Traffic Management Policy

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# Traffic Management Policy

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SECTION 1: INTRODUCTION

Section 1.1: Introduction

Throughout the country, problems on our street system such as mid-block crashes and delays to through traffic caused by turning vehicles can be traced to the access provided to abutting property via driveways and side streets. Historically, decisions to allow access were typically made relative to individual properties and not the function and characteristic of the street to which access was allowed. This piece-meal approach to access planning has frequently resulted in illogical and excessive number of access points that have led to increased congestion and crashes.

“Traffic Management” takes a comprehensive view of property access relative to the function of the streets from which it is provided. The objective of Traffic Management is to optimize, or find that right balance, between property access and traffic safety and efficiency, particularly along arterial streets. In other words, access is viewed in the context of the street system instead of just the individual property. Even further, access should be viewed in the context of the ultimate traffic volumes. What might appear acceptable one day may well be perceived differently in a long-term perspective.

Traffic Management is the careful planning and design of driveways, median openings, interchanges, and street connections to a roadway. It also involves the application of median treatments and turning lanes, and the appropriate separation of traffic signals. This is done to maintain the viability of major roadways to safely and efficiently accommodate traffic volumes commensurate with their function. It is the arterial street network that is key to the success of transportation within a community and it represents perhaps the greatest financial infrastructure investment.

Traffic Management requires that all properties have reasonable access to the public roadway system. Existing access will be allowed to continue and some areas, due to existing constraints, may never be fully improved. The objective of this Traffic Management Policy is to avoid further degradation caused by access in already developed areas and to prevent the creation of problems in the future. The net effect of Traffic Management along arterial streets is that the supporting networks of collector and local streets, and even inter-parcel connectivity, become more critical to effective circulation and property access.

The ultimate configuration of a street and its function are typically the result of land use planning, transportation planning, and traffic engineering. The concept of Traffic Management integrates these activities in order to optimize the safety and performance of the public street network, a significant infrastructure investment vital to the well being of the community.

Section 1.2: Experience

Every community has experienced safety and traffic operational problems associated with too much or poorly planned access to abutting properties. Many have also found it necessary to retrofit solutions to solve these problems. In the course of this experience, it has been discovered that managing access to major roadways has significant positive effects, including reducing crash experience, lessening congestion, enhancing community character, and improving air quality.

Studies to date indicate that an effective Traffic Management Policy can result in significant decreases in crashes and travel delays. Obviously, the degree of impact will vary based on the specific circumstances of any street segment, but this experience has provided valuable insight into the factors that have a negative influence on traffic safety and efficiency. Some of these factors include:
- Driveways or side streets in close proximity to major intersections;
- Driveways or side streets spaced too close together;
- Excessive driveways for the abutting land use type;
- Lack of left-turn lanes to store turning vehicles;
- Deceleration of turning traffic in through lanes; and
- Traffic signals too close together.

Sometimes these problems on major streets have unintended and undesirable consequences such as encouraging drivers to find alternate routes on collector and local streets.

Requirements for well-designed road and access systems further the orderly layout and use of land and help improve the design of residential subdivisions and commercial circulation systems. However, the “change” to a system of shared or unified access to property along major roadways often causes concern among property owners or business operators, due to the perception that loss of individual driveway access could adversely impact property values or income.

The appearance of corridors and gateways is also critical to the image of a community and its overall attractiveness to investors. Minimizing the number of curb cuts, consolidating access drives, constructing landscaped medians, and buffering parking lots from adjacent thoroughfares results in a visually pleasing and efficient corridor that, in turn, can help attract new investment. Effective management of roadway corridors can also protect property values over time.

**Section 1.3: Conflicts and Revisions**

Every effort has been made to ensure this Traffic Management Policy has no conflicts with the following design standards:

- Title IV, Chapter 405 of the O’Fallon Municipal Code, Article V, Design and Development Standards;
- Chapter 410: Unified Development Ordinance of St. Charles County, Missouri “Subdivision Regulations”; and

There may be occasions where discrepancies between these documents arise. Upon such an occasion, the order of preference is as follows:

1) If solely City of O’Fallon jurisdiction
   - Title IV, Chapter 405 of the O’Fallon Municipal Code, Article V, Design and Development Standards;
   - Traffic Management Policy.
2) If a County or State jurisdiction is involved one of the following may apply:

- Chapter 410: Unified Development Ordinance of St. Charles County, Missouri “Subdivision Regulations” (County jurisdictional roads only);

- 2004 Missouri Standard Specification Book for Highway Construction, along with the Missouri Department of Transportation Access Management Guidelines, current edition (MoDOT jurisdictional roadways only); and
SECTION 2: Definitions

- **AASHTO** - The American Association of State Highway and Transportation Officials.

- **Acceleration Lane** - A speed change lane that enables a vehicle to accelerate in order to get up to the traveling speed of the adjacent through lane.

- **Access** - Any way or means of approach to provide vehicular or pedestrian entrance to a property.

- **ADT** - Average Daily Traffic

- **Annual Average Daily Traffic (AADT)** - The annual average two-way daily traffic volume on a route. AADT represents the total traffic on a road per year, divided by 365.

- **At Grade** - When two or more facilities that meet in the same plane of elevation.

- **Auxiliary Lane** - A lane adjoining a roadway that is used for acceleration, deceleration, or storage of turning vehicles.

- **Backage Road** - A local road that is used to provide alternative access to a road with higher functional classification; backage roads typically run parallel with the main route and provide access at the back of adjacent properties. Also known as a “Reverse Frontage Road” or “Parallel Access Road.”

- **Change in Use** - A change in use may include, but is not limited to, structural modifications, remodeling, a change in the type of business conducted, expansion of an existing business, a change in zoning, or a division of property creating new parcels, but does not include modifications in advertising, landscaping, general maintenance or aesthetics that do not affect internal or external traffic flow or safety.

- **City Engineer** - City staff position that is responsible for directing the operation of the Technical Engineering Element of the Engineering Group in the Community Development Department. The Technical Engineering Element encompasses capital improvement management, development review, traffic engineering, and public works inspections. In all instances, “City Engineer” refers to the City Engineer or his/her designee including but not limited to the City’s traffic engineer.

- **Commercial** - Property developed for the purpose of retail, wholesale, or industrial activities, and which typically generate higher numbers of trips and traffic volumes than residential properties.

- **Conflict** - A traffic-related event that causes evasive action by a driver attempting to avoid a collision.

- **Conflict Point** - Any point where the paths of two through or turning vehicles diverge, merge, or cross and create the potential for conflicts.

- **Congestion** - A condition resulting from more vehicles trying to use a given road during a specific period of time than the road, intersection or driveway is designed to handle with what are considered acceptable levels of delay or inconvenience.

- **Connection** - Any driveway, street, turnout or other means of providing for the movement of vehicles to or from the public roadway system.
- **Connection Spacing** - The distance between connections, measured from centerline to centerline (center of right-of-way for public streets) along the edge of the traveled way.

- **Cross Access** - A service drive that provides vehicular access between two or more abutting sites so that the driver need not enter the public street system to move between them.

- **Deceleration Lane** - A speed-change lane that enables a vehicle to leave the through traffic lane and decelerate to stop or make a slow-speed turn.

- **Directional Median Opening** - An opening in a raised median that provides for specific traffic movements and physically restricts other movements. For example, a directional median opening may allow left turns from the main street while only allowing right turns from the side street at a particular location.

- **Director of Planning and Development** - City staff position that is responsible for directing the operation of the Planning and Development Department and for reviewing development plans and making recommendations to the Planning and Zoning Commission, the City Council and the Board of Adjustment, and for reviewing and approving construction plans prior to the issuance of a building permit. The Director also oversees developing and implementing planning goals and principles, the City’s Comprehensive Plan, Zoning Code and the Subdivision and Land Development Code. “Director of Planning and Development” refers to the Director of Planning and Development or his/her designee.

- **Design Traffic Volume** - The traffic volume which a roadway or driveway was designed to accommodate, and against which its performance is evaluated.

- **Downstream** – Used to identify items or features located in the direction of travel beyond the current location.

- **Driveway** - A (typically) private roadway or entrance used to access residential, commercial, or other property from an abutting public roadway.

- **Driveway Density** - The number of driveways divided by the length of a particular roadway.

- **Driveway Spacing** - (see Connection Spacing)

- **Driveway Width** - The width of a driveway measured from one side to the other at the point of tangency.

- **Easement** - A grant of one or more property rights by a property owner. For example, one property owner may allow a neighbor to access public roads across his or her property.

- **Entering (or Intersection) Sight Distance** - The distance of minimum visibility needed for a passenger vehicle to safely enter a roadway and accelerate without unduly slowing through traffic.

- **Facility** - A transportation asset designed to facilitate the movement of traffic, including roadways, intersections, auxiliary lanes, frontage roads, backage roads, bike paths, sidewalks, etc.

- **FHWA** - The Federal Highway Administration of the U.S. Department of Transportation.

- **Flag Lot** - A lot not meeting minimum frontage requirements where access to a public road is provided by a narrow strip of land carrying a private driveway.
- **Frontage** - The length of a property that directly abuts a roadway.

- **Frontage Road** - A local road that is used to provide alternative access to property from a road with higher functional classification; frontage roads typically run parallel to the mainline road and provide access at the front of a line of adjacent properties.

- **Functional Area** - The area surrounding an interchange or intersection that includes the space needed for drivers to make decisions, accelerate, decelerate, weave, maneuver, and queue storage for turns and stop situations.

- **Functional Classification System** - A system used to categorize the design and operational standards of roadways according to their purpose in moving vehicles; higher functional classification implies higher traffic capacity and speeds, and typically longer traveling distances.

- **Functional Integrity** - Incorporating appropriate Traffic Management standards and controls that allow a roadway to maintain its classified purpose.

- **Geometric Design Standards** - The required physical measurements that allow a facility to maintain functional integrity.

- **Grade Separated** - Two or more facilities that intersect in separate planes of elevation.

- **HCM** – Highway Capacity Manual

- **Highway Capacity** - The maximum number of vehicles a highway can handle during a particular amount of time and at a given level of service.

- **Highway System** - All public highways and roads, including controlled access highways, freeways, expressways, other arterials, collectors, and local streets.

- **Industrial** - Property developed for the purpose of the manufacturing of products.

- **Industrial/Commercial Collector Street** - Street that collects traffic to and from commercial or industrial areas and distributes it to arterial streets.

- **Interchange** - A grade-separated facility that provides for movement between two or more roadways.

- **Internal Circulation** - Traffic flow that occurs inside a private property.

- **Internal Site Design** - The layout of a private property, including building placement, parking lots, service drives, and driveways.

- **Intersection** - An at-grade facility that provides mobility between two or more roadways.

- **Interstate** - A federally-designated roadway system for relatively uninterrupted, high-volume mobility between states.

- **ITE** – Institute of Transportation Engineers

- **Joint (or Shared) Access** - A private access facility used by two or more adjacent sites.
- **Lane** - The portion of a roadway used in the movement of a single line of vehicles.

- **Left-Turn Lane** - A lane used for deceleration, and/or storage of vehicles conducting left-turning maneuvers.

- **Level of Service** - The factor that rates the performance of a roadway by comparing operating conditions to ideal conditions; “A,” is the best, “F,” which is worst.

- **Major Arterial Street** - Street that serves the highest traffic volume corridors and the longest trips.

- **Median** - A barrier that separates opposing flows of traffic. Raised medians (with curbs and a paved or landscaped area in the center) are generally used in urban areas. Raised medians should not be confused with more obtrusive Jersey barriers. Flush medians (with no curbs and a grass-covered area in the center) are generally used in rural areas. Medians can be both functional and attractive. Fences and walls are not acceptable as medians.

- **Median Width** - The distance between the near edges of opposing through travel lanes in each direction when separated by a median. A turn lane or lanes may occupy all or part of the median width.

- **Mid-Block Crossing** - A crossing that is provided so that pedestrians can conveniently cross a roadway in the middle of a block or segment of roadway.

- **Minor Arterial Street** - Street that interconnects and augments the major arterial streets.

- **MUTCD** - Manual on Uniform Traffic Control Devices

- **Multilane Roadway** - A roadway with more than one through lane in a single direction.

- **Multi-Purpose Trail** - A paved surface typically constructed parallel to a street to serve pedestrian and bicycle traffic.

- **NCHRP** - The National Cooperative Highway Research Program, a program that sponsors research on highway safety, operations, standards, and other topics.

- **Peak Hour Traffic** - The number of vehicles passing over a section of roadway during its most active 60-minute period each day.

- **PHF** - Peak Hour Factor

- **Point of Tangency** – The point where a curve ends and the forward tangent begins.

- **Police Power** - The general power vested in the legislature to make reasonable laws, statutes and ordinances where not in conflict with the Constitution that secure or promote the health, safety, welfare and prosperity of the public.

- **PRT (Perception Response Time)** – The time for a driver to perceive a vehicular movement needed to be made and to actually perform them movement.

- **Public Road** - A highway, street or road, open for use by the general public and which is under the jurisdiction or control of a public body.
- **Queue Storage** - That portion of a traffic lane that is used to temporarily hold traffic that is waiting to make a turn or proceed through a traffic control device such as a stop sign or traffic signal.

- **Raised Median** - The elevated section of a divided road that separates opposing traffic flows.

- **Residential** - Property developed for the purpose of single family, multi-unit, or other types of housing.

- **Residential Collector Street** - Street that collects traffic to and from residential areas and distributes it to arterial streets.

- **Residential Local Access Street** - Street that carries traffic having its origin or destination within the immediate neighborhood.

- **Reviewing Engineer** - An individual or individuals designated by the City Engineer to review development projects and make decisions as outlined in this Policy. The review should include input from the appropriate departments (fire, police, public works, planning & development, etc.).

- **Right-In, Left-In, Right-Out** - A driveway where left turns out are prohibited either by physical or regulatory means.

- **Right-In, Left-Out, Right-Out** - A driveway where left turns in are prohibited either by physical or regulatory means.

- **Right-In, Right-Out** - A driveway where left turns in or out are prohibited either by physical or regulatory means.

- **Right-of-Way** - Land reserved, used, or slated for use for a highway, street, alley, walkway, drainage facility, or other public purpose related to transportation or utilities.

- **Roadway Classification System** - See “Functional Classification System”

- **Service Road** - A local road that is used to provide alternative access to a road with higher functional classification; service roads may include internal circulation systems, frontage roads, or backage roads.

- **Shared Driveway** - A single, private driveway serving two or more lots.

- **Side Friction** - Driver delays and conflicts caused by vehicles entering and exiting driveways.

- **Sidewalk** - A paved surface designed specifically to serve pedestrian traffic.

- **Sight Distance** - The distance visible to the driver of a passenger vehicle measured along the normal travel path of a roadway to a specified height above the roadway when the view is unobstructed to oncoming traffic.

- **Spacing** - For purposes of this policy, the distance between two roadways and or drives measured from the center of one roadway to the center of the next roadway, unless otherwise defined for a specific application.

- **Speed Differential** - The difference in travel speed between through traffic, and traffic entering or exiting a roadway.
• **Stopping Sight Distance** - The minimum distance required for a vehicle traveling on a roadway to come to a complete stop upon the driver seeing a potential conflict; it includes driver reaction, braking, and stopping time.

• **Storage Length** – (see Queue Storage)

• **Strip Development** - A linear pattern of roadside commercial development, typically with relatively shallow lots and frequent drives. Also typically lacks a network of side streets permitting efficient traffic circulation between adjacent developments.

• **Taper** - The transitional area of a roadway where lanes are added or dropped.

• **Three Quarter Access** – A driveway that allows three of the four possible turning movements present at a full access. Normally either the inbound left or outbound left is the restricted movement.

• **Throat Length** - The distance parallel to the centerline of a driveway to the first on-site location at which a driver can make a right-turn or a left turn. On roadways with curb and gutter, the throat length shall be measured from the back of the curb. On roadways without a curb and gutter, the throat length shall be measured from the edge of the shoulder.

• **Traffic Flow** - The general movement of traffic (motorized, unmotorized vehicles, and pedestrians) along the roadway system.

• **Traffic Management** - Measures to assure the appropriate location, design, and operation of driveways, median openings, interchanges, and street connections to a roadway, as well as the application of median treatments and turning lanes in roadway design, and the appropriate separation of traffic signals for the purpose of maintaining the safety and operational performance of roadways.

• **Traffic Management Policy** - The whole of all actions taken by a governing council, board, or agency to maintain the safety and traffic carrying capacity of its roadways.

• **Transportation Impact Study** - A report that compares relative roadway conditions with and without a proposed development; typically including an analysis of mitigation measures.

• **Trip Generation** - The estimated volume of entering and exiting traffic caused by a particular development.

• **Turning Radius** - The radius of an arc that approximates the turning wheel path of a vehicle.

• **Two-Way Left-Turn Lane (TWLTL)** - A lane located between opposing traffic flows which provides a transition area for left-turning vehicles traveling in either direction.

• **Uncontrolled Access** - A situation that results in the incremental development of an uncontrolled number, spacing, and/or design of access facilities.

• **Upstream** - Used to identify items or features located in the direction of travel before (behind) the current location.

• **Vehicle Trip** - A vehicle moving from any point of origin to any point of destination.
- **Warrant** - The standardized condition under which traffic management techniques are justified.

- **Weaving** - Crossing of traffic streams moving in the same general direction through merging and diverging, for instance near an interchange or intersection.
SECTION 3: STREET CLASSIFICATION SYSTEM

Section 3.1: Street Classifications

Safe and efficient operation of streets and highways requires that these facilities be classified and designed for the functions that they will perform. The entire road system is traditionally classified by relating the proportion of through movement to the proportion of access. Freeways, which have full control of access and serve only the movement function, are at one end of the scale; local streets, which predominately provide for land access, are at the other end of the scale because they have little or no through movement. Collector and arterial streets normally provide a balance between movement and access functions; it is mainly along these streets that traffic management policy becomes important.

Freeways and expressways in O'Fallon are the responsibility of the Missouri Department of Transportation (MoDOT). City streets range from residential streets to arterial streets. Five street classifications are defined in Section 405.390 of Title IV: Land Use of the O'Fallon Municipal Code to include:

- Freeways (MoDOT standard)
- Expressways (MoDOT standard)
- Major Arterial (MoDOT standard)
- Minor Arterial (Thoroughfare and Parkway)
- Industrial/Commercial Collector (Collector)
- Residential Collector (Collector)
- Local Access (Minor Residential / Minor Residential Large Lot)

A number of frontage roads exist in O'Fallon, some owned by MoDOT and some by the City. Frontage roads are unique only by their proximity to access-controlled highways. Their function should be categorized by one of the seven aforementioned classifications. Figure 3-1 shows typical cross-sections used by the City.

MINOR ARTERIAL
MINOR ARTERIAL WITH PARKWAY OPTION

COLLECTOR

COLLECTOR WITH PARKWAY OPTION
Variations in the above standards can be made supported by the City’s Traffic consultant and City Engineer and further approved by the Planning & Zoning Commission. Changes must provide for the health, safety, and welfare of the community.

Figure 3-1
O’Fallon Typical Sections

Section 3.2: Typical Sections

A typical section for each of the street types is included in Section 405.390 of Title IV: Land Use of the O’Fallon Municipal Code, Chapter 410: Unified Development Ordinance of St. Charles County, Missouri “Subdivision Regulations” or the 2004 Missouri Standard Specification Book for Highway Construction. Some of the considerations that define the needed cross section of a given street segment are described below.

Section 3.2(A): Traffic Lanes
The number and types of lanes on any street should be determined by existing and projected traffic volumes and the classification and intended use, while remaining consistent with the nature of land use activity adjacent to it. Turn lanes are essential at many intersections and commercial driveways.

**Section 3.2(B): Bicyclists**

Bicycle routes are established on some city streets. Considerations for bicyclists could include a wider shared traffic lane, separate marked bike lanes, or multi-purpose trails.

**Section 3.2(C): Pedestrians**

Sidewalks or multi-purpose trails are generally required on one or both sides of a public street. Requirements are outlined in Title IV, Chapter 405, Article V, Design and Development Standards, of the Municipal Code.

**Section 3.2(D): Right-of-Way**

Providing sufficient right-of-way to meet the long term growth potential of a street is an important element of the transportation network. Once development occurs adjacent to the roadway, additional expansion of the street may become very expensive or impractical if sufficient right-of-way is not available. This may in turn limit additional development if sufficient capacity cannot be provided on the street.

In addition to the basic number of through lanes, street elements that influence the amount of right-of-way required include left-turn lanes (dual left-turn lane at some arterial street intersections), right-turn lanes, bike lanes, medians, and multi-use paths.

**Section 3.2(E): Corner Right-of-Way or Easement Triangles**

A 25-foot triangle of additional right-of-way shall be provided at the corners or two intersecting streets where both have a designated classification of arterial or collector. The triangle is determined by measuring along both right-of-way lines 25 feet from their point of intersection and striking a line to connect the two points (see Figure 3-2). The purpose of this triangle is to allow room for utilities and sidewalks behind the corner radius of the intersection. Additional right-of-way or other provisions may be required to provide appropriate sight distances at the corner. Alternatively, a 25-foot triangle easement may be provided in lieu of additional right-of-way if the additional right-of-way will substantial encumber the site. The easement shall be permanent and allow for the construction of sidewalks, roadway, drainage, utilities, signal equipment and signage.
Figure 3-2
Corner Right-of-Way Triangle
SECTION 4: COLLECTOR STREET PLANNING

Arterial streets are the backbone and collector streets are the skeleton of effective Traffic Management Policy. Collector Streets allow adjacent development to be efficiently served from a limited number of connections to the major (arterial) street system.

Section 4.1: Planning Requirements

The following requirements shall be applied in the development of the collector street system:

**Section 4.1(A)**

Prior to the approval of any new development, the City shall refer to the most current version of the thoroughfare plan included in the City’s Comprehensive Plan and insure the development is consistent with the plan. Consideration must also be given to existing or planned connections and collector streets in adjacent sections, existing property lines and topographic features.

**Section 4.1(B)**

A development may propose an alternative collector street system that must be approved along with the development plan. Within exclusively residential areas, collector streets should provide connectivity between developments and relatively direct access to the arterial street system, but may be more circuitous in design (note that access at other connections to the arterial street system may be restricted per this policy).

**Section 4.1(C)**

Collector streets shall be public streets.

**Section 4.1(D)**

A collector street may serve both residential and commercial development, but should be planned to discourage use by commercial traffic into and through residential areas.

**Section 4.1(E)**

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 traffic signal installation.

Section 4.2: Text Book Example – with optimal arterial spacing

An example of a collector street network is shown on Figure 4-1. Note that in order to maintain good connection spacing on the arterial roadways, commercial development areas should be at least 1/4 mile by 1/4 mile in size, larger where adjacent to major arterial streets.
Figure 4-1
Collector Street Planning Example
SECTION 5: REVIEW/EXCEPTION PROCESS

Flexibility is essential when administering access spacing requirements to balance Traffic 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 Traffic Management decisions. The exception/waiver process described below applies to all of the standards in this policy.

Section 5.1: Approval Required

Section 5.1(A)

No person shall construct or modify any access connection to an O’Fallon street without approval from the City. Approval is granted through the plan approval and/or the engineering process. All requests for connections to a City roadway shall be reviewed for conformance with this Traffic Management Policy.

Section 5.1(B)

Access connections that do not conform to this policy and were constructed before the effective date of this policy shall be considered nonconforming connections and may continue until a change in use occurs as provided in Section 8. Temporary access connections are nonconforming connections until such time as the temporary condition expires.

Section 5.1(C)

Any access connection constructed without approval by the governing body after the adoption of this policy shall be considered an unapproved connection and the owner shall be issued a violation notice and may be closed or removed by the City.

Section 5.2: Requests for Modification

Section 5.2(A)

Access connections deemed in conformance with this policy may be authorized in accordance with Title IV: Land Use of the O’Fallon Municipal Code.

Section 5.2(B)

Modifications of arterials or collectors greater than ten percent (10%) of the allowable spacing standard or 100 feet, whichever is less, shall require documentation justifying the need for the modification and a Traffic 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.

Section 5.3: Waiver of Nonconforming Situations
Where the existing configuration of properties and driveways in the vicinity of the subject site precludes spacing of an access point in accordance with the spacing standards of this policy, 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:

**Condition #1**

No other reasonable access to the property is available, and the property is not being subdivided such that reasonable access or compliance with this policy will be rendered impossible (see Section 6.1).

**Condition #2**

The connection does not create a potential safety or operational problem included but not limited to sight distance or L.O.S. as determined by the City Engineer.

**Section 5.3(A)**

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.

**Section 5.3(B)**

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 excluding resident properties.

- 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.

This is intended to deal with the development in question and not necessarily requiring easements or work off site unless such off site work is specifically necessary to support the project.
SECTION 6: TRAFFIC MANAGEMENT AND SUBDIVISION PRACTICES

The design of property access is established when land is subdivided for commercial or residential development. Therefore, all new lot splits and commercial and residential plats will be reviewed to assure that property access is designed in accordance with the Traffic Management Policy. The following standards shall apply.

Section 6.1: Creation of New Lots

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

Section 6.2: Subdivision Access

Section 6.2(A)

When a subdivision is proposed that would abut or contain an arterial or industrial/commercial collector street, it shall be designed to provide lots abutting the classified roadway with primary access from an interior local street. On arterial streets, buffering requirements shall be set out as specified in the zoning code. Special conditions may be considered by the City Engineer and Planning & Zoning Commission.

Section 6.2(B)

Direct residential driveway access to individual one-family and multi-family dwellings are prohibited from any arterial or industrial/commercial collector street.

Section 6.2(C)

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

Section 6.2(D)

Access locations to subdivisions shall provide appropriate sight distance and driveway spacing.

Section 6.3: Connectivity of Supporting Streets

As the City of O’Fallon 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:

Section 6.3(A)
New residential subdivisions shall be designed to coordinate with existing, proposed and anticipated streets in accordance with the most current version of the City’s Thoroughfare Plan contained within the City’s Comprehensive Plan.

Section 6.3(B)

All new developments shall be designed to discourage the use of local and residential collector streets by non-local traffic while maintaining the overall connectivity with the surrounding system of roadways. This may be accomplished through the use of modified grid systems, T-intersections, roadway jogs, roundabouts, horizontal alignment or other appropriate traffic calming or street design measures within the development.

Section 6.3(C)

Right of Ways and easements for 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. The improvements shall be constructed as close as possible to the boundary as is practical.

Section 6.3(D)

When a proposed development abuts unplatted land or a future development phase of the same development, stub streets should be provided to provide access to abutting properties or to logically extend the street system into the surrounding areas. All street stubs serving more than two residential units should be provided with a temporary turn-around, eyebrow, hammerhead design, or cul-de-sac, and the restoration and extension of the street would be the responsibility of any future developer of the abutting land.
SECTION 7: COMMERCIAL 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 re-entering a public 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 accomplish unified access and circulation systems for commercial development.

Section 7.1: Outparcels and Shopping Center Access

Outparcels are 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. Outparcel access policies foster unified access and circulation systems that serve outparcels as well as interior development, thereby reducing the need for driveways on an arterial street.

In the interest of promoting unified access and circulation systems, development sites under the same ownership or consolidated for the purposes of development and comprised of more than one building site shall prepare a unified access and circulation plan. In addition, the following shall apply:

Section 7.1(A)

The number of connections should be the minimum number necessary to provide reasonable access to the overall development site and not the maximum available for that frontage under the connection spacing requirements in this policy.

Section 7.1(B)

Access to outparcels shall be internalized using the shared circulation system of the principal development.

Section 7.1(C)

All necessary easements related to this policy shall be recorded in an instrument that runs with the deed to the property. All agreements that affect title or successors shall be recorded.

Section 7.1(D)

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.

Section 7.2: Joint and Cross Access

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

Section 7.2(A)
Unless the City Engineer finds that this would be impractical, adjacent commercial or office properties and major traffic generators, e.g. shopping plazas, shall provide a cross-access drive and pedestrian access way to allow circulation between adjacent properties. This requirement above shall also apply to a building site that abuts an existing developed property unless the City Engineer finds that this would be impractical.

Section 7.2(B)

To promote efficient circulation between smaller development sites, the City Engineer may require dedication of a 30 foot easement that extends to the edges of the property lines of the development site under consideration to provide for the development of a service road system. If required, the following points shall be met: 1. The service road shall be of sufficient width to accommodate two-way travel aisles and incorporate stub-outs and other design features that make it visually obvious that abutting properties may be tied in to it. 2. Abutting properties shall be required to continue the service road as they develop or redevelop in accordance with the requirements of this policy. 3. The easement may be provided to the front or rear of the site or across the site where it connects to a public roadway. At the public road connection location, an additional easement may be necessary to allow for sufficient spacing of intersections on the public roadway.

Section 7.2(C)

If obtained, property owners shall record all necessary easements and agreements between the property owners, 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.

Section 7.2(D)

Joint and cross access requirements may be waived by the City Engineer for special circumstances such as incompatible uses, e.g. a gas station next to a child care center, or major physical constraints, e.g. change in grade between properties makes connection impractical.

Section 7.3: 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. The following agreements shall be record per Section 7.

Conditions shall be included in the approval of a temporary connection including, but not limited to the following:

- An agreement may be required to define the level of participation 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 if the final access plan can be defined by the City.

Where permitted by lawn, a limit may be placed on the development intensity of small corner properties with inadequate corner clearance, until alternative access becomes available. These properties are encouraged to seek the cooperation of adjacent parcels to provide alternative access.
SECTION 8: REDEVELOPMENT

Traffic Management policies are not retroactive. Existing nonconforming properties may continue in the same manner as they existed before this policy was adopted. This allowance, commonly known as “grandfathering”, protects the substantial investment of property owners and recognizes the expense of bringing nonconforming properties into conformance.

Yet nonconforming access situations may pose safety dilemmas, contribute to traffic congestion, deter economic development, or undermine community character. To address the public interest in these matters, without posing an undue burden on property owners, access to nonconforming properties is best addressed when a change in use occurs so applicants can finance access improvements as part of the overall property improvement. In some instances, opportunities to improve the location or design of property access can also occur during the roadway improvement process. This plan includes the following conditions or circumstances where property owners or permittees may be required to relocate or reconstruct nonconforming access features and/or pursue alternative access measures. The provisions of this section should not be construed to impact the City’s police powers to provide for health and welfare of the community by closure or modification of unsafe intersections or driveways.

Section 8.1: Requirements

Properties with nonconforming access connections shall be allowed to continue, but must be brought into compliance with this Traffic Management Policy to the maximum extent possible when modifications to the roadway are made or when a change in type of use results in one or more of the following conditions:

Section 8.1(A)

When a new connection is requested or required.

Section 8.1(B)

When a Site Plan, Preliminary Plat, and/or Area Plan is required.

Section 8.1(C)

When a change in Zoning is requested.

Section 8.1(D)

When a site experiences an increase of ten percent (10%) or greater in peak hour trips or 100 vehicles per hour in the peak hour, whichever is less, as determined by one of the following methods to be decided upon by the City Engineer:

Section 8.1(D)(1)

An estimation of average peak hour trips based on the Institute of Transportation Engineers (ITE) Trip Generation manual (latest edition) for typical land uses, or

Section 8.1(D)(2)

Traffic counts made at similar traffic generators in the metropolitan area, or
**Section 8.1(D)(3)**

Actual traffic monitoring conducted during the peak hour of the adjacent roadway traffic for the property.

**Section 8.1(E)**

If the principal activity on a property is discontinued for a period of one year or more, or a previously approved development plan is no longer valid under Title IV: Land Use of the O’Fallon Municipal Code, the property must thereafter be brought into conformance with all applicable Traffic Management Policy requirements. This shall include the need to update any previously approved Transportation Impact Study where new traffic projections are available. For development in existence upon adoption of this policy, the one-year period for the purposes of this section begins upon the effective date of those requirements.

**Section 8.1(F)**

Access to all change-in-use activities shall be approved by the Director of Planning and Development. All relevant requirements of this policy shall apply.
SECTION 9: INTERCHANGE AREAS

The purpose of this section is to preserve the safe and efficient operation of traffic on interchange crossroads and interchanges, while preserving the accessibility of interchange areas for economic development. Specific purposes are to ensure adequate storage and maneuver distances for drivers between the first signalized intersection and the highway ramp and to avoid access connections to interchange crossroads that would interfere with traffic operations at interchange ramps. In addition, this section seeks to promote the development of local streets and service roads for access in the functional area of interchanges as an alternative to individual driveway access. The standards in this section apply to areas where grade-separated facilities, e.g. Interstates and other freeways, interchange with surface streets, highways, and roads. In such cases, adequate areas need to be provided for traffic to make the transition from a high-speed highway to the surface street system.

Section 9.1: Interchange Functional Area Standards

These requirements shall be applied to requests for access within 1320 ft. of interchanges where substantial development has not yet occurred, as determined by the Director of Planning and Development. In developed areas, these standards may be difficult to achieve, however they should be considered the desirable standard. The connection spacing standards will be the minimum standards. Where standards are conflicting with MoDOT or other governing agency, the stricter standard shall be applied.

Section 9.1(A): Requirements

Section 9.1(A)(1)

In order to provide a safe distance for transitional activity to occur, the minimum spacings identified in Figure 9-1 shall be provided from the end of the off ramp to the first private driveway, median opening, or intersection with a public road.

Section 9.1(A)(2)

The measurement basis for this standard is from the near edge of the ramp to the center of the intersection. At “diamond” type interchanges where traffic (including right turns) is controlled by a stop sign or traffic signal, the distance is measured from center to center of the intersections.

Section 9.1(A)(3)

Local roads or service roads shall be used for direct access to property within interchange areas.
$X \geq 750$ Feet  
$Y \geq 1,320$ Feet  
$Z \geq 750$ Feet

Figure 9-1  
Connections Spacing Near Intersections
SECTION 10: INTERSECTION FUNCTIONAL AREA

The functional area of an intersection consists of more than the area bounded by the stop lines or crosswalks. The functional area of the intersection also includes the area upstream of the intersection where vehicles have to react to slowing traffic in front of them, decelerate and wait in queues. The downstream functional area includes the area where through traffic merges with traffic turning from the cross street. It also includes the distance required to accelerate back to driving speeds. The intersection functional area is shown schematically in Figure 10-1.

Section 10.1: Upstream Intersection Functional Area

The upstream intersection functional area can be determined by summing two primary components:

Section 10.1(A): Reaction/Deceleration Time

This is the distance traveled while the driver recognizes that action is required, i.e. sees vehicles stopping ahead, reacts, i.e. presses break pedal, and decelerates i.e., slows to a stop. These values can be calculated from Table 10-1. The City Engineer shall determine where limiting conditions can be applied.
### Table 10-1

Upstream Intersection Area Excluding Storage, in Feet

<table>
<thead>
<tr>
<th>Posted Speed (MPH)</th>
<th>Desirable Conditions(^2)</th>
<th>Limiting Conditions(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deceleration(^4)</td>
<td>PRT Plus Deceleration(^5)</td>
</tr>
<tr>
<td>30</td>
<td>225</td>
<td>315</td>
</tr>
<tr>
<td>35</td>
<td>295</td>
<td>370</td>
</tr>
<tr>
<td>40</td>
<td>375</td>
<td>490</td>
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<tr>
<td>45</td>
<td>465</td>
<td>595</td>
</tr>
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<td>50</td>
<td>565</td>
<td>710</td>
</tr>
<tr>
<td>55</td>
<td>675</td>
<td>835</td>
</tr>
<tr>
<td>60</td>
<td>785</td>
<td>960</td>
</tr>
</tbody>
</table>

\(^1\) all distances rounded to five feet
\(^2\) 2.0 second perception-reaction time; 3.5 fps\(^2\) average deceleration while moving laterally into turn lane, 6.0 fps\(^2\) average deceleration thereafter; speed differential < 10 mph
\(^3\) 1.0 second perception-reaction time; 4.5 fps\(^2\) average deceleration while moving laterally into turn lane, 9.0 fps\(^2\) average deceleration thereafter; speed differential < 10 mph
\(^4\) distance to decelerate from through traffic speed to a stop while moving laterally into a left-turn or right-turn lane
\(^5\) distance traveled during perception-reaction time plus deceleration distance

### Section 10.1(B): Queue Storage Length

Queue storage lengths should be calculated based on existing (or existing plus development for new development projects) and future (horizon-year) traffic conditions. For development projects, turn lane storage improvements may be based on existing plus development conditions, however, site access and right-of-way should be planned to accommodate ultimate conditions.

Queue storage lengths should be calculated for left-turn, through and right-turn lanes. Queue storage lengths should consider 95th percentile queue storage and should be calculated using established procedures or software that reports 95th percentile or maximum back of queue storage. Analysis should conform to [Highway Capacity Manual](#) methods. In areas with closely spaced or coordinated signals, software that analyzes coordinated signal timings, e.g. SYNCHRO, may be needed to supplement the analysis. In these cases, queue storage lengths should be evaluated based on existing signal and/or proposed signal conditions.

The City Engineer may elect to define the upstream functional area at a value less than that calculated by the aforementioned method based on existing or anticipated conditions at an intersection.

### Section 10.2: Downstream Functional Area

The functional area of an intersection extends some distance downstream from the crosswalk location because of the need to establish guidance and tracking after having passed through the area in which there are no lane lines. This is especially true following a left turn. It can be argued that a vehicle should clear a major intersection before the driver is required to respond to vehicles entering, leaving or crossing the major roadway. The logic of this criterion is to simplify the driving task and thus minimize the chances of driver mistakes and collisions. Stopping sight distance is one criterion which would allow the driver to clear the
intersection before having to rapidly decelerate in response to a maneuver at a downstream intersection. Downstream functional areas based on AASHTO stopping sight distances are given in Table 10-2.

<table>
<thead>
<tr>
<th>Posted Speed</th>
<th>AASHTO Stopping Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>125</td>
</tr>
<tr>
<td>25</td>
<td>150</td>
</tr>
<tr>
<td>30</td>
<td>200</td>
</tr>
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<td>35</td>
<td>250</td>
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<td>45</td>
<td>400</td>
</tr>
<tr>
<td>50</td>
<td>475</td>
</tr>
<tr>
<td>55</td>
<td>550</td>
</tr>
<tr>
<td>60</td>
<td>650</td>
</tr>
</tbody>
</table>
SECTION 11: MEDIANS AND CONTINUOUS CENTER TURN LANES

Restrictive (“raised” or “non-traversable”) medians and well designed median openings are known to be some of the most important features in a safe and efficient street system. The design and placement of these medians and openings are an integral part of the Traffic Management practice. Raised medians are important for several reasons.

- **Vehicular Safety** - to prevent crashes caused by crossover traffic, headlight glare distraction and traffic turning left from through lanes.
- **Pedestrian Safety** - to provide a refuge for pedestrians crossing the street.
- **Vehicular Efficiency** - to remove turning traffic from through lanes thereby maintaining/increasing operating speed. This reduces fuel consumption and emissions which is an environmental benefit.
- **Improved Aesthetics** - Landscaped and grass medians offer aesthetic benefits over paved turn lanes or undivided roadways.

Properly implemented median management will result in improvements to traffic operations, minimize adverse environmental impacts, and increase highway safety. As traffic flow is improved, delay is reduced as are vehicle emissions. In addition, roadway capacity and fuel economy are increased, and most importantly, crashes are less numerous and/or less severe. Median design should consider the context relative to surrounding uses.

Continuous two-way center turn lanes (“two-way left-turn lanes” or “TWLTL” or “traversable” medians) do not provide all of the safety benefits of restrictive medians, but do offer substantial safety improvements over roadways where no left-turn lanes are provided, particularly in areas with frequent driveways. These facilities provide more flexibility than restrictive medians and operate safely and efficiently under appropriate circumstances. However, once the driveway density, left-turning traffic volumes, and through traffic volumes reach certain levels, the safety benefits diminish rapidly. Under such conditions, restrictive medians are the more effective alternative with regard to safety and operations.

**Section 11.1: Median Standards**

Restrictive medians shall prohibit vehicles from crossing the median except at designated median openings through the use of a barrier curb or wide landscaped median treatment. Restrictive medians should be considered for the following conditions

- On all major arterial streets.
- On minor arterial and collector streets where existing daily traffic volumes are in excess of 15,000
- Speeds are posted at 40 MPH or above.
- Adjacent to left-turn lanes at signalized intersections (existing or planned signal locations) where drives are present within the intersection functional area.
- Adjacent to all dual left-turn lanes.
- On multi-lane roadways (two or more through lanes in each direction) within the functional area of an interchange.
- On roadways with three or more through lanes in each direction.
Section 11.2: Continuous Two-Way Left Turn Lanes (TWLTL)

Continuous two-way left turn lanes shall be considered under the following conditions (except where restrictive medians are required as described above):

Section 11.2(A)

On all minor arterial and collector streets adjacent to property that is developed as or planned for commercial development especially where the future driveway location is unknown, or in areas where there is a need for frequent left-turn lanes at multiple locations.
SECTION 12: MEDIAN OPENINGS

Openings in raised medians should only be provided to accommodate turning traffic in locations where this can be safely done. Where openings are provided, an adequate spacing between them is required to allow for weaving of traffic so as to preserve traffic flow and provide for safe lane changes and turns.

A full opening allows turns to be made in both directions; a directional opening allows turns to be made in only one direction. An example of a directional median would be one that allows left turns into a driveway, but does not allow left turns to be made out.

Examples of these median opening types and allowed main line traffic movements are shown in Figure 12-1.

![Full Median Opening](image1) ![Directional Median](image2)

Figure 12-1
Median Openings

Section 12.1: Median Opening Standards

Section 12.1(A)

The minimum distance between full median openings shall be 660’ (center to center) subject to the limitations listed below.

Section 12.1(B)

No median openings shall be permitted within the functional area of an interchange.

Section 12.1(C)

Median openings shall not be permitted where an opening would be unsafe due to inadequate sight distance.

Section 12.1(D)

On Arterial Streets, full median openings must meet the requirements of both one-quarter mile spacing and the minimum connection spacing described in Section 14 for collectors the spacing shall be 440’.

Section 12.1(E)
Directional median openings may be provided at any connection that meets the connection spacing requirements, and is found to be an acceptable location based on a transportation impact study.

**Section 12.1(F)**

Left-turn lanes where needed to serve prevailing traffic movements shall be required at all median openings. Median openings shall not be permitted where adequate queue storage cannot be provided for the left-turn lanes.

**Section 12.2: U-Turns**

As Traffic Management principles and standards are applied, the U-turn becomes an increasingly important movement for accessing local streets and driveways. A standard passenger vehicle cannot make a U-turn from a left-turn lane with minimal median width, e.g. four (4) feet, and only two lanes in the opposing direction. In order to accommodate U-turn movements at median openings on a four-lane roadway, there are two options - provide a wide median near the intersection (30 feet or more) or provide some sort of widening of the downstream approach near the U-turn location. Downstream widening can be accommodated by allowing vehicles to turn on the shoulder or by flaring the pavement width at the U-turn locations. Ultimately, the width between the left edge of the left-turn lane and the right edge of the downstream travel lane needs to be at least 44 feet for a typical automobile to make a U-turn. Examples of these techniques are illustrated in *Figure 12-2*.

![Figure 12-2 U-Turns](image-url)
SECTION 13: TRAFFIC SIGNALS

This section addresses the distance between signalized at-grade intersections on public streets. Minimum spacing is mainly intended to preserve efficient traffic flow and progression on urban arterial streets; for instance, a quarter or half-mile spacing allows traffic signals to be more effectively interconnected and synchronized. Effective signal coordination will also tend to reduce rear-end collisions and stop-and-go driving that increases congestion, delay, driver aggravation, and air pollution.

Section 13.1: Traffic Signal Standards

An intersection should meet the following requirements to be considered for installation of a traffic signal.

Section 13.1(A)

The intersection shall meet a warrant or warrants in the FHWA Manual on Uniform Traffic Control Devices (MUTCD). Installation of a traffic signal based on the peak hour or four-hour warrant will only be considered at the intersection of an arterial street with a major collector street, or at expressway or freeway ramp terminals.

Section 13.1(B)

For intersections where one or more of the roadways is a collector street, existing traffic volumes shall be utilized in evaluating the signal warrants (installation of a traffic signal based on existing plus proposed development traffic volumes (center to center) on average may be approved based on traffic volume increases, projected to occur within the next 5 years).

Section 13.1(C)

The location of the traffic signal should be at least one-quarter (1/4) mile from another traffic signal, either existing or anticipated. The minimum spacing shall be 1000’.

Section 13.1(D)

Traffic signal interconnect shall be installed between traffic signals within 2,640 feet of the proposed location. This distance may be extended as directed by the City Engineer to connect to other signals to improve traffic flow. This section is meant to establish the need for signals and not to assign financial responsibilities for the cost of installing signals.
SECTION 14: CONNECTION SPACING

This standard governs the minimum allowable spacing between connections (side streets and private driveways) on various classifications of streets. Access points introduce conflicts and friction into the traffic stream. Vehicles entering and leaving the main roadway often slow the through traffic, and the difference in speeds between through and turning traffic increases crash potential. As stated in the AASHTO A Policy on Geometric Design of Highways and Streets ("Green Book"), "Driveways are, in effect, at-grade intersections. The number of accidents is disproportionately higher at driveways than at other intersections; thus their design and location merit special consideration."

The consensus is that increasing the spacing between access points improves arterial flow and safety by reducing the number of conflicts per mile, by providing greater distance to anticipate and recover from turning maneuvers, and by providing opportunities for use of turn lanes. Driveway spacing is one of the key factors that influence crashes.

Section 14.1: Connection Spacing Standards

Connections to arterial and collector streets should conform to the following requirements. All applicable criteria must be met to be deemed conforming.

Section 14.1(A)

Be outside any interchange or intersection functional areas.

Section 14.1(B)

Provide sufficient separation for provision of warranted or required right-turn lanes and left-turn lanes.

Section 14.1(C)

Be aligned with existing or planned connectors on the opposite side of the street (except where movements are limited to right turns in and right turns out).

Section 14.1(D)

Table 14-1 shows the minimum separations (measured from centerline to centerline) of offset intersections from connections on the opposite side of the street (where no restrictive median is in place). Left-in only movements must be controlled through the use of a restrictive median

<table>
<thead>
<tr>
<th>Street Classification</th>
<th>Distance between offset intersections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Arterial</td>
<td>660 Feet</td>
</tr>
<tr>
<td>Minor Arterial</td>
<td>400 Feet</td>
</tr>
<tr>
<td>Industrial/Commercial Collector</td>
<td>300 Feet</td>
</tr>
<tr>
<td>Residential Collector</td>
<td>200 Feet</td>
</tr>
</tbody>
</table>
SECTION 15: TURN LANES

Vehicles slowing to turn right or left onto cross streets or into driveways cause disruptions to through street traffic flow and increase crashes along a corridor. Thus, the treatment of turning vehicles has an important bearing on the safety and movement along arterial roadways. It is one of the major Traffic Management concerns.

Left turns may pose problems at driveway and street intersections. They may increase conflicts, delays, and crashes and often complicate traffic signal timing. These problems are especially acute at major suburban arterial intersections where heavy left-turn movements take place, but occur also where left turns enter or leave driveways serving adjacent land development. The following illustrate these problems:

- More than two-thirds of all driveway-related crashes involve left-turning vehicles.
- Where there are more than six left turns per cycle from a shared left-through lane at a signalized intersection, virtually all through vehicles in that lane may be blocked by the left-turning vehicles yielding to oncoming traffic.

Section 15.1: Left-Turn Lane Standards

Section 15.1(A)

Left-turn lanes should be provided on all approaches to intersections controlled by, or planned by the City to be controlled by, traffic signals.

Section 15.1(B)

Left-turn lanes should be provided on arterial streets at the intersection with other arterial and collector streets. On major arterial streets, it should be at the intersection with all connectors.

Section 15.1(C)

Left-turn lanes should be provided on any connections intersecting with arterial streets (where left-turn egress is permitted as deemed appropriate through the traffic study).

Section 15.1(D)

Left-turn lanes should be provided at all median openings on roadways with medians where necessary to serve prevailing traffic.

Section 15.1(E)

Left-turn lanes should be provided on collector streets at the intersection with a connector serving non-residential development where necessary to serve prevailing traffic.

Section 15.1(F)

Continuous two-way left turn lanes may be used in lieu of individual left-turn lanes where permitted according to this policy.

Section 15.1(G)
Right of Way shall be reserved to allow dual-left-turn lanes for all approaches of an arterial to arterial intersection.

**Section 15.1(H)**

The minimum length should be 250 feet plus taper on an arterial street intersecting another arterial street and 200 feet plus taper on arterial streets at other locations.

**Section 15.1(I)**

The length of the left-turn lane should be increased as necessary to accommodate estimated queue storage length.

**Section 15.1(J)**

The entrance taper shall be a 15:1 straight line taper based on the width of the left-turn lane.

**Section 15.2: Right-Turn Lane Standards**

**Section 15.2(A)**

Required on major arterial streets at each intersecting street or commercial driveway. Minimum length should be 250 feet plus the taper at the intersection with another arterial street and 100 feet plus the taper at other locations.

**Section 15.2(B)**

Required on minor arterial and 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 in any hour. The minimum length should be 100 feet plus the taper.

**Section 15.2(C)**

The length of the right-turn lane at intersections controlled by traffic signals should be increased, if necessary, based on the longer of the queues in the turn lane or the adjacent through lane.

**Section 15.2(D)**

Right-turn lane lengths cover the full-width segment between the taper and the end of the lane at an intersection with a public street or driveway. The end of the lane at the intersection should be determined as the point of curvature for the corner radius.

**Section 15.2(E)**

The minimum length on controlled approaches should be exceeded based on the estimated queue storage length determined for horizon year traffic volume projections. The turn lane length should be based on the longer of the queues storage in the turn lane or the adjacent through lane.
Section 15.2(F)

The entrance taper should be a straight line and its length should be determined by using a rate of 8 to 1 based on the width of the right-turn lane.

Section 15.2(G)

The beginning of a taper should be no closer than 100 feet from the centerline of the nearest connector preceding the turn lane where practical.

Section 15.2(H)

Continuous right-turn lanes will be discouraged.
SECTION 16: COMMERCIAL SIGHT DISTANCE STANDARDS

Sight distance for driveway construction should be considered essential in the design and issuance of permits for all driveways. If there is a request to construct a driveway at a questionable location, the transportation impact study must include a field inspection to evaluate the sight distance. Sight distance is always the most important consideration in allowing, not allowing, or placing driveways. Both vertical and horizontal alignment can limit sight distance. Special consideration is required for skewed intersections.


Section 16.1: Sight Distance Standards

Section 16.1(A)

At a Stop-Controlled Intersections the intersection sight distance is based on a gap-acceptance concept. It is assumed that drivers on the major road should not need to reduce to less than 70 percent of the initial speed. The intersection sight distance is determined from the size of acceptable gap that a driver requires to enter the roadway.

Sight distances for passenger cars on various width roadways are summarized on Table 16-1. The speed used to calculate the minimum sight distance shall be the design speed or the 85th percentile speed, whichever is greater.

<table>
<thead>
<tr>
<th>Speed</th>
<th>Lanes to Cross</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>220 240 250 260</td>
</tr>
<tr>
<td>25</td>
<td>280 290 310 330</td>
</tr>
<tr>
<td>30</td>
<td>330 350 370 400</td>
</tr>
<tr>
<td>35</td>
<td>390 410 440 460</td>
</tr>
<tr>
<td>40</td>
<td>440 470 500 530</td>
</tr>
<tr>
<td>45</td>
<td>500 530 560 600</td>
</tr>
<tr>
<td>50</td>
<td>550 590 620 660</td>
</tr>
<tr>
<td>55</td>
<td>610 650 690 730</td>
</tr>
<tr>
<td>60</td>
<td>660 710 750 790</td>
</tr>
<tr>
<td>65</td>
<td>720 760 810 860</td>
</tr>
<tr>
<td>70</td>
<td>770 820 870 930</td>
</tr>
</tbody>
</table>

1 Lanes to cross for left-turning vehicles (lanes with vehicles approaching from left including left and right-turn lanes, add one lane for each 15 feet of median width not including left turn lane).

Section 16.1(B)
The intersection sight distance at signal-controlled intersections requires that the first vehicle on each approach should be visible to the drivers of the first vehicle on all other approaches. If the signal is to be placed on two-way flashing operation, the requirements for left and right turns from a stop controlled intersection must be met. If right turns on red are permitted, the departure sight triangle for right turns for stop controlled intersections should be provided.

**Section 16.1(C)**

The first vehicle stopped on each approach should be visible to the drivers of the first vehicles stopped on all other approaches.

**Section 16.1(D)**

The required intersection sight distance for left turns from the major road is the distance traveled by an approaching vehicle at the design speed of the major roadway generally does not require a separate check where sight distance for stop intersections is available. Checks are required at three-legged intersections and at mid-block approaches or driveways. Locations on horizontal curves and with sight obstructions present in the median need to be checked as well.

**Section 16.2: Exceptions to Sight Distance Requirements**

Sight distance should be considered a key element in the location of all driveways with particular emphasis placed upon public street approaches, high volume commercial and industrial driveways, and all driveways on arterial streets. All driveway locations shall meet or exceed the requirements listed above.

If no location on the applicant’s frontage meets or exceeds the sight distance requirements, but a location does meet or exceed the distances shown in the Minimum Stopping Sight Distance column on Table 16-2, a driveway may be located with the City Engineer’s approval, in accordance with the following criteria:

- The proposed driveway location has the maximum sight distance available on the entire property frontage.
- The classification for the street is not expressway or major arterial.
- The proposed location is not for a public street approach or a high-volume commercial driveway (more than 50 trips (in plus out) existing or projected during the peak hour).
- There is no other available access, having equal or greater sight distance.
- The Applicant will submit a letter to the City Engineer stating the following: “Applicant is aware that the sight distance of this driveway is restricted. The sight distance is the minimum necessary for a vehicle traveling at the posted speed to come to a complete stop prior to the driveway.” The permit may also be issued with conditions limiting the number and types of vehicles using the driveway.

If these conditions are not met the permit shall not be issued for the driveway. The applicant should be advised of work that could improve sight distance for the location, such as minor grading or brush removal.
<table>
<thead>
<tr>
<th>Speed</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
<th>50</th>
<th>55</th>
<th>60</th>
<th>65</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distanc</td>
<td>115</td>
<td>155</td>
<td>200</td>
<td>225</td>
<td>275</td>
<td>325</td>
<td>400</td>
<td>450</td>
<td>525</td>
<td>550</td>
<td>625</td>
</tr>
</tbody>
</table>

\(^{1}\)Greater of design speed or 85th percentile speed.

**Section 16.3: How to Measure Sight Distance**

Add graphic representation to show how to measure

The sight distance for the proposed driveway is measured for each direction of travel and the smaller distance is then located in the sight distance chart for the speed (greater of the design speed and 85th percentile speed) of the roadway to determine which sight distance criteria is met, if any.

To measure actual sight distance limited by vertical alignment in the field, place a sighting target 3.50 feet above the edge of pavement at a point 20 feet from the edge of the nearest travel lane (approximate location of a driver waiting to exit the driveway) at the proposed driveway location. On streets classified minor arterial and below, the target may be placed at a point 15 feet from edge of the nearest travel lane. Sighting from a height of 3.5 feet for cars (7.6 feet for trucks), move along the roadway away from the proposed driveway site to a point beyond where the target disappears. Move toward the target until it can first be seen and place a mark on the pavement. The target should remain visible as you continue toward the driveway. The line of sight should stay within the limits of the right-of-way. Measure the distance along the roadway between the mark and the target. This measured distance is the sight distance.
Sight distance should take into account both the horizontal and vertical profile of the roadway. Consideration may also be given to vegetation both on the right-of-way and adjacent to the right-of-way as it may impede vision more during certain times of the year. Where providing adequate sight distance requires visibility across private property, provisions must be made to preserve sight lines across the property.

**Section 16.4:**

The City may require similar measures on residential driveways for questionable situations.
SECTION 17: COMMERCIAL DRIVEWAY/CONNECTION GEOMETRY

The design of driveways is important in Traffic 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 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 off of the public street to become congested and spill or queue back onto the public street. The proper separation of internal conflict points from the public street is necessary to eliminate or diminish this potential.

Driveway designs should always be based on the results of a study of the traffic likely to use them.

Section 17.1: Driveway/Connection Standards

Section 17.1(A): Lining Up Driveways Across Roadways

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

Section 17.1(B): Driveway Angle

Section 17.1(B)(1)

Driveways that serve two-way traffic should have angles of intersection with the public street of 90 degrees or very near 90 degrees. The minimum acceptable angle for driveways that serve two-way traffic is 70 degrees. However, any angle less than 80 will require a variance.

Section 17.1(B)(2)

Driveways that serve one-way traffic may have an acute angular placement from 60 to 90 degrees.

Section 17.1(C): Corner Radius

The corner radius at intersections should be large enough to allow entering design vehicles to do so at a reasonable rate of speed. The Design and Construction Manual describes minimum corner radii, measured from the edge of the driving surface of the roadway. 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 unless a channelizing island is utilized.

Section 17.1(D): Driveway Width

Driveway widths shall be measured exclusive of any curb, curb and gutter, or raised median. If monolithic curb is used, a 2-foot section measured from the back of curb shall be deemed a de facto curb and gutter section. Any medians contained in the driveway are above and beyond the
minimum widths in the table. Minimum acceptable and maximum acceptable widths for various
levels of traffic and directions of access are shown on Table 17-1.

**Section 17.1(D)(1)**

All commercial and industrial driveways shall be curbed.

**Section 17.1(D)(2)**

All commercial parking lots and driveways leading to or connecting with parking lots shall also be curbed.

**Section 17.1(D)(3)**

All driveways with four or more lanes shall have a raised, landscaped median at least 8 feet in width. On industrial drives with primarily heavy truck traffic, medians may be omitted, or “rollover” or mountable type median may be used but should be constructed with a pavement surface of a contrasting color.

**Section 17.1(D)(4)**

Single inbound or outbound lanes on driveways with a median shall be 16 to 18 feet in width.

**Section 17.1(D)(5)**

Low volume driveways may be permitted to have a width of 24 feet (back of curb to back of curb) on local roadways provided no truck traffic will be allowed to use the driveway.

<table>
<thead>
<tr>
<th>Driveway Traffic Category</th>
<th>Average Daily Traffic Using Driveway</th>
<th>Peak Hour Traffic Using Driveway</th>
<th>With Two-Way Access</th>
<th>With One-Way Access</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Minimum Width</td>
<td>Maximum Width</td>
</tr>
<tr>
<td>Low Volume</td>
<td>&lt;1500</td>
<td>&lt;150</td>
<td>28 feet&lt;sup&gt;2&lt;/sup&gt;</td>
<td>42 feet&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16 feet&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Medium Volume</td>
<td>1500-4000</td>
<td>1500-400</td>
<td>42 feet&lt;sup&gt;3&lt;/sup&gt;</td>
<td>54 feet&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20 feet&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>High Volume</td>
<td>&gt;4000</td>
<td>&gt;400</td>
<td>42 feet&lt;sup&gt;3&lt;/sup&gt;</td>
<td>To Be Determined Through a Traffic Study</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Generally Not Applicable</td>
</tr>
</tbody>
</table>

Table 17-1
Commercial/Industrial Driveway Widths
(Back of Curb to Back of Curb)
Section 17.1(E): Driveways and Accommodation of Pedestrians

All commercial driveways must adequately accommodate pedestrians using sidewalks or paths. The crosswalk location should 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 roundabout locations, where the crosswalk will be located in accordance with FHWA guidelines. Where four or more driveway lanes are created, they should be designed so that the pedestrians have a refuge from entering and exiting traffic.

Section 17.1(F): Driveways and Accommodation of Bicyclists

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, such as ramps, signing and striping, and stop bar location. Likewise, when a new bicycle facility is built that crosses existing driveways, the bicycle facility should be designed with safe crossings in mind.

Section 17.1(G): Driveway Throat Length

For driveways serving three or more properties or building sites the driveway throat length should minimize or eliminate the condition where inbound traffic queues storage backs onto a public street (see Figure 17-1). The throat length also provides for a place for exiting vehicles to queue storage, better definition of the driving lanes, and separation between the parking area and the adjacent street. Driveway throat lengths shall meet the following requirements and should be based on the ultimate public street section anticipated:
Figure 17-1

Driveway Throat Length
A right-in/right-out entrance within the throat length may be permitted for outbound traffic

Section 17.1(G)(1)

All driveways shall provide at least 50 feet of throat length adjacent to local streets and 100 feet adjacent to collector and arterial streets. This distance can be extended based on the City Engineer’s recommendation.

Section 17.1(G)(2)

For driveways serving between 100 and 400 vehicles in the peak hour (two-way traffic volumes) the driveways shall provide at least 125 feet of throat length. This distance can be extended based on the City Engineer’s recommendation.

Section 17.1(G)(3)

For commercial driveways serving over 400 vehicles per hour (two-way traffic volume) and for all driveways controlled by a traffic signal, adequate throat length shall be determined by a transportation impact study.

Section 17.1(G)(4)

For driveways serving extremely low volumes (10 vehicles or less in the peak hours) on low volume (less than 100 vehicles existing or projected in any hour), low speed (25 miles per hour speed limit) streets, a throat depth of 30 feet may be permitted at the City Engineer’s discretion.

Section 17.1(G)(5)

At no time shall parking be permitted in the driveway throat.

Section 17.1(H): 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. Left-turning drivers should not have to pull out straight into the intersection and then begin the turn maneuver. The minimum turning radii are as follows:

- For low volume drives or streets (less than 100 vehicles in the peak hour) serving primarily passenger cars, 30 feet minimum.
- For dual left-turn movements, 75 feet minimum (for the outer left-turn movement).
- For all other situations, 50 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.
SECTION 18: TRANSPORTATION STUDY REQUIREMENTS

Section 18.1: Background and Purpose

Land use and transportation are strongly interdependent. Transportation facilities and services are essential for development to occur, and high levels accessibility are needed to attract the economic development to provide and maintain a high quality of life.

The primary purpose for evaluating the impact of development through transportation impact studies is to protect the integrity of the transportation systems. Neither public nor private interests are well served if transportation systems needlessly degrade due to poor planning and design.

In order to accomplish this objective, the review of transportation systems associated with development needs to be extensively scrutinized and needs to take a long-term perspective. What might be acceptable today may not be as an area develops and matures. This is certainly consistent with the City’s long-range planning for land use, major streets and other infrastructure.

These transportation impact study guidelines, and the resulting work products, will allow for more informed decision-making and could lead to a framework for the negotiation of mitigation measures for the impacts created by development.

Section 18.2: Extent of Study Required

The necessity to review all applications to the Planning and Zoning Commissions with the exception of rezoning from a transportation perspective as well as the wide variety of land use types and intensities suggest that multiple thresholds or triggers be established to warrant a transportation impact study. The following guidelines will be followed.

Threshold #1

A transportation study will be required for a Development or Site Plan that is projected to generate 100 to 499 trips in a peak hour (see section 18.6(D) for trip generation). The study area may tend to be confined to the street or streets on which access is proposed but should be extended to at least the first major intersection in each direction.

Table 18-1 lists several land use types and the approximate amount of development that is estimated to generate 100 or 500 trips in a typical weekday peak hour, using the average rates from the Trip Generation manual.

Threshold #2

A transportation study will be required for a Development or Site Plan that is projected to generate 500 or more trips in a peak hour (see section 18.6(D) for trip generation). The study area will include the street or streets on which access is proposed to at least the first major intersection in each direction but may also extend beyond the first major intersection and/or include other streets.

Threshold #3

When requested by the Planning and Zoning Commission or City staff.
Section 18.2(A)

All Applications to the City shall include the following items:

1) Identify the specific development plan under study and any existing development on and/or approved plans for the site (land use types and intensities and the arrangement of buildings, parking and access). Also identify land uses (including types and the arrangement of buildings, parking and access) on property abutting the proposed development site, including property across public streets.

2) Document current public street characteristics adjacent to the site, including the nearest arterial and collector streets (number and types of lanes, speed limits or 85th percentile speeds, and sight distances along the public street(s) from proposed access).

3) Compare proposed access with established design criteria (driveway spacing, alignment with other streets and driveways, width of driveway, and minimum sight distances). Identify influences or impacts of proposed access to existing access for other properties. If appropriate, assess the feasibility of access connections to abutting properties, including shared access with the public street system.

4) Estimate the number of trips generated by existing and proposed development on the site for a typical weekday, weekday commuter peak hours (commonly referred to as A.M. and P.M. peak hours), and Saturday peak hour(s). Calculate the net difference in trips between existing and proposed uses. If the development site already has an approved plan, also estimate the number of trips that would be generated by the approved land uses.
Table 18-1
Typical Development Size Thresholds

<table>
<thead>
<tr>
<th>ITE Code</th>
<th>Land Use</th>
<th>Size</th>
<th>Size to Generate 100 Trips</th>
<th>Size to Generate 500 Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>Speculative Zoned Industrial</td>
<td>Sq. Ft.</td>
<td>100,000</td>
<td>500,000</td>
</tr>
<tr>
<td>130</td>
<td>Light Industry</td>
<td>Sq. Ft.</td>
<td>92,000</td>
<td>460,000</td>
</tr>
<tr>
<td>140</td>
<td>Industrial Park</td>
<td>Sq. Ft.</td>
<td>115,000</td>
<td>580,000</td>
</tr>
<tr>
<td>150</td>
<td>Manufacturing</td>
<td>Sq. Ft.</td>
<td>125,000</td>
<td>640,000</td>
</tr>
<tr>
<td></td>
<td>Warehouse</td>
<td>Sq. Ft.</td>
<td>160,000</td>
<td>815,000</td>
</tr>
<tr>
<td></td>
<td>Speculative Zoned Residential</td>
<td>Units</td>
<td>100</td>
<td>500</td>
</tr>
<tr>
<td>210</td>
<td>Single Family</td>
<td>Units</td>
<td>95</td>
<td>490</td>
</tr>
<tr>
<td>220</td>
<td>Apartments</td>
<td>Units</td>
<td>150</td>
<td>n/a</td>
</tr>
<tr>
<td>231</td>
<td>Low-Rise Residential Condo/Townhouse</td>
<td>Units</td>
<td>128</td>
<td>641</td>
</tr>
<tr>
<td></td>
<td>Speculative Zoned Commercial (Motor Vehicle Oriented Business)</td>
<td>Sq. Ft.</td>
<td>1,000</td>
<td>n/a</td>
</tr>
<tr>
<td>934</td>
<td>Fast Food with Drive-Thru</td>
<td>Sq. Ft.</td>
<td>1,000</td>
<td>n/a</td>
</tr>
<tr>
<td>853</td>
<td>Convenient Store with Gas Pumps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>912</td>
<td>Bank with Drive-Thru</td>
<td>Sq. Ft.</td>
<td>1,000</td>
<td>n/a</td>
</tr>
<tr>
<td>881</td>
<td>Pharmacy with Drive-Thru</td>
<td>Sq. Ft.</td>
<td>10,000</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Speculative Zoned Commercial (Non-Motor Vehicle Oriented Business)</td>
<td>Sq. Ft.</td>
<td>15,000</td>
<td>75,000</td>
</tr>
<tr>
<td>310</td>
<td>Hotel</td>
<td>Units</td>
<td>160</td>
<td>n/a</td>
</tr>
<tr>
<td>565</td>
<td>Daycare</td>
<td>Sq. Ft.</td>
<td>7,000</td>
<td>n/a</td>
</tr>
<tr>
<td>710</td>
<td>Office</td>
<td>Sq. Ft.</td>
<td>60,000</td>
<td>320,000</td>
</tr>
<tr>
<td>715</td>
<td>Single Tenant Office</td>
<td>Sq. Ft.</td>
<td>55,000</td>
<td>270,000</td>
</tr>
<tr>
<td>720</td>
<td>Medical Office</td>
<td>Sq. Ft.</td>
<td>20,000</td>
<td>n/a</td>
</tr>
<tr>
<td>750</td>
<td>Office Park</td>
<td>Sq. Ft.</td>
<td>57,000</td>
<td>287,000</td>
</tr>
<tr>
<td>812</td>
<td>Bldg Materials</td>
<td>Sq. Ft.</td>
<td>18,000</td>
<td>90,000</td>
</tr>
<tr>
<td>813</td>
<td>Discount Superstore</td>
<td>Sq. Ft.</td>
<td>All</td>
<td>124,000</td>
</tr>
<tr>
<td>816</td>
<td>Hardware Store</td>
<td>Sq. Ft.</td>
<td>20,000</td>
<td>101,000</td>
</tr>
<tr>
<td>820</td>
<td>Shopping Center</td>
<td>Sq. Ft.</td>
<td>26,000</td>
<td>130,000</td>
</tr>
<tr>
<td>932</td>
<td>Sit Down Rest.</td>
<td>Sq. Ft.</td>
<td>5,000</td>
<td>n/a</td>
</tr>
<tr>
<td>843</td>
<td>Auto Parts</td>
<td>Sq. Ft.</td>
<td>15,000</td>
<td>n/a</td>
</tr>
</tbody>
</table>

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Section 18.3: Qualifications to Conduct and Review a Study

The parties involved in a land development application sometimes have different objectives and perspectives. Developers are required to pay a fee to the City for a transportation impact study (if required). These fees shall be established and publicized by the City and used to contract transportation related services thru the City’s designated Traffic Consultant.
Should a developer hire their own transportation consultant on a project, they will still be required to pay the appropriate traffic study fees to the City. The person performing the traffic study shall be a licensed Missouri Professional Engineer. The person performing the traffic study shall also be a Professional Traffic Operations Engineer (PTOE), unless suitable traffic engineering experience is demonstrated to the City Engineer.

**Section 18.4: Review and Use of a Study**

A transportation impact study should be viewed as a technical assessment of existing and projected transportation conditions. The extent to which individual professional judgment has to be applied will be minimized by provision of community policies and practices with respect to street and traffic control design and land development.

Ultimately, a transportation impact study will be used by professional staff to make recommendations to the planning commission and governing body. Transportation is one element amongst many that must be considered.

City personnel charged with reviewing transportation impact studies have several functions to consider:

**Section 18.4(A)**

Determine whether the impacts of development have been adequately assessed as determined in scoping meeting.

**Section 18.4(B)**

Ensure that proposed access is properly coordinated with existing and planned facilities, fits into the ultimate configuration of the street system, and is appropriately designed at its connection to the public street system.

**Section 18.4(C)**

Determine whether proposed improvements for the public street system are sufficient to mitigate the impacts created by the development itself as opposed to fixing existing conditions, and that the improvements meet local requirements.

**Section 18.4(D)**

Ensure that the development plan considers the needs of pedestrians, bicyclists, and transit users.

**Section 18.4(E)**

Determine whether the development layout can accommodate all anticipated vehicle types.

**Section 18.4(F)**

Invite other responsible and stake holding transportation agencies or entities, e.g., Missouri Department of Transportation, to participate in the study and review processes.

**Section 18.4(G)**
Provide consistent, fair, and defensible reviews.

**Section 18.5: Standard Transportation Impact Study Procedures**

**Section 18.5(A)**

Study methodology determination prior to conducting any transportation impact study is necessary to determine the minimum technical responsibilities and analyses that will be performed. A transportation study submitted to the City shall be in line with the guidelines set forth by the Institute of Transportation Engineers. The City reserves the right to add or delete any components that it deems necessary to achieve an accurate understanding of the study area and potential impacts. The applicant shall have a scoping meeting with the City, City’s Traffic Consultant, and other stake holding agencies (if applicable), in order to determine which requirements are necessary from each project.

**Section 18.5(B)**

The following items shall be considered, discussed and agreed to by the City’s Director of Planning, the City’s Traffic Consultant, and the applicant for transportation impact studies.

- Definition of the proposed development, including type and intensity of the proposed land uses and proposed access.
- Study area limits based on the magnitude of the development.
- Impact or influence on access for adjacent and nearby properties.
- Time periods to be analyzed, e.g., weekday A.M., P.M. and/or weekend peak hours.
- Scenarios or conditions to be analyzed, e.g. existing conditions, existing plus approved/unbuilt, existing plus approved/unbuilt plus development conditions, and future conditions (including background traffic growth, consistent with horizon year in City traffic model).
- Future analysis year(s), including special study procedures for multi-phase development plans.
- General assumptions for trip generation, trip distribution, mode split, and traffic assignment.
- Traffic analysis tools and acceptable parameters.
- Availability and applicability of known data.
- Traffic data collection requirements and responsibilities, including time periods in which traffic counts will be collected.
- Transportation system data, e.g. traffic signals, transit stops, etc.
- Planned transportation system improvements, including the anticipated timing, for all modes of transportation, e.g. street widening, bicycle trails, transit stops, etc.

- Methodology for projecting future traffic volumes.

- Current level of service and Traffic Management requirements.

- Acceptable mitigation strategies.

**Section 18.5(C): Scoping Form**

A scoping form shall be filled out and agreed upon by all parties involved in the scoping meeting. The scoping form will determine assumptions, or may require that a technical memo be produced by the applicant. The technical memo may be used to verify assumptions such as trip distribution and assignment. This technical memo shall be submitted to the City for approval prior to proceeding with the final report.

**Section 18.5(D): Acceptable Levels of Service**

Levels of service (LOS) can range from level “A” for the best traffic operation to level “F” for the poorest operation. For design and planning purposes, a LOS “C” is desired; however, a LOS “D” is acceptable to the traveling public in urban areas. LOS “E” is generally considered capacity for roadways and intersections.

**Section 18.5(E): Documentation**

The transportation impact study shall be documented in a typewritten, bound report outlining the findings and conclusions of the study, including exhibits illustrating the site plan, traffic volumes (current and projected), and existing and proposed street conditions (lane configurations and intersection traffic controls). The report, or an appendix, shall include all analysis worksheets and traffic volume count spreadsheets listing data by the minimum time increment in which the data was collected (no less than 15-minute increments). Four (4) bound copies and one PDF of the final report shall be submitted to the Planning & Development Department.

The report shall be well organized and generally follow the study process chronology. The report should be divided into sections to clearly distinguish between the site plan details, assessment of existing conditions, assessment of existing plus development conditions, and the assessment of future conditions. The concluding section of the report shall summarize the significant findings and outline the mitigations measures needed to meet accepted standards. Trip generation information, trip distribution assumptions, and analysis results should be organized in tables and page numbering should be used. Documentation of the mitigation measures shall include a description of the proposed improvements. It is expected that sufficient due diligence has been conducted to reasonably conclude that the mitigation measures can be implemented without disruption to existing roadside facilities, other public street facilities, e.g., another turn lane, and/or existing access. If proposed access or a mitigation measure will cause such a disruption, the impact shall be clearly described.

It is not appropriate to define or suggest funding responsibilities in the study report.
Any deviation from established guidelines/policies shall be clearly identified and justification provided as to the basis for such a condition and its potential ramifications on the public street system.

All assumptions and analysis methodologies should also be identified. The final report should be complete to the extent that the reviewer could find all information necessary to understand how analyses were conducted. The City can require electronic analysis files for verification.
CITY OF O'FALLON TRAFFIC STUDY SCOPING FORM

Project: ___________________________ Date: ___________________________

Site Location: ___________________________ Est. Study Completion Date: ___________________________

Brief Description of Project: ___________________________

City Contact: ___________________________
City Traffic Consultant Contact: ___________________________
Consultant/Developer Contact: ___________________________

1. Is Traffic Impact Study required? Yes No

2. Study Area (roadways/intersections/interchanges): ___________________________

3. Scenarios and Planning Horizons: (a) Planning horizons: ___________________________

(b) Approved developments/transportation improvements/background growth assumptions: Is Technical Memo required? Yes No ___________________________


4. Peak Hours: 

5. Trip Generation and Distribution (reductions and other variations): 

6. Capacity Analysis and Simulation tools: 

7. Safety Locations: 

8. Special Analysis/Issues: 

9. Miscellaneous comments and description of information still needed: 

City signature: 

City Traffic Consultant signature: 

Consultant/Developer Signature: 

Consenting Stake Holder’s Signatures: 
SECTION 19: TRAFFIC CALMING

Section 19.1: Definition

Traffic calming consists of physical changes, usually in the vertical or horizontal alignment, or cross section of the roadway, with the intent of altering drive behavior. The goal of traffic calming is typically to reduce traffic volume, vehicle speed or both.

Section 19.2: Purpose of Traffic Calming Devices

One of the most common concerns raised by residents is speeding on residential streets. The 2006 direction finder survey results performed for the City of O'Fallon indicated that the flow of traffic and congestion management was ranked as the #1 highest priority amongst residents. Corresponding to the facts noted above, this same category was the category that residents are least satisfied with in the study. Traffic calming when applied effectively can control the flow of traffic on residential streets.

Section 19.3: Common Types of Traffic Calming Devices

Section 19.3(A): Speed Reduction Devices

Traffic Circles – Traffic circles are raised island, placed in intersections, around which traffic circulates. They can be controlled by yield signs, two-way stops, or all-way stops. Circles prevent drivers from speeding through an intersection by impeding the straight through movement. Drivers must first turn to the right, then to the left as they pass the circle, and then back to the right again after clearing the circle. The traffic circles would be made of pre-cast concrete, have a mountable curb, and can house landscaping in the center circle.

Semi-Circle Chicanes – The semi-circle chicane is very similar to a traffic circle. These would typically be placed at “T” intersections. In this application, a half circle is placed on the through street opposite the terminating leg of the intersection. Additional half circles are placed on the through street on either side of the terminating leg. Drivers must first turn left, then back to the right as they pass through the chicane. The semi-circle chicanes are made of pre-cast concrete, have a mountable curb, and have some space to hold landscaping.
**Chokers** – Chokers are curb extensions at midblock locations that narrow a street by widening the sidewalk or planting strip. If marked as crosswalks, they are also known as safe crosses. Two-lane chokers leave the street cross section with two lanes that are narrower than the normal cross section. One-lane chokers narrow the width to allow travel in only one direction at a time, operating similarly to one-lane bridges. They are good for areas with substantial speed problems and no on-street parking shortage.

**Speed humps/Raised Crosswalks** – Speed humps, speed tables, and raised crosswalks are rises in the pavement, usually constructed of asphalt. They consist of a rise, followed by a flat section, then slope back to original vertical alignment of the street. Drivers must slow down to travel over the speed hump.

**Center Island Narrowings** – A center island narrowing is a raised island located along the centerline of a street that narrow the travel lanes at that location. Center island narrowings are often landscaped to provide a visual amenity. Placed at the entrance to a neighborhood, and often combined with textured pavement, they are often called “gateway islands.” Fitted with a gap to allow walks through at a crosswalk, they are often called “pedestrian refuges.”

Center Island Narrowings are good for entrances to residential areas and wide streets where pedestrians need to cross.

**Rumble Strips** – Rumble Strips, along with speed humps, raised crosswalks and speed tables, are designed to slow traffic to negotiate the device. Rumble Strips are normally placed at crosswalks.

**Dynamic Message System** – Driver Feedback Speed Sign alerts drivers, and helps protect children at school crossings. The Driver Feedback Speed Sign combines fluorescent yellow green static school crossing signs with a fully self-contained dynamic vehicle speed sign.

**Other Devices:**

**Round-A-Bouts** – Roundabouts require traffic to circulate counterclockwise around a center island. Unlike Traffic Circles, roundabouts are used on higher volume streets to allocate right-of-way between competing movements.
Raised Intersections – Raised intersections are flat raised areas covering an entire intersection, with ramps on all approaches and often with brick or other textured materials on the flat section. They usually raise to the level of the sidewalk, or slightly below to provide a "lip" that is detectable by the visually impaired. By modifying the level of the intersection, the crosswalks are more readily perceived by motorists to be "pedestrian territory".

Speed Dips – Are depressions in the pavement usually construction of concrete or asphalt with the intended purpose of reducing speeds on the roadway

Section 19.3(B): Volume Reduction Devices

Full Divers – A full diverter is a barrier placed diagonally across an intersection, blocking the through movement. The barrier blocks the through movement in both directions. This method of traffic calming should not be used unless all other options are not feasible or desirable.

Partial Divers – A partial barrier is a barrier that blocks one-half of a street. The barrier blocks the through movement in one direction.

Section 19.4: Emergency Response

The Police and Emergency Services utilizes the City’s streets as their main response routes for emergency services. Traffic calming devices can lower vehicle speeds along local streets and they will have the same effect on emergency vehicles. Studies conducted by various municipalities have indicated that each traffic calming device can delay an emergency vehicle between 3 and 14 seconds, depending on the design of the device and the vehicle. In light of the impact on emergency vehicle response time, traffic calming devices other than the dynamic message speed indicator signs should not be used on collectors and shall not be used on arterial streets.

Section 19.5: Advantages/ Benefits to Installing Traffic Calming Devices

Some advantages of installing traffic control devices have been identified by numerous agencies that have installed such devices. Typical advantages listed include:

- Citizens would have an additional option to consider when they feel traffic is traveling too fast along their street as opposed to installing unwarranted stop signs, or constant police surveillance.
- City Staff would have an additional option to offer citizens who feel vehicle speeds along their street are too fast.
- Traffic calming devices are physical changes to the street and therefore are self-enforcing.
- Traffic calming devices have been proven to be effective in reducing speeds and traffic volumes.
Lower vehicle speeds increase available reaction time potentially reducing crashes and traffic volumes.

Traffic calming devices would increase travel time along residential streets that they are installed along, making arterial and collector streets more attractive for cross-town traffic.

Traffic calming can promote pedestrian, cycle and transit use.

Helps reduce the negative effects of motor vehicles on the environment (e.g., pollutions, sprawl).

Incorporates the preferences and requirements of the people using the area (e.g., working, playing, residing) along the street(s), or at its intersection(s).

Certain traffic calming measures can beautify the streetscape.

Section 19.6: Disadvantages to Installing Traffic Calming Devices

Some disadvantages of installing traffic control devices have been identified by numerous agencies that have installed such devices. Typical disadvantages listed include the following:

- Some residents will feel that the public’s street is being altered for the benefit of a small group of citizens.
- Traffic calming devices will increase the response time of emergency vehicles such as fire engines and ambulances.
- Traffic calming devices are physical changes to the roadway and therefore are not easily installed or removed.
- Traffic may be diverted from one local street to another, merely moving the problem to another location.
- There might be an increase damage claims as a result of the traffic calming devices.

Section 19.7: Traffic Calming – New Developments

The City recognizes that traffic calming is a function of street design, street setbacks, parking, landscaping and access. The City is committed to examining street design in overall subdivision planning.

As an alternate street design, reduced pavement widths may be provided with the approval of the Director of Planning, City Engineer and the Planning and Zoning Commission. Reduced pavement widths shall be considered along with a package of landscaping, enhanced pedestrian facilities and other community improvements. A traffic study that includes a parking analysis will be required for projects requesting reduced pavement widths.
Developers are required to address traffic calming measures through alternate street designs and/or by implementing the measures outlined in this section which include, but are not limited to raised intersections, neighborhood traffic circles, chicanes, neckdowns, center island narrowings and chokers as identified in the informational report entitled “Traffic Calming State of the Practice” by the Institute of Transportation Engineers (ITE) or as directed by the Director of Planning or City Engineer. See Section 19.3 for examples of Traffic Calming Devices. In the design of new subdivision streets, Collector and Arterial streets shown in the City’s Comprehensive Plan shall be addressed as neighborhoods are developed that adjoin such streets with those streets not being required or recommended to have traffic calming measures included. Subdivisions shall be designed to minimize or eliminate residential driveways from connecting directly to a system collector or arterial roadways. Residential streets shall be designed with the following standards with the intention of reducing the traveling speed of vehicles on residential streets.

1. At selected locations, such as sharp curves or school zones, design speed for residential streets shall be 20 mph and signed accordingly.

2. If spot Traffic Calming measures are used, they shall be spaced a maximum of 600 feet apart, unless otherwise approved by the City Engineer.

3. With the exception of connections required for traffic flow, residential streets should be discontinuous and generally should be interrupted with jogs and offsets or curved. Four-way intersection shall be avoided. Adequate Collector/Arterial streets shall be incorporated into projects, and efforts shall be made to minimize the number of homes fronting Collector and Arterial streets.

4. Local streets should not exceed 600-900 feet in length without design considerations for traffic calming. They may however, extend to ¼ mile if the street is curved (100-200 feet radius) for an adequate length (minimum curve length equals the curve radius) and the cut-through traffic potential is minimal.

The Type of Traffic Calming measures including street design alternatives for new developments shall be selected by the developer and presented to the Planning & Zoning Commission for approval with the Preliminary Plat.

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**Section 19.8: Traffic Calming Policy – Existing Developments**

To begin the process, a group of citizens representing 10 or more separate households from a given traffic neighborhood (subdivision) submits a letter to the City Engineer expressing their interest in improving traffic conditions in their neighborhood. The petitioner’s letter should describe, as completely as possible, the location and details of the types of traffic problems perceived. This letter must also be sent to the Councilperson representing the ward in which this subdivision/traffic neighborhood is located.

**Section 19.8(A): Staff Evaluation, Preliminary Data Collection and Analysis**

Upon receiving the request by the 10 residents, staff will verify the names and addresses on the
petitioners. After verification, staff will perform preliminary data collection and analysis (speed study) to determine the speeds and volumes of motorists on the roadway of concern.

Section 19.8(B): Eligibility

At a minimum, the speed study will need to demonstrate that the average speed is greater than 25 mph or the traffic volume must exceed 600 ADT (average daily traffic) for the roadway of concern. If one of these minimum criteria is not met, the roadway will not qualify for traffic calming.

Traffic calming devices other than the dynamic message speed indicator signs should not be used on collector streets and shall not be used on arterial streets.

Section 19.8(C) Education

If roadway does qualify per section 19.8 (B) the first step will be to educate motorist for a period of time and re-evaluate to determine if further intervention measures are needed.

Examples of education techniques are: Dynamic message boards, indicators, signage, speed trailers, etc.

Section 19.8(D) Enforcement

If education step is not successful, then enforcement intervention will be requested of the Police Department along with continued education techniques.

Section 19.8(E) Ranking System

If the desired results have not been achieved by education and enforcement, the next step will be to rank the project using the below criteria that has been established:

Section 19.8(F): Eligibility Criteria for Traffic Calming

The following criteria are used to produce a numerical score for each traffic calming request.

**Crashes** – The last 3 full years of available crash data for the section of street for which traffic calming is being requested will be examined. 10 points will be awarded for each crash that is susceptible to correction by traffic calming devices. (30 points maximum)

**Speed Violation Rate** – Percentage of vehicles traveling over the speed limit on the subject street. One point is awarded for each percentage point of vehicles traveling over the speed limit. (30 points maximum) **Traffic Volume** – Average Daily Traffic (ADT) on the busiest section of the subject street divided by 300 (10 points maximum)

**Increase in Traffic Volume** – The current ADT will be compared to the ADT from previous ADT data. The intent is to measure increases in traffic volumes related to factors outside the neighborhood, not increases in traffic volumes due to the development of the subdivision in which the subject street is located. If the difference between the current traffic volumes and the previous traffic volumes indicate an increase in ADT, then 1 point will be assigned for every 20 ADT increase. If the current traffic volumes have decreased, a score of 0 is assigned. If there is
no previous ADT data, then a score of 5 is given. (20 points maximum)

**Schools** – Ten points for each private or public elementary school on the subject street or within project area.

**Other Pedestrian areas** – Five points for each individual pedestrian oriented facility, such as a park, on the subject street.

**Driveway Density** – Density is expressed in terms of the number of driveways per mile. Driveways are defined as private accesses to the public roadway, serving up to 8 lots. Public roads and private roads are not considered driveways. One point per 10 driveways per mile rate. For example, a density of 50 driveways per mile would receive a score of 5 points. (10 points maximum)

**Other** – Five points will be awarded for the absence of sidewalks and 5 points will be awarded for the absence of street lights. Also, five points if street is utilized by high school age kids, driving to and from school which makes for a noticeable increase in traffic during times before and after school by inexperienced drivers.

**Alleys** – Deduct 5 points for alleys due to low traffic volumes and low speeds.

**A score of greater than fifty-five points is required for the location to be eligible for physical traffic calming. The scores will be used to prioritize traffic calming requests. Those that rank the highest will be acted upon first as funds are available.**

**Section 19.8(G) Neighborhood Meeting/Information Gathering**

Based on the ranking and if the traffic study shows that traffic calming measures can be implemented safely, a mail-back survey of all affected residential dwelling units will then be conducted by the City. A proposal for traffic calming must be supported by 51% of the residential dwelling units responding to the questionnaire in order to be considered for implementation. A 50% minimum number of responses to the mail back survey are required. A low response rate will be considered by the City Council as a no action.

The limits of the boundaries of the subdivision to which will be allowed to vote on the proposed traffic calming proposal will be determined by City Engineer and may include adjacent subdivision on which their sole access will be impacted by the traffic calming proposals.

**Section 19.8(H): Preliminary Design**

For local street projects where there is generally an agreement regarding the problems and strategies, staff will prepare a preliminary design. Preliminary design will include not only the street in question, but also the surrounding area and how it may be affected by the implementation of traffic calming measures. During this phase, potential traffic calming measures and locations will be identified as well as construction cost estimates. Input will be sought from emergency services with regards to the proposed preliminary design.
Section 19.8(I): Presentation of Preliminary Design to Neighborhood

The Department of Community Development staff will schedule and attend a neighborhood meeting to report the results of the design process and attempt to reach a consensus from the neighborhood regarding any proposed actions.

A representative from the Fire Department and the Police Department will present effects that traffic calming measures will have on emergency response time.

Section 19.8(J): Neighborhood Approval of the Design

Once the preliminary design of the traffic calming improvements is determined, the neighborhood in which the traffic calming device is to be placed is asked to vote on whether they approve of the proposed traffic calming proposal. A 65% vote in favor of preliminary design for all ballots issued to the property owners is needed to continue to next phase.

The limits of the boundaries of the subdivision to which will be allowed to vote on the proposed traffic calming proposal will be determined by City Engineer and may include adjacent subdivision on which their sole access will be impacted by the traffic calming proposals.

Section 19.8(K): City Approval of the Design

For all traffic calming proposals, the City Council, must approve the proposed traffic calming measures with input from the City Administrator, Police Chief, Fire Chief, Planning and Development Director and City Engineer.

Section 19.8(L): Project Scheduling

Project Scheduling will depend on budget and available resources. The project’s cost estimate will be presented to the City Council for funding.

When funds are approved by City Council and available, final design will be completed, the project will be advertised and constructed.

Section 19.8(M): City Staff Effectiveness of the Traffic Calming Device

No earlier than 6 months and within 18 months of implementation, City staff will conduct traffic studies on the project to determine the effects that the traffic calming has on the traffic. The before and after studies should be performed at the same time of year with similar weather conditions to ascertain the effects of the traffic calming devices and should consider school days as a factor. Traffic volumes and speed data will be recorded for comparison. Staff will report the results to the City Administrator.

Section 19.8(N): Removal

Two years or greater from the date of implementation, citizens in the study area may petition to have the traffic calming devices removed. There must be 51% of the households (each having one vote) in the study area supporting the removal. The devices cannot be
considered for removal until after studies have been completed. Once the petition has been verified, the City Administrator, or his or her designee, may order the removal of the devices. Generally, traffic calming devices shall not be requested in an area where traffic calming devices were removed for a period of at least 2 years from date of removal, unless otherwise directed by the City Administrator or City Council.
SECTION 20: PEDESTRIAN CROSSINGS POLICY AND GUIDELINES

Section 20.1: Definitions

**Crosswalk:** The portion of a roadway included within the prolongation or connection of the lateral lines of sidewalks at intersections, or any portion of a roadway distinctly indicated for pedestrian crossing by lines or other marking on the surface.

**Uncontrolled Crosswalk:** A legal crosswalk across a roadway approach not controlled by a stop sign or traffic signal.

**Controlled Crosswalk:** A legal crosswalk across a roadway approach controlled by a stop sign or traffic signal.

**Unmarked Crosswalk:** A legal crosswalk that does not feature any traffic control markings.

**Marked Crosswalk:** A legal crosswalk that does feature traffic control markings.

**Enhanced Crosswalk** – A legal crosswalk which features at least one traffic control enhancement (markings, stop sign, traffic signal, etc.).

**Mid-Block Crossing:** A legal crosswalk across a roadway approach not located at a roadway intersection.

Section 20.2: Purpose and Scope

The purpose of the Pedestrian Crossing Guidelines is to serve as the policy document that guides City Staff in determining where and how to implement crosswalks within the City of O’Fallon on City-owned and maintained streets. These guidelines provide direction to determine if a marked crosswalk is appropriate at a particular location, or if other enhancements would be appropriate depending on the site characteristics.

It is important to provide designated facilities for pedestrians to use the transportation network safely and without unreasonable delay. Crosswalks provide an important connection for pedestrians. The pedestrian network should be located and designed in such a way that pedestrians are not unreasonably either forced to wait for a gap in traffic or walk out of their way for an enhanced crosswalk. The Highway Capacity Manual 2010 states that when a pedestrian is forced to wait 30 seconds or longer, he is highly likely to exhibit risk-taking behavior.

Crosswalks that are appropriately located, marked and enhanced provide pedestrians with convenient opportunity to cross the street, while maintaining safety. Marked crosswalks are valuable in that they direct pedestrians to a designated place to cross, alert drivers as to
the potential presence of pedestrians, and legally establish the crosswalk at non-intersection locations.

This policy is intended to be considered for all future crosswalk requests and installations going forward from its adoption by the City. Existing crosswalks which have been installed on City-owned and maintained roads prior to adoption are not subject to this policy, and it is not meant to be retroactive in scope.

Section 20.3: Design Standards

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

The Manual on Uniform Traffic Control Devices (MUTCD, Federal Highway Administration, 2009) provides support, standards and guidance for traffic control devices (including markings, signs, beacons and signals) used for marking and enhancing crosswalks. The City of O’Fallon recognizes the MUTCD as a national authority on traffic matters. The MUTCD provides standards and guidance for the design of these traffic control devices, and it provides key considerations based on research from “Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations” (FHWA, 2002) regarding whether enhancement devices are necessary given a roadway’s characteristics. No warrants are provided for when to mark a crosswalk (this decision is left to local jurisdictions) or for most enhancements; however, application guidance for a pedestrian hybrid beacon and a pedestrian signal warrant is included. The MUTCD states:

Crosswalk lines should not be used indiscriminately. An engineering study should be performed before a marked crosswalk is installed at a location away from a traffic control signal or an approach controlled by a STOP or YIELD sign. The engineering study should consider the number of lanes, the presence of a median, the distance from adjacent signalized intersections, the pedestrian volumes and delays, the average daily traffic (ADT), the posted or statutory speed limit or 85th-percentile speed, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.

New marked crosswalks alone, without other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence, should not be installed across uncontrolled roadways where the speed limit exceeds 40 mph and either:

A. The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT of 12,000 vehicles per day or greater; or

B. The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater.
Section 20.4: Locations Disqualified from Receiving Crosswalks

Not all sites warrant a pedestrian crosswalk or a crosswalk with additional treatments. The following are possible outcomes that may result from non-uniform application, misuse, and overuse of crosswalk safety treatments.

1. **Noncompliance with traffic control devices:** In general, a motorist's decision on whether to comply with a traffic control device message is related to how reasonable the driver perceives the intended message conveyed by the device. If the message is not regarded as reasonable, the likelihood of noncompliance with the device increases.

2. **Decrease in safety:** Studies have demonstrated that in some circumstances installing pedestrian crosswalks without some other type of treatment such as signing, warning lights, etc. may not only be ineffective but could actually decrease the safety of crossing the roadway. In addition, locating crosswalks near intersections or driveways with high levels of vehicular traffic (especially larger vehicles associated with commercial use) can increase the potential hazard for pedestrians seeking to cross the roadway.

3. **Disregard of traffic control device:** Overuse of traffic control devices such as signs or striping can lead to a general disregard of the device. Drivers may start to ignore them creating a more hazardous situation.

4. **Increase costs of maintenance:** Adding additional items at locations which do not warrant them will increase the maintenance required by Streets and Public Works Depts. to ensure that they are kept in usable conditions.

Therefore, marked crosswalks, alone and without any other enhancements, will not be installed on streets with any of the following conditions:

- Where the speed limit exceeds 40 mph. For roadways with these speed limits, additional enhancements are required, at the discretion of the City Traffic Engineer.
- On a roadway that is part of an uncontrolled intersection, including mid-block crossings, unless the crossing is upgraded to increase safety and comply with Federal, State, and City standards, as applicable.
- On a roadway with an average daily traffic (ADT) composed of more than 30% large vehicles associated with commercial traffic (i.e. trucks, etc.).
- On a roadway with four or more lanes without a raised median or crossing island that has (or will soon have) an average daily traffic (ADT) volume of 12,000 vehicles or greater.
- On a roadway with four or more lanes with a raised median or crossing island that has (or will soon have) an ADT volume of 15,000 vehicles or greater.
Section 20.5: Crosswalks Subject to Federal Guidelines on Pedestrian Access

It is important to note that all enhanced crosswalks installed on City-owned and maintained streets are considered “street enhancements”, and thus, will be subject to Federal ADA regulations and requirements.

Any crosswalk installation on any road would also require that any sidewalk and portion of roadway “touching” the crosswalk be brought into compliance with Federal ADA regulations and requirements, if they are not already so.

Section 20.6: Evaluation of Crosswalk Locations

Crosswalk evaluations will only occur between April 1\textsuperscript{st} and October 31\textsuperscript{st} of each calendar year. As cold weather and other factors can have an influence on the volume of pedestrians using facilities at a given time, in order to be effective with staff time and resources, the City will only conduct these evaluations during this time period.

Section 20.6(A): Resident Submission of Crosswalk Petition Form

To begin the process, a group of citizens representing 10 or more separate households within 0.5 miles of the intersection in question submits a signed Request Form to the City Engineer, expressing their interest in installing a marked crosswalk at a specific intersection. This Form must also be sent to the Councilperson representing the ward in which this intersection is located.

Section 20.6(B): Intersection Site Evaluation and Cost Estimate

Upon receiving the request by the 10 residents, City Staff will verify the names and addresses on the petitioners. Then, staff will visit the proposed site to evaluate and estimate the potential cost of upgrades that would be necessary with a new marked crosswalk. This will be compared against the available budget to determine the project’s viability.

Section 20.6(C): Data Collection

After verification and the initial evaluation, staff will perform preliminary data collection and analysis on the intersection. Data collection shall consist of the following items:

1. Placing counters in/near the intersection to collect data on traffic moving through the intersection, including volume, speeds, etc. This data collection effort shall occur for a minimum period of five (5) days
2. Conducting a manual count of pedestrians utilizing the intersection during the peak hours of the day, including volume, direction of travel, wait times, etc. This data collection effort shall occur for a minimum period of five (5) days. Peak Hours are defined as the hours between 7 AM to 9 AM, and 2 PM to 4 PM.

Note that if there are circumstances which arise such that pedestrian peak hours occur outside these designated time windows, City Staff will explore that additional timeframe within the confines of the evaluation at their discretion.

Section 20.6(D): Eligibility Criteria

After collecting the data relevant to the intersection, a location shall be evaluated for a marked crosswalk based upon the following minimum criteria, utilizing the data collected relevant to the intersection during the prior study:

1. The proposed crosswalk location must be between existing pedestrian facilities (i.e. sidewalks, shared-use path, etc.).
2. A minimum of twenty (20) pedestrians per peak hour. A conversion factor of 1.33 per person will be used for vulnerable populations (children, elderly, persons with disabilities, etc.).
3. The average ADT of the roadway, perpendicular to the proposed crosswalk location, must exceed 600 vehicles per day, on average.
4. The proposed location for the crosswalk is ≥ 500 feet from the enhanced crossing (signalized crossing, stop sign-controlled crossing, or other marked crosswalk). The intent of this provision is to ensure that pedestrians are crossing roadways at the safest possible point.
5. The location meets the sight distance requirements, as determined using AASHTO’s Policy on Geometric Design for Highways and Streets.

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If a location meets all of the specified minimum criteria, it shall be considered eligible to have a marked crosswalk, alone and without other enhancements, installed at the proposed location. All marked crosswalks shall be installed per the recommendations and guidelines as set forth in the Manual on Uniform Traffic Control Devices (MUTCD).

Section 20.7: Review and Exemption Process

Flexibility is essential when administering City Policy to balance the needs of pedestrians who utilize the public facilities with the practical needs and budget constraints of the City. The following administrative procedures are intended to provide flexibility, while maintaining a fair, equitable and consistent process for Pedestrian Crossing decisions. The City recognizes that not all situations may be covered explicitly with the criteria set forth in this policy, and that certain circumstances must be evaluated under special considerations. The exception/waiver process described below applies to all of the standards in this policy.

Section 20.7(A): Approval Required

No person shall construct or modify any marked crosswalk to an O’Fallon street without approval from the City. Approval is granted through the review process stated herein. Any marked crosswalk constructed without approval by the City after the adoption of this policy shall be considered an unapproved connection and the owner shall be issued a violation notice and may be closed or removed by the City.

Section 20.7(B): Request for Modification

Modification of existing crosswalks shall require documentation justifying the need for the modification and be subject to approval from the City Traffic Engineer. Any modification implemented on a crosswalk will require that the roadway and sidewalks impacted by the crosswalk be brought into compliance with Federal ADA standards.

Section 20.7(B): Waiver of Nonconforming Situations

Where the existing configuration of properties, sidewalks, driveways, etc. in the vicinity of the proposed crosswalk site precludes meeting the minimum standards for the evaluation criteria set forth in this policy, the City Traffic Engineer, in consultation with appropriate City departments, shall be authorized to waive any evaluation criteria deemed necessary, at their discretion, and move forward with the evaluation based on the remaining criteria.
SECTION 21: NO PARKING SIGN POLICY AND GUIDELINES

Section 21.1: Purpose and Scope

The purpose of the No Parking Sign Guidelines is to serve as the policy document that guides City Staff in determining where and how to implement No Parking Signs within the City of O’Fallon on City-owned and maintained streets. These guidelines provide direction to determine if a No Parking Sign is appropriate at a particular location, depending on the site characteristics.

It is important to provide designated facilities for residents to use the transportation network safely and without unreasonable delay. No Parking Signs that are appropriately located provide residents with opportunity to effectively use streets, while maintaining safety. This policy is intended to be considered for all future No Parking Sign requests and installations going forward from its adoption by the City. Existing No Parking Signs, which have been installed on City-owned and maintained roads prior to adoption are not subject to this policy, and it is not meant to be retroactive in scope.

Section 21.2: Evaluation of No Parking Sign Request Locations

Section 21.2(A): Resident Submission of No Parking Sign Petition Form

To begin the process, a group of residents representing ten (10) or more separate households within the general area where the No Parking Signs are being requested may submit a Request Form to the City Engineer. The form must contain the following information:

- Ten (10) signatures from different households within the general area.
  - If ten signatures cannot be obtained, please provide a reason why this is the case
- A single resident designated as the “Point of Contact”
- A map showing the area where signs should be installed.
  - The minimum length of a “No Parking” area is 300 ft. Single houses or other configurations not complying with this requirement will not be considered.

Upon receiving the request by the 10 residents, City Staff will verify the names and addresses on the petitioners. If a form is found to be non-compliant, an email will be sent to the resident listed as the Point of Contact, and the evaluation will not proceed until a compliant form is submitted.
Section 2.1.2(B): Data Collection and Location Eligibility Criteria

After verification that the evaluation form is compliant, City Staff will perform preliminary data collection and analysis on the area of proposed parking restrictions. Data collection shall consist of the following items:

1. Placing counters in the area in question or in/near the area requested for No Parking signs, to collect data on traffic including volume, speeds, etc. This data collection effort shall occur for a minimum period of five (5) days.

2. Collection of traffic accident data for the area for the previous five (5) years, if available.

After the data collection is completed, the location shall be evaluated based upon whether it meets the following minimum criteria:

A. A minimum level of Average Daily Traffic (ADT) of 600 vehicles or greater.

B. The location does not meet the minimum AASHTO stopping sight distance requirements, based on the posted speed limit.

C. An average yearly accident rate greater than one (1) per year based on the previous five (5) years of accident data (only accidents which can be attributed to vehicles being parked the area in question and would have been avoided if vehicles were not parked there, based on the judgement of the City Engineer will be considered).

Section 2.1.2(C): Resident Support Requirements

Depending on whether the locations meets the respective minimum criteria, one of three options will occur, as described below:

Option 1: The location meets all three minimum criteria (A, B and C)

If all three criteria are met, City staff shall install No Parking signs at the location.

Option 2: The location meets two of three minimum criteria (A and B or C)

If two of the three criteria are met and the City Engineer feels that the signs are warranted, City staff shall install No Parking signs at the location.

If two of the three criteria are met but the City Engineer does not consider the signs to be warranted, the Engineering Dept. will survey, or otherwise verify that there exists among the residents a 65% level of support within the general area for the parking restriction, and a 75% leave of support among the property owners immediately adjacent to the area where the parking restrictions are proposed, based
on the total number of ballots issued. If those levels of support are verified, the City will install the signs.

Option 3: The location meets one or none of three minimum criteria

If only criteria (A) or none of the three criteria are met, the signs are not considered warranted at this location. If the residents still desire to have the signs installed, the Engineering Dept. will survey, or otherwise verify that there exists among the residents a 75% level of support within the general area for the parking restriction, and a 90% leave of support among the property owners immediately adjacent to the area where the parking restrictions are proposed. If those levels of support are verified, the City will install the signs.

For the purposes of this policy, “General Area” is defined as the area within the bounds of the subdivision and within a 300’ radius of the proposed parking restriction. In addition, “Immediately adjacent” refers to those properties that have frontage where parking is to be restricted on the same side of the street and those on the opposite side of the street. If the parking restriction is proposed on a cul-de-sac, the general area is limited to those residents who have driveway access on the street containing the cul-de-sac.

Section 21.2(D): Removal

Two years or greater from the date of implementation, citizens in the study area may petition to have the No Parking Signs removed. After verification that the petition is compliant, City Staff will perform preliminary data collection and analysis on the area of existing parking restrictions consistent with Section 21.2(B). If the City Engineer feels the signs are warranted based on the available data, the petition will be denied and the signs will remain in place. If the City Engineer does not feel the signs are still warranted based on the data, a 65% vote in favor supporting removal for all ballots issued to the property owners (each having one vote) is required to remove the signs. The signs cannot be considered for removal until after studies have been completed. Generally, No Parking Signs shall not be requested in an area where No Parking Signs were removed for a period of at least 2 years from date of removal, unless otherwise directed by the City Administrator or City Council.

Section 21.2(E): Removal

If the proposed No Parking Sign measure fails at any point in the process as outlined above, the area in questions will not be eligible for re-evaluation for No Parking Signs for a period of one (1) year.
Section 21.3: Review and Exemption Process

Flexibility is essential when administering City Policy to balance the needs of motorists who utilize the public facilities with the practical needs and budget constraints of the City. The following administrative procedures are intended to provide flexibility, while maintaining a fair, equitable and consistent process for No Parking Sign decisions. The City recognizes that not all situations may be covered explicitly with the criteria set forth in this policy, and that certain circumstances must be evaluated under special considerations. The exception/waiver process described below applies to all of the standards in this policy.

Section 21.3(A): City Engineer Authority

Per City Code Section 355.090.A., the City Engineer shall retain the right to authorize the erection of signs indicating No Parking upon any street when the width of the roadway does not exceed twenty (20) feet, or upon one (1) side of a street as indicated by such signs when the width of the roadway does not exceed thirty (30) feet, at their sole discretion. Engineering judgement shall be used to justify the erection of such signs, where warranted.

Section 21.3(B): Request for Existing Sign Modification

Modification of existing No Parking Signs shall require documentation justifying the need for the modification. Such a request will be subject to the same process and requirements as outlined in Section 21.2.
Section 21.3(C): Waiver of Nonconforming Situations

Where the existing configuration of properties, sidewalks, driveways, etc. in the vicinity of the No Parking Sign site precludes meeting the minimum standards for the evaluation criteria set forth in this policy, the City Traffic Engineer, in consultation with appropriate City departments, shall be authorized to waive any evaluation criteria deemed necessary, at their discretion, and move forward with the evaluation based on the remaining criteria.