# ACCESS MANAGEMENT CODE

CITY OF GARDNER
EDITION OF 2012

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# City of Gardner
# Access Management Code

**Acknowledgments**
This document draws on the prior work of a number of other communities, consultants, and researchers. In some cases this prior work was used as a reference; however, in other cases it was determined to be directly applicable to Gardner. In those situations the standards and/or policies have been incorporated directly into this document. It is therefore important to acknowledge the major sources of these standards and policies. They include: Olathe's Access Management Plan (2003), Lee's Summit's Access Management Code (TranSystems, 2004), Lenexa's Street Access and Street Design (2001), and the Transportation Research Board's Access Management Manual (2003).

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# Section 1:

## Purpose

Access management can be defined as "the systematic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway."[1] Underlying this definition is the acknowledgement that poorly designed access systems can significantly impact the operation, safety and flow of traffic on the roadway network. This in turn can negatively affect property access, public perceptions, and community character. Inadequate access systems can also require expensive remedial measures. Conversely, good access management can promote safe and efficient traffic flow, facilitate orderly property access, protect the substantial public investment in the street system, and benefit the community at large.

The purpose, therefore, of this Access Management Code is to provide for and manage access to land development, while preserving the regional flow of traffic in terms of safety, capacity, and speed. The Code recognizes both the right of reasonable access to private property and the right of the citizens of the City of Gardner to safe and efficient travel. To achieve this policy intent, the Code draws on existing regional and national access management guidelines to set policies and standards.

## Section 2: Applicability

This Code applies to all roadways and roadway right-of-ways (public and private) within the City of Gardner, as well as to all properties that abut these roadways. This Code is in addition to other state or local standards and requirements that may be in force on these roadways (such as the Corridor Management Policy of the Kansas Department of Transportation (KDOT) and the Comprehensive Arterial Road Network Plan (CARNP) of Johnson County). Refer to Section 4 when there are conflicts between this Code and other documents.

## Section 3: Conformance with Plans, Regulations, and Statutes

This Code is adopted to implement the plans and policies as set forth in the City of Gardner Comprehensive Plan, Subdivision Regulations, Zoning Ordinances, and other City plans and policy statements. In addition, this Code is intended to conform to, support, and supplement policies and plans of KDOT and the Mid-America Regional Council (MARC).

## Section 4: Conflicts and Revisions

While efforts have been made to ensure that this Access Management Code does not conflict with the Gardner Municipal Code, Subdivision Regulations, Zoning Ordinance, Technical Specifications for Public Improvements, and other City of Gardner planning and design regulations or documents, there may be occasions where discrepancies between these documents arise. Upon such an occasion, the City Engineer shall determine the more restrictive provision and it shall apply. This decision can be appealed to the City Council as discussed in Section 17.6.

[1] Transportation Research Board, Access Management Manual, 2003

# Section 5: Functional Classification for Access Management

In order to apply access management principles effectively, it is important to classify roadways based on their functional and operational characteristics. Therefore, the roadways in the City of Gardner have been classified using categories based on the standard Federal Highway Administration (FHWA) categories; categories that are also used by MARC. The categories match well with the local functional classification categories presented in the Transportation Research Board (TRB) Access Management Manual. Section 5.1 discusses specific functional classifications for streets within the City and Section 5.2 discusses functional classifications for state highways within city limits.

## 5.1 City Functional Classifications

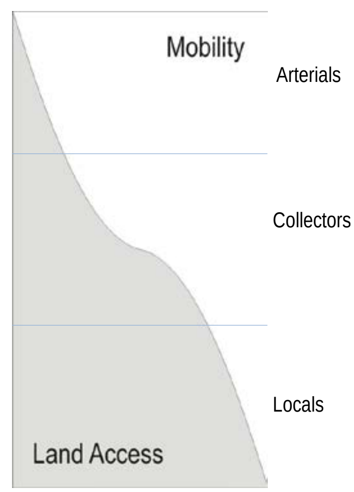
The functional classifications in the City of Gardner are shown on **Figure 5-1**. As indicated on the graphic, arterials and collectors emphasize traffic flow, while locals emphasize property access. The proposed classifications address the planned and existing street types in the City:

**Principal Arterial**

Part of an integrated network of roadways of regional and/or statewide importance; serves high volumes of traffic traveling long distances (including through traffic); tends to have multiple lanes and higher posted speeds. Priority is given to mobility over access. The terms "principal arterial", "major arterial", "thoroughfare", and "main trafficway" are considered to be interchangeable in meaning herein. Principal arterials are divided into two groups:

- *Freeway / Interstate* **-** Provide access only at interchanges
- *Other Principal Arterials* **-** Non-freeway principal arterials

**Figure 5-1**
**Roadway Functional Classifications: Serving Mobility vs. Access**




**Minor Arterial**

Connects with the principal arterial system; serves moderate volumes and trip lengths within the region; tends to have higher speeds and limited access; still emphasizes mobility over access.

**Collector**

Links local streets to the arterial system; Serves a greater number of localized trip purposes with shorter average trip lengths. Volumes are less than on arterials; Mobility is important, but they also provide limited direct property access.

**Local**

Includes all remaining roads in the system. Local roads provide the highest frequency of access, connections to the collectors, and primarily serve short trips.

The City of Gardner's roadway network with designated roadway classifications is provided in the Comprehensive Plan. For information on typical sections, design speeds, and other design elements and requirements, please refer to Gardner's *Technical Specifications for Public Improvements* and other relevant design standards.

## 5.2 State Highway Functional Classifications

State highways within the city limits are also classified according to the state classification system:

- I-35 is classified as an "A" Route, which is the designation for all routes on the Interstate Highway System. These routes are protected by full-access control.
- US 56 is classified as a "D" Route, which is one of the designations for routes not on the National Highway System that are also not growth corridors. These routes are "protected by a modest level of management."[2]

The US-56 Corridor Management Plan should be referred to for specific information related to US-56 within City limits. This plan was completed in July 2010 with funding by KDOT and partners along the corridor (Baldwin City, Edgerton, Gardner, Douglas County, Johnson County, Lawrence-Douglas Metropolitan Planning Organization and MARC). The plan evaluates and makes recommendations related to access management and capacity for US-56 from I-59 to I-35 and should be used as the basis for new and revised access along this facility. Variations from the US-56 Corridor Management Plan shall conform to this Access Management Code, subject to permitting as required by the Kansas Department of Transportation.

[2] KDOT Corridor Management Policy, 2003.

# Section 6: Access Near Interchanges and Intersections

It is important in access and roadway design to keep the areas near interchanges and intersections clear of street and driveway connections. Research has demonstrated that the presence of connections within the functional area of an interchange or intersection can negatively impact safety and obstruct the efficient flow of traffic. (Rakha et al, 2008. Zhou, Williams & Farah, 2008.)

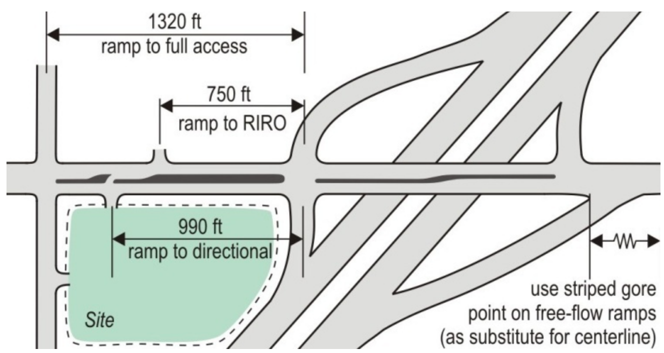
## 6.1 Interchange Functional Areas

The requirements of this section apply to the functional area around an interchange. An interchange functional area is defined as a linear zone extending at least 1,320 feet from the centerline of all ramp intersections as illustrated in **Figure 6-1**. An interchange is defined as a location where any grade-separated facility (such as an interstate highway) is connected to the local street system using ramp connections.

Where possible, direct property access within an interchange area should be provided by side-streets (typically collector or local roadways) and not the main interchange crossroad. This could include using shared access serving multiple properties as described in Section 13**.**

**Figure 6-1** shows the minimum spacing requirements in an interchange functional area. Distances are measured from the extended centerline of the nearest ramp to the centerline of the new or modified access point or median opening. These distances are to facilitate safe and efficient traffic operations including merging, weaving, and storage.

**Figure 6-1**
**Minimum Spacing Requirements in an Interchange Functional Area**




**6.1.1** The minimum required distance from the interchange ramp to the first full-access connection, regardless of type is 1,320 feet.

**6.1.2** The minimum required distance from the interchange ramp to the right-in / right-out only connection is 750 feet.

**6.1.3** The minimum required distance from the ramp to a left-in / right-in / right-out connection is 990 feet.

## 6.2 Intersection Functional Areas

According to AASHTO's *A Policy on Geometric Design of Highways and Streets*, "Ideally, driveways should not be situated within the functional area of an intersection." (AASHTO, 2004, p. 558) Access points located within this functional area can have a significant negative impact on both traffic flow and safety. In order to decrease the probability of crashes and to maintain efficient traffic flow, new or modified access points (streets, driveways, and median openings) shall not be located inside intersection functional areas.

The functional area of an intersection is the area both upstream and downstream from an intersection that is influenced by slowing, stopped, turning, merging, or accelerating vehicles. **Figure 6-2** illustrates the intersection functional area. As shown, the upstream functional area is typically larger than the downstream area.

**Figure 6-2**
**Intersection Functional Areas**

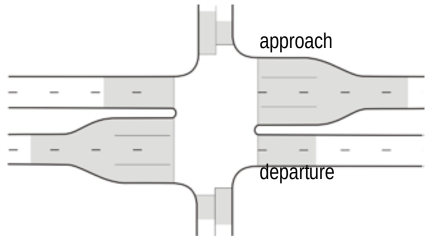
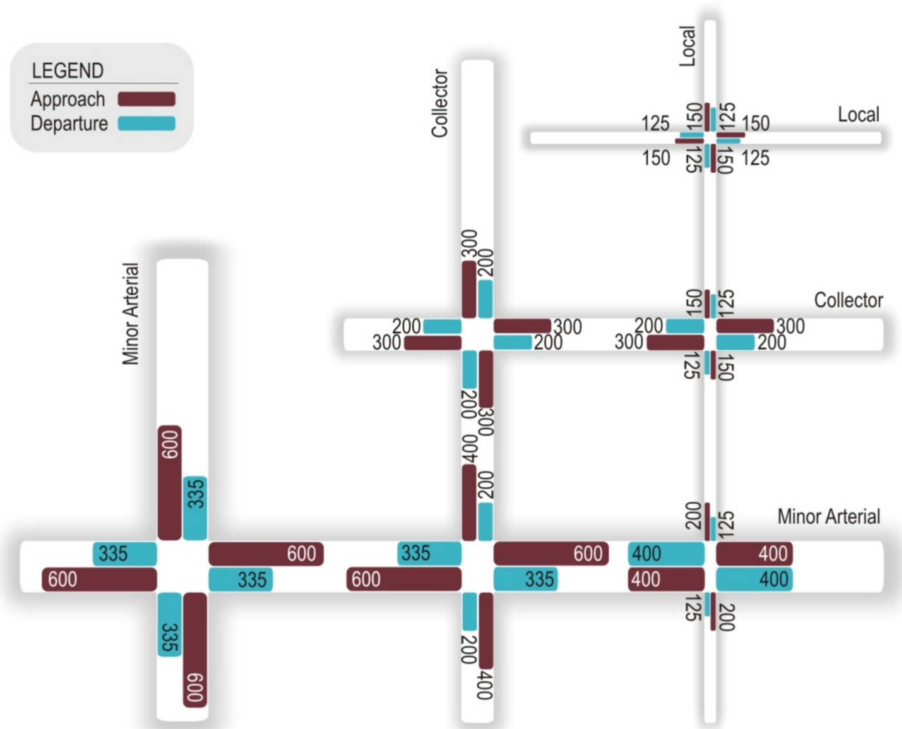



**Figure 6-3** presents approach and departure functional areas for the various intersection combinations in the City. These values should be used to guide access connection planning. However, in some cases it may be necessary to prepare a more detailed analysis of the functional area – for example, where speeds differ from the assumptions shown in **Figure 6-3**. This additional analysis may be initiated by an applicant, or it may be required by city staff. The Access Management Manual (TRB, 2003) and other similar documents should be consulted for appropriate methods.

**Figure 6-3: Typical Lengths of Intersection Functional Areas**




Notes: The lengths presented in the above figure are based on urban conditions with the following assumed speeds: minor arterial – 40 mph, collector – 30mph, and local – 20 mph. Other assumptions are as outlined in TRB's *Access Management Manual* (2003) Tables 8-3 and 10-2. Assumed queues range from 25ft to 200ft depending on the intersection. The distances shown for local streets intersecting other local streets do not apply to single family residential driveways. Additional analysis of functional areas may be initiated by a project applicant or required by city staff. Distances are measured from centerline to centerline.

# Section 7: Street and Connection Spacing Requirements

Recent research has verified that adequate spacing between access points significantly benefits traffic safety as well as traffic flow and operations on the local street system. This includes not just avoiding intersection functional areas, but appropriate and uniform spacing for major intersections, especially signalized intersections. Key factors to consider in regards to connection spacing include:

- Avoid interchange and intersection functional areas to limit conflicts and maintain capacity
- Establish appropriate and uniform spacing to promote consistent and suitable traffic flows and speeds
- Reduce the overall frequency of access points to limit conflicts and improve safety
- Maintain safe distances between access points to provide appropriate stopping, intersection, and decision sight distances.

All new or modified street and access connections in the City of Gardner shall meet or exceed the minimum connection spacing requirements shown in **Table 7-1**. Connection spacing shown on the table shall be measured from centerline to centerline. These standards are in addition to the requirement to avoid new connections in intersection functional areas. As discussed in Section 13, shared-use driveways should be used when necessary to meet the spacing requirements. Traffic signal spacing requirements are discussed further in Section 8.

**Table 7-1**
**Minimum Street and Access Connection Spacing**

| Functional Class | Median Treatment | Connection Spacing, feet* | | Median Opening spacing, feet | |
|---|---|---|---|---|---|
| | | ≤45 mph | >45 mph | Directional | Full |
| Arterial (Principal and Minor) | Median is Desirable | 440 | 660 | 660 | 1,320 |
| Collector | Varies | 245 | 440 | 330 | 660 |
| Local** | Typically No Median | 150 | -- | -- | -- |

* applies to roadways, driveways, and any other connections to public roadways.
** this spacing requirement does not apply to individual driveways on local residential streets.

# Section 8: Traffic Signal Installation and Spacing

The spacing of traffic signals influences traffic capacity, speed, safety, air pollution, and progression along a roadway. The most efficient and safe signalized corridors typically have long and uniform signal spacing.

The installation of a traffic signal in the City of Gardner should meet one or more of the following requirements.

- The intersection shall meet one or more of the signal warrants in the Manual on Uniform Traffic Control Devices (MUTCD). As stated in the MUTCD, use of the peak hour warrant should be limited only to "unusual cases".

- Warrants should be based on existing traffic volumes or existing plus proposed development volumes with the approval of the City Engineer.

**Table 8-1** defines the spacing guidelines for new traffic signals in the City of Gardner. All new signals must be in conformance with the minimum spacing; however, additional spacing may be required by the City Engineer if he/she deems appropriate based on the results of a Transportation Impact Study. Furthermore, if *minimum* signal spacing cannot be achieved, an engineering study will be required prior to approval by the City Engineer, subject to the approval of City Council, making a determination as to whether the requirement may be adjusted.

**Table 8-1: Traffic Signal Spacing (New Installations)**

| Classification | Minimum Distance (ft). |
|---|---|
| Major/Minor Arterial | 1,320 |
| Major/Minor Collector | 660 |
| Local (All) | 660 |

The engineering study must be provided to demonstrate the need for, and acceptability of, the shorter spacing. This will include documenting that the traffic signal will not degrade traffic conditions (current or future operations and safety) below acceptable levels, defined as the Impact Thresholds in Section 16. The installation of a traffic signal (and any study of a potential signal location) shall take into account possible future signals in the vicinity of the intersection, such that the build-out land-use and traffic condition will not result in signals spaced more closely than the minimum distances specified in **Table 8-1** (unless adjusted as described above).

## Section 9: Medians

The three primary median types on street systems include restrictive (raised or depressed) medians, painted medians, and two-way left-turn lane medians. Medians are an important and effective method for managing street access and can improve both roadway safety and traffic flow. In particular, raised medians can be essential to controlling access on higher functional class facilities (i.e. principal and minor arterials). The presence of medians affects both the types and frequency of access that can be allowed on roadways.

Undivided multi-lane roadways are discouraged.

### 9.1 Restrictive Medians – Installation and Standards

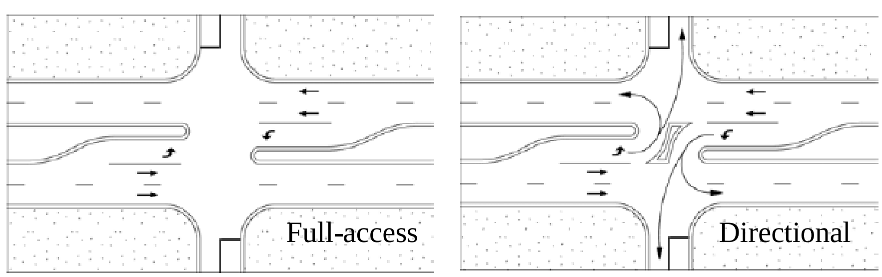
Restrictive medians shall be installed on streets in Gardner in accordance with the following guidelines.

- On all new or widened arterial streets unless otherwise approved by the City Engineer.
- On four-lane streets where existing daily traffic volumes exceed 24,000. Between 17,500 and 24,000 ADT, an evaluation should be prepared. Where future daily traffic projections (for build-out conditions) exceed these thresholds, the roadway and access should be designed to accommodate the future installation of a raised median, including reserving right-of-way, identifying potential median opening locations, and employing a 16-foot center turn lane (to allow for future 12-foot turn lanes plus four-foot median separation at intersections).
- On multi-lane streets with posted speed limits of 45 MPH or above.
- Adjacent to left-turn lanes at signalized intersections (existing or planned signal locations) where access connections are present within the intersection functional area (although, in accordance with other sections of this Code, such access connections should be eliminated where possible).
- Adjacent to dual left-turn lanes.
- On multi-lane roadways (two or more through lanes in each direction) within the functional area of an interchange.
- On streets with three or more through lanes in each direction.

### 9.2 Median Openings Types and Installation Requirements

Median openings are designed to allow one or more left-turn movements across a restrictive median. They can be full-access openings or directional (left-in only) openings as shown in **Figure 9-1**. Left-turn lanes are required at all new or modified median openings.

**Figure 9-1: Median Openings**




Regardless of type, the spacing of new or modified median openings should conform to the functional area, connection spacing, and traffic signal spacing requirements outlined in Sections 6, 7, and 8. They should only be constructed where they meet the minimum connection spacing requirements, avoid intersection and interchange functional areas, provide adequate sight distance and adequate left-turn storage and deceleration length, and meet any other applicable design requirements or guidelines. An engineering study should be provided to support the location of a new or modified median opening.

Temporary median openings will not be allowed unless a waiver is granted by the City Engineer.

## 9.3 Continuous Two-Way Left-Turn Lanes – Installation and Standards

The use of continuous two-way left-turn (TWLT) lanes shall be considered based on the following guidelines.

- TWLT lanes can be used on a roadway when an engineering study shows that they will be effective in maintaining adequate traffic flow, while providing safe property access.
- TWLT lanes should be considered on streets with numerous access points and high left-turn volumes – on two-lane roads, where daily traffic exceeds 8,000, and on four-lane roads, where daily traffic exceeds 17,500. (Consult National Cooperative Highway Research Program (NCHRP) 395 for further guidance.)
- Prior to construction of a TWLT, every reasonable effort should be made to eliminate as many access points as possible.

## 9.4 U-Turns

With the construction of medians with adequately spaced median openings on major streets in Gardner, the importance of U-turns will increase. U-turns are employed in many communities where good access management is in place. Streets with medians should be designed such that U-turns can be completed at full and directional median openings when there are no operational or safety restrictions that would limit such movements. Providing for U-turns includes widening the receiving side of the street and/or median itself such that a U-turn can be made by an appropriate design vehicle.

# Section 10: Auxiliary Lanes

The provision of auxiliary turn lanes at intersections and driveways is essential to the safe and efficient flow of traffic on the local roadway system. Left- and right-turn lanes allow vehicles to slow and queue without undue disruption to the through vehicles in the traffic stream. In particular, this helps reduce the speed differential between through and turning vehicles until the turning vehicles are safely in the turn lane. Turn lanes also increase intersection capacity and facilitate safe turning movements even at large heavily traveled intersections.

## 10.1 Left-Turn Lane Requirements

Left-turn lanes should be provided in the following locations and conditions:

- Approaches to all new connection points on arterial streets;
- Approaches to signalized (or possible future signalized) arterial or collector intersections;
- Arterial street approaches to intersections with other arterial and collector streets;
- New connections intersecting with arterial streets (where left-turn egress is permitted);
- Median openings on roadways with medians;
- Collector streets at the intersection with a connection serving non-residential development;

Possible future dual left-turn lane configurations should be planned for at all arterial/arterial intersections.

In addition, left-turn lanes (including dual left-turn lanes) shall be provided where an engineering study indicates that they are needed for safety, access, or traffic operations. If a left-turn lane required above is to be omitted, an engineering study must show that its elimination will not negatively impact traffic safety and operations.

The minimum length of a left-turn lane shall be 250 feet plus taper on an arterial street intersecting another arterial street and 200 feet plus taper at other locations. A taper length of 100 feet shall be used for single left-turn lanes, and a taper length of 150 feet shall be used for dual left-turn lanes. The length of the left-turn lane should be increased as necessary to accommodate estimated queue length based on standard traffic-engineering queue calculations. Continuous two-way left turn lanes may be used in lieu of individual left-turn lanes where permitted.

## 10.2 Right-Turn Lane Requirements

Right-turn lanes should be provided in the following locations and conditions:

- On arterials at all new intersections or connection points. The required length shall be determined by an engineering study. The minimum right-turn lane shall be 250 feet (at an intersection of an arterial street) or 150 feet (at other locations) unless determined by an engineering study approved by the City Engineer.

- On collector streets in non-residential areas at the intersection with any street or driveway where the right-turn volume on the collector street is or is projected to be at least 100 vehicles during any one hour. The minimum length should be 100 feet plus taper.

A taper length of 100 feet should be used for single right-turn lanes, and a taper length of 150 feet should be used for dual right-turn lanes.

The estimated queue length should be based on 20-year traffic volume projections. A traffic study, to be approved by the City Engineer, will be required to determine storage lengths. Turn lane lengths should be measured from the end of the taper to the start of the curb return for the access point.

# Section 11: Roadway Network Planning Requirements

Roadway network planning is essential to a successful access management program. The following items outline some of the City's and developer's responsibilities in planning for and implementing a safe and effective roadway network in Gardner.

- The Comprehensive Plan and the Transportation Master Plan together serve as the overall blueprint for roadway planning in Gardner. These documents plan potential new arterials and collectors based on the information available at the time they are drafted, revised, or amended.

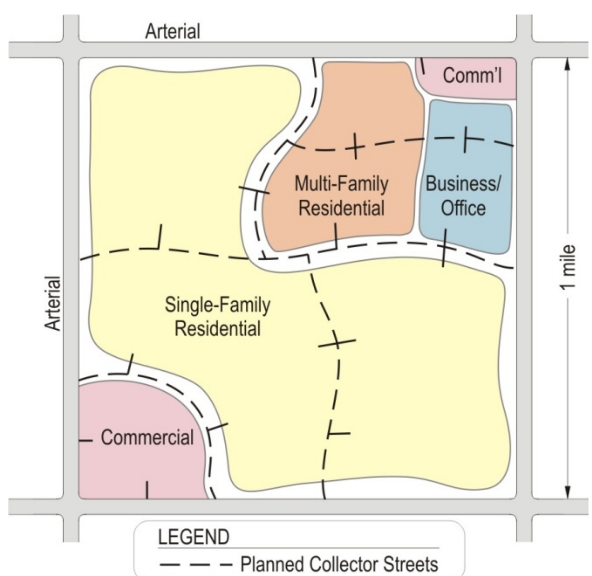
- Prior to the approval of any new development, the City shall develop a conceptual collector street system for the area bounded by the section line roads containing the development based on the Comprehensive and Transportation Master Plans. Consideration should also be given to existing or planned connections and collector streets in adjacent sections, existing property lines and topographic features.

- A development plan may propose modifications or alternatives to the conceptual collector street system described above, as long as the principles described above are followed. These changes would essentially constitute an amendment to the Transportation Master Plan, and such an amendment must be approved along with the development plan. Within exclusively residential areas, continuous collector streets are desirable, but not essential. In these areas, a less-defined collector system may be utilized, but should provide connectivity between developments and relatively direct access to the designated collector street connections to the arterial street system (note that access at other connections to the arterial street system may be restricted per this policy).

- Collector streets can serve both residential and commercial land-uses, but they should be planned to discourage commercial traffic intrusion into residential areas.

- Collector streets should connect to arterial streets at full median opening locations in accordance with the standards in this policy. Where feasible, the connection should also be made at a location suitable for a future traffic signal installation.

**Figure 11-1: Collector Street Network**

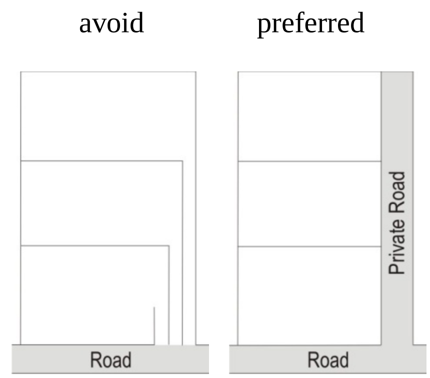



An example of a collector street network is shown in **Figure 11-1**. Any new development(s) along an arterial street should be part of a network of on and off-site connections and roadways to allow for movement between destinations without using the arterial street network. Limiting short trips on the roadway network decreases congestion on the network.

# Section 12: Subdivision and Land Development Access Guidelines

The purpose of this section is to describe the City's preferred land development strategies that promote the access management goals defined in this document.

Figure 12-1: Avoidance of Flag Lots



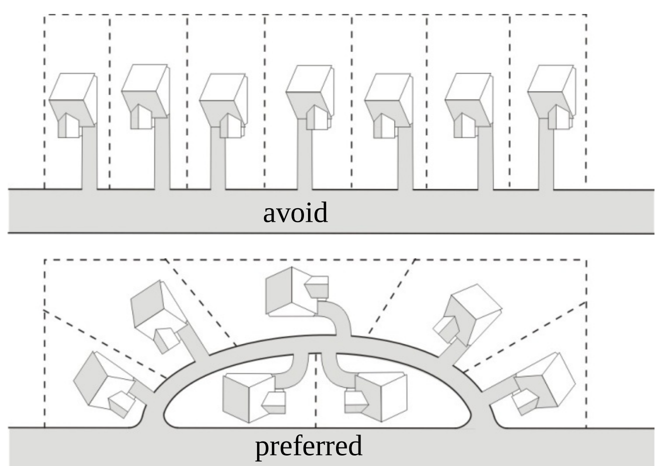

## 12.1 Creation of New Lots

New lots shall not be created on any arterial or collector roadway unless they comply with the access spacing standards of this plan through existing, shared, or alternative access.

Lots that violate the access management plan, such as the flag lot development shown in **Figure 12-1** are prohibited.

## 12.2 Subdivision Access

Figure 12-2: Indirect Access to Arterial or Collector




**12.2.1** When a subdivision is proposed that would abut or contain an arterial or collector street, it shall be designed to provide lots along the arterial or collector with access from an interior local street. **Figure 12-2** contrasts an undesirable configuration with a desirable one.

**12.2.2** Direct residential driveway access to individual one-family and two-family dwellings is prohibited on any arterial or collector street, unless approved by the City Engineer.

**12.2.3** Residential corner lots shall obtain access from the street with the lower functional classification, and access shall be placed as far from the intersection as possible to achieve the maximum available corner clearance.

## 12.3 Connectivity of Supporting Streets

As the City of Gardner continues to grow and land is subdivided for development, it will be essential to provide a balanced network of local and collector streets to avoid traffic congestion on major arterial roadways. Without a supporting street system, all local trips are forced onto a few major streets, resulting in significant traffic delays and driver frustration.

Reasonable connectivity of the local street network is also important. Fragmented street systems impede emergency access and increase the number and length of individual trips. Residential street systems should be designed in a manner that discourages "through" traffic, without eliminating connectivity.

To accomplish these objectives, the following standards shall apply:

**12.3.1** New residential subdivisions shall be designed to coordinate with existing, proposed and anticipated streets.

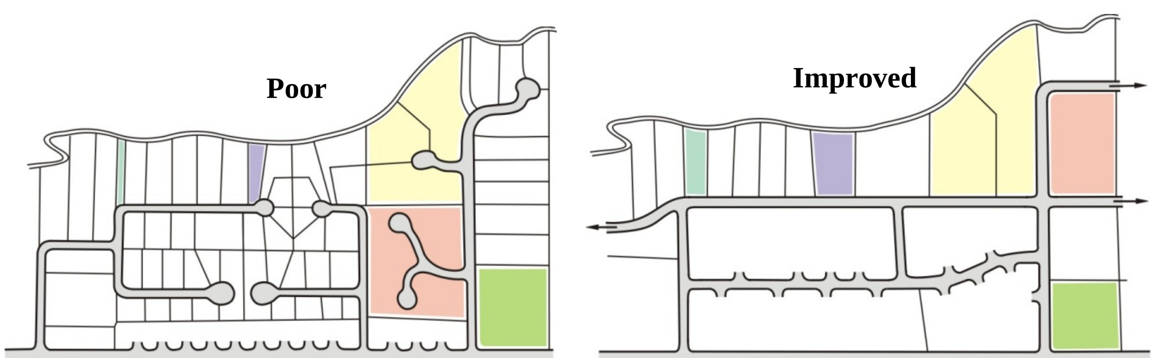
**12.3.2** New developments shall be designed to discourage the use of local streets by non-local traffic while maintaining the connectivity with the surrounding system of roadways. This may be accomplished through the use of modified grid systems, T-intersections, roadway jogs, or other appropriate traffic calming or roadway design measures.

**12.3.3** Proposed streets should be extended to the boundary lines of the proposed development where such an extension would connect with streets in another existing, platted or planned development. The extension or connection should be based upon traffic circulation or public safety issues and compatibility of adjacent land uses.

**12.3.4** When a proposed development abuts unplatted land or a future development phase of the same development, stub streets shall be provided to allow future access to abutting properties or to logically extend the street system into the surrounding areas. Previously approved plats and site plans shall be reviewed and coordinated so that street extensions are aligned between properties. All street stubs longer than 150 feet or three lots should be provided with a temporary turn-around or cul-de-sac. The restoration and extension of the street will be the responsibility of any future developer of the abutting land. The ends of these street stubs shall be clearly and prominently signed "Future Street Extension" on the approved final plat or final development plan.

**Figure 12-3** illustrates ways in which development and street layouts can be designed to improve connectivity while achieving the above goals.

**Figure 12-3: Street Connectivity**




- Walking, bicycling, transit use impeded
- Local trips on major roads increased
- Properties cannot be developed properly

- Local trips shortened
- Multimodal mobility improved
- Local mobility enhanced
- Internal site access opportunities increased

# Section 13: Unified Access and Circulation

Internal connections between neighboring properties and shared driveways allow vehicles to circulate from one business or development to the next without having to reenter a major roadway. Unified access and circulation improves the overall ease of access to development and reduces the need for individual driveways. The purpose of this section is to describe and facilitate unified access and circulation systems, especially for commercial and mixed-use development.

To limit the number of access points and short trips along an arterial, adjacent and neighboring parcels should have shared and/or joint and cross access to and from their properties. Developments should have proper site designs that allow for movement between different trip destinations without forcing the traveler on to the main roadway network. Individual “strip” development(s) are discouraged if a supporting road network is absent. Developments with multiple destinations shall have internal access to one another. Neighboring parcels with driveways that could reasonably be shared (as determined by the City Engineer) shall share access points.

## 13.1 Outparcels and Shopping Center Access

Unified access and circulation plans shall be prepared for all development sites that consist of more than one building site. This applies to sites with one owner as well as sites with multiple owners that are consolidated for the purposes of development. In addition, the following shall apply:

**13.1.1** The number of connections shall be the minimum number necessary to provide reasonable access to the overall development and not the maximum available for the development’s frontage.

**13.1.2** When a property or development abuts two roadways, access should first be considered off of the lower classification street.

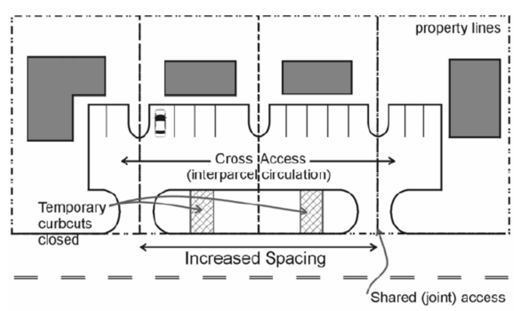
**13.1.3** Direct outparcel access shall be provided from the development’s interior roadways and aisles and not from the development’s external frontage.

**13.1.4** All necessary easements and agreements shall be recorded in an instrument that runs with the land. A joint access easement shall also be shown on the final plat.

**13.1.5** Unified access for abutting properties under different ownership and not part of an overall development plan shall be addressed through the Joint and Cross Access provisions below.

## 13.2 Joint and Cross Access

Joint and cross access policies promote connections between major developments, as well as between smaller businesses along a corridor. These policies help to achieve unified access and effective circulation systems for individual developments under separate ownership that could not otherwise meet access spacing standards or that would benefit from interconnection, e.g., adjacent shopping centers or office parks that abut shopping centers and restaurants.




**13.2.1** Adjacent commercial or office properties and major traffic generators, e.g. shopping plazas, should provide a cross-access drive and pedestrian accessway to allow effective circulation between adjacent properties. This standard shall also apply to a building site that abuts an existing developed property unless the City Engineer finds that this would be impractical.

**13.2.2** To promote efficient circulation between smaller development sites, the City Engineer may require dedication of an easement to serve as a private service road that extends to the edges of the property lines of the development site. This easement should be of sufficient width to accommodate two-way traffic and, where appropriate, incorporate stub-outs and other design features that make it visually obvious that abutting properties may tie into the private service road. Abutting properties shall be required to continue the service road as they develop or redevelop in accordance with the requirements of this policy. The easement may be provided to the front or rear of the site or across the site where it connects to a public roadway.

**13.2.3** Property owners shall record all easements and agreements, granted or entered into pursuant to this Code, including an easement allowing cross access to and from the adjacent properties, an agreement to close driveways provided for access in the interim after construction of the joint use driveway(s) or service road system, and a joint maintenance agreement defining maintenance responsibilities of property owners that share the joint-use driveway and cross-access system.

**13.2.4** Joint and cross access requirements may be waived when, in the City Engineer's judgment, that waiver is warranted. Instances in which a waiver may be warranted include incompatible uses (e.g., a gas station next to a child care center), major physical constraints (e.g., significant change in grade between properties), and refusal of an adjacent parcel owner who is not seeking development approval to join in or grant an easement. Refer to Section 17 for more details on waivers.

**13.2.5** Where properties are under the same ownership or consolidated for the purposes of development, the local street that is necessary to serve the proposed development shall be constructed by the developer. Where the street will serve properties under separate ownership, a method will be established to apportion the costs of initiating and constructing the street. In either case, the street shall be constructed prior to issuing building permits for the site.

# Section 14:

# Redevelopment Application

Existing and/or approved driveways that predate adoption of this Access Management Code are deemed legal, non-conforming access points. Properties with legal, non-conforming access shall be brought into compliance with the Access Management Code when one or more of the following conditions occur:

- When the roadway with the access connections is modified.
- When a new access connection is requested or required on the property with the non-conforming access point.
- When a preliminary and/or final development plan is required.
- When a proposed redevelopment, in comparison to the existing use, is forecasted to experience an increase of 50 trips (during the peak hour) or more, as determined by one of the following methods:
    - An estimation based on the ITE Trip Generation manual (latest edition) for typical land uses, or
    - Traffic counts made at similar traffic generators in the metropolitan area, or
    - Traffic counts conducted during the peak hour of adjacent roadway traffic for the property.
- If the principal activity on a property is discontinued for a period of one year or more, or construction has not been initiated for a previously approved development plan within a period of one year from the date of approval, then the property must be brought into conformance with all applicable access management requirements of this Code, unless otherwise exempted by the City Engineer. This shall include the need to update any previously approved transportation impact study where new traffic projections are available. For uses or approved plats in existence upon adoption of this Code, the one-year period for the purposes of this section begins upon the effective date of these requirements.
- Access to all change-in-use activities shall be approved by the City Engineer. All relevant requirements of this Code shall apply.

# Section 15: Driveway Connection Geometry

The design of driveways is important in access management in that it affects the speed of traffic turning into and out of driveways. This in turn affects the speed differential between through traffic and turning traffic where auxiliary turning lanes are not provided. Large speed differentials are created where driveways are inadequately designed, and these higher speed differentials are associated with higher crash rates and diminished traffic operations.

Another critical aspect of the driveway or connection design is the potential for traffic operations on private property to become congested and spill or queue back onto the public street. Adequate separation of internal conflict points from the public street is necessary to eliminate or diminish this potential. The design of driveways should always be based on the results of a study of the traffic likely to use them.

## 15.1 Driveway/Connection Standards

### 15.1.1 Lining Up Driveways Across Roadways

Driveways shall align with driveways across the roadway on roadways without nontraversable medians, or shall be offset as described in the connection spacing standards.

### 15.1.2 Angle of Intersection to the Public Roadway

Driveways that serve two-way traffic should have angles of intersection with the public street of 90 degrees. Driveways intersecting at angles less than 90 degrees are subject to the approval of the City Engineer. The minimum acceptable angle for driveways that serve two-way traffic is 80 degrees. Driveways that serve one-way traffic may have an acute angular placement of from 60 to 90 degrees.

### 15.1.3 Corner Radius

The corner radius at intersections should be large enough to allow inbound vehicles to enter at a reasonable rate of speed. The *Technical Specifications for Public Improvement Projects, City of Gardner,* should be consulted for minimum corner radii, measured from the edge of the driving surface of the roadway. Larger approach radii are allowable for driveways; however, the impact on lane definition, the view angle of right-turning traffic to see cross traffic, and the impact on pedestrian crossing times should all be considered. Corner radii of greater than 75 feet should not be used.

### 15.1.4 Driveway Width

Driveway widths shall conform to the provisions of the *Technical Specifications for Public Improvement Projects, City of Gardner.* All commercial and industrial driveways shall be curbed. All parking lots and driveways leading to or connecting with parking lots shall also be curbed.

### 15.1.5 Driveways and Accommodation of Pedestrians

All driveways should adequately accommodate pedestrians using sidewalks or paths. Crosswalk and sidewalk ramps shall be placed to balance the pedestrian crossing distance and the width of the intersection for vehicular traffic (typically this is at about the center point of the corner radius). Crosswalks should not be placed where pedestrians would likely have to cross behind or between stopped vehicles, except at roundabouts and "pork chop" right-turn islands. Where four or more driveway lanes are created, they should be designed so that the pedestrians have a refuge between the entering and exiting traffic.

### 15.1.6 Driveways and Accommodation of Bicycles

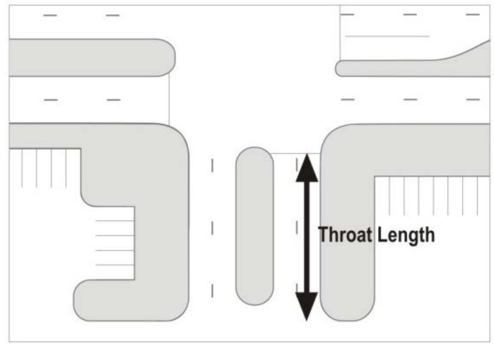
Where a new driveway crosses a bicycle facility (such as a dedicated bike path or an on-street bike lane), the driveway should be designed so as to accommodate the safe crossing of bicyclists. Likewise, when a

**Figure 15-1: Driveway Throat Length**

new bicycle facility is built that crosses existing driveways, the bicycle facility should be designed with safe crossings in mind.

### 15.1.7 Driveway Throat Length

The throat length shall be designed to minimize or eliminate inbound traffic queues onto a public street (see **Figure 15-1**). The throat length also provides a place for exiting vehicles to queue, better definition of the driving lanes, and separation between the parking area and the adjacent street.




All driveways shall provide a minimum throat depth of 30 feet on a local street, 50 feet on a collector, and 100 feet on an arterial. Additional storage lengths may be required as a result of a Transportation Impact Study.

### 15.1.8 Turning Radius

The path that a vehicle follows when turning left to or from a cross street or drive is defined as the turning radius. This path should be a continuous, smooth curve from the stopping point (e.g., the stop line), the end of the median nose, or the location the vehicle typically waits to make a left turn, to beyond the farthest conflicting travel lane. The turning radii shall be designed so that left-turning drivers do not have to pull out straight into the intersection and then begin the turn maneuver. The minimum turning radii are as follows (reckoned from the left side of the car):

- For low-volume drives or streets (less than 100 vehicles in the peak hour) serving primarily passenger cars, 40 feet minimum.
- For dual left-turn movements, 75 feet minimum (for the inner left-turn movement).
- For all other situations, 60 feet minimum.

Opposing left-turn movements, e.g. eastbound left turns and westbound left turns, at the same intersection shall provide at least 10 feet of separation between the outside edges of the two turning paths.

### 15.1.9 Sight Distance

All driveways shall be designed with adequate intersection sight distance and sight triangles as defined by AASHTO's A Policy on Geometric Design of Highways and Streets, latest edition.

# Section 16: Transportation Impact Study Requirements

The purpose of this section is to clearly outline the minimum requirements for Transportation Impact Studies (TIS) prepared as part of the land development approval process in the City of Gardner. A TIS identifies and quantifies the potential impacts of site development on the local and regional transportation system and specifies the measures necessary to mitigate those impacts.

## 16.1 TIS Process

The applicant's traffic engineer shall contact the City Engineer prior to submittal of the preliminary or final development plan or preliminary or final plat to discuss TIS requirements and the scope of work. The TIS must be submitted at time of application submission for Planning Commission, with any issues addressed and resolved prior to the Planning Commission meeting. Failure to meet these submittal deadlines shall be cause for rejection of the submittal and/or rescheduling to a later Planning Commission meeting. The subsequent sections present more detailed information on the TIS preparation requirements.

## 16.2 Study Triggers and Thresholds

The following situations will require a TIS:

- A currently undeveloped property proposed for development and/or rezoning.
- A currently developed property proposed for expansion, intensification, or redevelopment – to a level that requires City approval.
- A previously approved project in either category above that has not been developed within time-frames specified in this section and is re-starting.

The final determination of whether a TIS is required shall be made by the City Engineer.

The scope of the TIS for a proposed development is a function of the amount of new traffic trips the development, redevelopment, or expansion is expected to add to Gardner's roadway system. The City has established three levels of study, depending on the magnitude of traffic generated. The thresholds for these levels are shown in **Table 16-1**. The City Engineer can request a TIS and/or modify the scope requirements of a TIS based on local conditions and knowledge.

**Table 16-1: Transportation Impact Study Thresholds**

| Level of Study | Threshold | Typical Scope |
|---|---|---|
| Level 1 | 20-99 vph[1] | trip generation and site review |
| Level 2 | ≥100 vph | full study |
| Level 3 | ≥500 vph | full study with extended study area |

Note: vph = vehicles per hour - new trips generated by the development during traffic peak hours

## 16.3 Study Scope

The specific scope of a TIS will vary depending on the level of study. Prior to beginning the study, the applicant (or their authorized representative) should contact the City to begin the scoping process. The City Engineer must approve the scope of work and technical approach.

### 16.3.1 Study Area

The three levels of study areas are defined as follows:

Level 1: Site only.

Level 2: To the nearest arterial or collector intersection in either direction bordering the site.

Level 3: At least to the nearest arterial in all major directions of travel, further if necessary to adequately assess the potential traffic impacts. As a rule of thumb, all intersections experiencing an increase of 50 or more vehicles as a result of the project should be studied. The City Engineer shall make the final determination of what study area is reasonable.

#### 16.3.2 Study Scenarios

The study scenarios defined below shall be determined by the City Engineer:

Level 1: No analysis scenarios. The study needs to provide a forecast of the project trip generation and a review of the site to ensure compliance with the City's Access Management Code.

Level 2: Existing, Opening Day/Full Build (with and without project), 20-year horizon (with project).

Level 3: Existing, Opening Day/Full Build (with and without project), Near-Term (5 years after build-out with and without project), 20-year horizon (with project).

If a project is phased, the City Engineer may request the opening day for each major phase be studied.

#### 16.3.3 Traffic Analysis Methodology

Other items to be considered and approved either during the scoping phase or as the study progresses include: time periods to be analyzed (daily, am/pm peak periods, other peak periods), trip generation assumptions, trip distribution and assignment assumptions, planned public and private roadway and intersection improvement assumptions, baseline traffic counts, traffic projection methods, signal timing/phasing assumptions, acceptable mitigation measures. These and the Study Elements listed in Section 16.4 shall be considered unless otherwise approved by the City Engineer.

## 16.4 Study Elements

The TIS shall be prepared according to generally acceptable professional practice and shall address the following study elements. The City Engineer must approve all major assumptions.

#### 16.4.1 Executive Summary

This section should summarize all of the key findings of the study, including the identified impacts and proposed mitigation. The executive summary is only necessary for Level 3 studies.

#### 16.4.2 Introduction and Study Scope

This section should explain the context of the study and the scope of the work.

#### 16.4.3 Project Description

This section should provide the following information:

- Proposed project description including site location, layout, access, land-uses, and phasing,
- Existing access and land-uses,
- Information on nearby parcels' access and land-use and their relationship to the proposed project.

#### 16.4.4 Existing Conditions

The TIS will document the existing traffic conditions at the study intersections and on the study roadways. This will include the following:

- Description of the existing roadway system (street classifications, number of through lanes, number of turn lanes, intersection controls, etc.),
- Traffic Volumes (daily and study peak hours),
- Current operational results (Levels of Service, queuing, etc),
- Safety analysis,
- Parking conditions (if appropriate),
- Pedestrian and bicycle conditions,
- Public transit conditions, and
- Railroad crossing delay (if applicable).

### 16.4.5 Opening Day Conditions (No Project)

The TIS should present the background traffic conditions on the assumed opening day. The background conditions must include background traffic growth between the existing year counts and the expected opening day year. Background growth will address approved but not completed or occupied developments and background growth from other sources (based on historic traffic growth and other variables). All of the items addressed in the existing conditions section should be addressed here to the extent applicable.

### 16.4.6 Opening Day Conditions (With Project)

This section will present the opening day conditions with the proposed project. Key items will include:

- *Trip Generation* – The trip generation calculations will be based on the most recent version of ITE's <u>Trip Generation</u> unless otherwise approved by the City Engineer.
- *Trip Distribution and Assignment* – The trip distribution and assignment will be based on available local data and will be approved by the City Engineer. Both the distribution and assignment should be clearly shown in figures with explanatory test as necessary.

The topics addressed in the Existing Conditions section should be addressed in this section. In addition, potential impacts to any facility or mode should be highlighted.

### 16.4.7 Near-Term Conditions (5 years After Build-Out, With And Without Project)

This section will present conditions 5 years after project build-out, and shall analyze conditions both with and without the project. If any project trip generation or distribution patterns are anticipated to change in this time horizon, the study should incorporate those assumptions.

The 5-year horizon should include background traffic growth assumptions based on a methodology approved by the City Engineer. Typically, a combination of growth factors plus forecasted trip generation from approved or anticipated development will be adequate to develop these assumptions.

### 16.4.8 Long-Term (20-Year) Conditions (With Project Only)

For most studies, this scenario should be based on traffic forecasts provided by the City. The goal of this analysis is to provide the City with a clear picture of how the proposed project affects the City's long-range roadway and land-use planning. A detailed impact comparison is not required. For large projects (more than 500 peak-hour trips), the applicant should develop a forecasting methodology subject to approval by the City Engineer.

### 16.4.9 Proposed Mitigation

This section will outline the improvements required to address the identified impacts. These improvements could be on- or off-site and could affect any of the study modes (auto, truck, bus, bike, pedestrian). Typical mitigation measures include the addition of turn lanes, installation of signals (if warranted), provision of sidewalk connections, or other such improvements. The study shall demonstrate that the proposed measures will restore operations to acceptable levels.

## 16.5 Technical Approach Information

The following items outline key methods and requirements for preparing a TIS for the City of Gardner.

### 16.5.1 Data Collection

The applicant is responsible for collecting all of the required traffic data. The applicant should check with City staff regarding available data in the City's possession. Both peak hour and daily counts should be less than two years old and should have been conducted on a Tuesday, Wednesday, or Thursday (except for special studies when weekends or Monday/Friday counts are needed). Typically, both the a.m. and p.m. peak hours should be studied. If it can be demonstrated that the project will not generate traffic during one of the peak hours (for example, a restaurant that is only open for lunch and dinner), the City Engineer may waive the requirement to analyze that period.

### 16.5.2 Trip Generation

Trip generation calculations will be prepared using the most recent version of the ITE's Trip Generation. For redevelopment or rezoning projects, the applicant should calculate both the total project trip generation and the net difference. The trip generation assumptions and calculations must be approved by the City Engineer prior to initiation of the operational analysis.

### 16.5.3 Trip Distribution and Assignment

The applicant will clearly present and support the assumed trip distribution. Similarly, the major assignment assumptions will be presented and explained. For redevelopment or rezoning projects, the applicant will need to determine whether the distribution of the proposed project differs from that of the previously approved or zoned use, because the assignment will need to represent the net difference. The trip distribution assumptions must be approved by the City Engineer prior to initiation of the operational analysis.

### 16.5.4 Operational Analysis Methods

Highway and intersection operational analyses will be performed using the methods described in the most recent version of the Transportation Research Board's Highway Capacity Manual. If required by the City Engineer, the applicant shall perform a traffic simulation for closely spaced intersections, improvements relying on signal timing/phasing, or complex traffic conditions.

### 16.5.5 Impact Thresholds

The impact thresholds in use in the City of Gardner are as follows:

- LOS A – D are acceptable on all arterials and collectors.
- On local residential streets, 3,000 vehicles per day is the maximum acceptable average daily traffic volume.
- The City Council, at their sole discretion, may approve a development or access point that exceeds the impact thresholds listed above, it if determines that the overall development or access provides significant enhancements to the community that justify exceeding the impact thresholds and that such justification does not unnecessarily jeopardize the safety of the traveling public.

### 16.5.6 Queuing

The study will include queuing analyses for each study intersection. $95^{th}$ percentile queues should be reported if/when they exceed the existing (or proposed) queue storage.

#### 16.5.7 Access Management Review

The applicant will compare the proposed site access to the City's Access Management Code as outlined in this document as well as other applicable design standards and guidelines, and shall submit a proposal that meets the City's Access Management Code. If the applicant wishes to deviate from the Access Management Code, the applicant should submit a concept plan to the City Engineer for review and comment prior to making application.

#### 16.5.8 On-Site Circulation

The analysis will include a section evaluating and commenting on the on-site circulation. This will include an assessment of on-site intersections and driveways/roadways with respect to operations and safety (including driveway throat length, vehicle turning radii, sight distance, etc.). Shared access and cross-parcel traffic flows should also be considered. It will also address on-site truck circulation and parking.

#### 16.5.9 Multi-modal Considerations

Bike, pedestrian, transit, and truck considerations shall be discussed, as well as current and proposed transit services to the site.

#### 16.5.10 Responsibility and Qualifications

It is the applicant's responsibility to prepare the Transportation Impact Study, including all necessary data collection. The individual preparing the study must be a registered engineer licensed in the State of Kansas, with demonstrated experience in preparing Transportation Impact Studies. The City Engineer will make the final determination as to whether a particular individual is qualified.

The City of Gardner prefers to receive TISs that follow a consistent outline. The recommended outline is provided here. The City Engineer must approve other formats prior to submittal.

A minimum of two copies of a draft report shall be submitted to the City Engineer for review. After the applicant receives the City's comments, a minimum of two copies of a final report shall be submitted to the City Engineer. The report shall contain, in Appendices, any detailed calculations supporting the main body of the report such as intersection LOS analysis.

Any deviations from the above guidance should be approved by the City Engineer.

# Section 17:

# Review / Exceptions Process

Flexibility is essential when administering access spacing requirements to balance access management objectives with the needs and constraints of a development site. The following administrative procedures are intended to provide flexibility, while maintaining a fair, equitable and consistent process for access management decisions. The exception/waiver process described below applies to all of the guidelines in this Code.

## 17.1 Approval Required

**17.1.1** No person shall construct or modify any access connection to a roadway within the City of Gardner without approval from the City. Approval is typically granted through the preliminary and final development plan processes and/or engineering approval of construction plans for roadways. All requests for connections to a roadway within the City after the date of adoption of the Access Management Code shall be reviewed for conformance with this Access Management Code, except as noted below.

**17.1.2** Access connections that do not conform to this policy and were constructed before the effective date of this Code shall be considered legal nonconforming connections and may continue until a change in use occurs as described in Section 14. Temporary access connections are legal nonconforming connections until such time as the temporary condition expires.

**17.1.3** Any access connection constructed without approval after the adoption of this policy shall be considered an illegal nonconforming connection and shall be issued a violation notice and may be closed or removed.

## 17.2 Requests for Modification

**17.2.1** Access connections deemed in conformance with this policy may be authorized by the City Engineer. Any requests for modification shall require approval by the City Engineer.

**17.2.2** The City Engineer may reduce the connection, median opening, signal, and roadway spacing requirements by up to 10 percent or 100 feet (whichever is less) where it is impractical to meet the standards, except where prohibited by this Code.

**17.2.3** Modifications of greater than those described in Section 17.2.2 shall require documentation justifying the need for the modification and an access management plan for the site that includes site frontage plus the distance of connection spacing standards from either side of the property lines. The analysis shall address existing and future access for study area properties, evaluate impacts of the proposed plan versus impacts of adherence to standards, and include improvements and recommendations necessary to implement the proposed plan.

## 17.3 Variances

Based on an engineering study, the standards outlined in this Code may be altered or waived by the City Council to accommodate existing street or property limitations or extraordinary conditions.

## 17.4 Waiver for Nonconforming Situations

Where the existing configuration of properties and driveways in the vicinity of the subject site precludes spacing of a connection in accordance with the spacing standards of this Code, the City Engineer, in consultation with appropriate City departments, shall be authorized to waive the spacing requirement if all of the following conditions have been met:

**17.4.1** No other reasonable access to the property is available.

**17.4.2** The connection does not create a potential safety or operational problem as determined by the City Engineer based on a review of a TIS prepared by the applicant's professional engineer.

**17.4.3** The access connection along the property line farthest from the intersection may be allowed. The construction of a median may be required on the street to restrict movements to right-in/right-out and only one drive shall be permitted along the roadway having the higher functional classification.

**17.4.4** Joint access shall be considered with the property adjacent to the farthest property line. In these cases:

- A joint-use driveway with cross-access easements will be established to serve two abutting building sites,
- The building site is designed to provide cross access and unified circulation with abutting sites; and
- The property owner agrees to close any pre-existing curb cuts after the construction of both sides of the joint use driveway.

## 17.5 Temporary Access

A development that cannot meet the connection spacing standards of this policy and has no reasonable alternative means of access to the public road system may be allowed a temporary connection. When adjoining parcels develop which can provide joint or cross access, permission for the temporary connection shall be rescinded and the property owner must remove the temporary access and apply for another connection. Conditions shall be included in the approval of a temporary connection including, but not limited to the following:

- Applicants must sign an agreement to participate in any future project to consolidate access points.
- Applicants must sign an agreement to abandon the interim or temporary access when adequate alternative access becomes available.
- The transportation impact study should consider both the temporary and final access/circulation plan.

A limit may be placed on the development intensity of small corner properties with inadequate corner clearance, until alternative access becomes available.

## 17.6 Appeal of City Engineer's Decision

The decisions of the City Engineer, related to the interpretation and implementation of this Access Management Code, may be appealed to the City Council. This appeal must be accompanied by a TIS which addresses the issues that are being appealed. The TIS must be executed and sealed by an experienced, qualified professional engineer licensed in the State of Kansas with demonstrated experience in preparing TISs. The City Council may approve the appeal if they determine that the proposed conditions do not substantiate a safety or operational condition that places unnecessary risk to the community.

# Section 18:

# Glossary

AASHTO: American Association of State Highway and Transportation Officials

Access Point: See definition for connection.

ADT: Average Daily Traffic. The average number of vehicle trips generated over a specific time period.

Connection: Any street or driveway intersection with a public street. It also includes median openings on public streets.

CARNP: Comprehensive Arterial Roadway Network Plan

City Engineer: The City Engineer can authorize a designee to make decisions where the text authorizes the City Engineer to make decisions.

Driveway throat: The portion of the driveway extending back from the public street, uninterrupted by any internal site access points (through physical prohibition by raised islands).

FHWA: Federal Highway Administration

Flag lots: Lots created such that each parcel has access to the main roadway instead of the preferred method where the parcels would connect on a private drive or local roadway.

KDOT: Kansas Department of Transportation

LOS: Level of service. A measure of effectiveness that determines the quality of service on transportation infrastructure. (see Highway Capacity Manual).

MARC: Mid-America Regional Council

Outparcels: Lots on the perimeter of a larger parcel that break its frontage along a roadway. They are often created along arterial street frontage of shopping center sites, and leased or sold separately to businesses that desire the visibility of major street locations.

Queue: A line of vehicles.

TRB: Transportation Research Board

Trip Generation: Prediction of the amount of traffic originating from a particular location.

V/C: The ratio of demand flow rates to capacity for a given type of transportation facility.

# Section 19: References

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