



Appendix A: Policies and Ordinance Models

This appendix includes information gathered on previous plans and more details on policies described in Chapters 2 and 3. In addition, model ordinance language is provided for transportation impact studies, transit oriented overlay zoning and access management.

Transportation Impact Study

In order for transportation impacts of new development to be anticipated and mitigated, it is important to understand how much traffic will be generated by each new development or redevelopment project. The City currently has a policy that requires submittal of a transportation impact study for any project that would generate 50 or more directional (one-way) trips in the peak hour or 500 trips expected in an average day. The city uses guidelines for preparing transportation impact studies have been established by the "Evaluating Traffic Impact Studies: A Recommended Practice for Michigan Communities" and the Institute of Transportation Engineers (ITE) Trip Generation Manual. One key component of such studies is what level of traffic generation is required, i.e. the standard for new developments to meet. For Ann Arbor, the expectation is not just an acceptable level of operation for autos, but for all uses as outlined below.

Vehicular Level-of-Service

The City's current policy is to require mitigation to a level-of-service (LOS) "C" or better during peak hours. If the existing road system cannot maintain this LOS, then the developer must contribute toward roadway improvements to help offset the impacts of the project and maintain the desired LOS "C" during the a.m. and p.m. peak hours (the busiest times of the day).

LOS "C" refers to traffic condition where there is fair progression and signalized intersection operations with average vehicle delays between 20.0 and 35.0 seconds. This is a fairly high standard to meet during peak hours in an urban setting and requiring roadway improvements to maintain this LOS will have certain implications on the built environment. In some instances this would require substantial roadway widening and intersection improvements that would not fit within the right-of-way. In some cases, the problem already exists. In other cases, major roadway improvements to accommodate automobiles would run contrary to the desire to maintain a pedestrian-oriented environment. Also, the lack of congestion would minimize any incentive for drivers to change to other modes such as transit. Therefore, this plan recommends that the city's LOS standard be reconsidered for the downtown and perhaps, again in five years if there is progress on transit along the signature corridors.

Multi-modal Level of Service

Potential impacts can be partially offset through enhancements that encourage other modes of travel. Just as conventional traffic impact studies go to great lengths to evaluate for vehicles, so to should the adequacy of sidewalks, pathways, bike lanes and transit access be evaluated. A transportation impact study should evaluate the existing conditions for pedestrians, bicyclists and transit users and explore how use of those options can be increased through design and amenities on-site, improvements adjacent to the site, or in some cases contributions to off-site improvements.

Pedestrian level of service should consider the following:

- Ease of crossing the street for pedestrians (note: traffic impact mitigation should not include signal optimization that reduces pedestrian crossing time)
- Presence of elements that make it inviting for pedestrians such as the presence of a sidewalk, width of sidewalk, buffers between sidewalk and motor vehicle travel lanes

Bicycle level of service should consider the following:

- Ease of bicycling to/from and within a site
- Presence of bike lane or paved shoulder
- Motorized vehicle volume, speed and percentage of trucks
- Pavement condition
- Potential to improve safety and comfort with elements to buffer bicyclists from pedestrians
- On-street parking

Transit level of service should consider the following:

- Service Frequency
- Information on transit availability (such as kiosks)
- Sidewalk connection to transit stop
- Proximity and ease of travel to transit stop

Transit and Trip Reduction

One of the benefits of the city's support of transit and non-motorized transportation is that vehicle trips can be reduced from what otherwise might be expected. The availability of transit needs to be factored in to trip generation forecasts. So, as part of a transportation impact study, trip reductions may be allowed for development within areas served by transit or where many trips are made by walking or bicycling. In addition, trip reduction factors can be used as an incentive to encourage development that encourages travel by transit, walking or bicycling. Studies have shown that there can be a shift to transit or walking of 1-26%; the wide range due to variables like the nature of uses, the surroundings and the availability and type of transit.

Transportation impact study requirements need to account for the modal shift in areas served by transit and should at the same time create incentives for transit-oriented development. Developments requiring a transportation impact analysis should be allowed to reduce the projected vehicular trip generation for their use by the percentages below based upon location and incorporating the following transportation demand measures.

To apply trip reduction factors, a transportation impact study should first list the trips predicted according to the most recent edition of the Institute of Transportation Engineers "Trip Generation Handbook". That handbook provides estimated trips based on surveys and counts at actual developments by factors such as size and number of employees. There are different types of "trips" and the impact on the transportation system depends upon the category. Some trips are considered "new", where a special trip was made to visit a use. Some are considered "diverted" where the traveler is already making a trip but adds the site as a visit during that trip. A third trip category are those passing by, such as those accessing a gas station that were already driving past, the impact of those trips is typically just operations at site access points. Anticipated trips can also be categorized by the mode of travel – whether the trip is made by auto, transit, walking or bicycling. The greater number of non-automotive trips, the less impact on the street system and need for improvements.

There are a number of ways a development can be designed and managed to help reduce the number of automotive trips. An incentive for a developer is that fewer auto trips may mean less costly mitigation will be needed. As part of a transportation impact study, a developer should describe efforts to reduce vehicle trips to lessen the impact. City staff shall review the requested trip reduction factors in consideration of research, publications and experience in Ann Arbor. Some of the potential trip reduction factors are listed below:

- **Mixed-use development.** A mixed-use development is a building or site that contains two or more use groups (residential, office or commercial) and a fully integrated pedestrian and vehicular circulation system where some internal trips are expected.
- **Transit-friendly design.** A development can be considered transit friendly where the design or management is expected to result in more transit use than would ordinarily be expected. This can be accomplished through location along a transit corridor, proximity to a transit stop with convenient pedestrian connections, a "transit-friendly" design such as placing the building location closer to the street rather than setback behind a large parking lot.
- **Walkable design.** Walkable design includes provision of pedestrian facilities and amenities beyond what would typically be required, such as wider sidewalks, design that favors pedestrians over autos within the site, safe and dedicated pedestrian access from the public sidewalk to the building entrance and links to adjacent land uses. This may also include off-site improvements to the pedestrian system that will significantly improve the level of service for pedestrians using the site, such as improved streetscape along sidewalk, enhanced crosswalks, medians, pedestrian activated signals, filling in gaps in the system.
- **Bike amenities.** Bike amenities would include upgrades to bike paths or bike routes along a site's frontage and/or the provision of bike facilities onsite such as bike racks. Provisions for on-going maintenance and replacement could be included in a development agreement.
- **Employer trip reduction incentives.** A development agreement that ensures greater mode split through provision of transit passes in lieu of on-site or paid parking (or additional compensation for those who use transit/walk/bike/park and ride or charges to those who park on-site). Flexible work hours where a percentage of workers start and

end shifts during non-peak hours may also be considered. A system of monitoring compliance shall be outlined in the development agreement.

Model Regulations: Transportation Impact Study Requirements

This model for transportation impact studies represents a supplement the procedures currently used by the city to evaluate traffic impacts with the addition of an analysis of non-motorized and transit service.

Transportation Impact Assessment

A transportation impact assessment is an analysis that evaluates transportation operations at site access points. An assessment would be required for developments expected to generate 50 - 99 trips during a peak hour.

Transportation Impact Study

A transportation impact study is an analysis that evaluates current, background, and future transportation operations at site access points and intersections in proximity to the site. Intersections to be evaluated in the Transportation Impact Statement shall be established by the City. An impact study would be required for developments expected to generate over 100 trips during the peak hour.

The following contents should be included in the traffic impact study.

Existing Site Conditions

- Site location and area
- Surrounding land uses
- Expected development in the vicinity which could influence future transportation conditions

Existing Traffic Conditions

- Existing and planned right-of-way
- Functional classification
- Roadway alignment
- Number of lanes
- Lane width and configuration
- On-street parking configuration
- Speed limits
- Existing traffic control
- Existing signal timing
- Existing peak-hour weekday traffic volumes
- Sight distance limitations
- Locations of existing driveways and intersections opposite the site and adjacent to the site within 250 feet along the roadway.
- Description of any committed roadway improvements
- For projects that require a Transportation Impact Study, existing counts and levels of service for intersections in the study area shall be performed
- For a Transportation Impact Study, crash data shall be provided and analyzed

- Existing Conditions intersection level of service for Transportation Impact Studies for the AM and PM peak hours (sometimes noon peak hour or Saturday) for the chosen study intersections

Existing Multi-Modal Conditions

- Existing sidewalk/non-motorized pathway location and width
- Bike lane location and width
- Nearest crosswalk and signalization
- Nearest transit route and transit stop
- Nearest public off-street parking lot or structure

Background Transportation Conditions

- Evaluation of background traffic for the expected completion date of the proposed development
- Background traffic based on historic counts; general growth trends in the area; or growth from the WATS model data
- Traffic associated with other approved developments
- The background traffic shall be evaluated based on the existing road system plus programmed improvements where funding has been committed
- Roadway improvements programmed by the City, the WCRC or included in the WATS 5-year TIP
- Background Conditions intersection level of service for Transportation Impact Studies for the AM and PM peak hours (sometimes noon peak hour or Saturday) for the chosen study intersections

Proposed Use or Future Conditions

- Forecasted trip generation of the proposed use for the AM peak hour, the PM peak hour, and average day (sometimes noon peak hour or Saturday depending on the development type)
- Trip reduction for pass-by trips, transit, ride-sharing, other modes and internal capture for mixed use
- Trip distribution onto the existing street network with project turning movements at site access points and nearby intersections
- Access point level of service
- Intersection level of service for Transportation Impact Studies
- Traffic signal warrant analysis for unsignalized intersections for Transportation Impact Studies
- Parking generation

Access and Circulation Design

- Sight distance limitations
- Dimensions from adjacent driveways and intersections
- Potential for shared access facilities
- Data to demonstrate that the number of driveways proposed is the fewest necessary
- Support that the access points will provide safe and efficient traffic operation
- Internal circulation design, including adequacy of queuing (stacking) at site access points and other features that may affect traffic operations and safety
- Pedestrian circulation system on-site and along frontage
- Transit stop location for larger developments

Mitigation

- Measures to be taken to minimize automobile trips, including transit-oriented design, or employer incentives
- Mitigation measures to meet the City's goal that signalized intersections operate at a Level of Service C or better; D or better Downtown
- Roadway improvements including roadway widening, change to road intersection alignment or grades, need for bypass lanes or deceleration tapers/lanes or changes to signalization
- Reduction in number of access points or changes to access systems to improve conformity with access spacing standards
- A reduction in the proposed density or intensity of use to reduce trip generation
- Improvements to non-motorized pathways along site frontage and adjacent to site
- Subsidizing transit fares to increase ridership, physical improvements to make transit more inviting (such as bus shelters) or park and ride lot improvements

Model Regulations: Transit Corridor Overlay District Outline

Land use and development patterns need to have adequate density, diversity of land uses and pedestrian oriented-design to make transit sustainable. A Transit Corridor Overlay District is one regulatory tool that could be used to promote transit-oriented uses and design for select areas in the city, such as downtown or along the Signature Transit Routes and some High Frequency Transit Routes identified in the plan. The Overlay District could be written to apply to all properties that front on the designated corridor, properties within a ¼ mile of the corridor or properties within a ¼ mile radius of major transit stops.

The Overlay District could be mandatory requiring all new development comply with the requirements or it could be an optional designation that would have incentives to encourage transit-oriented development, such as allowing a mixture of uses, increased building height, reduced setbacks or reduction in parking requirements.

Allowable Uses

Because the Overlay District would cover a wide variety of underlying districts ranging from single-family residential to commercial, the allowable uses would likely be based upon the underlying zoning district; however, the Overlay District could be drafted with its own list of permitted uses. Either way, the uses currently allowed may need to be modified to restrict certain automotive-oriented uses and to allow certain uses that are more conducive and supportive of transit. In addition, some density increase may be appropriate to make transit a more viable option.

The Overlay District might limit certain types of uses that are not conducive to a pedestrian- and transit-oriented environment, such as auto related uses, auto dealerships and drive-throughs. Limitations could be in the form of making these uses special land uses, limiting the frontage that can be occupied by these uses, requiring these uses be spaced a set distance from any other auto-oriented use, requiring that the vehicle-oriented aspect of these uses be located in the rear yard (such as a drive-thru window).

Dimensional Requirements

The dimensional requirements would be established to make the site more conducive to pedestrian access and minimize conflicts between pedestrians and motorists. This could include elements such as:

- Maximum front yard setback requirements as opposed to minimum requirements.
- Minimum percentage of the frontage along the sidewalk be occupied by a building units design standards to ensure pedestrian entrances for businesses are located on the sidewalk.
- Front yard parking restrictions to limit the amount of parking that can be located along the frontage of the lot.
- Within a set distance of major transit stops, buildings could be required to be built-to the sidewalk for a 100% of the frontage and main entrances to buildings could be required to be oriented towards the transit stop to make access from transit more convenient.
- Greater building heights or densities could be allowed for sites fronting on the transit-oriented corridor, perhaps in the form of bonus height for mixed-use developments.
- Because of the availability of enhanced transit and the goal to discourage single-occupancy vehicles, minimum off-street parking requirements would be relaxed or more provisions would be made to give the Planning Commissions the ability to reduce or waive parking requirements.

Model Regulations: Access Management

As noted in the Plan, access management is one approach to improve transportation operations and safety. The Michigan Department of Transportation has a published set of access management techniques in the MDOT Access Management Guidebook. That guidebook served as the foundation for a separate access management plan for M-17 through the city, Ypsilanti and Ypsilanti/Pittsfield Township's (incorporated by reference as a Chapter of this Transportation Plan). Those access management recommendations should be applied to all the arterial (major) streets in Ann Arbor with the understanding that, given the built character of the city, compliance with the recommended MDOT driveway spacing standards is not always practical. Therefore, the MDOT recommended access spacing standards should be used as a guide, with the city making final decisions to apply the standards to the extent reasonable.

While the most obvious benefits of access management are to reduce the potential for crashes and improve traffic operations, the reduction in conflict points can also benefit pedestrians, bicyclists and transit users. Access management will be implemented gradually. Standards for access spacing and design can be applied to new developments, changes in use, and when a street reconstruction project is being designed. While a separate ordinance may be preferred, the concept can already be applied as the city reviews site plans and development proposals. The model regulations below are an outline of the components in an access management ordinance.

In situations like Ann Arbor where the “standards” may need to be adjusted based upon actual conditions, those adjustments could be agreed upon by the city engineering staff or the planning commission as part of a site plan review. The model regulations note several situations where some adjustment may need to be considered to implement access management to the extent reasonable. Any regulations should specify the authority to approve modifications with the zoning board of appeals having jurisdiction for a variance if there is a “practical difficulty”.

Section ___ Access Management Regulations

- (a) **Intent.** Numerous published studies and reports document the relationship between systems and traffic operations and safety. Those reports and experiences of other communities demonstrate standards on the number and placement of access points (driveways and side street intersections) that can preserve the capacity of the roadway and reduce the potential for crashes. The standards herein are based on recommendations published by various national and Michigan agencies that were refined during preparation of the Washtenaw County Access Management Plan.
- (1) Preserve the capacity of the road system by limiting and controlling the number, location and design of access points and requiring alternate means of access through shared driveways, service drives, and access off cross streets in certain locations.
 - (2) Improve traffic safety and reduce the potential for crashes.
 - (3) Avoid the proliferation of unnecessary curb cuts and driveways, and eliminate or reconfigure existing access points that do not conform to the standards herein, when the opportunities arise.
 - (4) Implement the recommendations of the Washtenaw County Access Management Plan and any other specific corridor plans.
 - (5) Require demonstration that resultant parcels are accessible through compliance with the access standards herein prior to approval of any land divisions to ensure safe accessibility as required by the Land Division Act.
 - (6) Improve safety for pedestrians and other non-motorized travelers through reducing the number of conflict points at access crossings.
 - (7) Provide landowners with reasonable access, though the access may be restricted to a shared driveway or service drive or via a side street, or the number and location of access may not be the arrangement most desired by the landowner or applicant.
- (b) **Applicability.** Access spacing from intersections and other driveways shall meet the requirements of this section. The number of access points is the fewest needed to allow motorists reasonable access to the site.
- (1) All uses subject to site plan, subdivision or land division approval under Section ___ shall be required to comply with the requirements of this section. No building

or structure shall be erected unless the access management regulations are met and maintained in connection with such building or structure.

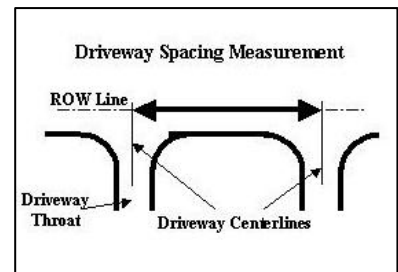
- (2) Any change in use that may change traffic conditions as determined by city staff. (Note: a change in use may be a trigger to require removal, consolidation or redesign of an access point.)
 - (3) For building or parking lot expansions, or changes in use, the Planning Commission shall determine the extent of upgrades to bring the site into greater compliance with the access standards.
- (c) **Additional Submittal Information.** In addition to the submittal information required for site plan review, the following shall be provided with any application for site plan or special land use review. The information listed in items (1)-(4) below shall be required with any request for a land division, subdivision plat or site condominium review.
- (1) Existing access points within three hundred (300) feet on both sides of the road frontage, and along both sides of any adjoining roads, shall be shown on the site plan, aerial photographs, plat or survey.
 - (2) The applicant shall submit evidence indicating that the applicable sight distance requirements are met.
 - (3) Dimensions between proposed on-site and existing off-site access points.
 - (4) Where shared access is proposed or required, a shared access and maintenance agreement shall be submitted for approval. Once approved, this agreement shall be recorded with the Washtenaw County Register of Deeds.
 - (5) Dimensions shall be provided for driveways (width, radii, throat length, length of any deceleration lanes or tapers, pavement markings and signs) and all curb radii within the site.
 - (6) The site plan shall illustrate the route and dimensioned turning movements of any expected emergency vehicles, truck traffic, tankers, delivery vehicles, waste receptacle vehicles and similar vehicles. The plan should confirm that routing the vehicles will not disrupt operations at the access points nor impede maneuvering or parking within the site.
 - (7) Location of existing and proposed bus stops, sidewalks, pedestrian crosswalks and bike paths.
- (d) **Review coordination.** For development or change in use along state trunklines, the applicant shall provide correspondence that the site plan has been submitted to the MDOT for their information and comment. Any correspondence from the MDOT on the general access design and geometrics shall be considered during the site plan review processes.
- (e) **Permitted Access:** Each lot shall be permitted one access point. This access point may consist of a shared access with an adjacent use or access via a service drive,

frontage road or side street. An individual driveway may be permitted where standards are met, provided such driveway is located and easements are provided to facilitate shared access by adjacent lots.

(f) **Additional Access Justification:** An additional driveway may be permitted by the Planning Commission upon finding that one (1) of the conditions below exists. The additional driveway may be required to be along a side street or a shared access with an adjacent site.

(1) The site has adequate frontage to meet the spacing standards between access points listed below, and the additional access will not prevent adjacent lands from complying with the access spacing standards when such lands develop or redevelop in the future; or,

(2) A transportation impact study demonstrates the site will generate over 300 trips in a peak hour or 3000 trips daily, or 400 and 4000 respectively if the site has access to a traffic signal, and the traffic study demonstrates the additional driveway will provide improved conditions for the motoring public and will not create negative impacts on through traffic flow; or



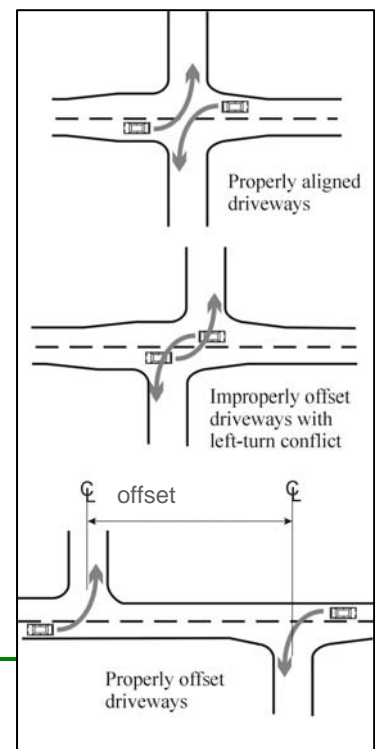
(3) The additional driveway is a necessity rather than just a convenience. Planning Commission may require a report by a qualified traffic engineer that certifies the need for an additional driveway.

(g) **Access Spacing:** Access points shall provide the following spacing from other access points along the same side of the public street (measured from centerline to centerline as shown on the figure):

Table A-1: Minimum Driveway Spacing Same Side of Road

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

Note: the standards for arterials are those published by MDOT; spacing for "other streets" are those used by some other Michigan cities. Ann Arbor engineering staff may prefer to develop its own spacing standards based on a street's functional classification system or characteristics.



- (h) **Spacing From Intersections.** Minimum spacing of access points from intersections shall be in accordance with the table below (measured from pavement edge to pavement edge as shown on the figure):

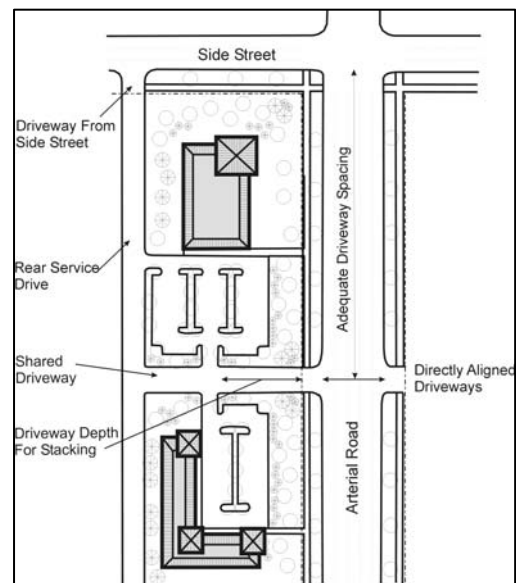
Table A-2: Minimum Driveway Spacing from Intersection *

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

* Unless other spacing is approved by the city engineering department or MDOT, as applicable.

- (i) **Accommodate Future Shared Access:** Where the subject site adjoins land that may be developed or redeveloped in the future, including adjacent lands or potential outlots, the access shall be located to ensure the adjacent site(s) can also meet the access location standards in the future.
- (j) **Offsets:** Access points shall be aligned with driveways on the opposite side of the street or offset to reduce left-turn conflicts as determined by city engineering staff.
- (k) **Sight Distance.** Driveways shall be located to provide safe sight distance, or determined by the city or MDOT, as applicable.
- (l) **Public Facilities in Right-of-way.** No driveway shall interfere with municipal facilities such as street light or traffic signal poles, signs, fire hydrants, cross walks, bus loading zones, utility poles, fire alarm supports, drainage structures, or other necessary street structures.

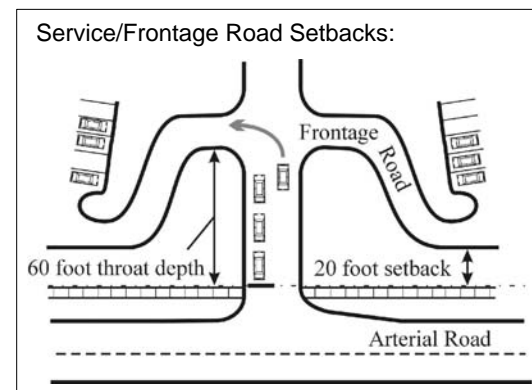
- (m) **Shared commercial driveways, frontage roads and service drives.** Shared commercial driveways, frontage roads or rear service drives connecting two or more lots or uses shall be required in instances where the city engineer or Planning Commission determines that reducing the number of access points will have a beneficial impact on traffic operations and safety. In particular, service drives shall be



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

- (1) Service drives shall generally be parallel or perpendicular to the front property line and may be located either in front of, adjacent to, or behind, principal buildings. In considering the most appropriate alignment for a service road, the Planning Commission shall consider the setbacks of existing buildings and anticipated traffic flow for the site.
- (2) Service drives shall be within an access easement permitting traffic circulation between properties. This easement shall be approved by the *City of Ann Arbor* and recorded with the Washtenaw County Register of Deeds. The required width shall remain free and clear of obstructions, unless otherwise approved by the Planning Commission. Each property owner shall be responsible for maintenance of the easement and service drive.

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



- (4) Service drives shall have a minimum pavement width of twenty-four (24) feet and be constructed of a base, pavement and curb with gutter that is in accordance with public street standards. The city traffic engineer or Planning Commission may modify these standards based upon site conditions, anticipated traffic volumes and types of truck traffic.
- (5) In cases where a shared access facility is recommended, but is not yet available, temporary direct access may be permitted, provided the plan is designed to accommodate the future service drive, and a written agreement is submitted that the temporary access will be removed by the applicant, when the alternative access system becomes available. This may require posting of a financial performance guarantee.
- (6) With the redevelopment of existing sites where it is not possible to develop separate service drives, the Planning Commission may instead require a drive connecting parking lots.

- (n) **Modifications by the City Traffic Engineer or Planning Commission.** Given the variation in existing physical conditions, modifications to the spacing and other standards above may be permitted by the city engineer or Planning Commission as part of the site plan review process upon a finding that the following conditions apply:
- (1) Conditions exist on the site that make compliance unreasonable (sight distance limitations, topography, wetlands, drain or water body, woodlands that will be preserved, existing development, existing non-conforming width, unique site configuration or shape), or existing off-site access points make it impractical to fully comply with the standards.
 - (2) The use involves an access improvement to an existing site or a new use that will not generate any more traffic than the previous use or there is only one access point that is not being changed.
 - (3) The proposed modification is consistent with the general intent of the preceding standards, the recommendations of the Washtenaw County Access Management Plan, or any other corridor or subarea plan.
 - (4) A transportation impact study has been provided, where required and warranted, that certifies the modification will improve traffic operations and safety along the roadway, and is not solely for convenience of the development. Roadway or intersection control or driveway design change improvements will be made to improve overall traffic operations prior to the project completion or occupancy of the first building.
 - (5) Indirect or shared access has been provided to the extent practical.

The Planning Commission may require that a performance guarantee or other legally binding means approved by City of Ann Arbor be provided to ensure the removal of the driveway upon expiration of the temporary driveway permit.