OSHTEMO CHARTER TOWNSHIP

Access Management Plan

as amended September 9, 2003

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adopted by Resolution

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INTRODUCTION

Oshtemo Township is a growing and developing community, both in its residential and nonresidential sectors. In fact, it has been one of the fastest growing communities in Kalamazoo County since the early 1970's. As development occurs, the street system is impacted by the additional traffic that is generated by new development and by the increased driveway activity. The negative traffic impacts are intensified by poorly coordinated access, especially along busy corridors. The lack of coordinated access decreases the street's capacity and degrades its function to move traffic safely and efficiently. Conversely, a well managed access system can preserve the function of roadways and help ensure safety, efficiency, and convenience for the public.

This Access Management Plan has been adopted to achieve a well managed access system. The objects of this Access Management Plan are to:

(a) identify the needs as reflected by existing or potential traffic problem areas of Oshtemo,

(b) develop general policies in response to those needs, and to

(c) develop access control guidelines as a means to implement the policies.

Oshtemo Township recognizes the role it can play in conjunction with the Kalamazoo County Road Commission and the Michigan Department of Transportation in providing a safe street network and desirable environment for its residents and businesses. It also recognizes the difficulty of introducing an access management program on existing and already developed roadways. However, many national studies have identified the damaging effects that uncontrolled access can have on the functional quality of a roadway. An access management program will serve to preserve the street system by offering a consistent approach toward access management, allowing of coordinated review procedure with the road agencies (Kalamazoo County Road Commission and MDOT), and encouraging well planned growth within the township.

ACCESS MANAGEMENT

DEFINITION

Access management or access control is a technique to minimize land access/traffic movement conflicts. Access management standards are designed to reduce traffic conflicts associated with driveways along major streets.

A street system has two major functions - to move traffic between points and to provide access to adjacent property. The primary function of the street will vary depending upon the roadway type. Four general roadway classifications are used by Federal and State road authority agencies to describe the character of the service they are intended to provide. These four classifications are expressway, arterial, collector, and local.

Expressways, such as US-131, have as a primary function the moving of traffic. Efficient traffic movement is possible on these types of roadways because they have been designed to limit access to adjacent land uses. Arterials and collectors generally provide for both movement and land access while locals serve primarily to provide land access and limit the amount of through traffic. Figures 1 and 2 illustrate examples of the relationship between the roadway classification and its function.

The two functions of a street system are incompatible by nature. As the number of access points increase along a street, the number of conflict points along that roadway increase, reducing travel speed and maneuverability and increasing accident potential on the roadway. The two functions become increasingly incompatible as more and more development occurs along the street. If developments and their related access points are uncontrolled, both the carrying capacity and the safety of the street are degraded.

Access management seeks to preserve the carrying capacity and uninterrupted traffic flow of roadways by controlling the location and design of the driveways and promoting alternatives to direct access. Access control methods will vary depending upon the roadway and the land use situation but typically will include effective techniques such as limiting the number of curb cuts per parcel or lot, the shared-drive concept, and service and frontage roads.

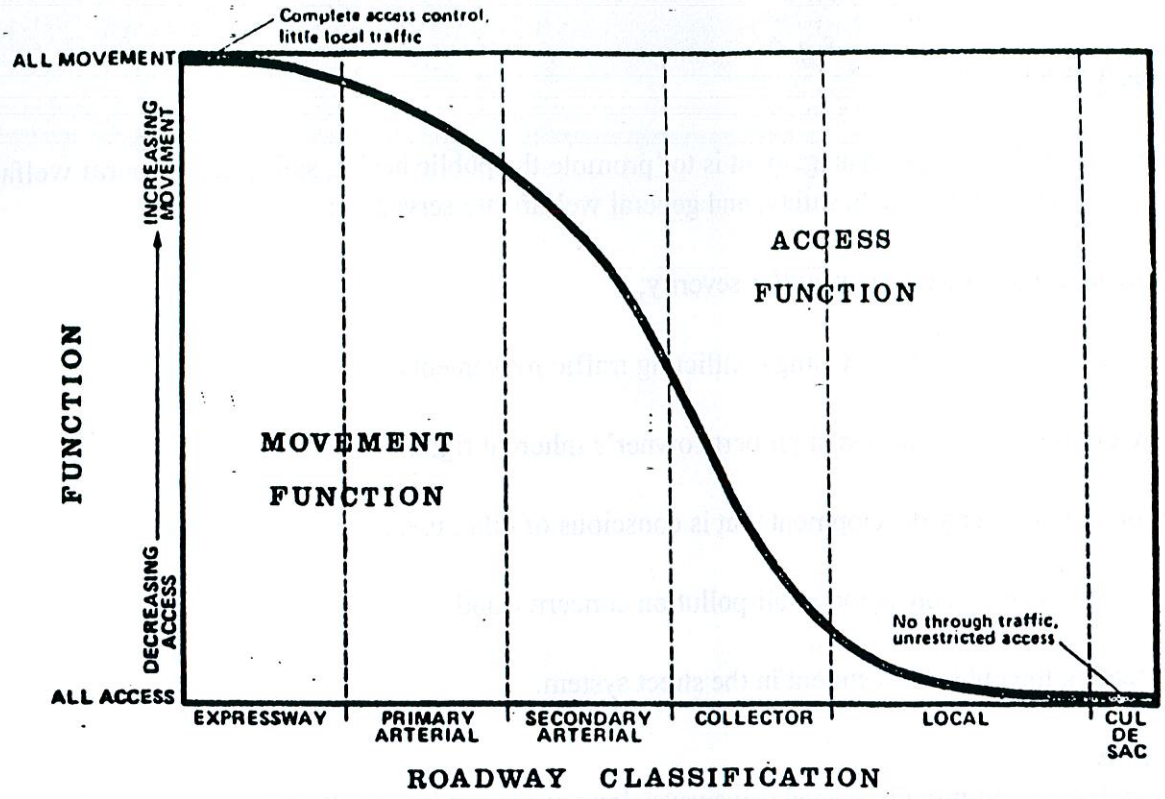


Figure 1. Roadway function by classification. Reprinted from Tri-County Regional Planning Commission 1981, 3.

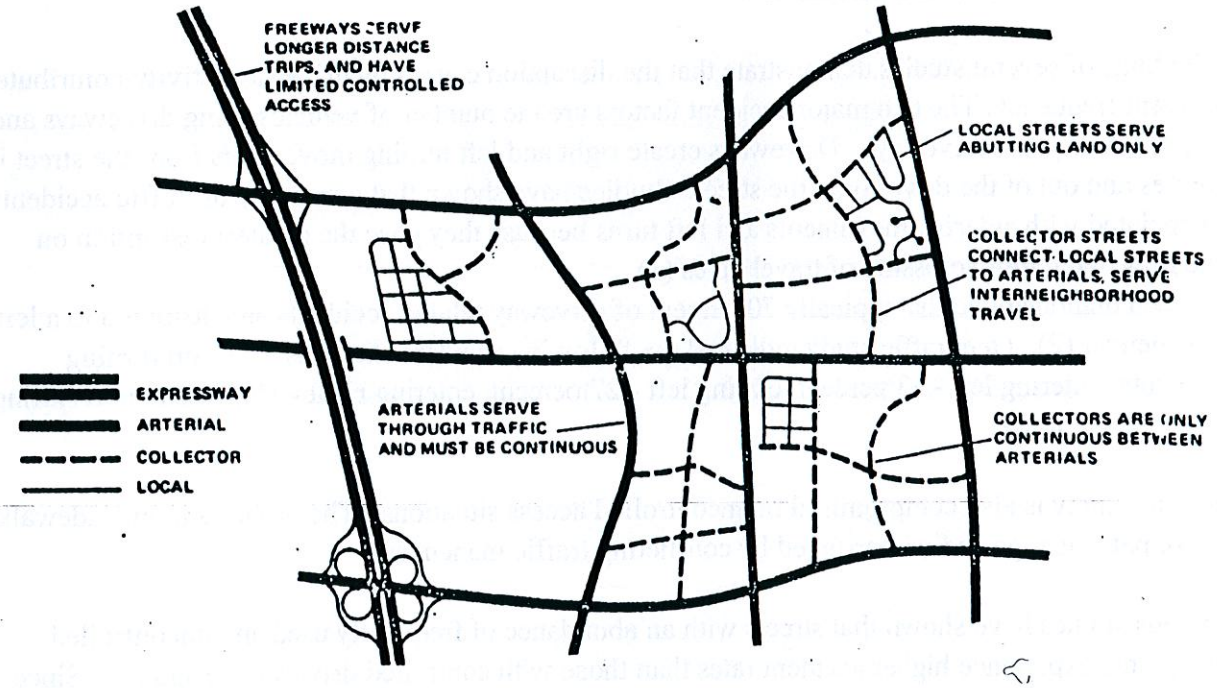


Figure 2. Street functions. Reprinted from Tri-County Regional Planning Commission 1981, 3.

OBJECTIVES

The overall goal of access management is to 'promote the public health, safety, and general welfare of the community. Public heath, safety, and general welfare are served by:

1) reducing accident frequency and/or severity;

2) lessening congestion by reducing conflicting traffic movements;

3) providing reasonable access, a property owner's inherent right;

4) encouraging orderly development that is conscious of other uses;

5) addressing energy consumption/air pollution concerns; and

6) protecting the public investment in the street system.

1) Safety

An abundance of minimally spaced driveways along roadways is a result of poorly managed access. A consequence of a multitude of access points is driver confusion as attempts are made to locate the desired entrance drive. Travelers following may also become confused as to the intentions of the searching driver. These situations lead to slowed traffic movement and begin to degrade the street's function to provide for safe traffic flow.

The findings of several studies demonstrate that the disruption caused by driveway activity contributes to accident frequency. The two major accident factors are the number of vehicles using driveways and the number/design of driveways. Driveways create right and left turning movements from the street into the drives and out of the drives onto the street. Studies have shown that a majority of traffic accidents are associated with entering movements and left turns because they pose the greatest disruption on traffic flow and require crossing of travel lanes (1).
It has been demonstrated that typically 70 percent of driveway related accidents are attributed to a left turn maneuver (2). One traffic study indicated the following accident statistics based on turning movements: entering left - 43 percent, exiting left - 27 percent, entering right - 15 percent, and exiting right - 15 percent (3).

Pedestrian safety is also compromised in uncontrolled access situations. The progress along sidewalks and bike paths is repeatedly interrupted by conflicting traffic maneuvers.

Numerous studies have shown that streets with an abundance of frequently used and uncontrolled access points experience higher accident rates than those with controlled driveway design (4). Since a reduction in accident potential improves safety, and lessening congestion improves community welfare,

management of access points falls under Oshtemo Township's authority to promote the public health, safety, and welfare of the community.

2) Lessen Congestion

Congestion occurs when traffic volumes exceed the capacity (hourly or daily) the street/intersection is designed to efficiently accommodate. Generally, land use along a corridor is the dominating congestion factor. However, the number and design of driveways can also significantly affect congestion levels. Abutting land use that attracts additional traffic, and is characteristic of heavy driveway activity, can effectively slow through traffic, thereby decreasing the capacity of the street.

The effect of driveway activity on the capacity of a roadway is reflected by simply comparing the capacity of a four lane controlled access expressway at 56,000 vehicles per day to a four lane free access roadway (estimated capacity of 20,000 vehicles per day).

When faced with traveling along a congested roadway, some motorists will divert to an alternate route, many times a residential street. This not only defeats the traffic movement function of the roadway but also ends up placing an undesirable burden on the local street which is not designed for the additional traffic.

An access management program can help maintain the capacity of a street system by reducing the number of driveway conflict points and allowing traffic to enter driveways more efficiently.

3) Provide Reasonable Access

An access management program seeks to provide 'reasonable' access for abutting property owners, a legally protected right. Reasonable access also provides the motoring public with convenient access to land uses while still maintaining the integrity of the street. The definition of 'reasonable' will vary depending on the interested party's needs and objectives. Oshtemo Township's definition of 'reasonable' seeks to ensure that access is provided which is commensurate with the characteristics of the proposed use and is not confusing or inconvenient. This does not mean, however, that access onto the street(s) must be direct. The Township supports rulings by the Michigan judiciary that access via a service drive or other indirect means is 'reasonable'.

4) Encourage Orderly Development

The relationship between sound planning and zoning practices and access management is significant. Consideration of land use characteristics such as the amount of traffic generated and peak traffic hours is essential in determining the appropriateness of particular zoning districts and land use arrangements along corridors.

In addition, consideration of parcel or lot dimensions, setback requirements and parking standards also allows for compatibility between land uses and the surrounding street network.

A land use plan seeks to encourage orderly development of a community by clustering compatible land uses in consideration of the factors listed in Section 3 of the Township Rural Zoning Act, such as, but not limited to, encouraging the use of land in accordance with its character and adaptability. Further, the road network and existing traffic patterns are considered in developing the land use plan. A zoning ordinance serves to implement the objectives of the plan through attention to site development factors. An access management program, in concert with the land use plan and zoning ordinance, encourages orderly development by proposing access arrangements and designs in consideration of traffic patterns and the character of adjacent land use.

By limiting individual driveways and providing for well designed circulation patterns, the 'front yards' of the abutting establishments stand to be impacted. Access management, can, in effect, promote a more pleasing visual environment by increasing available yard area and encouraging uniform landscaping and signage. Effective access management can produce a corridor design that is safe and efficient as well as aesthetically coordinated.

5) Address Energy Consumption/Air Pollution

The transportation system is a key system in which to address fuel consumption and efficient use of fuel supplies. Two primary factors in vehicular fuel consumption are traffic speed and changes in speed, both of which can be positively affected by access control techniques.

A study conducted by the Federal Highway Administration (5) noted that fewer stops, fewer speed changes, and a decrease in idling hours by traveling vehicles would result in a decrease in fuel consumption.

Air quality was also found to be affected by traffic speed and changes in speed. Carbon monoxide, hydrocarbon and nitrogen oxide emissions are increased with stops, speed changes and idling time of vehicles (6).

By reducing delay and eliminating congestion on our arteries, access control techniques do in fact address significantly the concern toward energy consumption and air pollution.

6) Protect Public Investment in Transportation System

The public has made a major investment in providing a through transportation system. There has been a renewed effort by Federal and Michigan road agencies to allocate most transportation funds for maintenance. Since there is only a limited amount of money available for new road construction and widening, communities must accommodate increasing travel through other means. Access management, by preserving the through capacity, can help delay or avert the need for costly improvement projects. Thus, the public realizes tremendous cost saving benefits and businesses are not disrupted by long construction projects.

GOVERNMENTAL AUTHORITY

Local government has the authority to manage land development in the public interest through comprehensive planning and zoning. Specifically, Oshtemo Township is authorized by the Township Rural Zoning Act to regulate so as to "avoid overcrowding of the population...to lessen congestion on public roads and streets; to reduce hazards to life and property." Through a comprehensive program which conforms to enabling legislation, a community can establish an access management plan and provide for the development and implementation of access control policies.

Local governmental authority should be implemented with consideration of the rights of the public and of abutting land owners to use the public street system. The public has the right to travel the roadway with safety and convenience – a roadway which has been paid for with the public's dollars. Abutting land owners must be permitted access that is suitable to allow the property to be developed to allow a 'reasonable' economic return on the property. Public Act 200 of 1969 (7) ensures property owners the right to 'reasonable' access to their property.

Plan

A plan serves to provide the information base required through identification of the street system and its functions and the identification of the land use and growth patterns of a community. A plan also provides a policy level commitment toward an access management program, setting forth the community's acceptance of the concept of access management. The plan is adopted by the local government to express formally this commitment and to ensure its defensibility.

Zoning Ordinance

The adoption of a zoning ordinance allows a community to establish standards reflecting the plan's policies. In that ordinance standards are based on sound planning principles and adopted policies, the standards cannot be disregarded as arbitrary or capricious. Implementation of the standards through a systematic review procedure, such as site plan review, promotes a consistent and uniform application of the standards, thus eliminating claims of discrimination.

Site Plan Review

The site plan review procedure is a very effective tool for a community to implement its access management program. The review criteria are based upon the ordinance standards and allow for the review of a proposed development according to its compliance with standards. It also provides for a coordinated review effort allowing the involvement of all relevant agencies in a development proposal.

Jurisdiction – State and County

The Michigan Department of Transportation (MDOT) and the Kalamazoo County Road Commission (KCRC) are responsible for issuing driveway permits along the street rights-of-way in Oshtemo Township for which they have jurisdiction. Both agencies review the design of driveways using the minimum standards set forth in MDOT's "Administrative Rules Regulating Driveways, Banners and

Parades On and Over Highways" based on Public Act 200 of 1969 and the Kalamazoo County Road Commission Policy for Regulating Driveway Construction within the right-of-way of County Roads.

Though these agencies typically support access management techniques, they concede that their review criteria do not adequately address the unique characteristics of intensely developed commercial corridors or the alternatives offered through access management. To date, their efforts to manage and coordinate access have only been through informal encouragement measures. Typically, a driveway proposal meeting the minimum standards set forth for all roads will receive a driveway permit. MDOT staff has noted its frustration with this process and the need for greater involvement by the local community.

Jurisdiction – Oshtemo Township

Oshtemo Township has jurisdiction over street access outside of the right-of-way through the zoning approval process. Though driveway design inside the right-of-way is typically left to the road agencies, the Township can use the site plan review process to encourage or require shared access arrangements and/or service/frontage roads.

The Township also has the authority to adopt standards exceeding the state and county minimums if a public benefit can be demonstrated. In fact, Public Act 200 of 1969 (8) requires that road agencies cannot issue driveway permits unless there is compliance with local ordinances.

An access management program, by detailing accident and driveway statistics, provides a basis for the incorporation of access management standards into the review process. This could result in the Township requiring changes in access proposals, even if a driveway permit has been issued, if the access standards in the ordinance have not been met.

Agency Coordination

The overlapping jurisdiction over access considerations requires cooperation among agencies. It is essential that the road agencies and the Township work together if an access management program is to be effective.

The road agencies have the technical expertise to review access requests and the Township has the authority to promote design standards which consider and complement existing and planned land use along the corridor. This makes the coordination between the Township and the road agencies critical, requiring that each must be aware of the other's actions regarding access control. Through their combined authority the design, placement, spacing and shared use of driveways can be managed and alternative access arrangements required.

NEED FOR ACCESS MANAGEMENT

Oshtemo Township recognizes the need for an access management program by noting that:

1. Four of the twenty-five highest accident intersections in Kalamazoo County for the years 1995-1999 were located in Oshtemo Township (9).

2. There has been a steady increase in traffic volume on the Township's arterials and collectors over the past five years (10).

3. West Main, Drake Road, Stadium Drive, KL Avenue and South Ninth Street, all with daily traffic volumes nearing or exceeding ten thousand vehicles per day, serve through traffic movement while also providing access to high-intensity land uses (11).

4. Development continues to occur and is directed, in some cases, along the Township's already heavily traveled arterials and collectors (12).

5. Residences located on sub-standard size lots and fronting arterials are being converted to commercial land use (13).

6. The desire to construct numerous or uncontrolled access points for a single development continues to be demonstrated. (14).

7. The review criteria used by the Michigan Department of Transportation and the Kalamazoo County Road Commission does not adequately address coordinated access arrangements, due to their need for broad, network-wide standards.

8. Funds to improve/widen streets that are over capacity are becoming scarce. Expensive improvements can be delayed or avoided through thoughtful land use planning and access management techniques.

The purpose of this access management program is to effectively address the problems and concerns identified above and to provide the Township with a consistent and reasonable approach toward growth and access regulation before the problem becomes unmanageable.

PROGRAM AREA ANALYSIS

Classification of Street System

A street system classification plan serves to provide a functional description of the roadways by developing categories based upon the access needs of abutting land use, the volume of through traffic movement, and the location of traffic generators.

The purpose of the plan is to provide parameters within which policies and guidelines can be developed. It would be illogical to attempt to impose the same restrictions on a major arterial as would be applicable on a rural collector. By developing categories based upon roadway character and type and traffic characteristics, access controls can be more reasonably applied as the situation requires.

A good classification plan will promote a street network that will both support land use objectives and provide a safe and efficient traffic circulation system. The National Committee on Urban Transportation recommends the four basic street classifications listed and defined below (15):

1. **Expressway:** A street class with a primary function of traffic movement and level of service or access function. It typically serves traffic volumes of over forty thousand trips a day and has a principal trip length of over three miles.

2. **Arterials:** Within this class of streets, a distinction can be made between major arterials and minor arterials.

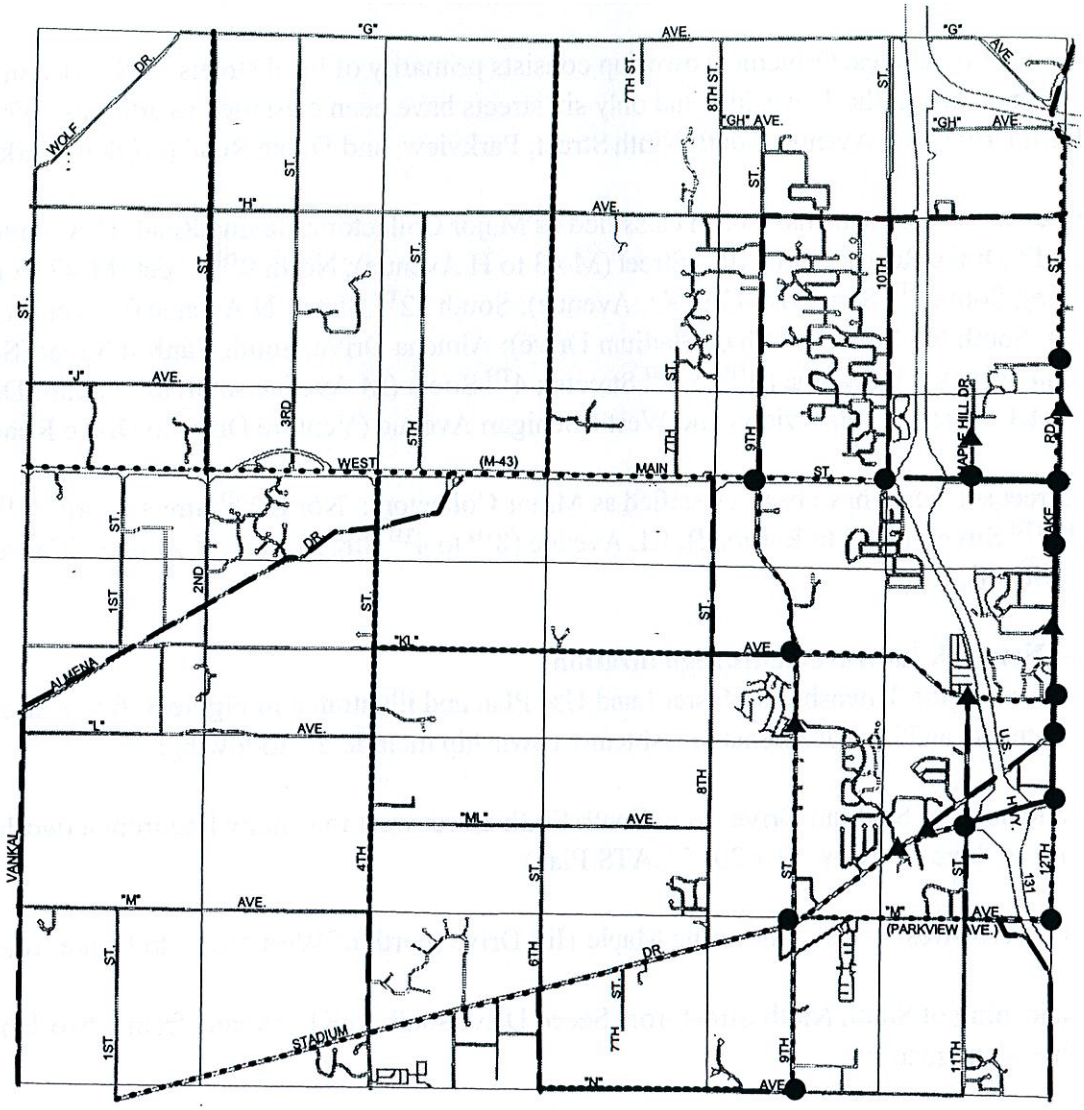
   a) Major arterials' primary function is to move traffic and typically have little facing commercial or residential property. They generally have traffic volumes ranging from twenty-five thousand to forty thousand vehicles per day and have a principal trip length of one to three miles.

   b) Minor arterials' primary function is also to move traffic but are characterized by having abutting non-residential development. They generally carry traffic in the ten thousand to twenty-five thousand vehicles per day range.

3. **Collectors:** This class of street primarily provides for traffic movement from neighborhoods to arterials. Collectors do not handle long through trips, typically serving only to link local areas, and have traffic volumes of fifteen hundred to ten thousand vehicles per day.

4. **Locals:** Local streets serve only to provide access to abutting land use, usually residential. This class of street generally carries daily traffic volumes of one thousand or less and typically constitutes a large percentage of a community's street mileage.

Figure 3.
Street Classification Map
CHARTER TOWNSHIP OF OSHTEMO



Signals
- ● existing
- ▲ future

Street Classification
- Major Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local

N

0 3000 6000 9000 Feet

Prepared by
Oshtemo Township
Planning Department
September 2003

The Michigan Department of Transportation (MDOT), in conjunction with the Kalamazoo Area Transportation Study (KATS), has classified the street system in Oshtemo Township according to the classification scheme identified on the previous page. Oshtemo Township's street classification plan as determined by the road agencies has been adopted as a part of the Township's Master Land Use Plan and is reflected in Figure 3.

As Figure 3 illustrates, Oshtemo Township consists primarily of local streets. US-131 constitutes the only expressway in the Township, and only six streets have been classified as arterials: West Main, Stadium Drive,, KL Avenue, South Ninth Street, Parkview, and Drake Road (north of Parkview).

Fourteen street segments have been classified as Major Collectors: Ravine Road; H Avenue (9TH Street To Drake Road); North 10TH Street (M-43 to H Avenue); North 9TH Street (M-43 to H Avenue); South 8TH Street (M-43 to KL Avenue); South 12TH Street; N Avenue (Carver Drive to 9TH Street); South 6TH Street (South of Stadium Drive); Almena Drive; South VanKal Street (South of Almena Drive); KL Avenue (9TH to 8TH Streets); 4TH Street (M Avenue south to Stadium Drive); 11TH Street (KL Avenue to Parkview) and West Michigan Avenue (Venture Drive to Drake Road).

Five street segments have been classified as Minor Collectors: North 2ND Street; North 6TH Street; South 4TH Street (M-43 to Railroad); KL Avenue (8TH to 4TH Streets); and N Avenue (Carver Drive to 6TH Street).

Street Network Improvements/Signalization

As set forth in the Township's Master Land Use Plan and illustrated in Figure 3, future street network developments and improvements in Oshtemo Township include the following:

1. Widening of Stadium Drive from South Sixth Street west to County line from a two-lane to a four or five-lane roadway. (Per 2025 KATS Plan)

2. Two east-west routes connecting Maple Hill Drive (north of West Main) to Drake Road.

3. Widening of South Ninth Street from Seeco Drive south to KL Avenue from a two-lane to a three-lane roadway.

4. Extension of Maple Hill Drive south to connect with Green Meadow.

5. Widening of Drake Road from Grand Prairie to Canterbury to a three-lane roadway. (Per 2025 KATS Plan)

6. Improving Maple Hill Drive north of West Main Street to include lane delineation and boulevard design.

7. Widening of KL Avenue from Drake Road to 9th Street. (per 2025 KATS Plan)

Currently, the Township's street network includes fourteen traffic signals. Based on future land use plans, projected road improvements, and increased traffic volumes, the following locations have been identified by Oshtemo Township for future signalization:

1. Drake Road/Croyden Avenue
2. KL Avenue/South 11TH Street.
3. GreenMeadow Drive/Drake Road.
4. South 9TH Street/Quail Run Drive.
5. Stadium Drive at either Venture Park Drive or Quail Run Drive.
6. Maple Hill Drive at Vintage Lane..

In addition, a review of the existing signalization at Maple Hill Drive/West Main and Drake Road/West Main is recommended. Adjustment of signal timing and queue length at these locations will be needed to accommodate the increased traffic volumes and left-turn movements resulting from redeveloping and proposed land uses in these areas.

Closure and Consolidation of Existing Access Points

Through use of Access Management Techniques described in this Plan, the following areas have been identified for closure and/or consolidation of existing driveways as opportunities arise:

1. West Main Street - US 131 to Drake Road
2. Stadium Drive - 11th Street to 8th Street
3. South 9th Street - Meridian Avenue to Atlantic Avenue
4. West Main Street - 9th Street to 7th Street

Areas with Limited or No Additional Access Points
Through use of Access Management Techniques described in this Plan, the following areas have been identified for limited and/or no additional (future) access points without closure of an existing drive(s) in the street segment:

1. Drake Road - West Main Street to West Michigan Avenue

2. West Main Street - US 131 to Drake Road

3. West Main Street - US 131 to 8th Street

4. Stadium Drive - US 131 to 8th Street

5. Ninth Street - West Main Street to KL Avenue

Street Analysis
A review of the functions and characteristics of the heavily traveled arterials within the Township will assist in determining the existing or potential traffic problems along a particular corridor. Further, knowledge of these characteristics and situations will assist the Township both in coordinating projected growth with the existing street system and in applying appropriate access management techniques to preserve the intended function of the streets.

The streets selected for review are those which have been identified under the classification system as major arterials, minor arterials, or collectors. The remaining roadways in Oshtemo Township have been classified as local streets. Since the primary function of these streets is access to abutting land uses, the need for access management techniques is diminished in comparison with arterials and collectors.

In general, the street analysis will review the traffic volumes and accident history of the roadways and consider the land use objectives as set forth in the Township's Master Land Use Plan and traffic/access patterns characteristic of each corridor.

MAJOR ARTERIALS

West Main
West Main is a major east-west route serving Oshtemo Township. It is a heavily traveled corridor with traffic volumes ranging from 29,000 vehicles per day west of US-131 to 29,600 vehicles per day from US-131 east to Drake Road (17). The character of West Main east of US-131 is quite different from the portion extending west of 9th Street.

East of US-131

This area is fully developed and is characterized by intensive commercial land use. The commercial activity along this segment of the corridor consists mainly of several large lot developments and a commercial plat. However, several small commercial lots are interspersed along the corridor.

The nature of the commercial development in this area has promoted implementation of some alternative access designs, such as a frontage road along the commercial plat and an extensive internal circulation design in and around the regional malls. Building setbacks along this segment are sufficient and relatively consistent which has complemented the use of alternative access designs.

This area is also characterized by a ring of office/multiple family residential zoning which surrounds the commercial core. In response to the planned development of that area, new road networks involving the extension of existing streets have been approved. Though access points relative to the planned land uses should be minimal and directed onto the new road network (Maple Hill Drive/Croyden Avenue) instead of West Main, the additional traffic generated will impact the intersections of these cross streets with West Main and Drake Road. The Township should request that the road agencies consider modification to the intersection design and signalization at these locations.

Except for US-131, this portion of West Main experiences the highest volume of traffic in the Township with an average of 29,600 vehicles per weekday (18). Although some access management techniques, such as the frontage road, have improved traffic operations along this segment, the high traffic volume still causes periodic congestion and significant accident problems at the two major intersections - West Main/Drake Road and West Main/Maple Hill Drive (19).

Drake Road (M-43 to Stadium Drive)

Drake Road serves as the eastern boundary of Oshtemo Township and is a primary north-south route. It links the two major east-west arterials in the Township which provide access to two separate commercial centers. A five lane artery, Drake Road carries average traffic volumes of 26,900 vehicles daily (20), over the estimated capacity of 25,000 vehicles per day.

The adjacent land use is primarily medium-high density residential with some scattered office use. Drake Road also provides access to a regional mall just north of West Main and a large commercial development as well as a regional Post Office south of West Main. It constitutes one of the two cross streets accepting the additional traffic anticipated from the medium density development ring surrounding the West Main commercial core.

Drake Road is characterized by rolling topography which limits motorists' sight distance at several locations, especially when weather conditions reduce visibility. Among the locations with limited sight distance are the intersections of West Michigan/Drake Road, KL Avenue/Drake Road, Century/Drake Road, and Stadium Drive/Drake Road.

Access onto Drake Road has been minimized through the controlled access arrangements of the several multiple family developments and two regional commercial centers that abut the roadway. The abundance of vacant land along the south portion of the street currently limits the number of access locations. To help retain the current desirable traffic operation along these segments, future development and access design along Drake Road, specifically between West Main and Stadium Drive, should be reviewed in consideration of the roadway's function, capacity, and unique topographic characteristics.

The most appropriate access design for this area is the service road concept, with access points onto cross-streets where possible. This type of access should be incorporated in site plans, unless the applicant demonstrates alternate techniques which successfully address the Plan's objectives.

Stadium Drive

The Stadium Drive portion of this street segment is only one half mile in length and primarily constitutes the access ramps to US-131. It carried a daily traffic volume of 26,700 in 2001 (21) but access is restricted and very little abutting private property exists, which increases the street's capacity.

MINOR ARTERIALS

West Main Street (West of US 131)

The West Main corridor west of 7th Street is largely undeveloped. Oshtemo's Master Land Use Plan objectives include only two moderate-size commercial nodes to be linked together by transitional and residential land use. Current development patterns generally follow the Plan. Numerous cross street, large vacant parcels, residential land use, and partial development of the commercial centers can all be found. Current traffic volumes are easily accommodated by the five lane road which has an estimated capacity of 25,000 - 26,000 vehicles per day (25).

Five-lane arterials generally attract strip commercial development and its resultant traffic problems. However, the Township has consistently discouraged strip commercial along this roadway in its long range plans and rezoning decisions in consideration of the Township's objectives regarding access management, strip commercial development and the preservation of Oshtemo's rural/residential land use pattern.

The 9th Street Focus Area Overlay Zone was adopted in 1998 along the south side of West Main Street, east of 9th Street. This zone allows for coordinated office development to occur on the first 880 feet south of the street with limited, shared and well-placed access to West Main Street.

Drake Road (Ravine Road to M-43 and Stadium Drive to Parkview Avenue)

Drake Road serves as the eastern boundary of Oshtemo Township and is a primary north-south route. It links the two major east-west arterials in the Township which provide access to two separate commercial centers. A two-lane artery in the northern segment with primarily residential and institutional land uses abutting. A new boulevard has been established in the southern section where primarily vacant land abuts, this road segment primarily serves to move through traffic from Stadium Drive to Parkview Avenue a major east-west road in the region. Both segments have sight limitations due to topography. Controlled access arrangements will be essential to preserve the carrying capacity of this street.

Stadium Drive

Stadium Drive, as it extends east from the village area, is an active commercial corridor, characterized by a mixture of retail, office, industrial and high density residential land use. This five lane artery carries significant traffic volumes because of its through nature and the several retail strip centers, restaurants, and multiple-family developments located along the roadway and growth occurring west of Oshtemo. There is little consistency in the setbacks or general appearance of abutting land use. Recent developments east of the Village have demonstrated controlled access arrangements but much of the land use in the Village itself is characterized by shallow setbacks, smaller lots, and individual driveways.

Stadium Drive west from the village area is a primarily an east-west route in the Township. An all-weather access route for industrial traffic destined for I-94 and/or the City of Kalamazoo, a portion of this minor arterial also services a small 'downtown' commercial center and links local residential areas in the Township.

Abutting land use varies and includes an active commercial center (The Village), an established industrial node, and large amounts of acreage devoted to residential land use. Considerable land area is vacant in all of the development districts.

South Ninth Street

South Ninth Street is a north-south route in the Township providing access to both the village area and I-94. The two-lane artery, north of Stadium Drive, has an estimated capacity of 10,000 vehicles per day. The five-lane section south of Stadium Drive has a daily traffic volume of 12,500 vehicles per day (22).

The portion of South Ninth Street extending south from the village is characterized by large, vacant parcels, has been designated as a restricted industrial corridor due to the many industrial amenities in the area and has been earmarked in the Land Use Plan for large lot development, with increased setbacks and coordinated access arrangements.

The segment of South Ninth Street south of the Village carries a significant traffic volume, averaging due largely to the I-94 interchange and the proximity of Kalamazoo Valley Community College. The

additional traffic to be generated by adjacent land use is projected to be mainly light industrial truck traffic. This segment has a capacity of 36,000 vehicles per day and operates under capacity (23).

South 9th Street north of KL Avenue to West Main Street is experiencing growth. In addition to being a major north-south artery, this street serves intensive commercial development and a growing residential area. It will be imperative that the Township follow land use planning and access management principals in reviewing development proposals in this area to ensure the street will continue to function effectively and safely.

Parkview Avenue

In the Township, Parkview is a two lane road approximately 1.5 miles in length. Averaging traffic volumes of six thousand vehicles per day (24), it serves as a link between the village area and the City of Kalamazoo. Parkview also provides a convenient connecting route to several of the major roadways in the area. The abutting land use along the roadway is largely low density residential and crop-land. However, planned land uses include a mobile home development expansion and medium-density residential development with an emphasis on platting.

Currently, access along Parkview is direct. Planned residential development will have a significant traffic generating potential but should lend itself well to controlled access arrangements such as internal street access with a limited number of direct access points.

KL Avenue

KL Avenue is a two-lane, east-west route in the Township and experiences traffic volumes ranging from 2,000 vehicles per day (west of South Eighth Street) to 10,300 vehicles per day (east of South Eleventh Street) (25). KL Avenue is also an all-weather road east of South Fourth Street, one of only five in the Township, because it previously provided access to a regional landfill.

East of South Ninth Street, KL Avenue provides direct access to a large area of multiple-family development and a small cluster of industries. These land uses currently are responsible for the majority of the traffic volume on KL Avenue. Acres of Industrially-zoned property and multiple family zoning remain undeveloped (26). Development of these areas will serve to generate increased traffic volumes on both KL Avenue and South Ninth Street. West of South Eighth Street, KL Avenue provides direct access to abutting rural residential land use.

COLLECTORS

Twelfth Street, H Avenue, Tenth Street (H Avenue to West Main Street) and H Avenue (Ninth Street to Ravine)

These street segments mainly provide access to adjoining residential land use and serve to link several residential neighborhoods to the more heavily traveled arterials. Considerable land area is available for development along both streets and is planned to accommodate medium-density residential growth.

Current traffic volumes are moderate to high with 3,000 to 11,000 vehicles per day (27), and are easily accommodated by the existing street system. However, development of the vacant land area, specifically along Twelfth Street, would have significant traffic generating potential sufficient to impact the functional capabilities of the streets.

Other Collectors:

These collectors serve primarily residential land uses or connect residential areas to arterial streets. The Master Land Use Plan does not envision non-residential uses in these areas.

North Second Street	South Fourth Street
North Sixth Street	South Sixth Street
North Ninth Street	Almena Drive
N Avenue	Van Kal Street

PROGRAM AREA PROBLEM REVIEW

From the data noted, it is possible to determine the existing and potential problems along the Township's arterials and collectors. Generally, these problems fall into three major categories: street functions, operations, and land use.

Street Functions

1. West Main, Stadium Drive, Drake Road, KL Avenue and 9th Street are arterials serving large volumes of traffic and providing frontage and access to commercial and/or industrial development. Through traffic with destinations outside of the corridors conflict with local traffic destined for the abutting land.

2. South Ninth Street has a dual designation as an industrial traffic route and an arterial providing access to a community college and a commercial center.

3. Stadium Drive currently serves as a major east-west roadway providing access to the Village and the City of Kalamazoo.

4. Planned land use in and around the non-residential cores along West Main will impact the function of the related intersection and the existing signalization situation.

Operations

1. Topographic characteristics of Drake Road create sight-distance problems and increase accident potential.

2. High traffic volumes produce periodic congestion and delay motorists making turns to and from abutting properties.

3. A proliferation of driveways reduces the capacity of a street and results in congestion and inconvenient site access.

4. Excessive curb openings contribute to rear-end and other types of accidents.

5. Driveways near intersections contribute to accidents, primarily rear-end collisions.

Land Use

1. The conversion of narrow-frontage residences to commercial uses in the Village has resulted in closely spaced individual driveways, front yard parking lots, and inadequate landscaping. However, the Village Focus Area Development Plan and Village Commercial District encourage parking behind the buildings, shared access/parking and buildings near the road.

2. Inadequate lot depths and existing shallow setbacks make roadway widening and the application of access management methods very difficult.

3. Residential land use abuts commercial and industrial land use in many areas. Conflicting land use hampers the effective use of coordinated access arrangements.

4. Many vacant areas zoned for high density residential development exist along the Township's arterials and collectors. Though conducive to controlled access arrangements, these land uses generate significant traffic volumes which impact the function of the street and existing street signalization.

ACCESS MANAGEMENT POLICIES

The Oshtemo Township Master Land Use Plan recognizes that convenience for both residents and businesses, as well as the economic strength in Oshtemo Township, is linked to the efficiency of the Township's transportation system.

As a means to protect the function of the existing streets and avoid traffic congestion, the Land Use Plan recommends the development of an access management plan. As set forth in the Master Plan, access management in Oshtemo Township should be structured to establish these guidelines:

- Ensure the health, safety, and general welfare of Oshtemo Township residents and patrons, both now and in the future.
- Lessen congestion on public roads and streets and reduce hazards to life and property.
- Coordinate the projected growth in the Township with the existing street system and planned expansion routes.
- Establish a street improvement plan to avoid costly acquisition of right-of-ways.
- Protect the functional capabilities of existing streets and highways and provide for a continued efficient, safe, and comfortable traffic carrying system.
- Control access along heavily traveled arterials and collectors and at major intersections.
- Require service roads and internal traffic circulation in areas of new development or land use modifications and encourage them in existing developments.
- Require industrial, commercial, multiple-family developments, and single and two-family subdivisions to utilize internal traffic circulation rather than individual driveways.
- Provide adequate access while allowing for a proper relationship between the public street and the driveway and parking area to encourage pedestrian and vehicular safety.
- Maintain adequate setback requirements to provide clear visibility and ensure adequate space for street improvements and access management measures.
- Increase the convenience and safety of pedestrians and bicyclists along arterials and collectors.

- Maintain a working cooperative relationship with the Michigan Department of Transportation (MDOT) and the Kalamazoo County Road Commission (KCRC) to ensure that access management efforts are coordinated.

- Develop and adopt a well defined implementation program to ensure consistent and fair application of access management measures.

- Educate the Township residents and developers as to the value of access management and inform them of the adopted implementation techniques.

The access management policies set forth are intended to provide a general framework from which to adopt access control guidelines and specific street development plans for the Township of Oshtemo.

ACCESS MANAGEMENT TECHNIQUES

Access management techniques involve a variety of regulatory and physical considerations. These techniques will vary depending upon the stage of development of the artery, particular site characteristics, and engineering judgement. Therefore, the access management techniques adopted by the Township are intentionally flexible to allow consideration of unique access problems.

The following examples address major concepts in the control of access and are recommended in various manuals, reports, and articles developed for the Federal Highway Administration (28), the Institute of Transportation Engineers (29), and the U.S. Transportation Research Board. In addition, access management documents from the Tri-County Regional Planning Commission (Lansing, MI), Flint Township, Delta Township, Geneva Township and the American Planning Association were referenced. The specific requirements and/or design criteria for Oshtemo Township were developed using those sources.

The major elements of access management are:

- driveway design (geometrics)
- limiting the number of driveways
- sufficiently spacing driveways
- promoting shared access, i.e. joint driveways, frontage roads, service drives
- promoting side street access

Driveway Design

A driveway should be designed to be capable of accommodating an entering vehicle at a particular speed and provide adequate width for simultaneous ingress and egress. Proper design will maximize turning speeds and increase maneuverability safety. Design features such as throat width and length, curb radius, and approach angle all affect the efficiency of the driveway. Figure 4 identifies these components on a standard two-way driveway.

Improper driveway design, such as inadequate flare of the curb (curb radius), insufficient stacking space (throat length), or improper throat width, creates conflicts for entering and exiting vehicles which, in turn, results in slower turning movements, speed reductions for through traffic, and increased accident potential.

Variations from the standard two-way driveway may be necessary for land users unable to be serviced effectively by one two-way access. Optional features include additional ingress/egress lanes, two one-way driveways, channelizing islands, deceleration lanes, tapers and by-pass lanes. The application of these features will require consideration of traffic conditions and use characteristics and will be based on planning and engineering judgement.

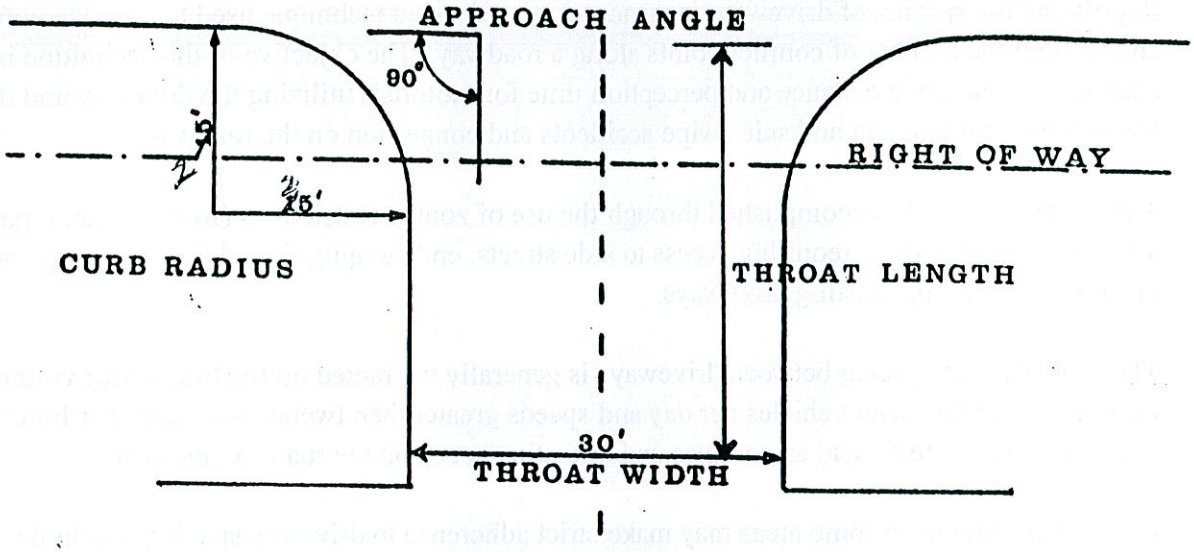


Figure 4. Standard two-way driveway design. From Tri-County Regional Planning Commission 1981, 12.

Number of Driveways

Reducing the number of driveways can effectively improve traffic operations while still providing reasonable access. Developers must often be convinced that a reduction in the number of access points actually can enhance the convenience of motorists. Generally, the number of driveways permitted is based on the length of street frontage. Used in conjunction with driveway spacing guidelines, limiting the number of driveways provides reasonable and convenient site access use while protecting the function of the abutting roadway.

These guidelines can successfully allow for growth along major arteries through the promotion of large-lot developments. Limiting the number of driveways also helps manage access in areas where types of uses or property characteristics do not lend themselves to shared access systems. Limiting driveways also serves as an incentive for shared access arrangements.

Driveway Spacing

Regulating the spacing of driveways is an access management technique used to separate conflict points and to limit the number of conflict points along a roadway. The objective of this technique is to allow adequate deceleration distance and perception time for motorists utilizing the driveway and decrease the potential for rear end and side swipe accidents and congestion on the roadway.

This technique can be accomplished through the use of zoning restrictions (frontage, area, parking lot setbacks, PUD's, etc...), requiring access to side streets, encouraging shared access arrangements, and closing or relocating existing driveways.

The regulation of spacing between driveways is generally warranted on roadways with volumes exceeding five thousand vehicles per day and speeds greater than twenty-five miles per hour and becomes even more critical as volumes and operating speed on the roadway increase.

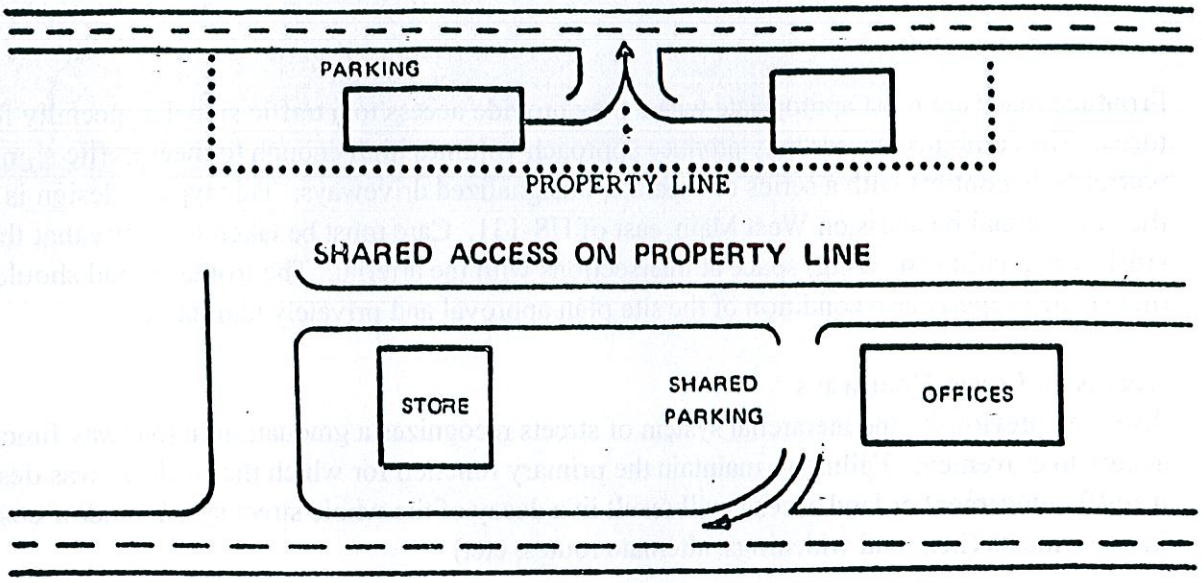
Existing conditions in some areas may make strict adherence to driveway spacing standards unobtainable within the near future. A more realistic approach along road segments with existing access or short parcel or lot frontages is to limit the driveways to those essential to the land use and relate driveway location to adjacent driveways and nearby intersections. Offsetting drives by a minimum of 150' or aligning them directly across from one another (especially where future signalization is likely) should be required to reduce left-turn conflicts.

Shared Access Arrangements

The use of shared drives is a very effective means to reduce traffic conflicts and preserve the functional character of the roadway. Shared access arrangements can also result in shared parking lots and coordinated site circulation between properties which allows for safer traffic movement between establishments.

Shared drives are often located along joint property lines and may warrant special driveway design considerations to accommodate higher traffic volumes and turning movements. Cooperation between involved parties regarding easements and maintenance agreements is required to effectively utilize this technique. It also typically requires a formal agreement between property owners granting joint use of a driveway. Reference Appendix A for a sample agreement.

Figure 5 illustrates examples of the application of the shared drive concept.



INTERNAL TRAFFIC CIRCULATION

Frontage Road/Service Drives

A frontage road is an access management technique which serves to segregate local traffic from through traffic and provide access to abutting land use. Access to the frontage road from the through street is generally provided in connection with a cross street intersection or well spaced driveways.

A frontage road system can preserve the function of the street and alleviate congestion by reducing the number of conflicts along the street and removing the lower turning vehicles from the traffic stream. It also provides more convenient travel between abutting properties. Figure 6 illustrates a typical frontage road layout.

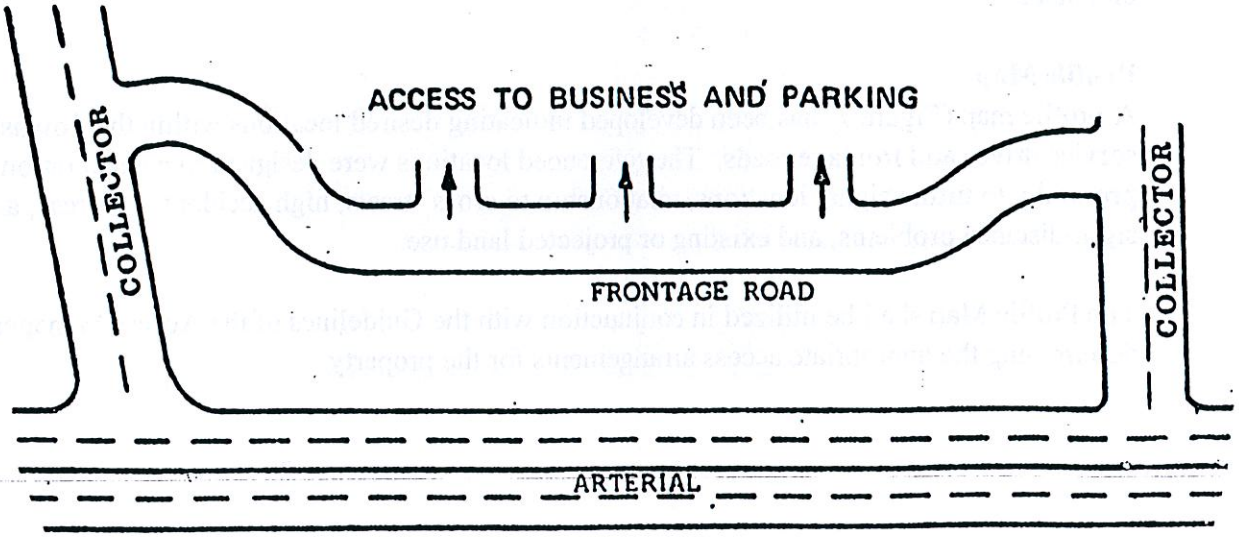


Figure 6. Typical frontage road layout. From Tri-County Regional Planning Commission 1981, 23.

Frontage roads are most appropriate where they provide access to a traffic signal, especially for left turns. The combined access may produce approach volumes high enough to meet traffic signal warrants, in contrast with a series of separate, unsignalized driveways. This type of design is used along the commercial business on West Main, east of US-131. Care must be taken to ensure that there is sufficient queuing (stacking) space at intersections with the arterial. The frontage road should be built on private property as a condition of the site plan approval and privately maintained.

Access on Lesser Roadways

As noted previously, the hierarchal system of streets recognizes a graduation in roadway function from access to movement. Failure to maintain the primary function for which the roadway was designed, be it traffic movement or land access, will result in a decay of the whole street system and/or costly improvements (i.e., road widenings, alternate routes, etc.)

Based on this premise, corner properties or properties fronting more than one roadway should consider access onto the lesser roadway. This places the point of access onto a roadway designed to accommodate slower traffic and land access movements while leaving the major artery free to move faster through traffic without conflict.

In situations where driveway spacing requirements can be met, high traffic volumes will be generated, or the subject side street is residential or inappropriate for non-residential traffic, access onto the main roadway or access to both roadways should be considered.

The access point should be located as far from the intersection as possible to allow for adequate corner clearance.

Profile Map

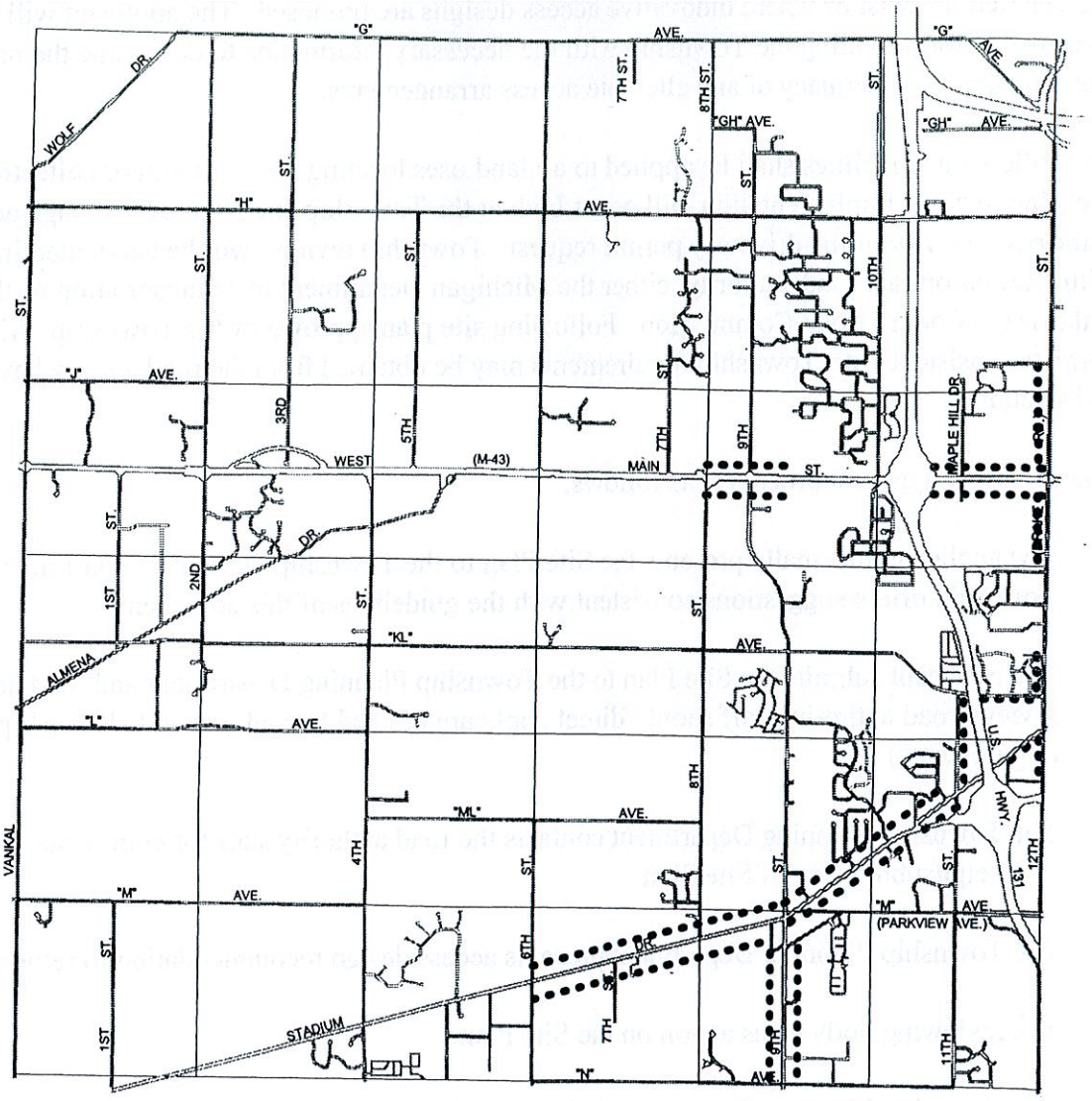
A profile map (Figure 7) has been developed indicating desired locations within the Township for service drives and frontage roads. The referenced locations were designed in consideration of proximity to future signal locations, relationship to cross streets, high accident rate areas, areas having sight-distance problems, and existing or projected land use.

The Profile Map shall be utilized in conjunction with the Guidelines of the Access Management Plan in determining the appropriate access arrangements for the property.

Figure 7.

Service Drive / Frontage Road Map

CHARTER TOWNSHIP OF OSHTEMO



Legend

Planned Service Drive / Frontage Road Locations

N

Prepared by
Oshtemo Township
Planning Department
September 2003

ACCESS MANAGEMENT GUIDELINES

The standards contained herein were derived through the numerous sources previously referenced and are intended to serve as guidelines in site plan and platting decisions. Engineering judgement of the access situation will be considered in lieu of the adopted guidelines where unique traffic conditions or site restrictions exist or where innovative access designs are proposed. The applicant will be responsible for providing the Township with the necessary information to determine the nature of the site situation and adequacy of any alternate access arrangements.

The following guidelines shall be applied to all land uses locating on an arterial or collector and requiring site plan review. Implementation will occur both at the Township site plan review stage and during road authority's review of the driveway permit request. Township reviews will be conducted in cooperation with the appropriate road authority, either the Michigan Department of Transportation or the Kalamazoo County Road Commission. Following site plan approval by the Township, driveway permits consistent with Township requirements may be obtained from the road agency having jurisdiction.

The driveway approval process is as follows:

1. The applicant informally presents the Site Plan to the Township Planning Department. The Township offers suggestions consistent with the guidelines of this document.

2. The applicant submits the Site Plan to the Township Planning Department and road authority for review (road authority staff should direct applicant of need to conform with Township requirements).

3. The Township Planning Department contacts the road authority staff for comments within 10 days of receipt/submission of Site Plan.

4. The Township Planning Department presents access design recommendation to reviewing body.

5. The reviewing body takes action on the Site Plan.

6. The Township Planning Department informs road authority of staff decision.

7. The applicant requests driveway permit from road authority.

Driveway Design

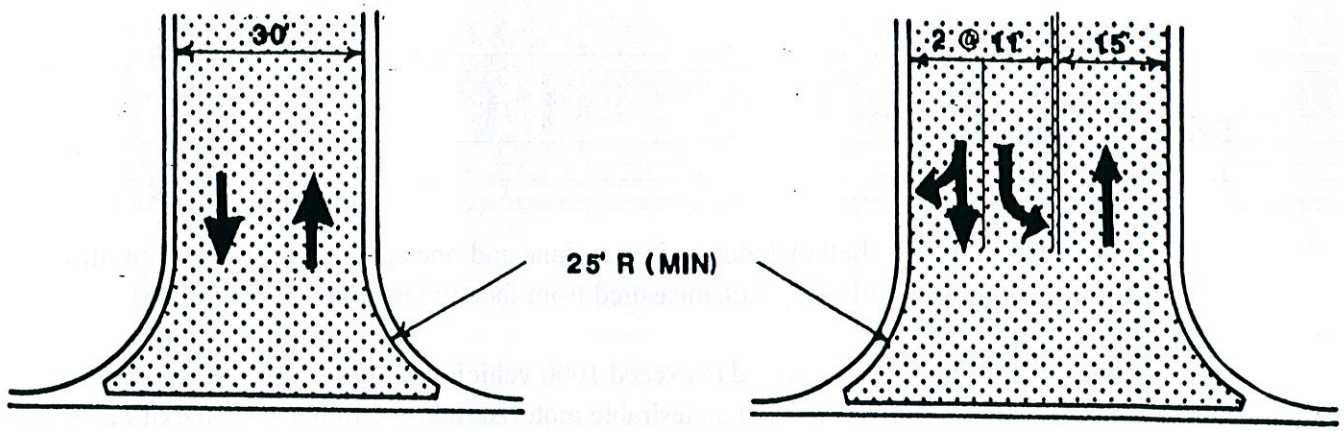
1. Driveway width

a) The standard design shall include one ingress lane and one egress lane with a combined maximum throat width of thirty feet, measured from face to face of curb (Figure 8a)

b)Where exit volumes are expected to exceed 1000 vehicles per day, 100 during peak hours, or in areas where it is determined that undesirable motorist delays will occur, two exit lanes may be required. Such driveways should include on 15 foot ingress lane and two 11 ½ foot wide egress lanes (one marked exclusively for left turns - Figure 8b). In areas where significant pedestrian/bicycle travel is expected, the ingress and egress lanes should be separated by a 4 - 10 foot wide median with pedestrian refuge area (Figure 8c).

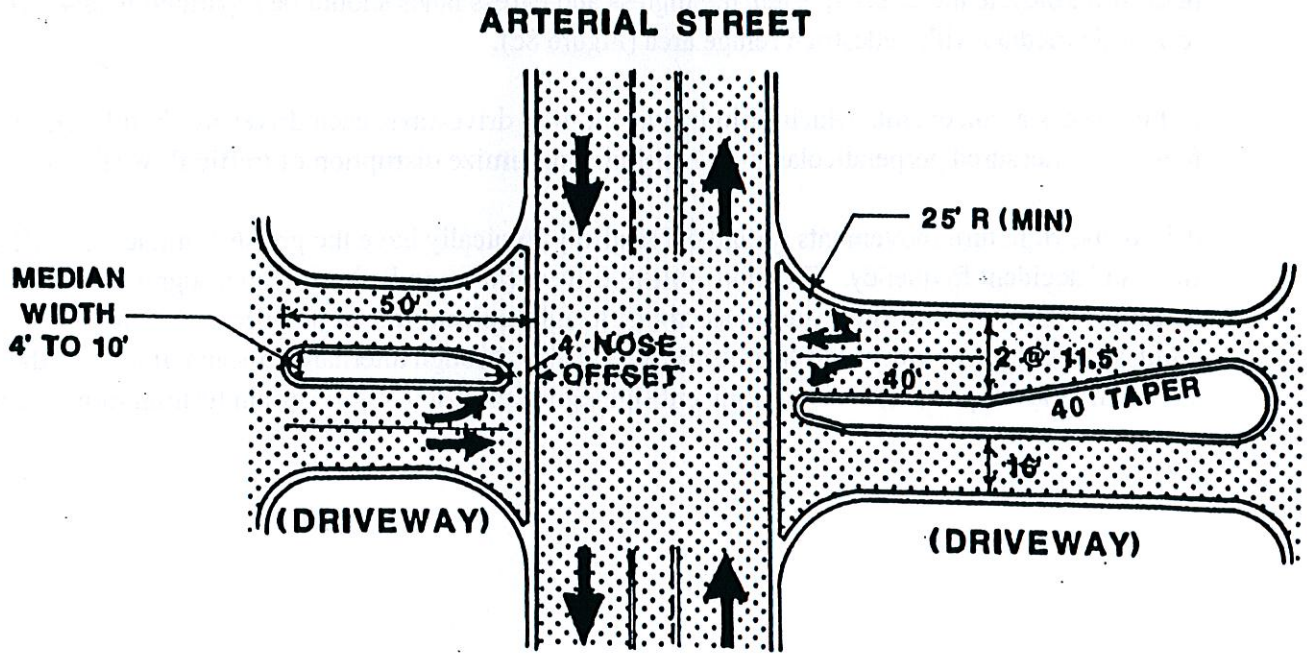
c) For access arrangements which include two one-way driveways, each driveway shall be sixteen feet wide, measured perpendicularly, and angled to minimize disruption of traffic flow (Figure 8d).

d)Left and right turn movements on and off roadways typically have the greatest impact on traffic flow and accident frequency. Therefore, where driveways are to be located in a segment defined in adopted Township corridor studies as having a high accident rate or significant traffic congestion/delays, or where left turn access is available through alternative means of access, the Township may require driveway design and signing which discourages certain turning movements.

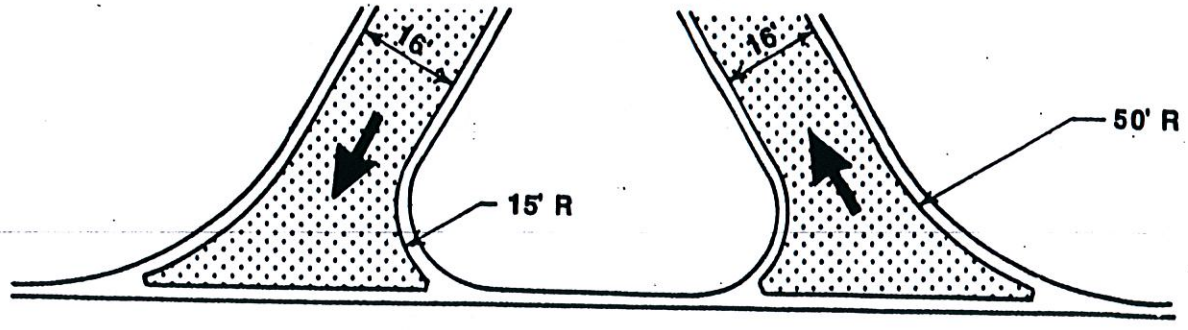


a. TYPICAL 2-WAY DRIVEWAY

b. HIGH-USE DRIVEWAY



c. BOULEVARD DRIVEWAYS



d. ONE-WAY DRIVEWAYS

Figure 8. Typical driveway designs. From Delta Township Zoning Ordinance, 19-10.

e) Where driveways are intended to control specific left and/or right turn ingress and egress, the designs shown in Figure 9 shall apply. Similar designs shall be accepted, provided that they are approved by the Michigan Department of Transportation or the Kalamazoo County Road Commission.

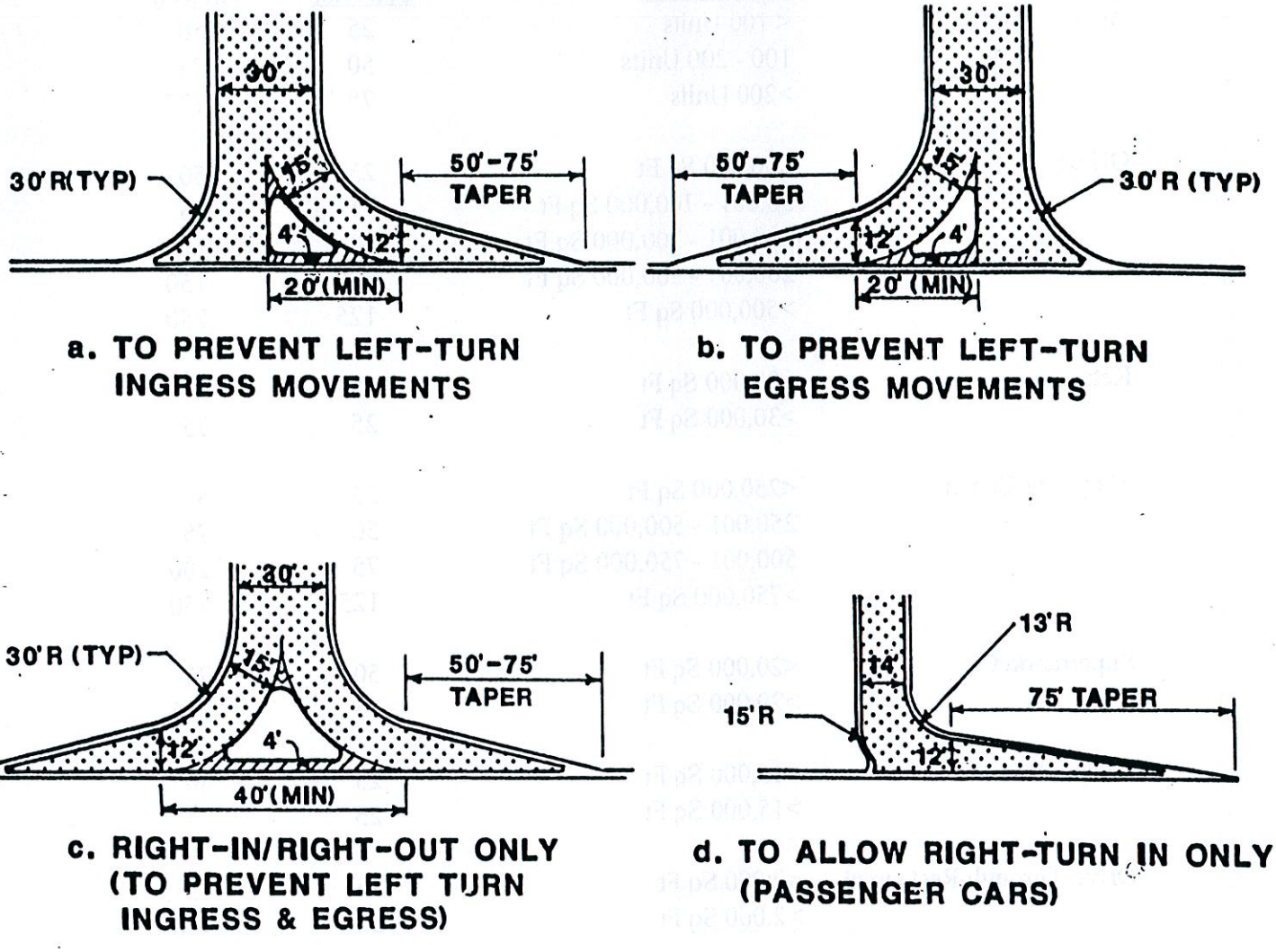


Figure 9. Channelization island designs. From Delta Township Zoning Ordinance, 19-12.

2. Engineering judgment should be utilized to determine the necessary throat length and storage guidelines. In the absence of adequate traffic volume data, application of the commonly-used values found in Table 1 is appropriate.

Table 1. Minimum Throat Length Requirements

Land Use	Building Size	Minimum Throat Length (ft.) Collector	Arterial
Apartments	< 100 Units	25	50
	100 - 200 Units	50	75
	>200 Units	75	125
Office	<50,000 Sq Ft	25	50
	50,001 - 100,000 Sq Ft	25	75
	100,001 - 200,000 Sq Ft	50	100
	200,001 - 500,000 Sq Ft	100	150
	>500,000 Sq Ft	125	250
Retail	<30,000 Sq Ft	25	50
	>30,000 Sq Ft	25	75
Shopping Center	<250,000 Sq Ft	25	50
	250,001 - 500,000 Sq Ft	50	75
	500,001 - 750,000 Sq Ft	75	200
	>750,000 Sq Ft	125	250
Supermarket	<20,000 Sq Ft	50	75
	>20,000 Sq Ft	75	125
Restaurant	<15,000 Sq Ft	25	50
	>15,000 Sq Ft	25	75
Drive-Through Restaurant	<2,000 Sq Ft	25	75
	>2,000 Sq Ft	50	100
Motel	<150 Rooms	25	75
	>150 Rooms	25	100
Light Industrial	<100,000 Sq Ft	25	50
	100,001 - 500,000 Sq Ft	50	100
	>500,000 Sq Ft	50	200

Source: Vergil Stove and Frank Koepke, 1988.
Transportation and Land Development, Institute of Transportation Engineers.

2. Curb Radii

a) Standard driveways shall be designed with a minimum 25 foot radii where primarily passenger vehicle traffic is expected.

b) For sites where truck traffic is expected, or where determined necessary by the Oshtemo Township Fire Department, the driveways shall be designed with a minimum 30 foot radii.

3. All driveways should be on a ninety degree angle with the roadway unless physical modifications and directional signs are used to enforce intended one-way operations or restricted turning movements.

4. Declaration lanes and tapers, where warranted by either through traffic conditions or expected high driveway volumes, should be used to avoid the disruption in the flow of traffic caused by motorists making right turns.

5. When alternatives to a two-way driveway are necessary to provide adequate driveway access to property fronting upon the arterial street system, the following progression of alternatives should be used:

a) One standard, two-way driveway;

b) Additional ingress/egress lanes on one standard, two-way driveway;

c) Two, one-way driveways;

d) Additional ingress/egress lanes on two, one-way driveways;

e) Additional driveway on cross street;

f) Additional driveway on major street.

Restricted turns and roadway modifications will be considered in conjunction with alternative driveway designs.

6. Driveways shall be constructed of paved surface resistant to erosion.

7. Driveways shall be constructed such that drainage is channeled away from the street right-of-way.

8. In order to ensure smooth on site traffic circulation, directional signs and/or pavement markings may be required and shall be clearly visible and maintained.

Number of Driveways

1. Access for an individual property or for contiguous properties under the same ownership shall consist of either a single two-way driveway or a paired driveway system wherein one driveway is designed, and appropriately marked, to accommodate ingress traffic and the other egress traffic.

2. For developments that can demonstrate that their combined driveway approach volumes (entering and exiting) will exceed 3000 during an average day (or will be used by 300 vehicles during the peak hour of traffic for either street or the use), and lacking access to a secondary street, a second driveway may be allowed along the major street provided that the additional driveway can meet the spacing requirements.

3. For a property with frontage exceeding 300 feet, or where a property has frontage on at least two streets, an additional driveway may be allowed, provided that a traffic analysis is submitted by the applicant showing that conditions warrant an additional driveway and that all driveways meet the spacing requirements.

4. Certain developments generate enough traffic to warrant consideration of an additional driveway to reduce delays for exiting motorists. Where possible, these second access points should be located on a side street, shared with adjacent uses or designed for right turn-in/right-turn-out-only movements. Uses where a second driveway could be considered are influenced by the trip generation characteristics of the use and the volumes of the adjacent roadway, as shown in Table 2. (Note: Where the development has access to a signalized location, the approach volume of driveway traffic should be double that shown for unsignalized locations to warrant consideration of a second access location.)

Table 2. Development Characteristics that Warrant Consideration of an Additional Driveway

: multiple family developments with over 500 units

: a grocery store of over 30,000 square feet (GFA)

: a shopping center with over 40,000 square feet (GFA)

: a hotel or motel with over 400 rooms

: industrial developments with over 300,000 square feet (GFA) or 350 employees (although a secondary entrance for trucks should be allowed)

: warehouses of over 750,000 square feet (GFA) or 350 employees

: a mobile home park with over 600 units

: general office building of 150,000 square feet (GFA) or 500 employees

: medical office building of 60,000 square feet (GFA) or 200 employees

: fast food restaurants of over 6,000 square feet (GFA)

: sit-down restaurant of over 20,000 square feet (GFA)

Source: The WBDC Group, 1989. Based on the Institute of Transportation Engineers Trip Generation Manual, 4th Edition.

Driveway Spacing

1. Driveway spacing will be based on posted speed limits along the property frontage as indicated in Table 3.

Table 3. Recommended Driveway Spacing Distances

Posted Speed Limit (MPH)	Driveway Spacing* (feet)
30	125
35	150
40	185
45	230
50	275
55	350

* Measured centerline to centerline

Source: John Flora and Kenneth Keitt. 1982. Access Management for Street and Highways, U.S. Department of Transportation, Federal Highway Administration, June.

2. Driveway spacing from intersection streets shall be subject to the schedule outlined in Table 4 below:

Table 4. Driveway Spacing from Intersections

Driveways Along Arterials

Intersecting Street	Full Movement Driveway (feet)	Channelized for right-turn-in/ right-turn-out only (feet)
Arterial	250	100
Signalized Non-Arterial	125	75
Other Street	100	75

Driveways Along Side Streets Intersecting Arterials

Intersecting Street	Full Movement Driveway (feet)*	Channelized for right-turn-in/ right-turn-out only (feet)*
Arterial	200	100
Signalized Non-Arterial	100	75
Other Street	75	75

* Measured from the nearest edge of the driveway throat to the nearest edge of the intersection. Source: The WBDC Group. 1989.

Reference Figure 10 for an illustration of typical driveway spacings required by Tables 3 and 4.

3. a) If the amount of the street frontage is not sufficient to meet these criteria, the driveway shall be constructed adjacent to the property line furthest from the intersection.

b) Future shared use or the development of a frontage road/service drive will be encouraged.

c) In areas where accidents and congestion due to left turn traffic movements are a concern, designs to discourage left turn ingress and/or egress will be considered.

4. If a driveway curb radius extends beyond the frontage of the property, written consent from the affected property owner allowing the design must be provided.

5. In order to minimize left turn conflicts at non-signalized locations, driveways shall be offset a minimum of one hundred fifty feet, measured centerline to centerline, or aligned with those across the street.

6. Where a property has frontage or access on more than one roadway, access shall be provided from the lesser traveled street. Where spacing requirements can be met, high traffic volumes will be generated, or the subject side street is inappropriate for non-residential traffic, access onto the main roadway will be considered.

7. In the case of expansion, alteration or redesign of an existing development where existing driveways do not comply with the guidelines set forth in this Plan, the closing, relocation, or redesign of the driveway may be required.

Shared Access Arrangements

1. Shared driveways or joint use of a driveway by two or more property owners shall be encouraged. In cases where access is restricted by the driveway guidelines set forth herein, a shared driveway could be used to comply with the standards.

2. The shared driveway shall be constructed along the joint property line unless a written easement is provided which allows traffic to travel across one parcel to access another.

3. The applicant shall provide to the Township a copy of a written and recorded agreement to share access among two or more property owners.

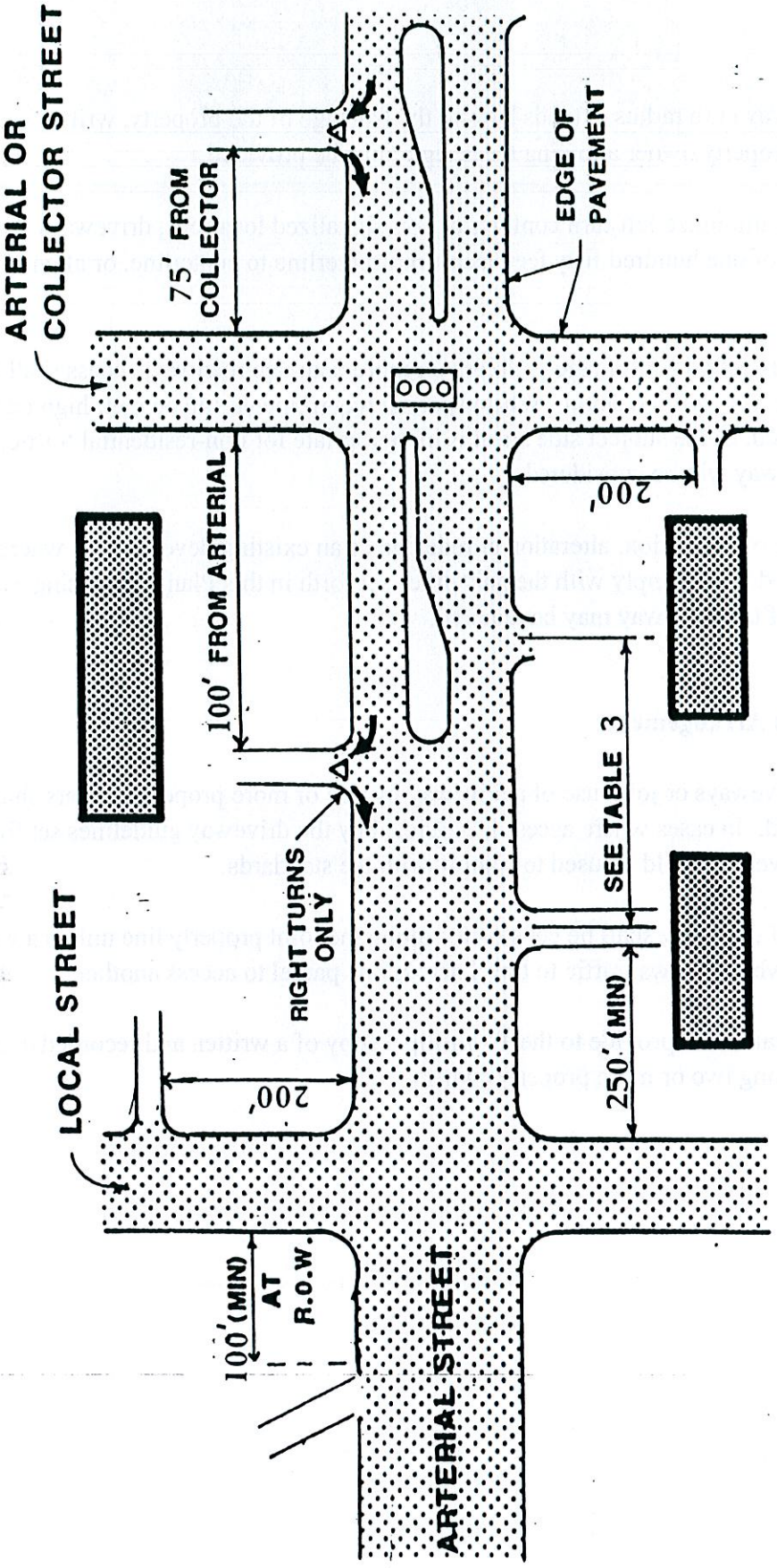


Figure 10. Typical Driveway Spacings. From Delta Township Zoning Ordinance, 198 , 19-10.

Frontage Roads/Service Drive

A frontage road is defined as a public or private drive which generally parallels a public street between the right-or-way and building setback line and links two or more properties. A service drive is similar to a frontage road but runs behind the buildings which front on a the major artery. The drive also generally runs parallel to the right-of-way but may provide access to properties on both sides thus spreading the construction costs.

1. In areas where frontage roads or service drives exist, access to individual properties shall be provided by these drives rather than direct access.

2. In areas where frontage roads or service drives are recommended in the Access Management Plan but adjacent properties have not yet developed, the site should be designed to accommodate the facility in the future. In such areas where the design of the future drive would not include direct access to the street for the property in question, temporary direct access would be allowed, except that the direct access will then be closed when the service drive or frontage road is constructed.

3. Frontage roads and service drives shall be constructed to the following standards (See Figure 11a. and 11b.):

   a) A width of thirty to thirty-six feet, measured curb to curb, with an approach width of thirty-nine feet at intersections.

   b) Connection points with the major artery shall be designed according to the same minimum standards as described for driveways.

   c) A minimum setback of thirty feet from the right-of-way, provided that there is at least sixty feet of queuing (stacking) space from the street pavement edge where driveway access to the street is provided.

   d) Intersections for frontage roads should be located at least one hundred fifty feet from the street right-of-way which they parallel.

   e) Intersections for service drives should be at least three hundred feet from the street right-of-way which they parallel.

   f) Individual drives onto the access road shall not be subject to the minimum spacing standards indicated in Table 3.

g) Parking shall not be allowed either along the access road or designed in such a manner as to require backing onto the access road.

h) In the case of expansion, alteration or redesign of an existing development where it can be demonstrated that pre-existing conditions prohibit installation of a frontage road or service in accordance with the aforementioned standards, the Township shall have the authority to allow alternative cross access between adjacent parking areas through the inter-connection of main circulation aisles. Under these conditions, the aisles serving the parking stalls shall be aligned perpendicularly to the access aisle, as shown in Figure 11c., with islands, curbing and/or signage to further delineate the edges of the route to be used by through traffic.

Parking Lot Connections

Where a proposed parking lot is adjacent to an existing parking lot of a similar use, a vehicular connection between the two parking lots will be encouraged. For developments adjacent to vacant properties, the site should be designed to provide for a future connection (Figure 11c.).

Shared Access Reduction Schedule

1. When a driveway is established to serve two or more properties, and where such properties are not served by any other access point, the total parcel or lot size and road frontage required by the Township Zoning Ordinance shall be reduced by ten percent.

2. When a frontage road or service drive is established on a property, the total property size, road frontage, and number of parking spaces required shall be reduced by ten percent.

3. When a cross parking arrangement or agreement has been reached (and written evidence thereof in existence) regarding two or more properties, the number of parking spaces required for each of the properties in question shall be reduced by ten percent.

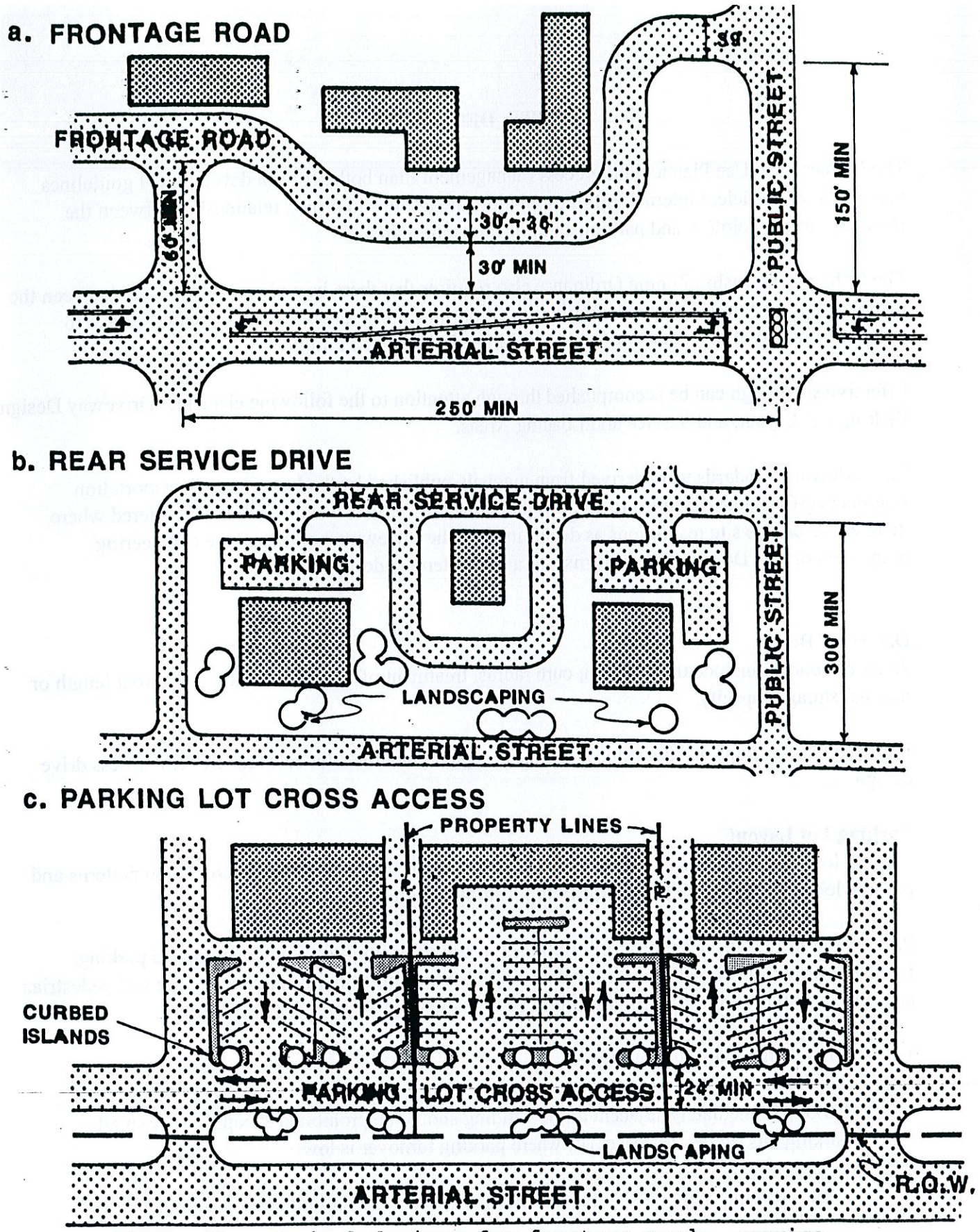


Figure 11. Typical designs for frontage roads, service drives, and parking lot connections. From Delta Township Zoning Ordinance, 19-16.

SITE DESIGN

The Master Land Use Plan and the Access Management Plan both set forth development guidelines that encourage efficient internal traffic circulation and a safe and proper relationship between the roadway, access point(s), and parking areas on developed sites.

The Oshtemo Township Zoning Ordinance also requires that there be a proper relationship between the roadway, access point(s), internal circulation and parking areas in the approval of any site plan to ensure the "safety and convenience of pedestrian and vehicular traffic".

Effective site design can be accomplished through attention to the following elements: Driveway Design, Parking Lot Layout, and Service and Loading Areas.

The following standards were derived from manuals published by the Institute of Transportation Engineers (36) and are intended to serve as guidelines. Alternate designs will be considered where there exists unique site restrictions as determined by the reviewing body or where engineering judgement or Fire Department concerns warrant an alternate design.

Driveway Design

Areas of concern include throat width, curb radius, treatment of turn movements, and throat length or internal storage capacity.

Previous Plan sections discuss extensively the accepted guidelines for safe and efficient access drive design.

Parking Lot Layout

Parking lot layout involves parking stall location and orientations, parking lot circulation patterns and parking lot landscaping (i.e., islands, curbing, vegetation, etc.)

Parking lots should be designed to offer safe and convenient site access, circulation, and parking. Failure to provide well-designed lots will result in driver confusion, increased vehicular and pedestrian accident potential, and customer frustration.

1. Parking Stall Location/Orientation

   a) Parking immediately adjacent to the building should be prohibited except in very small parking lots (under 20 spaces) or where parking turnover is low.

   b) Prime customer parking should be conveniently located near building access points.

c) Handicap parking stalls should be located in close proximity to building access points and should be serviced by adequate barrier-free paths.

d) Provision of overflow and employee parking areas should be considered.

e) Parking stalls shall be dimensioned at ten feet by twenty feet, except for handicap parking stalls which shall be dimensioned in compliance with the Michigan Barrier Free Code and the Americans with Disabilities Act.

1. Parking Lot Circulation

a) Parking lot aisles shall be no less than twenty-four feet wide if parking is allowed on both sides or twenty feet wide if parking is angled or along one-side only.

b) Parking lot aisles should not exceed 300-350 feet in length without a break in circulation.

c) Circulation near major access points should be channelized with raised (landscaped) islands to reduce speeds through the lot and minimize motorist confusion.

d) Perimeter roads exist between the parking areas and the building and are used by both vehicles and pedestrians. Recommendations for perimeter roads include:

- An uninterrupted length of no more than 400 feet.

- A minimum width of twenty-seven feet from sidewalk curb adjacent to building to the road side of the parking island.

- A minimum inside radii (measured back of curb) of between thirty and fifty feet.

- Consideration for fire lane designation.

e) Ring Roads provide the primary on-site circulation for larger office, commercial, and industrial developments. Recommendations for ring roads include:

- A width of forty-eight feet (four-lane) assuming parking areas on both sides; thirty-six feet (three-lane) is acceptable if parking is restricted to one side.

- A width of twenty-seven to thirty feet can be considered for developments of less than 500,000 square feet gross leasable area in size.

- Three-way intersections should be used for all on-site intersections and designed to the same standards as used for comparable street classes.

3. Parking Lot Landscaping

a) Hairpin or looped/double striping patterns are recommended for parking stalls.

b) A four-inch-wide line should be used for hairpin as well as single-line striping.

c) End-islands should be used to delineate the on-site circulation roadway at the edge of parking lots in order to:

- protect end auto from turning vehicles;

- prevent sight-distance limitations;

- provide a location for landscaping offering visual relief and aesthetic value.

Figure 13 illustrates typical end-island designs for 90 and 60 parking layouts.

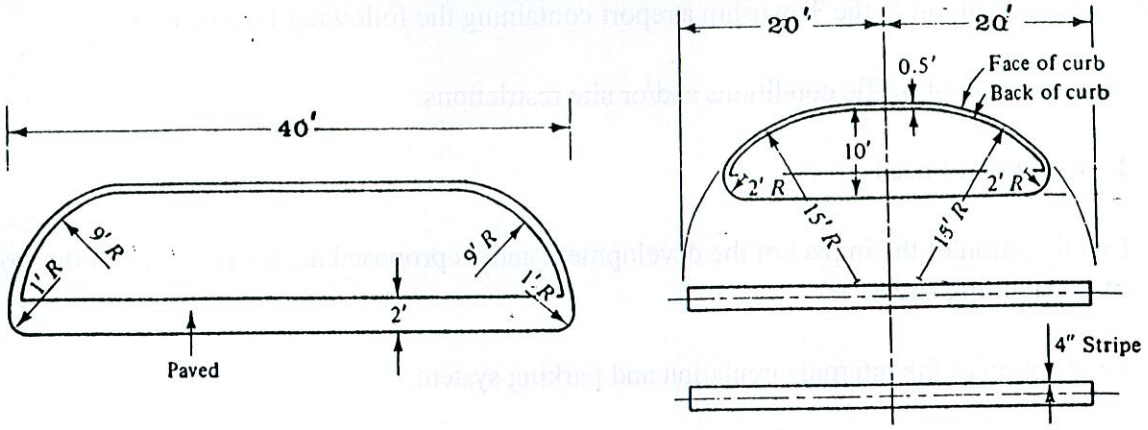
d) A four-inch vertical curb is recommended for use as wheel-stops and for end islands.

Service and Loading Areas

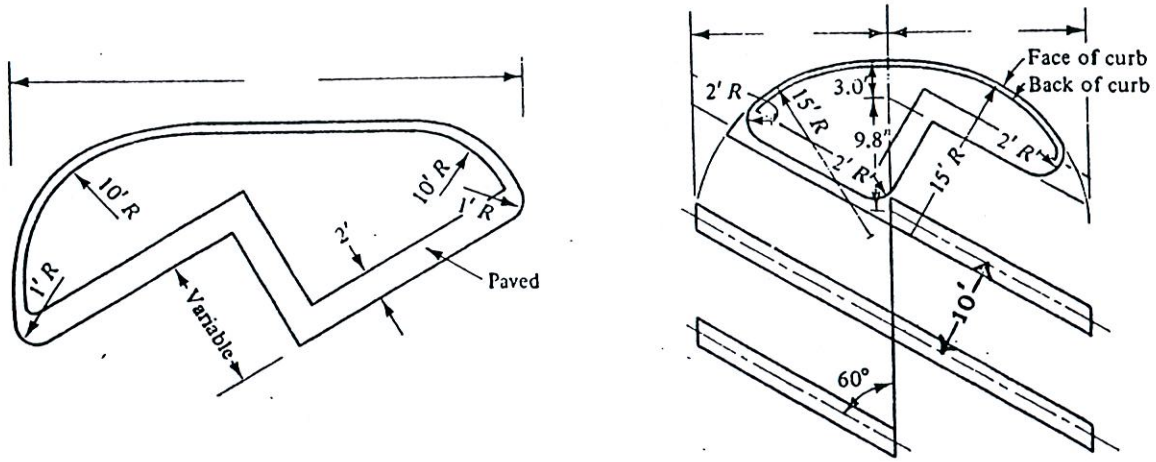
1. Large activity centers should provide separate access drives for delivery traffic.

2. Rear loading/unloading is considered most efficient and convenient. Front loading docks shall be prohibited.

3. Loading areas should be located out of pedestrian areas and should be screened from adjacent streets and properties.



NINETY-DEGREE
PARKING



SIXTY-DEGREE
PARKING

Figure 13. Typical end-island designs. From Institute of Transportation Engineers, Transportation and Land Development, 1988, 202.

DEVIATION FROM GUIDELINES

For any development for which a deviation from the guidelines set forth herein is requested, the applicant shall submit to the Township a report containing the following information:

1. Identification of traffic conditions and/or site restrictions.

2. Justification of need.

3. Identification of the impact of the development and its proposed access facilities on the operation of the abutting street.

4. Description of the internal circulation and parking system.

5. Compliance with the objectives of the Township's access management guidelines.

Upon adequate submission of the aforementioned information, the reviewing body shall determine if alternate access arrangements or site designs are warranted and comply with the Township's access management objectives.

IMPLEMENTATION

Implementation of this access management program will be an on-going project that will be complicated by the presence of existing land uses. Access improvements to these existing land uses should not be required unless a hazardous situation exists or there are obvious liabilities present. However, in locations characterized by scattered existing development, incorporation of access management methods will be encouraged as surrounding property develops. Generally, implementation of the program will occur only as land use changes or undergoes improvements which require Township approval.

To achieve the goals of the program, the Township shall allow new driveways only in accordance with permitted locational and design standards, encourage the upgrading of inadequate driveways, and eliminate hazardous access points. This task is becoming increasingly important as development continues along the Township's arteries, and the safety and capacity of the streets is degraded.

Probably the most significant factor in determining the success of this program will be the cooperation of all parties involved. Without the cooperation and coordination of the land owner, the road authority (Michigan Department of Transportation and/or the Kalamazoo County Road Commission), Township Board, Planning Commission, Zoning Board of Appeals, and Township staff, successful implementation of the program is not likely.

In accomplishing the objectives of Oshtemo's access management program, the Master Land Use Plan, the Access Management Plan, the zoning ordinance, and the site plan review process all become critical elements.

The Master Land Use Plan and Access Management Plan provide for the establishment of an informal base and a commitment to access management at a policy level. The zoning ordinance serves as the legally enforceable tool to implement the adopted policies. This is accomplished through the establishment of developmental standards and a site review process.

Section 82.000 of the Oshtemo Township Zoning Ordinance requires that all uses, except single and two-family residential, must receive site plan approval. Section 82.800(a) states that the reviewing body is required to consider "that there is a proper relationship between the existing streets and highways within the vicinity and proposed deceleration lanes, service drives, entrance and exit driveways and parking areas to assure the safety and convenience of pedestrian and vehicular traffic" when approving any site plan.

More specifically, the review procedure allows for the Township to consider the circulation pattern, driveway design, driveway location, and number of driveways for a proposed development.

The Oshtemo Township access management program provides a set of guidelines based upon sound planning and design principles which shall be used in determining compliance with Section 82.800(a), Oshtemo Township Zoning Ordinance. This will enable the reviewing body to base approvals of proposed access arrangements on adopted policies and allow the use of an integrated and consistent set of standards.

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LIST OF REFERENCES

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APPENDIX A

SAMPLE

RECIPROCAL EASEMENT AGREEMENT

THIS RECIPROCAL EASEMENT AGREEMENT, made and entered into this_____ day of _____, 20__, by and between _____ (corporation, partnership, single individual, husband and wife) whose address is _____ _____, Michigan (Party "A"), and _____ _____, a _____ (corporation, partnership, single individual, husband and wife), whose address is _____ _____, Michigan (Party "B").

WITNESSETH:

WHEREAS, Party A owns a certain parcel of land located in the _____of __ _____, _____ of _____ _____, and State of Michigan ("Parcel A"), legally described as follows.

[insert legal description of Parcel A]

and

WHEREAS, Party B is the owner of a certain parcel of land ("Parcel B") abutting Parcel A, which is legally described as follows:

[insert legal description of Parcel B]

and

WHEREAS, the parties wish to provide each other with easement rights to enable them to share a common driveway;

and

WHEREAS, Parcel A and Parcel B are in need of perpetual easement rights affording adequate access;

and

WHEREAS, it is essential to the value of the Parcels that their access road be maintained in a good and proper manner;

and

WHEREAS, the owners of Parcel A and Parcel B should share equally in the cost of maintaining the access road serving the Parcels;

NOW, THEREFORE, it is agreed as follows:

6. Easement

1.1 Party A does hereby grant to Party B and its employees, tenants, invitees, guests, and customers the right to use those portions of the driveway located or to be located upon Parcel A (appurtenant easement as depicted on the survey attached hereto as Exhibit 1 and hereinafter referred to as "easement premises") for ingress and egress to and from Parcel B, and for utilities and for construction, maintenance and repair of said driveway and/or utilities.

1.2 Party B does hereby grant to Party A and its employees, tenants, invitees, guests and customers the right to use those portions of the driveway located or to be located upon Parcel B (appurtenant as depicted on the survey attached hereto as Exhibit 1 and hereinafter referred to as "easement premises") for ingress and egress to and from parcel A, and for utilities, and for construction, maintenance and repair of said driveway and utilities.

1.3 Party A and Party B also grant appurtenant easement (depicted in Exhibit 1) to any utility company or municipality providing utility services in the vicinity where it is located.

II Repair and Maintenance of Easement.

2.1 The easement shall be paved for use as a vehicular road and shall be maintained in a good and useful condition.

2.2 When repairs appear to be necessary, either the owner(s) of Parcel A, or the owner(s) of Parcel B may undertake such repairs anywhere along the Easement Premises. The owner(s) of Parcel A and the owner(s) of Parcel B hereby grant to one another reasonable rights of passage over their respective parcels for the purpose of conducting maintenance and repair of the easement premises.

2.3 The person undertaking the maintenance or repair shall contract for and initially pay all reasonable costs associated with them. However, the owners of Parcel A and Parcel B shall share equally in such costs, regardless of who incurs them. The party incurring such expenses shall bill the others for their share of such costs. The others shall promptly pay the statement rendered.

2.4(a) Provided he is current in his obligations to the others, any Parcel owner shall be released from all personal liability for costs associated with the repair and maintenance of the Easement immediately upon the sale or other conveyance of his complete fee interest in the Parcel owned by him that is benefitted by the Easement.

2.4(b) If any Parcel owner shall fail to pay any statement tendered by another to him, or to his successors and assigns, within ten days after receipt thereof, the amount of such statement, together with interest thereon at the maximum legal rate, plus attorneys' fees necessary to collection, shall automatically become a continuing lien upon the parcel of the obligor billed, which lien shall be superior to all claims to such parcel except purchase money first mortgages, as well as an enforceable personal obligation of the Parcel owner. The Parcel owner incurring an expense which remains unpaid may, upon failure of the other Parcel owner to pay his share, record notice of his claim of lien against such parcel and thereafter pursue a judicial action to foreclose said lien, subject only to any purchase money first mortgage, in any manner now or in the future permitted by law or equity with respect to mortgage liens. Proceeds received at such sale shall be distributed first to pay the lien being foreclosed upon, plus all costs and expenses, interest, and attorneys' fees, and any surplus shall be distributed in accordance with the priorities established by applicable law. The unpaid Parcel owner may, in addition to, or instead of, foreclosure, obtain a personal judgement against the obligor.

2.5 The owner of Parcel A and the owner of Parcel B shall work together to coordinate their repair and maintenance activities so as to make repair and maintenance of the Easement as economical as possible. Each shall provide the other with reasonable notice before undertaking any repairs or maintenance.

2.6 Any damage to the Easement Premises caused by any Parcel owner or his guests or invitees shall promptly be repaired by that Parcel owner at his sole expense. If any Parcel owner fails to promptly repair damage to the Easement to caused by him or his guests or invitees, another Parcel owner may do so, and the cost of doing so shall be the sole responsibility of the Parcel owner responsible for the damage, to be paid and collected as set forth in Section 2.3 above.

III Subdivision.

3.1 If any of the Parcels are subdivided, all charges that would have been levied in respect of a Parcel (such as an equal share of the cost of maintaining and repairing the Easement) shall be allocated among the subdivision based upon the ratio their respective areas bear to the area of the parcel out of which they were created.

IV Assignment of Rights.

4.1 All rights hereunder granted shall not be further assignable by such Parcel owners except as an appurtenance to and in conjunction with the sale of their parcels.

V. Amendment.

5.1 The Easement, rights and responsibilities set forth in this instrument shall be perpetual and shall run with the land. The provisions of this instrument may be amended, but only with the consent of the owners of all the property described on Exhibit 2 hereto.

IN WITNESS WHEREOF, the undersigned has executed this Reciprocal Easement Agreement as of this _____day of _____, 2003.

Signed in the Presence of:

_____ _____

_____

(Witness No. 1)

Its _____

_____

_____

(Witness No. 2)

_____ _____

_____

(Witness No. 1)

Its _____

_____

_____

(Witness No. 2)

STATE OF MICHIGAN)
: ss
_____COUNTY)

On this _____ day of _____, 20__, before me personally appeared the above-named _____ and made oath that he/she/they has/have read the foregoing Reciprocal Easement Agreement by him/her/them subscribed, and know(s) the contents thereof, and that same is true of his/her/their own knowledge, except as to those matters which are therein stated to be on his/her/their information and belief, and as to those matters he/she/they believe(s) it to be true.

_____
Notary Public
Kalamazoo County, Michigan
My commission expires:_____

STATE OF MICHIGAN)
: ss
_____COUNTY)

On this _____ day of _____, 20__, before me personally appeared the above-named _____ and made oath that he/she/they has/have read the foregoing Reciprocal Easement Agreement by him/her/them subscribed, and know(s) the contents thereof, and that same is true of his/her/their own knowledge, except as to those matters which are therein stated to be on his/her/their information and belief, and as to those matters he/she/they believe(s) it to be true.

_____
Notary Public
Kalamazoo County, Michigan
My commission expires:_____

OSHTEMO CHARTER TOWNSHIP

Access Management Plan

as amended September 9, 2003