meet the access location standards in the future.
- (8) Access points shall be aligned with driveways on the opposite side of the street or offset the distance indicated in the following table, measured centerline to centerline. The Planning Commission may reduce this to not less than 150 feet where the offsets are aligned to not create left-turn conflicts.





**Table 2**  
**Minimum Opposing Driveway Offset**

Posted Speed (mph)	Driveway Spacing (in feet)
25	255
30	325
35	425
40	525
45	630
50 +	750

- (9) Minimum spacing of access points from intersections shall be in accordance with the table below (measured from pavement edge to pavement edge as shown on the figure):

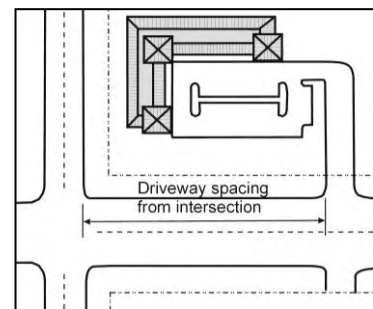
**Table 3**  
**Minimum Driveway Spacing from Intersection \***

Location of Access Point	Type of Intersecting Road	Minimum Spacing for a Full Movement Driveway**	Minimum Spacing for a Driveway Restricting Left-turns
Access along an arterial road	Expressway ramp	600	600
	Arterial	300	125
	Collector or local	200	125
Access along a collector road	Arterial	200	100
	Collector	150	100
	Local	125	100
Access along a local street	Arterial	125	75
	Collector	100	75
	Local	75	75

\* Unless greater spacing is required by MDOT, WCRC or required to meet other standards herein.

\*\* Greater spacing may be required based upon the posted speed of the road and the spacing distances required by table 1.

- (10) Where direct access consistent with the various standards above cannot be achieved, access shall be via a shared driveway or service drive or side street. In cases where access is from the side street, the access point must be located as far from an intersection as feasible.



- (f) **Sight Distance.** Driveways shall be located to provide safe sight distance, or determined by the applicable road agency.
- (g) **Public Facilities in Right-of-way.** No driveway shall interfere with municipal facilities such as street light or traffic signal poles, signs, fire hydrants, cross walks, bus loading zones, utility poles, fire alarm supports, drainage structures, or other necessary street structures.
- (h) **Shared commercial driveways, frontage roads and service drives.** Shared commercial driveways, frontage roads or rear service drives connecting two or more lots or uses shall be required in instances where the Planning Commission determines that reducing the number of

access points will have a beneficial impact on traffic operations and safety. In particular, service drives shall be required where recommended in a sub-area master plan; near existing traffic signals or near locations having potential for future signalization; where service drives may minimize the number of driveways; and along segments with a relatively high number of crashes or limited sight distance. Frontage roads or service drives shall be constructed in accordance with the following standards:

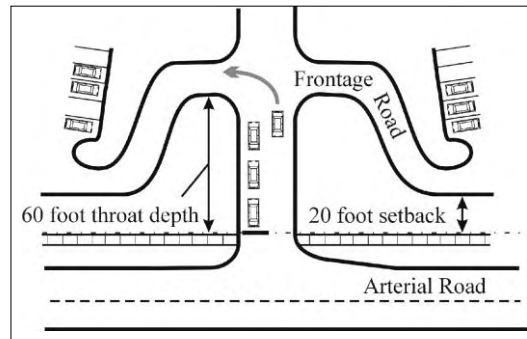
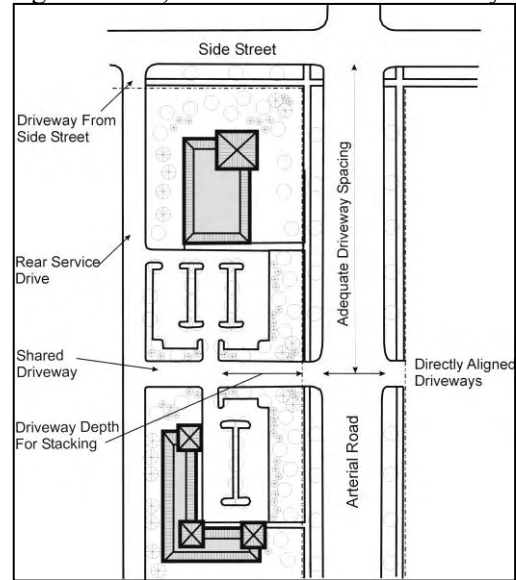
(1) Service roads shall generally be parallel or perpendicular to the front property line and may be located either in front of, adjacent to, or behind, principal buildings. In considering the most appropriate alignment for a service road, the Planning Commission shall consider the setbacks of existing buildings and anticipated traffic flow for the site.

(2) The service road shall be within an access easement permitting traffic circulation between properties. This easement shall be approved by the (COMMUNITY) and recorded with the Washtenaw County Register of Deeds. The required width shall remain free and clear of obstructions, unless otherwise approved by the Planning Commission. Each property owner shall be responsible for maintenance of the easement and service drive.

(3) Service drives and frontage roads shall be set back as far as reasonably possible from the intersection of the access driveway with the public street. A minimum of twenty (20) feet shall be maintained between the public street right-of-way and the pavement of the frontage road, with a minimum sixty (60) feet of throat depth provided at the access point, measured between the public street right-of-way and the pavement of the parallel section of the frontage road.

(4) Service roads shall have a minimum pavement width of twenty-four (24) feet and be constructed of a base, pavement and curb with gutter that is in accordance with public street standards. The Planning Commission may modify these standards based upon site conditions, anticipated traffic volumes and types of truck traffic.

(5) The service road is intended to be used exclusively for circulation. The Planning Commission may require the posting of "no parking" signs along the service road. One-way roads or two way roads constructed with additional width for parallel parking may be allowed on the side of the road closest to the building if it can be demonstrated through site plan review that parking along the service road will not significantly affect the capacity, safety or operation of the service road.



- (6) The site plan shall indicate the proposed elevation of the service road at the property line so that the (*COMMUNITY*) can maintain a record of all service road elevations and their grades can be coordinated with future developments.
  - (7) The alignment of the service drive can be refined to meet the needs of the site and anticipated traffic conditions, provided the resulting terminus allows the drive to be extended through the adjacent site(s). This may require use of aerial photographs, property line maps, topographic information and other supporting documentation.
  - (8) In cases where a shared access facility is recommended, but is not yet available, temporary direct access may be permitted, provided the plan is designed to accommodate the future service drive, and a written agreement is submitted that the temporary access will be removed by the applicant, when the alternative access system becomes available. This may require posting of a financial performance guarantee.
  - (9) With the redevelopment of existing sites where it is not possible to develop separate service drives, the Planning Commission may instead require a drive connecting parking lots.
- (i) **Modifications by Planning Commission.** Given the variation in existing physical conditions, modifications to the spacing and other standards above may be permitted by the Planning Commission as part of the site plan review process upon a finding that the following conditions apply:
- (1) Practical difficulties exist on the site that make compliance unreasonable (sight distance limitations, topography, wetlands, drain or water body, woodlands that will be preserved, existing development, existing non-conforming width, unique site configuration or shape), or existing off-site access points make it impractical to fully comply with the standards.
  - (2) The use involves an access improvement to an existing site or a new use that will not generate any more traffic than the previous use or there is only one access point that is not being changed.
  - (3) The proposed modification is consistent with the general intent of the preceding standards, the recommendations of the Washtenaw County Access Management Plan, WCRC or MDOT guidelines, and both (*COMMUNITY*) and WCRC or MDOT staff support the proposed access design.
  - (4) A traffic study has been provided, where required and warranted, that certifies the modification will improve traffic operations and safety along the roadway, and is not solely for convenience of the development. Roadway or intersection control or driveway design change improvements will be made to improve overall traffic operations prior to the project completion or occupancy of the first building.
  - (5) Indirect or shared access has been provided to the extent practical.

The Planning Commission may require that the access provided under this section be a temporary driveway that is issued for a set period of time or until an adjacent site develops allowing for shared access in accordance with this ordinance. The Planning Commission may require that a

performance guarantee or other legally binding means approved by (*COMMUNITY*) be provided to ensure the removal of the driveway upon expiration of the temporary driveway permit.

- (i) **Appeal.** The decision by the Planning Commission under this ordinance may be appealed to the Zoning Board of Appeals. In consideration of this appeal, the ZBA shall apply the standards above in addition to the other appeal criteria in Section \_\_\_\_\_.

(j) **Definitions**

*The definitions contained in this Model Ordinance may or may not include those that are generally already included in Municipal codes. They must be compared with the definitions within municipal codes and any differences need to be reconciled. Definitions may be included with access management section or placed in Definitions article of the Zoning Ordinance.*

Access - A way or means of approach to provide vehicular or pedestrian entrance or exit to a property from an abutting property or roadway, either by direct, indirect or shared means.

Access Management - The process of providing and managing reasonable access to land development while preserving the flow of traffic in terms of safety, capacity, and speed on the abutting road system.

Access Point – The point at which a driveway, service drive private road or public street intersects the public road system.

Driveway - Any entrance or exit used by vehicular traffic to or from land or buildings abutting a road. Access to unmanned utility structures shall not be regulated as a driveway under the access management standards.

Driveway, Shared - A driveway connecting two or more contiguous properties to the public road system.

Nonconforming Access - Features of the access system of a property that existed prior to the effective date of this Ordinance and that do not conform with the requirements of this Ordinance.

Peak Hour - The hour of highest volume of traffic entering and exiting the site in the morning (a.m.) or the afternoon (p.m.).

Reasonable Access - The minimum number of access connections, direct or indirect, necessary to provide safe access to and from a public road, as consistent with the purpose and intent of this Ordinance and any other applicable plans and policies of the (*COMMUNITY*), with Act 200 of 1969 or with other applicable law of the State of Michigan. Reasonable access does not necessarily mean direct access.

Road - A way for vehicular traffic, whether designated as a “street,” “highway,” “thoroughfare,” “avenue,” “boulevard,” “lane,” “cul-de-sac” or otherwise designated, and includes the entire area within the right-of-way.

Road, Arterial - Roads serving comparatively large volumes of long-distance or through traffic and which also provide access to abutting properties.

Road, Collector - Roads that provide access to abutting properties and which link development roads, collector roads, or other local roads to major traffic roads.

Road, Local - Roads intended to provide access to abutting properties, accommodate lower traffic volumes and provide mobility within a local neighborhood.

Service Road (also Frontage Road and Rear Service Drive) - A public or private road, auxiliary to and normally located parallel to an arterial road, that maintains local road continuity and provides access to properties adjacent to the controlled access facility.

Sight Distance – The distance that the driver of a stopped vehicle can view along a roadway to decide when to enter or cross an intersecting road. Safe sight distance shall be a distance that a driver can view that is sufficient for perception reaction time and to make a turning movement onto the roadway and accelerate to posted speed prior to a vehicle entering the view to reach the point of the driver.

Temporary Access – A local street or private road typically in front of principal buildings and parallel to an arterial for travel between abutting properties for the purpose of controlling access to the arterial.

# Chapter 4: City of Ann Arbor

## Introduction

About 6 of the corridor's 17 miles run through the city of Ann Arbor. The I-94 Business Loop goes by many names in Ann Arbor, including Jackson Road from I-94 east to Dexter, West and East Huron Street from Dexter to Washtenaw, and Washtenaw Avenue from East Huron east to US-23. Through Ann Arbor, I-94 Business Loop is designated BR US-23, while Washtenaw Avenue also extends east into Pittsfield and Ypsilanti Townships and City of Ypsilanti under the designation M-17. This Chapter of the Plan includes analysis and recommendations for the corridor segment in the city of Ann Arbor. Through Steering Committee meetings and public involvement during the Plan project, it became obvious that a necessary and logical extension of an additional 1,500 feet to the west of the western end of the corridor (to the eastbound I-94/Jackson exit ramp) was needed. The recommendations for the additional section can be found later in this Chapter, in the Recommendations section under *Western Plan Area Limits – Additional Recommendations*.

## Existing Conditions

### Overview of Land Use

Within Ann Arbor, a wide range of land uses and styles of development line the corridor, from suburban commercial at either end to historic neighborhoods and downtown Ann Arbor in the center. At the west end, of these is a concentration of commercial centers and businesses adjacent to the freeway interchange. Travelling eastward, Jackson and West Huron, from Maple to just west of downtown, traverse established single family neighborhoods and some multiple family developments and senior facilities just west of the downtown. Downtown mixed-use and the University of Michigan Central Campus are located along East Huron and Washtenaw to approximately University Avenue. Past the university area to Platt Road, the predominant land use is historic single family residential neighborhoods with a commercial and office node at Stadium Avenue. From Platt Road to the eastern city limits at US-23, the corridor is lined with suburban-style commercial development (buildings behind surface parking lots), including the Arborland Mall area.



**Above:** an existing frontage road in the city was designed with minimal throat depth; only two cars waiting to turn out block the route for cars turning into the driveway and crossing the driveway on the frontage road.

**2006 Average Daily Traffic (ADT) along the Plan corridor in the City of Ann Arbor**

Road	ADT
<b>Jackson:</b>	
I-94 - Maple	24,200
Maple – Dexter**	14,200
<b>West Huron:</b>	
Dexter-Main	19,600
<b>East Huron:</b>	
Main-Washtenaw	20,000
<b>Washtenaw:</b>	
Geddes-Vinewood	18,000
Glenwood-Huron Pkwy	39,900
Huron Pkwy-US-23	37,700

Source: WATS, MDOT

\*\* See additional discussion of potential road diet for this segment later in this chapter.

Roadway Conditions

Average Daily Traffic (ADT) along the corridor ranges from 14,200 to 39,900. Volumes are generally within the capacity of four to five lane streets, with additional dedicated turn lanes provided at several intersections (see ADT table and Map 1.2). The lower ADT along Jackson between Maple and Dexter may accommodate a 4 lane to 3-lane (center turn lane) conversion in the future. In addition, two portions of Washtenaw Ave in the city’s portion of the Plan corridor have a raised island in the center lane area, generally in place to restrict left turns. Posted speed limits along the corridor range from 30 MPH to 45 MPH. Two intersections with the highest number of crashes in 2006 are Jackson / Maple and Washtenaw / Stadium (see Figure 2.2).

Access Conditions

Access point frequency varies, with the highest concentrations focused at the west end (Jackson Ave near Maple Road), and the east end (Washtenaw Ave from Platt Road east to US-23 Interchange). Uncoordinated development in these two areas has led to a pattern of numerous individual commercial businesses with multiple access points and few connections across property lines, especially near signalized intersections.

The remainder of the corridor is primarily either residential, downtown, or University of Michigan campus. Downtown Ann Arbor and the University of Michigan campus areas already have very highly restricted access (or no direct access) to the Plan corridor.

Non-Motorized Conditions

Most of the corridor in the city has some type of non-motorized facility on both sides of the street, ranging from a narrow sidewalk to a wide, multi-use pathway. There are no on-street bike lanes, except along several cross streets.

High volumes of pedestrians and bicyclists cross the Plan corridor throughout the city, especially near the following:

- Transit stops that have high volumes of boardings and deboardings.
- University facilities and/or student housing areas.
- Downtown.
- Near the YMCA just west of downtown and the County Recreation Center west of Platt.

Two non-motorized overpasses cross Washtenaw Ave to connect University facilities on the east and west sides of the street. Construction of a multi-use pathway is planned for 2008 along the north side of Washtenaw Ave, to extend the pathway from Manchester Street to Platt Road.

A more detailed study of non-motorized crossing patterns and potential alignment across the US-23 / Washtenaw interchange (US-23/M-17 Non-Motorized Crossing Study) offers an examination of existing conditions and potential mitigation for this gap.

#### Transit Conditions

AATA and the MRide systems offer multiple routes along the corridor. The University of Michigan's central campus bus terminal is located just west of the intersection of Washtenaw Ave and Geddes Ave, on N. University Ave. Many buses heading westbound/inbound to this terminal turn left at the unsignalized intersection from westbound E. Huron Ave south on to Fletcher Street that separates campus from student housing areas.

#### Conditions of Select Intersections

- **Jackson Avenue/Maple Road Intersection.** This intersection is located in a commercial area, with an average daily traffic (ADT) of between 14,200 and 24,200 along Jackson Avenue. Jackson Avenue is five lanes west of Maple Road and four lanes east of Maple Road, while Maple Road is five lanes north of Stadium Boulevard. Both roads have additional lanes at key intersections. Intersection turning radii are quite large, resulting in an exceptionally wide expanse of pavement at the intersection, which creates long crosswalks (one of which is approximately 130 feet long), and that expose pedestrians to traffic for a very long time.

The Jackson Avenue/Maple Road Intersection is very close to the South Maple Road/West Stadium Boulevard intersection (480 feet to the south) and relatively close to the North Maple Road/Dexter Avenue intersection (1,700 feet to the north).

Turning movements are complex, with a significant number of left turns from all approaches. Traffic queuing at the signals (which are multi-phase) extend past the driveways close to the intersection and through the intersection of Stadium and Maple just to the south, and is likely a contributing cause of crashes. There were 38 crashes at the Jackson Avenue/Maple Road and Maple Road/Stadium Boulevard intersections in 2006, comparable to the previous two years. The types of crashes were primarily rear end (42.1



**Above:** an example of one of several gaps in the city's non-motorized system. **Below:** a more recent development along Washtenaw includes on-site bike racks and a landscaped non-motorized connection from the public system in to the development.





percent) and angle crashes (23.7 percent), suggesting congestion may be a contributing factor. There were also several multiple vehicle crashes just to the west of the Jackson Avenue/Maple Road intersection, which appear to be related to vehicle conflicts entering/exiting the driveways on Jackson Avenue closest to the intersection.

- ***Jackson Avenue/Dexter Avenue/West Huron Street Intersection.*** This signalized intersection forms an unusual five-leg configuration with Jackson Avenue, Dexter Avenue, West Huron Street, North Revena Boulevard, and South Revena Boulevard. Jackson Avenue, with an ADT of 14,200, converges with Dexter Avenue at a sharp angle. Jackson Avenue and West Huron Street (19,600 ADT) are four-lane roadways with a posted speed limit of 35 mph. Revena Boulevard is a two-lane local street with a median. Dexter Avenue widens from two lanes to three at the intersection.

Though more than half the crashes (55.6 percent) are rear-end crashes, crash numbers for 2006 are relatively low (9). However, it may be beneficial to provide a more standardized intersection to reduce conflict points and potential driver confusion. There are 15 driveways that add to conflicts near the intersection, including those to the west at the gas station.

- ***Washtenaw Avenue/Stadium Boulevard Intersection.*** This signalized intersection forms a severely skewed three-way intersection and has a local street (Bedford Road) and several driveways very close to the signal. Washtenaw Avenue is a four-lane roadway with an ADT of 17,400 that intersects with Stadium Boulevard and continues eastward as a five-lane roadway with an ADT of 35,300. The posted speed limit along Washtenaw Avenue is 35 mph northwest of the intersection and 45 mph east of the intersection. In 2006, 77.8 percent of the 27 crashes at this intersection were rear-end crashes. This suggests that congestion may also be a contributing factor (in addition to the geometric issues).

There are changes in grade at the intersection, as Washtenaw Avenue descends from the northwest to intersect Stadium Boulevard, and then curves to the east.

## Recommendations

### Recommendations for Local Implementation

In concert with this Plan's recommended development review procedure, the City of Ann Arbor staff has prepared an amendment to the city code to establish city-wide access management standards as part of this project. The ordinance will work together with this Plan, using both the access standards and Plan recommendations, to guide access decisions access along the corridor and throughout the city by requiring applicants to meet access-related standards and conform to the intent of this Plan.

In addition to the amendment of the city's code, the city will include this Plan in whole or by reference in its Master Plan to solidify the basis for the ordinance and emphasize the importance of the land use-transportation link. Furthermore, the city's new Transportation Plan should include a section outlining the benefits of access management to all major roads in the city with reference to this Plan. The policy will outline 'triggers' when Ann Arbor should closely examine access, such as prior to the design stage of road projects, to ensure every opportunity to improve access in the City is evaluated. Access management can play a vital role in improving the safety and efficiency of the city's transportation network and supporting future growth and planned land uses.

### Recommendations for Access, Non-Motorized, and Transit

Map tiles 1 through 12 and the western plan area expansion recommendations on the following pages illustrate specific recommendations for access management and improving the relationship between automobile access and non-motorized and transit facilities. As outlined in Chapter 3, these recommendations are based on state and national research, evaluation of the existing conditions along the corridor, and the extensive experience and expertise of the Plan team with access management implementation.

Because the recommendations are based on the existing conditions at the time this Plan was developed, a significant change in conditions on a site should prompt a thorough consideration of any proposed project in the context of the policies, standards, and goals of this Plan. The city, MDOT, and members of the Steering Committee will play an important role in reviewing development proposals along this corridor to promote the most efficient, and safe configuration of access.

*The City of Ann Arbor's corridor segment is illustrated on Map Tiles 1 through 12, which illustrate specific recommendations for access management including how to improve the relationship between automobile access and non-motorized and transit facilities. All the Map Tiles are located after Chapter 7.*

*Through Steering Committee meetings and public involvement during the Plan project, it was determined that a logical extension of an additional 1,500 feet to the west of the western end of the corridor (to the eastbound I-94/Jackson exit ramp) was needed (see next page).*

**Strip Commercial/Multiple Family Areas.** Many opportunities exist in the two commercial strip areas where cross-access could be provided relatively easily in terms of physical conditions (parking areas in close proximity, no significant grade change). In the few areas with clusters of multiple-family residential, cross-access between parking areas to minimize the number of direct access onto the trunkline is recommended. Cooperation between property owners is needed to implement shared access. While limitations are usually physically easy to overcome, politically based limitations are often more difficult when making access connections across property lines.

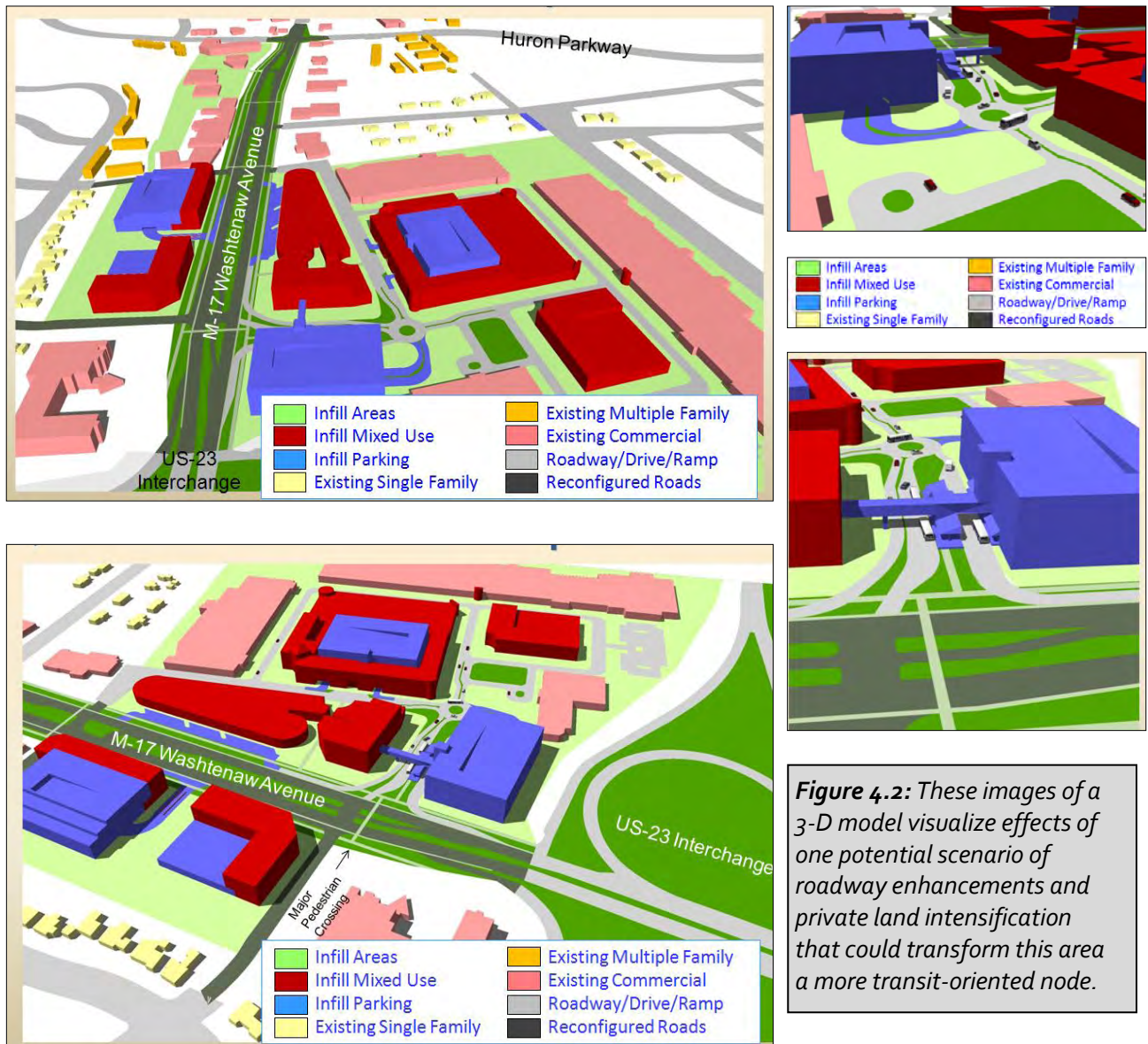
**Jackson Avenue Future Road Diet (Maple to Dexter).** While projected volumes along Jackson Avenue from Maple Road east to Dexter Road may not currently support a 4-to-3 road diet, a future conversion may be feasible if ADT continues to stay below 18,000 vehicles. A detailed analysis of traffic and transit volumes and patterns would be needed to evaluate potential benefits of safety and traffic flow against the possibility of increased, unacceptable congestion.

*Figure 4.1: Western Plan Area Limits – Additional Recommendations*



Washtenaw Avenue Boulevard and Land Use Intensification Simulation

One simulated concept was identified and contemplated by this Plan as an example of melding together a public roadway design that maximizes access management, non-motorized, and transit facilities with a transit-friendly intensification and design of adjacent private land areas. This concept, generally located on tiles 11 and 12 between Huron Parkway and the US-23 interchange, includes reconfiguration of Washtenaw (using mostly existing right of way on the south side of the street) as a four-lane boulevard with an average width 45' median, on-street bike lanes, and indirect and direct left turns through median crossovers. To simulate the potential private projects that could accompany this public investment, some existing commercial areas were shown with higher-density, urban-style mixed-use redevelopment and infill, including parking structures, open space, and integrated transit facilities. This simulation is intended only as a visualization of the opportunities that exist for this segment of the corridor, and would require detailed studies for road alignment and environmental impact, adjustments to local regulations to allow the private redevelopment as shown, and public involvement to gather input regarding any final design.



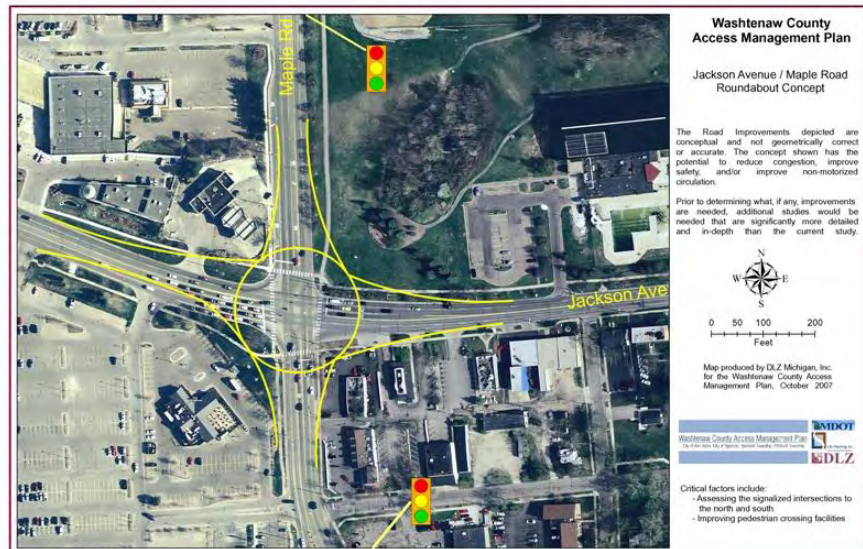
**Figure 4.2:** These images of a 3-D model visualize effects of one potential scenario of roadway enhancements and private land intensification that could transform this area a more transit-oriented node.



### Intersection Concepts

Several intersections throughout the Plan area were identified by the Steering Committee as having perceived problems with traffic congestion, crashes, and/or non-motorized and transit access. The following discussions of crash mitigation and intersection improvement concepts is intended to simply identify potential short- and long-term fixes to existing problems. Many more steps will be needed before any improvements will take place, including a more detailed study of traffic movements and volumes, improvement impacts, and costs.

- **Jackson Avenue/Maple Road Intersection.** A modern roundabout at this intersection may offer a viable option to relieve the congestion and congestion-related crashes, since roundabouts can offer much better performance at locations where there are a substantial number of left turns. A roundabout could contribute to a



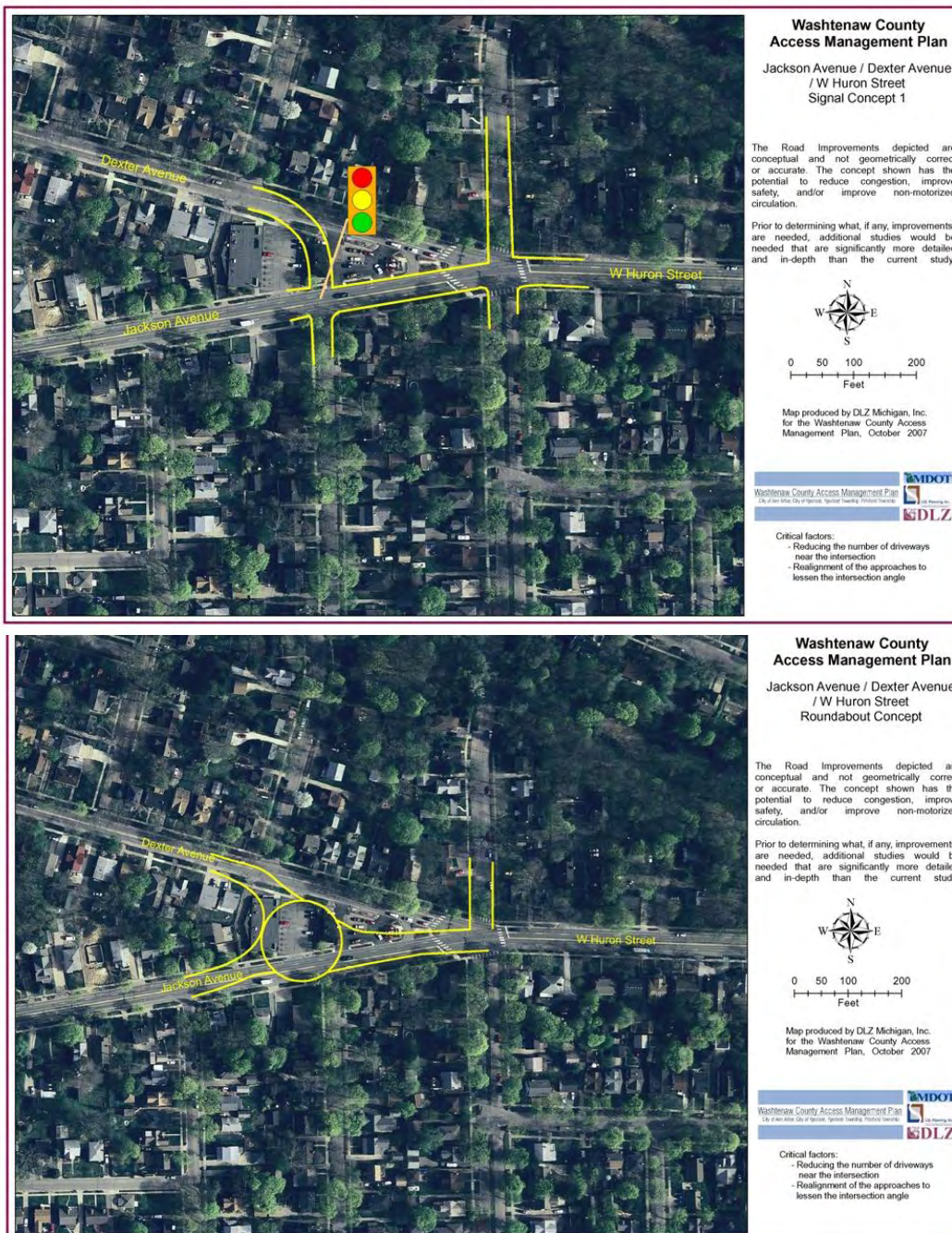
reduction in queuing by providing a slow, smooth and continuous progression of traffic. In addition, a properly designed roundabout can significantly reduce the potential number of and severity of crashes since there are fewer conflict points and there are much lower circulating speeds at the intersection. Pedestrian crossings would be constructed around the perimeter of the roundabout and would connect to the existing sidewalks. Motorists would be concerned with pedestrians in shorter crosswalks that are separated from vehicle traffic in the roundabout's circulating roadway. This would allow pedestrians to cross the intersection more efficiently and safely.

Though additional right-of-way would be needed, there appears to be an opportunity to construct a roundabout without causing significant impacts. In order to assess the feasibility of a modern roundabout intersection, peak hour turning movement counts would be needed from which an analysis can determine optimal size, number of lanes, position, and level of service to accommodate existing and projected future traffic.

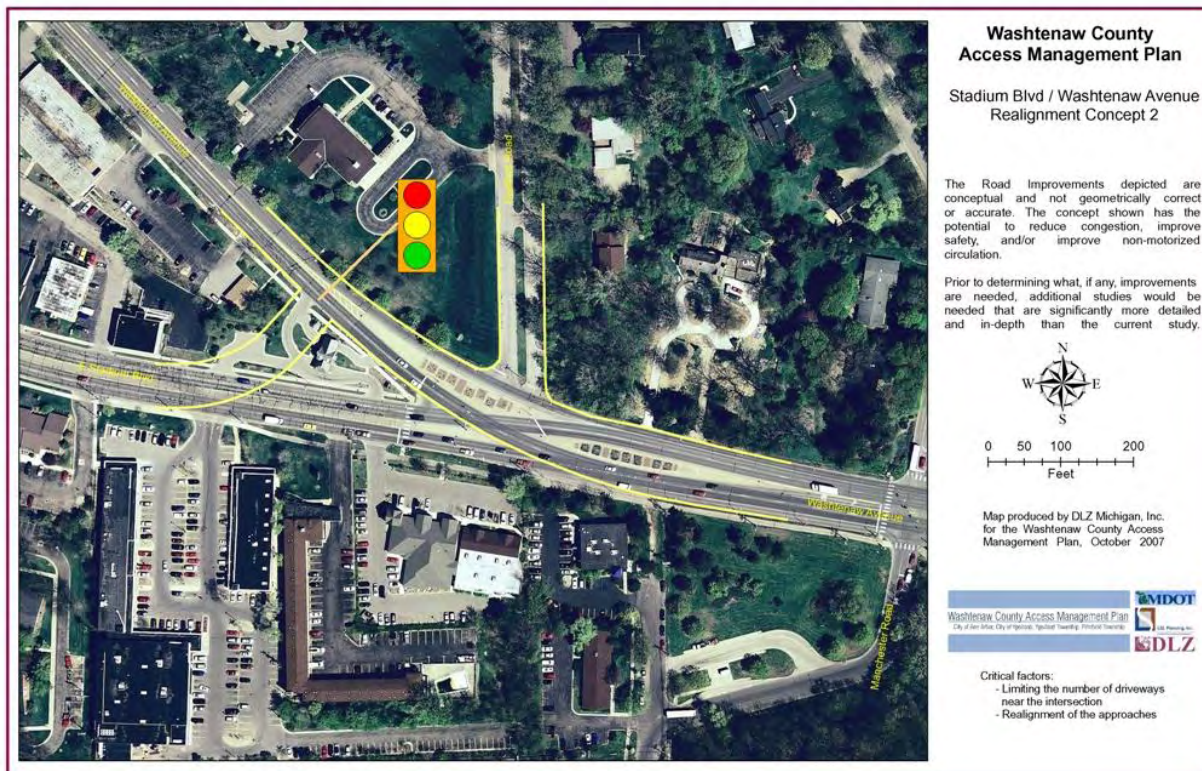
Additionally, observations have indicated that there are problems with traffic queues blocking the intersection from the signalized South Maple Road/West Stadium Boulevard intersection. A more detailed analysis of the Jackson Avenue/Maple Road intersection to determine the feasibility of a roundabout would also require an examination of the relationship of this intersection to the adjacent north and south intersections.

Driveways west of, and close to, the intersection should be closed to reduce conflicts near the intersection. Vehicles would use the next available driveways to the west, which are connected to the same parking areas.

- **Jackson Avenue/Dexter Avenue/West Huron Street Intersection.** Options to improve the intersection include a realignment of Dexter Avenue to intersect perpendicular to Jackson Avenue (shown at middle of page). Alternately, Jackson Avenue could be realigned to intersect perpendicular to Dexter Avenue. A third option would be to investigate the feasibility of a modern roundabout intersection (shown at bottom of page). Any of the three options would require use of property west of the intersection. A short-term option would include a determination of which driveways could be closed and consolidated in a way that would have the greatest beneficial impact to the intersection. For example, low volume residential driveways would have the least impact and may not need to be closed or consolidated, while driveways of high-volume traffic generators would have the most impact and should be closed or consolidated.



**Washtenaw Avenue/Stadium Boulevard Intersection.** Clearly the improvement with the most benefit would be to lessen the skew angle at this intersection. While there are a number of options for accomplishing this, all would require purchase of right-of-way. One option explored is a modern roundabout. It is likely that the traffic volumes could be accommodated by a modern roundabout and there may be adequate room to physically construct one, however a modern roundabout designed to meet all standards may have significant right-of-way impacts. The Stadium Boulevard, Washtenaw Avenue, and Bedford Road legs would require major realignment on the approaches. The difference in grade could be minimized with the construction of a roundabout, however this realignment is likely to have right-of-way impacts that would be unacceptable. Other possible solutions exist, all of which require at least some realignment to reduce the skew angle. One possible option includes a realignment of Washtenaw Avenue to intersect perpendicular to Stadium Boulevard. Alternately, Stadium Boulevard could be realigned to intersect perpendicular to Washtenaw Avenue. Additionally, the realignment of Bedford Road and construction of an alternate access point on Washtenaw Avenue for both Bedford Road and the building in the northwest quadrant could be considered.







# Chapter 5: Charter Township of Pittsfield

## Introduction.

Portions of Washtenaw Avenue (M-17) corridor from US-23 east to Golfside Drive are located within Pittsfield Township. This chapter of the Plan includes analysis and recommendations for the corridor segment in Pittsfield Township. This segment of the corridor shares a boundary with the City of Ann Arbor on the west, and Ypsilanti Township on the east.



## Existing Conditions

### Overview of Land Use

M-17 in the Charter Township of Pittsfield has a variety of land uses along the one mile segment, from single- and multiple- family residential to commercial and office. The western end of the Township, at Hogback/Carpenter and M-17, has a more suburban-style commercial node. From that point east, there is multiple-family residential and commercial on the north side of the road and single-family and office uses on the south side of the road, to approximately Foster Road. From Foster, west to Golfside, commercial uses occupy both sides of the street.



### Roadway Conditions

Average Daily Traffic (ADT) along the corridor is approximately 30,000. The volume is generally within the capacity of five lanes (see data table on the right and Figure 1.2), with additional dedicated turn lanes provided at several intersections. The posted speed limit is 40 MPH (see Figure 2.1). Two intersections with the highest number of crashes in 2006 are Washtenaw/Hogback-Carpenter and Washtenaw/Golfside (see Figure 2.2). Traffic signals at the US-23 southbound exit ramp and US-23 northbound exit ramp are in very close proximity to the adjacent signalized intersections to the west (400 feet) and to the east (200 feet), respectively.

**2006 Average Daily Traffic (ADT) along the Plan corridor in the Charter Township of Pittsfield**

Road	ADT
<b>Washtenaw:</b>	
US-23-Golfside	30,000

*Source: WATS, MDOT*

### Access Conditions

Land uses patterns in Pittsfield Township along the Plan corridor results in most of the commercial access points being located around the commercial node at the intersection of Hogback/

Carpenter and Washtenaw, and from Foster Road east to Golfside Drive. Residential driveways dominate the remainder of the corridor, with a few shared commercial drives and access to side streets. Uncoordinated development in these two areas led to a pattern of numerous individual commercial businesses with multiple access points and few connections across property lines, especially near the Hogback/Carpenter and Golfside signalized intersections. Opportunities exist on the east end of this segment of the corridor where cross-access could be provided relatively easily (parking areas close proximity, no significant grade change), and some potential exists for the formation of rear service drives on the north and south sides of Washtenaw at Golfside.



**Above:** many of the businesses along the corridor in the township have shallow lots, no parking setbacks and no throat depth. **Below:** one example of the several opportunities that exist where cross-access could be constructed without significant cost.



#### Non-Motorized Conditions

Some segments of the Plan have a sidewalk on one or both sides of the street. As new development and redevelopment occurs, the Township's regulations will require current gaps in the non-motorized facilities network to be filled in, to provide continuous access between properties and also to transit stops. A non-motorized off-street pathway is scheduled to be constructed on the north side of Washtenaw in 2008, between approximately Dayton Drive and Hawks Avenue. No segments of the Plan corridor in the township currently have on-street bike lanes.

High volumes of pedestrians and bicyclists cross the Plan corridor in several key points throughout the township, namely at transit stops that have high volumes of boardings and deboardings such as the stops across from Glencoe Apartments and Ypsi-Arbor Bowl (located just east outside of the township limits).

A detailed study of non-motorized crossing patterns and potential configuration of future facilities across the US-23 / Washtenaw interchange (US-23/M-17 Non-Motorized Crossing Study) was completed separate from this Plan, and should be referenced for a more detailed examination of existing conditions and potential mitigation for this critical gap in the area's non-motorized facilities.

#### Transit Conditions

AATA offers multiple bus routes along the corridor. In addition, several locations in and adjacent to the township have the potential to serve as park-and-ride lots, including Arborland (expanded facility), the Lutheran Church east of the County Service Center, and the Ypsi-Arbor Bowl area. Long-term use of these sites for park-and-ride should include upgrades to the existing access points to include design elements to handle higher volumes of traffic, buses, and to promote safety for non-motorized crossings.

Conditions of Select Intersections

- **Washtenaw Avenue/US-23 Ramps/Carpenter Road Intersection.** Washtenaw Avenue is a five-lane roadway with a posted speed limit of 40 mph and an ADT of 39,900 west of the Carpenter Road/Hogback Road intersection. East of the intersection, the ADT is somewhat lower ( 30,000). In 2006, this intersection had the highest number of crashes (70) along the corridor. Factors that may have contributed to crashes include high traffic volumes, congestion, complex signalization and lane assignments (multiple turning lanes), close proximity of driveways, and close proximity of the two intersections.

During site visits, it was observed that traffic queuing from the signal for eastbound traffic at Hogback Road/Carpenter Road often blocked the off ramp traffic, especially those attempting to enter a left turn lane across two lanes of traffic to access northbound Hogback Road, the location of the Washtenaw County Service Center. Right turns on red are very difficult and traffic is often blocked even when the signal is green. The crash history shows that 88.6 percent of the crashes are rear-end, side-swipe, and angle crashes, suggesting that congestion as well as geometry is a factor. This location is not conducive to pedestrian or bicycle movements due to the free flow of the US-23 ramps, complex signalization, high traffic volumes, and a wide roadway cross section.



**Above:** an example of one of several gaps in the township’s non-motorized system. **Below:** the non-motorized crossing of the M-17/US-23 interchange has been studied in-depth as part of a separate study, and still remains a critical gap.



*Pittsfield Township’s corridor segment is illustrated on Map Tiles 12 through 14, which illustrate specific recommendations for access management including how to improve the relationship between automobile access and non-motorized and transit facilities. All the Map Tiles are located after Chapter 7.*

**Recommendations**

Recommendations for Local Implementation

In concert with this plan’s recommended development review procedure, Pittsfield Township staff has prepared an amendment to its zoning ordinance to ensure that the current comprehensive set of access management standards reflects current best practices as part of this project. The township participated in a project similar to this plan for the US-12 corridor in the southern portion of the township, which established a community-wide zoning ordinance. The current ordinance, with minor revisions, will work together with both plans, using both the access standards and plan recommendations to continue to guide access decisions access along these corridors and throughout the rest of the township.



**Above:** *although some connections between parking areas exist, they are often poorly defined.*

In addition to the amendment of the township's code, the township should include this plan in whole or by reference in its Master Plan to further solidify the basis for the ordinance and emphasize the importance of the land use-transportation link.

*Recommendations for Access, Non-Motorized, and Transit*

The following pages include map tiles 12 through 14, which illustrate specific recommendations for access management including how to improve the relationship between automobile access and non-motorized and transit facilities. As outlined in Chapter 3: Using the Plan, these recommendations are based on state and national research, a thorough review of the existing conditions along the corridor, and the extensive experience and expertise of the Plan team with access management implementation across the state.

Because the recommendations are based on the existing conditions at the time this plan was developed, a significant change in conditions on a site should prompt a thorough consideration of any proposed project in the context of the policies, standards, and goals of this plan. The township, MDOT, and members of the Steering Committee will play an important role in reviewing development proposals along this corridor to promote the most efficient, and safe configuration of access.

### Intersection Concepts

Several intersections throughout the Plan area were identified by the Steering Committee as having perceived problems with traffic congestion, crashes, and/or non-motorized and transit access. The following discussion of crash mitigation and intersection improvement concepts is intended to simply identify potential short- and long-term fixes to existing problems. Many more steps will be needed before any improvements will take place, including a more detailed study of traffic movements and volumes, improvement impacts, and costs.

- **Washtenaw Avenue/US-23 Ramps/Carpenter Road Intersection.** Many possibilities for mitigation exist for the interchange and the adjacent intersections, however only two are presented here. Before any configuration is chosen, an interchange feasibility study would be conducted. One possible configuration would realign the NB US-23 off ramp to a point as far west as possible and make it perpendicular to Washtenaw Avenue in order to maximize a driver's line of sight. An analysis of current turning movements throughout the day to adjust and coordinate the signal timing of this intersection may improve traffic flow to a limited extent. Another possibility to significantly improve traffic operations and reduce the potential for crashes would be to investigate the installation of a series of modern roundabouts at the intersection and the interchange. These concepts are illustrated and on the next page.

It appears as though there may be adequate space to construct roundabouts at this location without major impacts to existing buildings. However, it should be noted that the turning movements would need to be investigated in greater detail to ensure the design is developed correctly. Given the complexity and volume of turning movements, the design should be prepared by an experienced expert. It should also be noted that with a reconfiguration of the interchange there would be additional opportunities for development and/or an additional park and ride area in the space that would become available.

Any new configuration for the interchange should address the following problems:

- The number, and severity of crashes
- The close proximity of adjacent signalized intersections
- The close proximity of driveways
- The Lack of connectivity for pedestrian and bicycle facilities
- The complexity of signal phasing and turning movements

For a more detailed analysis and recommended non-motorized crossing alignments, refer to the US-23/Washtenaw Interchange Non-Motorized Crossing Study.

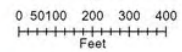


**Washtenaw County  
Access Management Plan**

**Washtenaw Avenue / US-23  
Diamond Concept**

The Road Improvements depicted are conceptual and not geometrically correct or accurate. The concept shown has the potential to reduce congestion, improve safety, and/or improve non-motorized circulation.

Prior to determining what, if any, improvements are needed, additional studies would be needed that are significantly more detailed and in-depth than the current study.



Map produced by DLZ Michigan, Inc.  
for the Washtenaw County Access  
Management Plan, October 2007



- Critical factors:**
- Increase distance between intersections
  - Reduce the number of driveways close to intersections or each other
  - Increase intersection safety through redesign

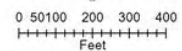


**Washtenaw County  
Access Management Plan**

**Washtenaw Avenue / US-23  
Roundabouts Concept**

The Road Improvements depicted are conceptual and not geometrically correct or accurate. The concept shown has the potential to reduce congestion, improve safety, and/or improve non-motorized circulation.

Prior to determining what, if any, improvements are needed, additional studies would be needed that are significantly more detailed and in-depth than the current study.



Map produced by DLZ Michigan, Inc.  
for the Washtenaw County Access  
Management Plan, October 2007



- Critical factors:**
- Increase distance between intersections
  - Reduce the number of driveways close to intersections or each other
  - Increase intersection safety through redesign

# Chapter 6: Charter Township of Ypsilanti

## Introduction

About seven miles of the corridor are in Ypsilanti Township. Washtenaw Avenue from Golfside Drive to Hewitt Road (west of the City of Ypsilanti), Michigan Avenue from Ecorse Road east to US-12, and Ecorse Road from Michigan Avenue south and east to US-12 are each within the township limits. Washtenaw and Ecorse through the township are also designated M-17, and the entire route of Michigan Avenue through the Township is designated Business US-12. Pittsfield Township borders this corridor segment to the west, with the City of Ypsilanti segment is located in the middle of Ypsilanti Township's two segments.



## Existing Conditions

### Overview of Land Use

M-17 (Washtenaw Avenue) in the western part of Ypsilanti Township has a mixture of new and old commercial strip development, with primarily commercial land uses and a few connections to multiple-family residential. M-17 (Ecorse Road) in the eastern part of the township includes a wide variety of uses including single family, commercial, institutional, and industrial along its length, with most development dating back several decades. BUS US-12 includes a more suburban style development pattern, with large setbacks and lot areas including some more recent developments; the land uses include single family residential, mobile home parks, commercial, and industrial uses.

### Roadway Conditions

Average Daily Traffic (ADT) along the corridor ranges from 27,800 along Washtenaw Avenue to 10,500 on Ecorse Road (see data table on the next page and Figure 1.2). Volumes are generally in the capacity of four to five lanes, with additional dedicated turn lanes provided at several intersections. Posted speed limits along the corridor range from 35 MPH to 55 MPH (see Figure 2.1).



**Above:** one example of a single business with multiple (4) closely spaced access points along Michigan Avenue.



**2006 Average Daily Traffic (ADT) along the Plan corridor in the Charter Township of Ypsilanti**

Road	ADT
<b>Washtenaw:</b>	
Golfside-Hewitt	27,800
<b>Michigan:</b>	
Ecorse-US-12	16,400
<b>Ecorse:</b>	
Michigan-Maus	10,900
Maus-US-12	10,500

*Source: WATS, MDOT*

Access Conditions

The frequency of access points on the Plan corridor varies across the three segments in Ypsilanti Township.

- **Washtenaw Avenue segment** has a high frequency of access points along its entire length in the township, with an uncoordinated development pattern, multiple access points per property, and shallow, narrow commercial lots. Many opportunities exist in this segment where cross-access and service drives could be provided relatively easily (parking areas close proximity, no significant grade change, properties extending behind other businesses).
- **Michigan Avenue segment** has a lower frequency of access points (especially on the eastern end) due in part to larger parcels and a more ex-urban pattern of commercial and industrial development. However, many unnecessary and poorly spaced access points still exist that should be closed, consolidated, or redesigned as opportunities arise.
- **Ecorse Road segment** has a high frequency of access points along its length, with older, urban style neighborhood commercial development that typically includes 2-4 access points for each business. Most of the businesses are located on very shallow lots (many with 100' or less of depth) with at least one side of the property accessing a local/side street.



**Above and below:**  
opportunities exist along the corridor for simple connection of parking areas for shared access and potential consolidation of driveways.



Non-Motorized Conditions

Non-motorized facilities vary only slightly between the three corridor segments in the township. All three segments have some non-motorized facilities along one or both sides of the street, but overall connectivity along the corridor is poor. As new development and redevelopment occurs, the Township's regulations will require current gaps in the non-motorized facilities network to be filled in, to provide continuous access between properties and also to transit stops.

One critical link in the township is non-motorized facilities is at the west end of Ecorse Road, at the intersection area of Ecorse Road and Ford Boulevard (which continues southeast as Laverne Street and then Dorset Avenue across US-12). This long non-motorized connection between the neighborhoods on the northwest (along Ecorse) and southeast (along Dorset) has some of the facilities in place, but is lacking key connections on either end to the local non-motorized facilities on Ecorse and Dorset. Complex property ownership and road jurisdiction further complicates the efforts of

the township to establish an alignment for the connections and secure funding and partners for the project.

In addition, one non-motorized overpass is currently in place on Ecorse Road that connects institutional facilities on either side of the road. The exit from the overpass on the north side of Ecorse is currently not directly connected to the nearest non-motorized facility.

Transit Conditions

AATA offers multiple routes on the corridor, with Eastern Michigan University, and downtown Ypsilanti, being two major destinations for transit users. AATA transit service also connects to Willow Run Airport on the east and various destinations in Pittsfield Township and the City of Ann Arbor to the west.

Conditions of Select Intersections

- **Washtenaw Avenue/Golfside Drive Intersection.** Five-lane Washtenaw Avenue intersects four-lane Golfside Drive whose alignment borders Pittsfield Township and Ypsilanti Township. A center left turn lane is provided on all approaches to this signalized intersection. 2006 ADT east and west of the intersection is 27,800 and 30,000 respectively, a relatively high traffic volume. A large number of commercial developments in the area and the proximity of the intersection between the cities of Ann Arbor and Ypsilanti contribute to the high traffic volumes.

Potential problems include commercial driveways that are very close to the intersection. Also, long crosswalks leave pedestrians exposed to traffic for a considerable distance. In 2006, the intersection had the second highest number of crashes in the Plan area (56). The crashes consisted of 41.1 percent rear-end, 26.8 percent angle, and 7.1 percent sideswipe crashes, suggesting that congestion as well as the close proximity of driveways could be a major contributing factor. There are also 5.4 percent head-on and 14.3 percent multiple vehicle crashes.

- **Ecorse Road/Ford Boulevard/US-12 Intersection.** Five-lane Ecorse Road, with a posted speed limit of 35 mph, intersects four-lane South Ford Boulevard, two-lane Dorset Avenue, and the on/off ramps for US-12 to the east, forming a five-leg intersection. Dorset Avenue enters the intersection as a horizontal curve at a skewed angle. There is an expanse of open area to the northeast of the intersection. The Ecorse



**Above:** the lack of a connected non-motorized network often forces bicyclists onto the road.



**Above:** everyday use/conditions of internal circulation areas is important to safe, efficient access between adjacent parcels.

Road 2006 ADT is 10,500. There was a relatively low number of crashes (8) in 2006, five of which (62.5 percent) were rear-end crashes. In addition, there is a critical gap in non-motorized facilities to and through the intersection area to areas east of Ford Boulevard. Winter weather conditions require snow being plowed on to and over the non-motorized facilities, forcing pedestrians and bicyclists onto the road.

## **Recommendations**

### *Recommendations for Local Implementation*

In concert with this Plan's recommended development review procedure, Ypsilanti Township staff has drafted amendments to its zoning ordinance to strengthen its access management standards for site plan review as part of this project. The ordinance will work together with this Plan, using both the access standards and Plan recommendations, to guide access decisions access along the corridor and throughout the township.

In addition to the amendment of the township's code, the township will include this Plan in whole or by reference in its Master Plan to solidify the basis for the ordinance and emphasize the importance of the land use-transportation link.

### *Recommendations for Access, Non-Motorized, and Transit*

Map tiles 14 through 16 and 22 through 30 illustrate specific recommendations for access management, including how to improve the relationship between automobile access and non-motorized and transit facilities. As outlined in Chapter 3, these recommendations are based on state and national research, a thorough review of the existing conditions along the corridor, and the extensive experience and expertise of the Plan team with access management implementation across the state.

Because the recommendations are based on the existing conditions at the time this Plan was developed, a significant change in conditions on a site should prompt a thorough consideration of any proposed project in the context of the policies, standards, and goals of this Plan. The township, WCRC, MDOT, and members of the Steering Committee will play an important role in reviewing development proposals along this corridor to promote the most efficient, and safe configuration of access.

*Ypsilanti Township's corridor segment is illustrated on Map Tiles 14 through 16 and 22 through 30, which illustrate specific recommendations for access management including how to improve the relationship between automobile access and non-motorized and transit facilities. All the Map Tiles are located after Chapter 7.*

Intersection Concepts

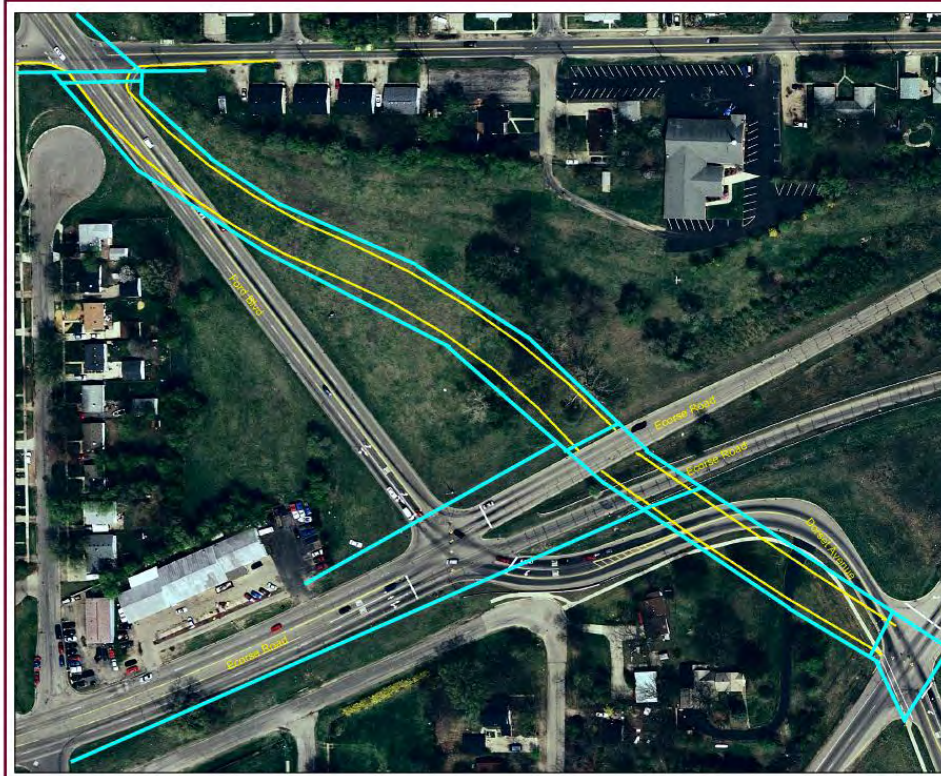
Several intersections throughout the Plan area were identified by the Steering Committee as having perceived problems with traffic congestion, crashes, and/or non-motorized and transit access. The following discussions of crash mitigation and intersection improvement concepts is intended to simply identify potential short- and long-term fixes to existing problems. Many more steps will be needed before any improvements will take place, including a more detailed study of traffic movements and volumes, improvement impacts, and costs.

- **Washtenaw Avenue/Golfside Drive Intersection.** A number of measures could be considered at this location. Closure or consolidation of some of the driveways near the intersection are needed to reduce the number of conflicts, especially in the southwest quadrant. The southeast quadrant is currently being considered for redevelopment and any plans should place access points away from the intersection to the greatest extent possible. A review of the signal timing could provide some degree of improvement in the progression of traffic. Another option that should be considered is the installation of a roundabout at the intersection, which has a much greater potential to improve traffic flow, and reduce both the number and severity of crashes. In addition, pedestrian facilities at a roundabout would enhance safety by allowing motorists to deal with pedestrians in shorter crosswalks separated from vehicle traffic in the roundabout's circulating roadway. Improved safety, connectivity and traffic progression, brought about by a roundabout at this intersection, are conditions that are also favorable to redevelopment efforts on adjacent properties.



- ***Ecorse Road/Ford Boulevard/US-12 Intersection.*** The geometry of the intersection contains an extremely skewed angle and curved approach. With such a low number of crashes, it is difficult to ascertain whether intersection geometry is a contributing factor, however the severe curvature and angle on the approach warrants a closer examination to see if the intersection can be brought into closer conformity with accepted standards. The most likely measure would be to realign the legs of the intersection or install a modern roundabout at this location. A modern roundabout may be a viable solution, considering the five-leg configuration. Additionally, it may be possible to purchase right-of-way from the expanse of vacant land to the northeast, if needed. It is recommended that peak hour turning movement counts be collected and analyzed to determine if a roundabout would be feasible. In the short term, priority should be given to connecting nearby non-motorized facilities to and through the intersection area to existing facilities both west and east of the area. In addition, the alignment of the facilities through the intersection area should be reexamined to address the winter weather problems that prevent safe pedestrian and bicyclist crossing in the area.

A realigned geometry or a roundabout would not only bring the intersection into closer conformity with accepted standards, but would also provide a more unified design element to this link in the area's transportation system. Motorists, pedestrians, and bicyclists would find the intersection to have more familiar, and less challenging characteristics, with an improved connectivity with the rest of the system.

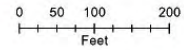


**Washtenaw County  
Access Management Plan**

**Ecorse Road / Ford Blvd  
Realignment Concept**

The Road Improvements depicted are conceptual and not geometrically correct or accurate. The concept shown has the potential to reduce congestion, improve safety, and/or improve non-motorized circulation.

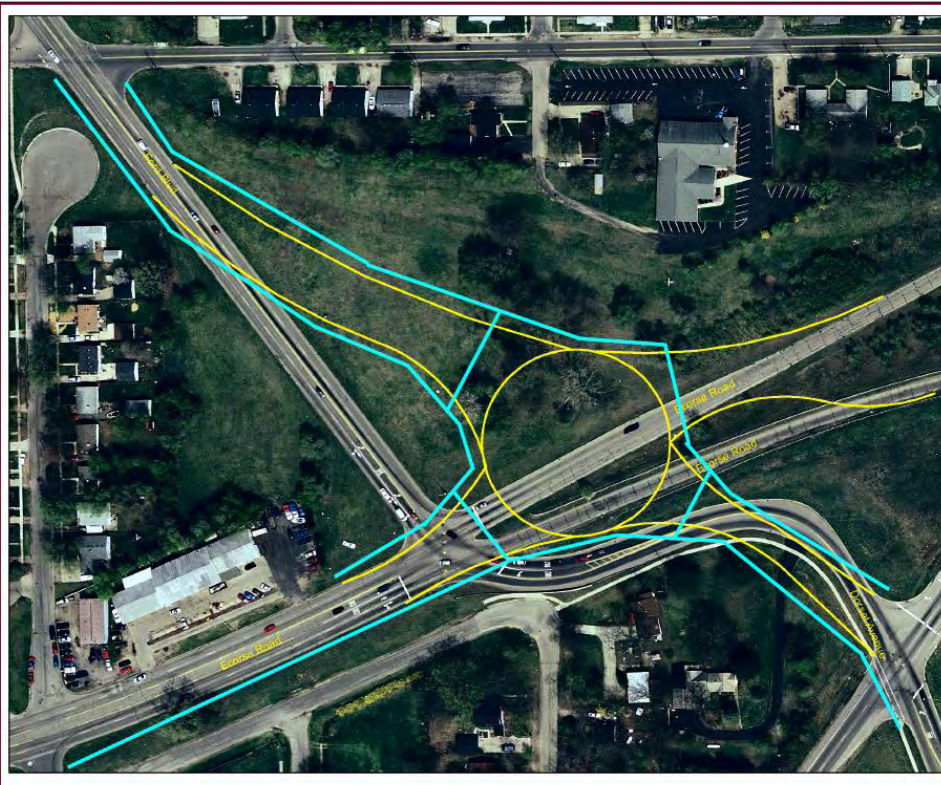
Prior to determining what, if any, improvements are needed, additional studies would be needed that are significantly more detailed and in-depth than the current study.



Map produced by DLZ Michigan, Inc. for the Washtenaw County Access Management Plan, October 2007



- Critical factors:**
- Realign the approaches
  - Improve the overall design of this link in the transportation system

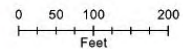


**Washtenaw County  
Access Management Plan**

**Ecorse Road / Ford Blvd  
Roundabout Concept**

The Road Improvements depicted are conceptual and not geometrically correct or accurate. The concept shown has the potential to reduce congestion, improve safety, and/or improve non-motorized circulation.

Prior to determining what, if any, improvements are needed, additional studies would be needed that are significantly more detailed and in-depth than the current study.



Map produced by DLZ Michigan, Inc. for the Washtenaw County Access Management Plan, October 2007

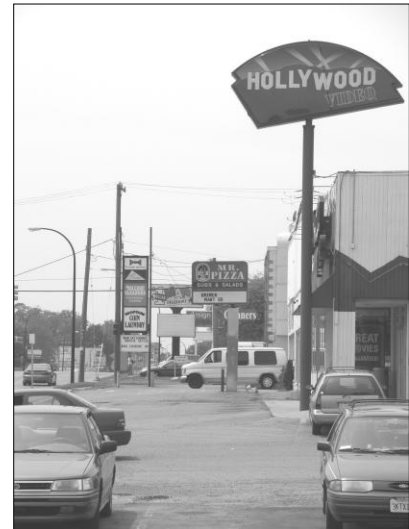


- Critical factors:**
- Realign the approaches
  - Improve the overall design of this link in the transportation system

# Chapter 7: City of Ypsilanti

## Introduction

Portions of the corridor located within the City of Ypsilanti constitute approximately three miles, and includes Washtenaw Avenue from Hewitt Road to Hamilton (includes one-way eastbound), Hamilton Road from Washtenaw to Michigan (one-way eastbound), Cross Street and North Huron from Washtenaw to Michigan Avenue (one-way westbound), and Michigan Avenue from Hamilton east to Ecorse Road. The entire route of Washtenaw/Hamilton/ Cross/Huron and Ecorse through the city is designated M-17, and the entire route of Michigan Avenue through the city is designated Business US-12. The corridor transitions into Ypsilanti Township on the east and west end of the city' segment.



## Existing Conditions

### Overview of Land Use

M-17 and Michigan Avenue in the City of Ypsilanti include a wide range of land uses, from commercial strip, residential, and institutional on the west, downtown in the middle, and a mix of commercial, industrial, and vacant areas to the east. The one-way pairs of Washtenaw-Hamilton eastbound and Huron-Cross westbound to the north and west of downtown are home to urban style neighborhood commercial, institutional, and single- and multiple-family uses. The westbound pair of Huron-Cross was recently reconfigured from three through traffic lanes to two traffic lanes, one lane of on-street parallel parking, and one on-street bike lane. Much of the commercial and industrial uses on the east and west edges of the city are located on shallow, narrow lots.

### Roadway Conditions

Average Daily Traffic (ADT) along the corridor is approximately 25,000 for two-way traffic (see data table on the right and Figure 1.2). Volumes are generally within the capacity of four lanes in downtown, five lanes east and west of downtown on two-way segments, and two to three lanes along the one-way pairs. Michigan Avenue in downtown Ypsilanti has a raised island in the center lane area, generally to increase the aesthetics, prevent left- and u-turns, and provide a refuge for non-motorized users crossing Michigan Avenue. Posted speed limits along the corridor range from 25 MPH to 35 MPH (see Figure 2.2).

<b>2006 Average Daily Traffic (ADT) along the Plan corridor in the City of Ypsilanti</b>	
<b>Road</b>	<b>ADT</b>
<b>Washtenaw:</b>	
Hewitt-Cross	25,600
Cross-Hamilton*	12,600
<b>Huron:</b>	
Michigan-Cross**	13,600
<b>Cross:</b>	
Huron-Washtenaw**	12,400
<b>Michigan:</b>	
Huron-Ecorse	24,300
* - One-way eastbound road. ** - One-way westbound road. Source: WATS, MDOT	

### Access Conditions



***Above:*** although some connections between parking areas exist, they are often poorly defined.

Access point frequency on the Plan corridor varies across the City of Ypsilanti, with the highest concentrations being focused at the west end (Washtenaw Ave west of Cornell Ave), and the east end (Michigan Avenue east of the Huron River). Decades of uncoordinated commercial development in these two areas has led to numerous individual commercial businesses with multiple access points and few connections across property lines, especially near signalized intersections.

Unlike other segments along the 17 miles of the Plan area, several segments in Ypsilanti have on-street parking available on one or both sides of the street, including westbound Cross Street, northbound Huron Street, and Michigan Avenue in the downtown area.

Residential, downtown, or Eastern Michigan University campus makes up the remainder of the corridor. Downtown Ypsilanti, neighborhood commercial areas, and the Eastern Michigan University campus areas already have very highly restricted access (or no direct access) to the Plan corridor.

### Non-Motorized Conditions

Most of the Plan corridor in the City of has sidewalks on both sides of the street, except for the western-most portion of Washtenaw Avenue west of Mansfield Street, where some gaps exist. Westbound Cross Street, from Huron to its connection with two-way Washtenaw, currently has one on-street bike lane on the north side and on-street parking on the south side (the result of a recent road diet reducing three travel lanes to two to accommodate these new facilities).

High volumes of pedestrians and bicyclists cross the Plan corridor throughout the city, especially near the following:

- Transit stops that have high volumes of boardings and deboardings.
- University facilities and/or student housing areas.
- Downtown.
- To and from the senior housing complex located just west of downtown.

In addition, all of the traffic signals in the downtown area have push-button activated crossing signals.



---

### Transit Conditions

The Plan corridor is served by multiple routes on the AATA bus system. The downtown Ypsilanti bus terminal is located just north of Michigan Avenue on Pearl Street (one-way westbound only); busses access the terminal using the dedicated left turn lane on one-way northbound Huron and exit on to southbound Hamilton.

### Conditions of Select Intersections

- **Washtenaw Avenue/Hamilton Street Intersection.** Three-lane Washtenaw Avenue, with a posted speed limit of 35 mph, intersects three-lane Hamilton Street where the speed limit lowers to 30 mph. The 2006 ADT along Washtenaw Avenue and South Hamilton Street is 12,600. The number of 2006 crashes at this intersection is relatively low (13), with over half (53.8 percent) being angle crashes. Washtenaw Avenue is one-way at this location. The intersection includes an eastbound to southbound slip lane to a one-way roadway. The limited turning movements (and reduced number of conflict points) may be a factor which helps to keep the number of crashes low.
- **North Huron Street/West Cross Street Intersection.** This segment of North Huron Street is one-way northbound, with Cross Street being one-way westbound to the west and two-way traffic to the east. Cross Street includes a bridge over the Huron River to the east. The crash numbers for 2006 are fairly low (15) and include 5 sideswipe, 5 angle, and 2 rear end crashes.
- **Ecorse Road/Michigan Avenue/Center Street Intersection.** Five-lane East Michigan Avenue, with a posted speed limit of 35 mph, intersects five-lane Ecorse Road, also with a posted speed limit of 35 mph. 2006 ADT to the west and south of the intersection is 24,300 and 10,900, respectively. East of the intersection, Michigan Avenue has an ADT of 16,400. The intersection forms a skewed angle between a principal arterial and a major collector, with the added complexity of a two-lane local street (Center Street). While the number of crashes in 2006 is relatively low (13), nearly half (46.2 percent) of the crashes are rear-end crashes, and another fourth (23.1 percent) of the crashes are sideswipes. It is likely that the geometry of the intersection has an impact on a driver's line of sight, or there may be other issues which contribute to the disproportionate number of rear-end and sideswipe crashes.

There are also no non-motorized facilities to accommodate crossings in any direction at this intersection.

### **Recommendations**

#### *Recommendations for Local Implementation*

In concert with this Plan's recommended development review procedure, the City of Ypsilanti staff has drafted amendments to its zoning ordinance to include a comprehensive set of access management standards as part of this project. The ordinance will work together with this Plan, using both the access standards and Plan recommendations, to guide access decisions access along the corridor and throughout the city.

In addition to the amendment of the township's code, the township should include this plan in whole or by reference in its Master Plan to further solidify the basis for the ordinance and emphasize the importance of the land use-transportation link.

#### *Recommendations for Access, Non-Motorized, and Transit*

*The City of Ypsilanti's corridor segment is illustrated on Map Tiles 16 through 22, which illustrate specific recommendations for access management including how to improve the relationship between automobile access and non-motorized and transit facilities. All the Map Tiles are located after Chapter 7.*

Map tiles 16 through 21 illustrate specific recommendations for access management, including how to improve the relationship between automobile access and non-motorized and transit facilities. As outlined in Chapter 3, these recommendations are based on state and national research, a thorough review of the existing conditions along the corridor, and the extensive experience and expertise of the Plan team with access management implementation across the state.

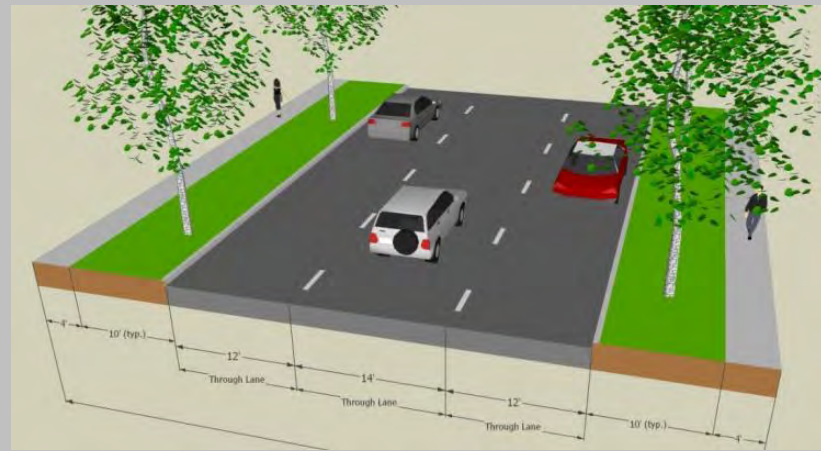
Because the recommendations are based on the existing conditions at the time this Plan was developed, a significant change in conditions on a site should prompt a thorough consideration of any proposed project in the context of the policies, standards, and goals of this Plan. The city, MDOT, and members of the Steering Committee will play an important role in reviewing development proposals along this corridor to promote the most efficient, and safe configuration of access.

Recommendations for Michigan Avenue east of the Huron River include the extension of on-street parking east of downtown. Non-motorized crossing bump-outs are recommended to increase visibility and safety at crossings.

***Extension of Road Diet on One-Way Eastbound M-17.*** As shown on the illustrative recommendations maps, this Plan recommends an extension/expansion of the Cross Street road diet (which includes on-street parking and bike lane) to the eastbound

Washtenaw/Hamilton segment. The 3-d cross-section shown in this section illustrates one potential configuration for this project.

#### Road Diet Simulation.



**Before:** Current roadway configuration includes three lanes of one-way, through traffic heading into Downtown Ypsilanti.



**After:** One alternate road diet configuration would include two lanes of through traffic maintained on the south/west sides of eastbound M-17, with a bike lane, an on-street parking lane on the north/east side of eastbound M-17 (on the "downtown" side of the street) and a shared zone of the bike lane for accessing parked vehicles (shown with hatching on the model).

**Linear Commercial/Multiple Family Areas.** Many opportunities exist in the two commercial strip areas where cross-access could be provided relatively easily in terms of physical conditions (parking areas in close proximity, no significant grade change). In the few areas with clusters of multiple-family residential, cross-access between parking areas to minimize the number of direct access onto the trunkline is recommended.

Intersection Concepts

Several intersections throughout the Plan area were identified by the Steering Committee as having perceived problems with traffic congestion, crashes, and/or non-motorized and transit access. The following discussion of crash mitigation and intersection improvement concepts is intended to simply identify potential short- and long-term fixes to existing problems. Many more steps will be needed before any improvements will take place, including a more detailed study of traffic movements and volumes, improvement impacts, and costs.

- **Washtenaw Avenue/Hamilton Street Intersection.** A detailed review of the traffic movements should be considered to determine the cause of the angle crashes at this location. A review of the geometry along with turning movement traffic counts may provide some insight on why there are a disproportionate number of angle vs. other crashes at the intersection. It may be possible to improve traffic flow and reduce the number of crashes by making modest changes to the intersection geometry and the addition of a yield sign for southbound Hamilton traffic to allow safe merging of Washtenaw traffic into the far left lane (to downtown).
- **North Huron Street/West Cross Street Intersection.** Consideration of altering traffic flow from one-way to two-way could assist with providing more convenient access to area businesses.
- **Ecorse Road/Michigan Avenue/Center Street Intersection.** The railroad overpass bridge limits the changes that can be implemented. Reducing the skew angle by realigning Ecorse Road slightly to the east of its present position on Michigan Avenue should be considered. In addition, removal of Center Street from the intersection would reduce traffic conflict points. This can be accomplished by constructing a cul-de-sac at the north end of Center Street. A review of the signal timing may provide an opportunity to improve overall traffic flow. In the short-term, crosswalk striping and non-motorized crossing signals should be installed to increase safety for crossings.



