Update

Access Management Guidelines

Prepared for:

CITY OF MARICOPA®
PROUD HISTORY · PROSPEROUS FUTURE

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January 2019

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EXECUTIVE SUMMARY

The current Access Management Guidelines followed by the City were developed in 2008 as part of the Regional Transportation Plan (RTP) Update. An Access Management element was included in the recently published Area Transportation Plan (ATP), which is comprised of the Transportation Master Plan (TMP) and Regional Connectivity Plan (RCP). Appendix F of the ATP – Recommended Roadway Design Standards, Planning Level Unit Costs, and Access Management – includes some access management changes to recommendations in the RTP. These changes reflect the need to clarify the desirable degree of permissible roadway access for private driveways and public streets, based on the City's objectives adopted with approval of the ATP. The accompanying matrix summarizes the key features associated with the City's roadways and primary Access Management considerations.

The purpose of this document is to provide an update of guidance provided by the 2008 Access Management Guidelines to reflect the contents, findings, and recommendations presented in the ATP. As such, it provides updates to recommended practices for the management of vehicular access to all City-owned roadways and State highways within the City's jurisdiction. The updated Guidelines have been augmented to incorporate Best Practices identified and adopted by Federal, State, and local transportation organizations. Basic guidelines relating to Access Management are included in the summary table – Roadway Design and Access Management Guidelines. This Update document provides contemporary Access Management information and integrates current thinking regarding regional connectivity requirements to satisfy future mobility and travel demand needs of the City of Maricopa, as presented in the ATP.

Roadway Design and Access Management Guidelines

Guidance Criteria	Parkway	Arterials			Collectors		
		Principal Arterial I	Principal Arterial II	Minor Arterial	Collector	Village Collector	60' ROW Collector
Roadway Facility Design Guildlines							
Street Purpose	Mobility	Mobility	Mobility	Mobility	Mobility/Access	Access	Access
Design Speed (Miles Per Hour)	55	45-55	45-55	45	35	35	35
Posted Speed (Miles Per Hour)	50	40-45	40-45	35	30	25	25
Right-of-Way Width (Feet)	200	150	150	110	81.5	108	60
Number of Lanes	6	6	6	4	3	2	2
Street Width (to back of curb) (Feet)	109	109	109	75	51	81	48
Pavement Width (Feet)	2 x 42.5	2 x 42.5	2 x 42.5	57	48	78	45
Lane Width (Directional) (Feet)	12 - 14	12 - 14	12 - 14	12	12	12	11
Median Width/Left-Turn Lane (Feet) (P)=Painted, (C)=Curbed	74C	16C Single Left-Turn; 28C Double Left-Turn	16C Single Left-Turn; 28C Double Left-Turn	16C	14P	14P	None
Design Average Dailyl Traffic (ADT) at LOS 'E' Threshold	70,000	45,000 - 49,200	45,000 - 49,200	29,200	13,000	8,000	4,000
Curb/Edge Treatment	Mountable Curb	Mountable Curb	Mountable Curb	Mountable Curb	Vertical Curb	Vertical Curb	Vertical Curb; Rolled Curb Optional
Pedestrian/Multi-Use Facilities (A)=Attached, (D)=Detached	2 x 12'D (5' Buffer)	10'D with 5' Buffer; 6'D with 5' Buffer	10'D with 5' Buffer; 6'D with 5' Buffer	10'D with 5' Buffer; 6'D with 5' Buffer	10'D with 5' Buffer; 5'D with 5' Buffer	10'D with 5' Buffer; 5'D with 5' Buffer	5'A
Bicycle Facilities	6 1/2-foot lane \1 (Optional)	6 1/2-foot lane \1 (Optional)	6 1/2-foot lane \1 (Optional)	6 1/2-foot lane \1 (Optional)	6 1/2-foot lane \1 (Optional)	6 1/2-foot lane \1 (Optional)	4-foot lane* (Optional)
Parking	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	10' Parallel and 20' Diagonal withiin Striped Shoulder; Diagonal includes 2-foot buffer to Bicycle Lane	Parallel within Unstriped Shoulder
Transit Amenities	Far-Side Bus Pullouts, where warranted \2	Far-Side Bus Pullouts, where warranted \2	Far-Side Bus Pullouts, where warranted \2	Far-Side Bus Pullouts, where warranted \2	Bus Stop	Shuttle or Circulator Service with Bus Stops	Bus Stop
Access Management Guidelines							
Traffic Signal Spacing	1 mile; 1/2 mile, where warranted and permitted	1/2 mile and 1 mile locations, where warranted, fully coordinated and progressed; 1/2 mile Minimum in Urban areas; 1 mile Minimum for highways in rural areas	1/2 mile and 1 mile locations, where warranted, fully coordinated and progressed; 1/2 mile Minimum in Urban areas; 1 mile Minimum for highways in rural areas	1/2 mile and 1 mile locations, where warranted, fully coordinated and progressed; 1/2 mile Minimum in Urban areas; 1 mile Minimum for highways in rural areas	1/2 mile locations: 1/4 mile locations, where warranted	1/2 mile locations: 1/4 mile locations, where warranted	1/2 mile locations: 1/4 mile locations, where warranted
Public Street Access Spacing	1/2 mile Minimum; 1 mile Preferred	1/2 mile Minimum; 1 mile Preferred (1/4 mile, if warranted)	1/2 mile Minimum; 1 mile Preferred (1/4 mile, if warranted)	1/8 milie Minimum; 1/2 mile Preferred	No Restrictions	No Restrictions	No Restrictions
Private Direct Access Spacing	N/A	600 feet Minimum; 1,200 feet Preferred	450 feet Minimum for RI/RO; \3 Limit left-out to 1/4 mile Minimum spacing for major driverways	450 feet Minimum for RI/RO; Limit left-out to 1/4 mile Minimum spacing for major driverways	150 feet Minimum; 300 feet Preferred	150 feet Minimum; 300 feet Preferred	150 feet Minimum; 300 feet Preferred
Driveway Access	RI/RO only; Left turns are discouraged, but can be accommodated by aligning U-turn crossover with side street or driveway	RI/RO Preferred; Full access, where approved, but limited	RI/RO Preferred; Full access, where approved, but limited	RI/RO; Full access, where approved, but otherwise limited	Full access, where approved, otherwise limited	Full access, where approved, otherwise limited	Full access, where approved, otherwise limited
Private Access Geometrics	Right turns allowed; Turn lanes may be required	Right turns allowed; Turn lanes may be required	Right turns allowed; Turn lanes may be required	Right turns allowed; Turn lanes may be required	Right turns allowed; Turn lanes may be required	Right turns allowed; Turn lanes may be required	Right turns allowed; Turn lanes may be required
Private Access - Remarks	Per Arizona Parkway Design Guide	Allowed when no other access is available	Allowed when no other access is available	Allowed when no other access is available	One access per parcel; Two large developments, when spacing standards can be met	One access per parcel; Two large developments, when spacing standards can be met	One access per parcel; Two large developments, when spacing standards can be met

\1 Includes 1.5' gutter.

\2 The City of Maricopa *Transit Feasibility Review and Implementation Plan* (July 2007) states that "bus stops are generally located on the far side of an intersection to minimize interference with other traffic operations" and that far-side intersection placement of bus pullouts is desirable.

\3 RI/RO means access to/from a property is Right-In/Right Out only.

1.0 INTRODUCTION

Access management focuses on regulating and managing vehicular ingress and egress points to land parcels adjacent to all manner of roadways. It generally is accepted by highway and transportation planning officials that good access management promotes safe and efficient use of roadways and the overall roadway network. As such, access management is a rational framework for concepts and tools important to maintaining community mobility and accessibility. For example, efficient and effective spacing and design of ingress and egress points to preserve the functional integrity of a roadway and roadway network can assure the overall operational viability of street and road systems is maintained.

The purpose of this document is to (1) provide an overview of access management issues associated with the City of Maricopa roadway network and overall transportation system and (2) present recommended practices for the management of vehicular access to all City-owned roadways and State highways. Following this Introduction, Section 2.0 presents a definition and explanation of the concept and practice of access management (also referred to as access control). Section 3.0 briefly explains the importance of access management as a strategy to improve the safety and functionality of the City's roadway network. Section 4.0 summarizes Best Practices currently recognized by Federal, State, and local transportation organizations. Section 5.0 provides an overview of legal issues associated with a jurisdiction, such as the City of Maricopa, having authority over and exercising access control along the rights-of-way of roads and streets under its control. Section 6.0 identifies administrative and technical methods by which the City can manage access to the roadway network. Finally, Section 7.0 presents a set of recommended access control guidelines to provide a framework for assessing the need for and authorizing access to public roads and streets in Maricopa.

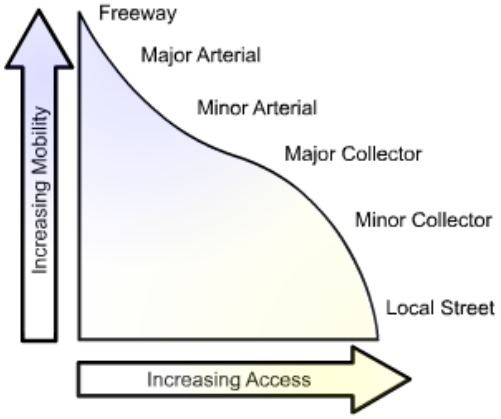
2.0 DEFINITION OF ACCESS MANAGEMENT

Access management (also referred to as access control) is defined as the regulation of access to public roadways from property adjoining or abutting the roadway. The concept of access management is referenced and results are manifested in a number of ways, such as:

- Access management represents a framework for assessing and recommending appropriate ingress to and egress from the property that will support the safety and efficiency of roadway operations.
- Access management practices are applied by jurisdictions to establish an optimal level of control over vehicles exiting and entering roadways.
- Access management has proven to be effective at preserving the function, efficiency, and safety of public roadways.
- Access management guidelines aid Federal, State, and local jurisdictions in maintaining the through capacity of public roadways, ensuring reasonable access to private land adjoining the roadways, and enhancing public safety through by reducing the potential for vehicle conflicts.
- Access management is regulated through legal, administrative, and technical strategies available to a political jurisdiction under its police powers and authority to maintain the health, safety, and welfare of the jurisdiction's residents.

Guidelines and recommended practices presented in Section 5.0 include basic design criteria for the location, spacing, and geometric aspects associated with permitting driveway access to City roadways. Access management initiatives at the State and local levels generally fall into two major categories: (1) land use and development strategies; and (2) technical traffic engineering and roadway design tools. The Guidelines presented in this document are intended for use by City staff, as well as property developers, in evaluating reasonable access provisions associated with proposed land uses, site plans, and facility designs. The availability of updated Guidelines and recommended practices provides a contemporary framework for reducing project review and approval time and establishes a rational framework for assuring adequate access is available to serve a proposed land use while critical roadway functions are protected.

The figure at right shows how access management is related to the roadway facility types identified and discussed in this document. Increasing mobility is associated with available capacity and, thus, usually is associated with Arterial roadways and high-capacity Freeways or Expressways. By contrast, increasing access is associated with facilities having significantly less capacity for traffic movements. Increased access to abutting properties generally is associated with Major and Minor Collectors and Local Streets. The balance of mobility to access requires recognition of an important tenet of Access management: the adoption of policies and standards should seek to maintain the capability of facilities



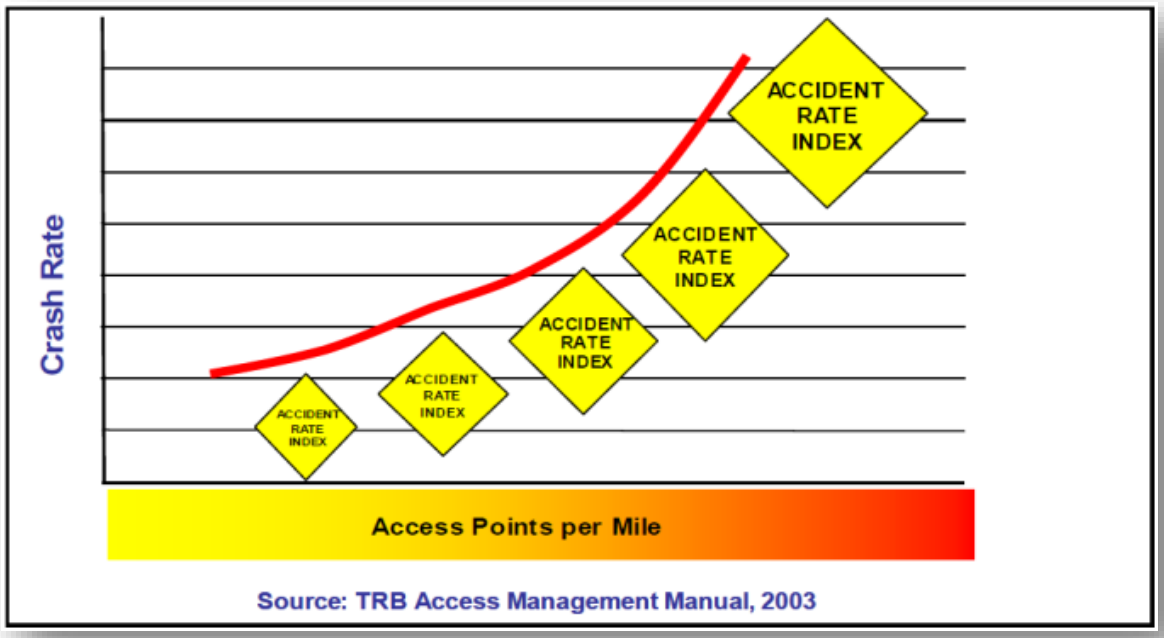
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Operations, Access Management Program Plan, at http://ops.fhwa.dot.gov/access_mgmt/progplan.htm.

with higher capacities to accommodate higher speeds and higher traffic volumes. If access is not controlled through the implementation of Access management practices, traffic flows can be impeded, and the likely result will be congestion and less safe traffic movements.

Access management is achieved through a combination of planning, regulatory, and design strategies. Access management provides the necessary framework to evaluate and consider the full potential effects of introducing driveways or minor streets to the backbone roadway network of Arterials. Beyond the direct effect on traffic progression and safety is the necessity of evaluating and considering potential economic damage to adjoining and nearby parcels. Nevertheless, studies and experience show that a well-designed Access Management Plan (AMP) supports property values and promotes safe and efficient transportation for the traveling public. This especially is true for facilities critical to regional connectivity and sustaining major arterial flow. Basic guidelines relating to access management are included in the summary table presented earlier. Comprehensive guidance was developed for the RTP Update (2008) in a Technical Memorandum titled Access Management Guidelines. This document provides adequate guidance for evaluating proposed roadway projects and proposals for access to existing roadways.

3.0 IMPORTANCE OF ACCESS MANAGEMENT

Access management planning focuses on the development of corridor- or roadway-specific transportation and land use strategies to improve safety and functionality. Engineering and day-to-day experience indicates the operational safety, capacity, and functional integrity of a roadway is directly affected by the number, locational proximity, and design of access points. Each access point is a location at which vehicle movements are counter to the flow of traffic and, therefore, the potential exists for conflicts and crashes involving motorists, bicyclists, and pedestrians. If development along a roadway and the amount of access afforded that development does not fit with the volume and type of traffic, the roadway may become congested and unsafe. As shown in the graphic below, as the number (or frequency) of access points per mile increases, the Crash Rate increases (measured by what is termed the Accident Rate Index, which equals the number of crashes per million vehicle miles traveled).



Adding more lanes to an existing highway to gain necessary capacity or reduce congestion for safety's sake is expensive and may not even be feasible or possible. By contrast, controlling and limiting access to highways, major roads, and even certain streets is a cost-effective way to help maintain the capacity of the facility and improve the safety of traffic operations. Proactive solutions can include the control of entrances and exits to abutting properties, installation of medians to restrict left-turns to abutting properties, addition of dedicated left-turn lanes at prescribed locations, and establishment of connections between adjoining developments to reduce access points. In many cases, it is possible to improve safety and functionality without adding lanes. This can be accomplished by coordinating access locations with surrounding land uses, based on traffic data, forecasted volumes, and expected roadway function (e.g., collector v. arterial). Coordination of the local street network with the State Highway System (SHS) also adds to opportunities for implementing pro-active and cost-effective solutions to capacity and safety issues.

Other significant benefits of access management include:

- Improved community quality of life through reduced congestion and more efficient access to goods and services;
- Greater sustainability of community design through effective integration of transportation and land uses;
- Improved safety for bicyclists and pedestrians, due to the reduction in conflict points at the side of the roadway and, in some cases, center islands that provide refuge;
- Improved transportation corridor aesthetics through practical landscaping and streetscaping; and
- More efficient use of limited, available funding through implementation of more affordable, less disruptive roadway improvements versus major reconstruction and widening.

4.0 REVIEW OF BEST PRACTICES FOR ACCESS MANAGEMENT

Access management is not an end unto itself, but a coordination of policies and programs to achieve two primary objectives: achieve safe and efficient traffic movements throughout the community, and attain reasonable access for all properties fronting the roadway as well as intersecting roads and streets. *Access Management Principles*, a Federal Highway Administration (FHWA) presentation prepared as an introduction to the concept of access management, frames access management as a process employed to achieve a balance of community access and mobility.[1] Access management is formally defined as a "…programmatic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway." Informally, access management is "Where the road meets the driveways [or other roadways]." This section provides a summary of access management programs and methods adopted or espoused by various communities and government agencies around the United States to establish a relative framework of Best Practices for applying the concept of access management in the City of Maricopa.

4.1 ACCESS MANAGEMENT PRINCIPLES, INTRODUCTION AND OVERVIEW (*Neil Spiller, Federal Highway Administration, 2007*)

This presentation begins by noting that access management, as a concept, was first asserted in 1902 restraints on horse and bicycles use of "speedways." Access control was viewed as a sovereign power of the states in 1906, and the first statewide legislations incorporating access control of roads were implemented in New York and New Jersey. The FHWA presentation points out:

> "A property owner has right to have access (i.e., not to be landlocked) but does NOT have right to expect absolute access at any point, NOR should they expect compensation for relocated access *as long as the government shows justifiable cause and least-impact.* [emphasis in original presentation]."

Colorado is credited with establishing the first comprehensive access management guidance, incorporating safety, aesthetic, and delay-reducing benefits associated with access control of roadways. The State recognized "…the *proliferation of driveways* and other access approaches is a major contributor to highway accidents and the greatest single factor behind the functional deterioration of highways in this state [emphasis in original presentation]." From a national perspective, two primary objectives of access management – traffic flow and safety – are grounded in conclusions accepted by the FHWA and other organizations:

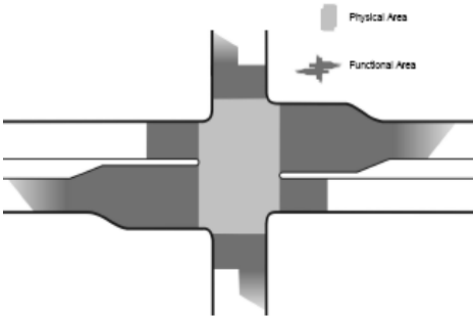
- The lack of access control along arterial highways has been the largest single factor contributing to the obsolescence of highway facilities [*NCHRP Report 121, Protection of Highway Utility*], and
- Every study since the 1940's has indicated a direct and significant link between access frequency and accidents [*International R/W Assoc. Conference Paper, 1999*].

These two primary objectives provide the overarching framework for implementing access management through policies, programs, and practice, the goal of which can be understood to "…Limit the number and

[1] Access Management Principles, Introduction and Overview, Neil spiller, Federal Highway Administration (FHWA), 2007.

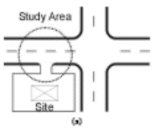
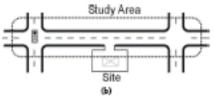
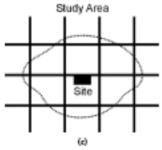
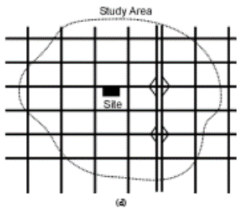
impact of driver decision and conflict points from impacting on through traffic." The practice of access management is highlighted in this presentation as including the following actions and concepts:

- Use non-traversable medians to separate traffic and direct motorists where to access properties.
- Use turn lanes to queue separate movements and to "free up" through movements.
- Where restricted from placing a median, can you install a bypass lane?
- Increased separation between intersections.
- Introduction of U-turns to replace former movements.
- Recognize the "functional influence area" of an intersection, specifically –
  - The impact length, i.e., distance back from the intersection at which drivers begin to be affected,
  - Perception-reaction distance, and
  - Vehicle length.



Because appropriate location and spacing of access points are critical to a successful access management program, the presentation provides a recommended hierarchy as a guide when requiring traffic impact studies for proposed development and redevelopment actions. This hierarchy is shown in the figure below. (Note: This guidance is incorporated in **Attachment B**, Maricopa Traffic Impact Analysis (TIA) Procedures).

Traffic Impact Study Areas

		Scope:
	Very small site or re-use Owner-transfer, same use-upgrade or isolated (i.e., non urban) location	**Driveway only or nearest intersection**
	Small site, local impact Bank, restaurant, gas station	**Closest intersections up- and down stream**
	Medium site, destination oriented Small strip retail, small office or residential complex	**Radius of neighborhood intersections**
	Large site, regionally impacting Shopping center, large residential/retail complex, big-box store	**Large cordon of intersections, including major connections**

Source: Access Management Principles, Introduction and Overview, Neil spiller, Federal Highway Administration (FHWA), 2007.

4.2 ACCESS MANAGEMENT: A KEY TO SAFETY AND MOBILTY

The clear emphasis on access management at the federal level is reflected in the title to this section: safety and mobility. This Brochure, published by FHWA November, 2009, states that access management is:

> *Access management refers to the design, implementation, and management of entry and exit points (e.g., driveways) between roadways and adjacent properties. The use of access management techniques is designed to increase roadway capacity, manage congestion, and reduce crashes while serving land uses appropriately.*

4.2.1 ACCESS MANAGEMENT PRINCIPLES

The FHWA Brochure outlines six foundational principles supporting the application of access management to achieve its intent as defined above.

ROADWAY HIERARCHY

This principle is based on the premise that different roadway facilities serve different functions within the transportation network, a concept introduced in Section 2, Definition of Access Management, of this updated set of guidelines. A key element of this principle is that public road intersections have priority over individual driveway access to fronting properties. Ideally, access for private driveways should always connect with the lowest classification of roadway to minimize impacts to roadway with higher speeds and traffic volumes.

FUNCTIONAL AREA OF AN INTERSECTION

The functional area of an intersection essentially represents the approaches to the physical intersection of two roadways. In this area, drivers must make numerous decisions and effect necessary maneuvers to negotiate the intersection. Each approach includes a distance for perception-reaction time, travel for maneuvering and deceleration, and entering the vehicle queue, as necessary and appropriate, in response to traffic control. Drivers use the functional area beyond the physical area of the intersection to complete whatever maneuver initiated (i.e., through- or turning-movement) and accelerate.

Driveways located within the functional area create conflict points within the tightly defined intersection approaches and can negatively impact the ability of drivers to negotiate the intersection safely by increasing the number of decisions necessary to perceive, react, maneuver, decelerate, enter the queue, initiate and complete the desired travel through the intersection maneuver, then accelerate. The intent of access management is to protect the integrity of the functional areas of intersections by applying design treatments that consider geometry, adequacy of corner clearances, and access points. Ideally, intersections should be spaced far enough apart so functional areas do not overlap.

DRIVEWAY LOCATION AND CONFLICT POINTS

This principle is closely associated with the principle of Functional Area, but emphasizes the need to preclude and/or eliminate left turns within the functional area of intersections. It also focuses on the proximity of driveways/access points on opposite sides of the street, which can result in criss-crossing vehicle movements in the midst of the functional area, where drivers must concentrate to perceive/recognize the configuration of the intersection, maneuver and decelerate, enter the vehicle queue (if necessary), and pass through the intersection. The installation of raised medians and restricted right-in/right-out (RI/RO) access for fronting properties are noted as significant improvements for intersection conflict zones.

ACCESS POINT AND SIGNAL DENSITY

The FHWA Brochure points out that a number of studies during the past 40 years have consistently revealed that the number of access points on roadways and at intersections directly correlates with the number of crashes. Therefore, minimizing and/or eliminating access points will result in a reduction in crashes, and this can be accomplished through the application of access management strategies and tools.

DRIVEWAY DESIGN

This principle states the driveway access and site circulation must permit drivers to exit and enter the roadway without significantly impeding traffic flow.

4.2.2 ACCESS MANAGEMENT TOOLS AND TECHNIQUES

The FHWA Brochure also identifies physical and design techniques to aid in guiding development and roadway design standards and the coordination of these standards:

- Consolidate and minimize left turn exits from driveways.
- Use a two-way center left-turn lane (in some applications).
- Use a raised center median.
- Encourage shared driveways for adjacent land parcels/developments.
- Provide inter-parcel circulation (ability to travel from one property to the next without entering the roadway).
- Create service roads for direct land access parallel to major arterial.
- Provide adequately designed turn and U-turn lanes.
- Provide roundabouts to facilitate median treatments and U-turns at key locations.

4.3 THE ACCESS MANAGEMENT GUIDEBOOK, MICHIGAN DEPARTMENT OF TRANSPORTATION

This document prepared for the Michigan Department of Transportation (MDOT) represents a comprehensive approach to access management that links roadway or street design with access control principles. It was developed to aid local officials in achieving greater and more effective communication relating to need to coordinate access management, common transportation issues, and land use objectives. The "Guidebook" spells out how and when access management techniques can be utilized to address common traffic problems. Access management is defined as:

A set of proven techniques that can help reduce traffic congestion, preserve the flow of traffic, improve traffic safety, prevent crashes, preserve existing road capacity and preserve investment in roads by managing the location, design and type of access to property.[2]

[2] Reducing Traffic Congestion and Improving Traffic Safety in Michigan Communities: THE ACCESS MANAGEMENT GUIDEBOOK, Michigan Department of Transportation, October 2001.

The Guidebook recognizes 15 principles of access management, which comprise various techniques that often must be applied together in a coordinated fashion to attain the desired result (see sidebar at right).

The Guidebook addresses the need and differences between corridor management plans (CMPs) and access management plans (AMPs). MDOT points out that the CMP will address more issues in greater detail and can include identification of: needed future right-of-way; traffic capacity and flow requirements; aesthetic concerns; and coordination with land use plans. This type of plan focuses on a specific travel corridor to evaluate the need for extensive improvements of an existing facility or requirements to accommodate a new facility. The CMP often will involve a longer timeframe, address broad strategies for supporting access over a large area, and provide opportunities for more extensive public involvement.

AMPs, by contrast, have a broader frame of reference and provide a long-range guide to aid coordination of access to public roads from surrounding development. These plans generally provide guidance that focuses on targeted improvements through the application of various techniques and methods for increasing safety and efficiency (e.g., driveway consolidation, installation of a raised median, altering property access locations, etc.). As such, the AMP represents a framework for implementing location-specific improvements within the authority of regulations or design standards or preventing adverse impacts through guidelines effected during review and implementation of a project.

15 ACCESS MANAGEMENT PRINCIPLES

1. "Reasonable access" to public roadway is protected by state law.
2. Access management or control assures businesses and drivers of safe and convenient entry/exit and taxpayers of more cost-effective roadway investments.
3. More important roadways (i.e., higher functional classification), require a higher the degree of access control to assure the roadway performs according to the function it was designed to serve.
4. Coordination of interconnections between adjacent sites and between subdivisions is important to the safety and efficiency of the street system.
5. Limit the number of driveways and other conflict points.
6. Separate driveways and other conflict points.
7. Improve driveway operation/function by fitting the best design to access need.
8. Remove turning vehicles from through traffic lanes.
9. Reduce conflicting traffic volumes.
10. Improve roadway operations on arterials by achieving the proper balance between traffic flow and property access.
11. Use the local comprehensive plan and/or access or corridor management plans to establish a foundation for correcting existing access control problems and preventing future ones.
12. Coordination with all appropriate transportation agencies is essential when preparing and adopting access management plans, roadway design techniques, and relevant guidelines and regulations.
13. Multi-jurisdictional coordination is essential when applying access control standards during reviews of lot splits, subdivisions, site plans, and zoning matters.
14. Educate the public about the benefits of access control and encourage involvement in developing access management plans and implementation activities.
15. Many access control techniques are best implemented through zoning and others through local lot split, subdivision, condominium and private road regulations.

NOTE: Edited for brevity.

4.4 ACCESS MANAGEMENT GUIDANCE, MARICOPA ASSOCIATION OF GOVERNMENTS

Although the Maricopa Association of Governments (MAG) does not have a formal access management plan or program, the agency did provide guidance that was used in reviewing and developing access management policies and guidelines as part of the 60 (US-60)/Grand Avenue Corridor Optimization, Access Management, and System Study (COMPASS) – Loop 303 to Interstate 10 study.[3] The COMPASS initiative included this review of access management to gain "…understanding of local access needs and authorities for regulating access…." Understanding of the framework of access management applied within the MAG planning region was critical to "…determining the feasibility and reasonability of actions intended to protect highway functionality through controls on access while assuring reasonable access to fronting properties and local roads and streets." MAG now presents the COMPASS results as the primary reference for access management for the MAG planning region. As the City of Maricopa is in the MAG planning region for purposes of transportation planning, this guidance is relevant and appropriate.

The MAG access management framework incorporates the notion that the best practices provide a cost-effective approach to (1) improving mobility, (2) reducing congestion and, therefore, travel delays, and (3) increasing traveler safety. To attain these objectives, however, requires the practice of access management to ensure vehicular access to land development adjoining roadways "…in a manner that preserves the safety and efficiency of the transportation system." When access control is managed ineffectively, there is a tendency for customers, business employees and employers, and visitors to gravitate to safer, more accessible locations. This, in turn, can result in gradual decline of older developed areas that suffer from access-related congestion, safety issues, and even aesthetics. The movement of new investments to better-managed corridors or areas, therefore, has adverse social, economic, and environmental consequences.

MAG provides five general guidelines for the establishment of an access management program and supporting policies and embraces these guidelines in justifying access control:

- Allows motorists to operate vehicles with fewer delays, fewer emissions, and less fuel consumption;
- Provide reasonable access to properties;
- Maintains functional integrity and efficiency of the roadway;
- Protects investments in infrastructure; and,
- Coordinates transportation and land use decisions.

The regional planning agency also supports adherence to ten access management practices, as outlined by the Transportation Research Board (TRB) Committee on Access Management and published in the Access Management Manual originally in 2003 and updated in 2014.[4] These principles are presented below:

[3] Technical Memorandum 4: Principles and Practices of Access Management, Preliminary Draft for Planning Partner Review Only, US-60/Grand Avenue Corridor Optimization, Access Management, and System Study (COMPASS) – Loop 303 to Interstate 10, Maricopa Association of Governments, March 2013.

[4] Access Management Manual, TRB Committee on Access Management, Transportation Research Board (TRB) of the National Academies of Sciences, 2003, updated 2014.

1. **Provide a specialized roadway system** – Different types of roadways serve different functions. It is important to design and manage roadways according to the primary functions that they are expected to serve.
2. **Limit direct access to major roadways** – Roadways that serve higher volumes of regional through traffic need more access control to preserve their traffic function. Frequent and direct property access is more compatible with the function of local and collector roadways.
3. **Promote intersection hierarchy** – An efficient transportation network provides appropriate transitions from one classification of roadway to another. For example, freeways connect to arterials through an interchange that is designed for the transition. Extending this concept of transition to surface roadways results in a series of intersection types that range from the junction of two major arterial roadways to a residential driveway connecting to a local street.
4. **Locate signals to favor through movements** – Long, uniform spacing of intersections and signals on major roadways enhances the ability to coordinate signals and ensure continuous movement of traffic at the desired speed. Failure to carefully locate access connections, or median openings that later become signalized, can cause substantial increases in arterial travel times. In addition, poor signal placement may lead to delays that cannot be overcome by computerized signal-timing systems.
5. **Preserve the functional area of intersections and interchanges** – The functional area of an intersection or interchange is the area that is critical to its function (as noted earlier above). This is the area where motorists are responding to the intersection or interchange, decelerating, and maneuvering into the appropriate lane to stop or complete a turn. Access connections too close to intersections or interchange ramps can cause serious traffic conflicts that impair the function of the affected facilities.
6. **Limit the number of conflict points** – Drivers make more mistakes and are more likely to have collisions when they are presented with the complex driving situations created by numerous conflicts. Conversely, simplifying the driving task contributes to improved traffic operations and fewer collisions. A less complex driving environment is accomplished by limiting the number and type of conflicts between vehicles, vehicles and pedestrians, and vehicles and bicyclists. The number of potential conflicts increases substantially when pedestrian and bicycle movements are considered.
7. **Separate conflict areas** – Drivers need sufficient time to address one potential set of conflicts before facing another. The necessary spacing between conflict areas increases as travel speed increases to provide drivers adequate perception and reaction time. Separating conflict areas helps to simplify the driving task and contributes to improved traffic operations and safety.
8. **Remove turning vehicles from through-traffic lanes** – Turning lanes allow drivers to decelerate gradually out of the through lane and wait in a protected area for an opportunity to complete a turn, thereby reducing the severity and duration of conflict between turning vehicles and through traffic. They also improve the safety and efficiency of roadway intersections.
9. **Use nontraversable medians to manage left-turn movements** – Medians channel turning movements on major roadways to designated locations. The majority of access-related crashes involve left turns. Therefore, non-traversable medians and other techniques that minimize left

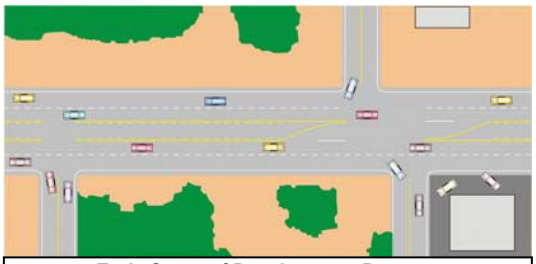
turns or reduce the driver workload can especially be effective in improving roadway safety. Full median openings, which allow left turns from either direction, are best provided at signalized intersections and unsignalized junctions of arterial and collector streets. Full median openings in other unsignalized locations can adversely affect safety and traffic flow, but may be appropriate in some areas, where analysis indicates traffic operations and safety would be improved.

10. **Provide a supporting street and circulation system** – Well-planned communities provide a supporting network of local streets to enhance connectivity and mobility. Connectivity can be maintained while advancing access management objectives for arterial roadways by ensuring that local street connections to the arterial conform to the adopted connection spacing interval.

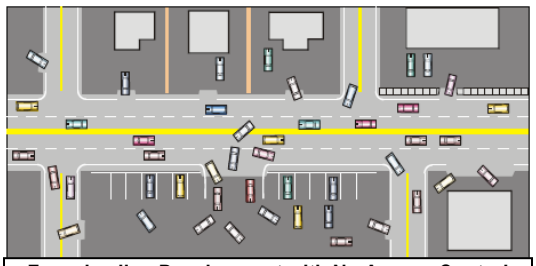
4.5 ACCESS MANAGEMENT MANUAL, PINAL COUNTY RSRSM

The Access Management Manual prepared by Pinal County in support of Regionally Significant Routes for Safety and Mobility (RSRSM) was developed to aid Pinal County, local jurisdictions, Native American Communities, and private developers implement access management practices relative to the RSRSM. This document presents a direct connection between the roadway network of a community and land use. Although its focus is on regionally significant routes, the Manual notes that an effective access management program sustains a highly functional roadway system, which supports efficient mobility options for persons and goods to access land use activities.

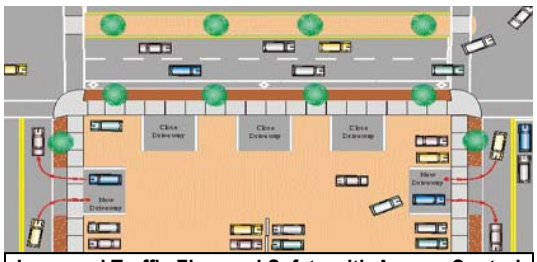
The emphasis on RSRSM derives from the need to attain and maintain a high level of service. If access to abutting property is not limited, multiple access points along with the addition of traffic signals and curb cuts generally has adverse effects on both mobility and safety. Instead, minor arterials, collectors, and local streets should be the focus of access to land uses, freeing the major roadways for high-volume, higher-speed travel unencumbered by intervening access points. The graphic at right shows how the lack of managed access control can deteriorate travel conditions and increase the risks of crashes, as vehicle operators cross paths to access property fronting the roadway. The graphic also shows how managed access control can resolve the many points of conflict and facilitate more efficient travel mobility, safety, and access.



Early Stage of Development Process



Freewheeling Development with No Access Control



Improved Traffic Flow and Safety with Access Control

Source: Access Management Manual, Regionally Significant Routes for Safety and Mobility (RSRSM), Pinal County, September, 2008.

The Pinal County Manual identifies access management as the process that controls vehicular access to public highways (from private property or an intersecting roadway) to provide access to land development, while simultaneously seeking to minimize access/potential conflict points to preserve traffic flow on the surrounding roadway system relative to safety, capacity, and speed. The Manual identifies numerous

strategies and technical tools for use in addressing access management issues associated with the RSRSM, which are applicable to other elements of the roadway network. Many of the strategies and tools are most effective when implemented prior to development occurring. However, the Manual also provides a useful set of techniques for enhancing access conditions in fully develop travel corridors, effectively "retrofitting" to mitigate extraordinary existing conditions that adversely impact mobility and safety.

4.5.1 LAND USE AND DEVELOPMENT STRATEGIES

Certain planning, design, and regulatory practices are useful for managing land use and development activity to benefit the transportation network.

Acquisition of Access Rights – This technique most frequently is used in association with freeway development; but, increasingly it has been applied to arterial roadways and bypasses. Access rights should be acquired before development occurs, when the cost of the land is still low.

Dedications and Exactions – Local governments can require monetary payments or contributions of land by a developer-applicant as a condition of project approval. In the case of subdivision development, regulations generally require dedications from the developer for site-related improvements.

Interim-Use Allowances – Interim-use allowances restrict structural improvements within transportation rights-of-way, while allowing modest structural investments, such as nurseries and storage yards, prior to acquisition/taking for a future transportation improvement project.

Purchase of Development Rights - Development rights can be separated from other property rights, or from the remainder of the property, and purchased, donated, sold, or condemned for public purpose, such as a new roadway.

Transfer of Development Rights - Instead of purchasing development rights, such rights are transferred from one area of the parcel to another to protect the area desired for a future transportation improvement project.

Land Development Regulation – This involves managing development in transportation corridors through comprehensive planning, land development regulation, and the exercise of timely development review. Future development and the future functional classification of the roadways anticipated in General Plans can be the basis for identifying access management categories and the application of access management strategies that identify the type and number of access points for a roadway.

Flexible or Cluster Zoning – Performance standards, which permit relaxation of land use and zoning constraints, may be applied to promote creative site design to avoid encroachment on anticipated future right-of-way needs of the community.

Overlay Zones – Overlay zoning is employed to add special requirements onto an existing zoning district, permitting the community to tailor development standards by priority or intensity of access, safety, and congestion problems extant in a corridor.

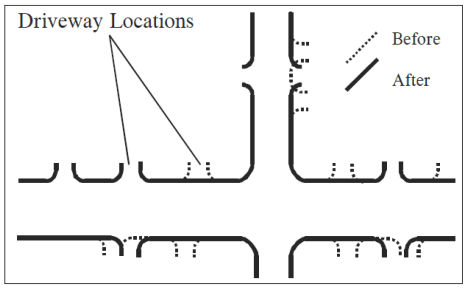
Subdivision Regulations and Site Plan Review - Subdivision plat review can include a requirement to document all access points and the internal circulation system, as well as access and design standards associated with traffic signals, medians, and on-site circulation. A similar review process can be asserted with respect to large-scale, commercial development actions.

Zoning Regulations – Zoning regulations work in conjunction with land use plans and subdivision regulations and can be useful in re-orienting lot/parcel development to access local streets instead of the main highway, as well as ensure adequate spacing between access points.

4.5.2 TECHNICAL TOOLS FOR ACCESS MANAGEMENT

Several types of access management tools are appropriate for application during technical design stages of development and redevelopment continually occurring in the community.

Driveway Consolidation – Consolidation of driveways minimizes the number of access points along a roadway and aids in achieving adequate access spacing. The development review process is the most appropriate setting for ensuring adequate access spacing; however, many travel corridors can benefit from the implementation of retrofit strategies to reduce the number of access points, such as depicted in the graphic at right. Potential strategies are listed below:



- Consolidate access, as appropriate, when –
  - Relocating or reconstructing substandard driveways
  - Negotiating driveway closure, reconstruction, or relocation during roadway resurfacing or improvement projects
  - Redevelopment or expansion of an existing land use occurs, including joint- and cross-access options with abutting properties
  - Adjacent properties come under common ownership.
- Negotiate redesign of driveway access during sidewalk maintenance, reconstruction, or additions.
- Improve the traffic signal system through longer, more uniform intervals with advance traffic monitoring and control capabilities.
- Use raised medians or other traffic barriers at hazardous intersections or along certain roadway segments to control mid-block turning movements and improve safety.
- Develop special corridor overlay zoning districts tailored to the circumstances of built-up areas.

Joint Driveway/Cross-Access – Cross-access calls for establishing a unified on-site circulation plan serving several properties along a commercial corridor that connects adjacent parcels and allows for circulation between the parcels without using the arterial street system. Joint-access calls for two for more adjoining commercial activities to share a single driveway.

Raised Medians –

Raised roadway medians preclude vehicle movements from one side of the roadway to the other and can be used to channel turning movements. There are two specific applications of this tool:

- Raised medians at intersections provide a center barrier to prevent certain turning movements within the functional influence area of an intersection, which facilitates the elimination of undesirable movements and reduces potential conflicts.

- Full, raised medians are effective at managing left turns and roadway crossing movements and can be located at intersections (as noted above) or the full length of a travel corridor. The primary benefit of a full, raised median is the reduction in conflict points, which enhances safety and traffic flow. The disadvantages of this tool are: limitations on crossing movements; the need to accommodate U-turns, which can increase the potential for crashes; and access to fronting properties (except for left-turn provisions in the median) will be restricted to RI/RO access.

Alternative Access - The long-term access management objective for major corridors is to develop a system of side streets, parallel roads, and traffic control features to support existing and planned development while optimizing vehicle throughput and safety of travel. Main components of such a system are frontage or reverse access roads, which together with inter-parcel connections provide alternative routes for short local trips; thereby, helping reduce local traffic on the primary roadway.

4.5.3 APPLICATION OF RETROFITS TO EXISTING TRAVEL CORRIDORS

Many of the policies, strategies, and tools cited above may be applicable to both new development and redevelopment projects. However, introducing access management into developed corridors can be difficult and controversial. Unique solutions often need to be used in this reactive process to achieve corridor objectives. Constraints, such as the unavailability of land, can aggravate attempts to implement access management techniques. In addition, property rights need to be respected and the resulting legal, social, and political aspects of access management need to be thoroughly understood by the implementing agency and all stakeholders.

Most likely, the consolidation or removal of existing access will be sought in conjunction with roadway reconstruction or urban redevelopment projects. The Pinal County Manual cites four different categories of retrofit techniques form the City of Tucson Transportation Access Management Guidelines:

- Category A – Limit Number of Conflicts
- Category B – Separate Basic Conflict Areas
- Category C – Limit Speed Adjustment Problems
- Category D – Remove Turning Vehicles from Through Lanes

Each of these categories is associated with numerous actions designed and intended to reduce conflicts within the transportation system and expedite through travel. Many actions reflect the strategies and tools of access management cited above, emphasizing the enhancement of directional travel patterns by minimizing cross-traffic movements and interference with the traffic flow associated with actions to access fronting properties.

4.6 ACCESS MANAGEMENT GUIDELINES, CITY OF PEORIA, ARIZONA

The City of Peoria, Arizona, identifies access management as "…attempts to balance the need to provide good mobility for through traffic with the requirements for reasonable access to adjacent land uses."[5] The most important concept associated with access management is understanding that through movement of

[5] Access Management Guidelines, City of Peoria, AZ, 2011.

traffic is in conflict with access to property. The City has adopted a list of actions essential to an effective access management program:

- Limit the number of conflict points at driveway locations.
- Conflict points are indicators of the potential for collisions.
- When left turns and cross street through movements are restricted, the number of conflict points are significantly reduced.
- Adequate spacing between intersections allows drivers to react to one intersection at a time, and reduces the potential for conflicts.
- Reduce the interference with through traffic.
- Provide turning lanes, design driveways with large turning radii, and restrict turning movements in and out of driveways reduces friction to the through movement and enhances safety.
- Provide sufficient spacing for at-grade, signalized intersections.
- Good spacing of signalized intersections reduces conflict areas and increases the potential for smooth traffic progression.
- Provide adequate on-site circulation and storage.
- The design of good internal vehicle circulation in parking areas and on local streets reduces the number of driveways needed for access to commercial and residential developments.

The Peoria Guidelines include six areas of focus as a framework for implementing these actions within an access management program:

- Functional Classification – Provisions relating to functional classification include improvements to the roadway system to: enhance the safety and convenience of pedestrians and bicyclists; expedite emergency access; reduce vehicle miles traveled (VMT). The access management focus of this guideline is preservation of major roadways for through traffic by providing alternative routes for short, local trips, thereby, reducing the need for continued roadway widening that divides neighborhoods with wide expanses of pavement making it difficult and hazardous to travel.
- Connectivity – This guideline stresses:
  - Connections of local streets to knit developments together that consider signalization of intersections, arterial/collector integration, street alignments, and local street-to-local street linkages at subdivision boundaries;
  - Creating appropriate connections between new developments and the surrounding system of roadways to minimize cut-through traffic using local streets; and
  - Enhanced opportunities for pedestrian and bicycle travel with improved linkages between neighborhoods, schools, recreation areas, community centers, shopping areas or employment centers.

- Connection Spacing – This guideline stresses:
  - Mitigating and/or preventing negative safety and traffic flow impacts associated with access within the functional area of an intersection; and
  - Signal-spacing standards designed to address safety and operational issues of intersections, interchanges, and the roadways; and
- Medians – This guideline addresses median widths and median openings, including location, spacing, function, and operational impacts.
- Internal Site Circulation and Outparcels – This guideline focuses on methods and means for minimizing access points through consolidation of access between and among parcels.
- Frontage Roads – Both new and existing frontage roads are addressed under this guideline, which is intended to increase access opportunities without interfering with arterial roadways and improve traffic circulation patterns

4.7 STREET DESIGN AND ACCESS CONTROL, CHANDLER, ARIZONA

This Technical Design Manual, prepared by the City of Chandler, Arizona, established minimum design standards for streets within and adjacent to land developments initiated within the City.[6] It includes a section outlining access control policies and guidelines, which provide the framework for the planning, design, and approval of access to the City's arterial street system. City guidance specifically states:

> *The primary function of the arterial street system is to provide mobility for intra- and inter-city travel. Access to abutting land is secondary to providing a high level of mobility and safety* [emphasis added].

The Manual indicates traffic impact studies are required for any new or change of access proposals under certain circumstances specified in the Manual or as may be directed by the City Transportation Engineer. All traffic impact studies/reports must include a site plan that identifies proposed access points. In addition, to roadway and intersection design guidance, the following specific guidance is provided with respect to access to public roads:

- General access to the arterial network is provided by intersections with collector and local roadways and by major and minor driveways to developments. The spacing of access intersections will vary between the arterial functional classes, according to the level of land access which may be allowed.
- Single family residences are not allowed direct access to arterial streets, and new residential developments shall not front an arterial street.
- Direct land access to principal arterials is not permitted, although frontage roads with direct land access are planned for some locations.

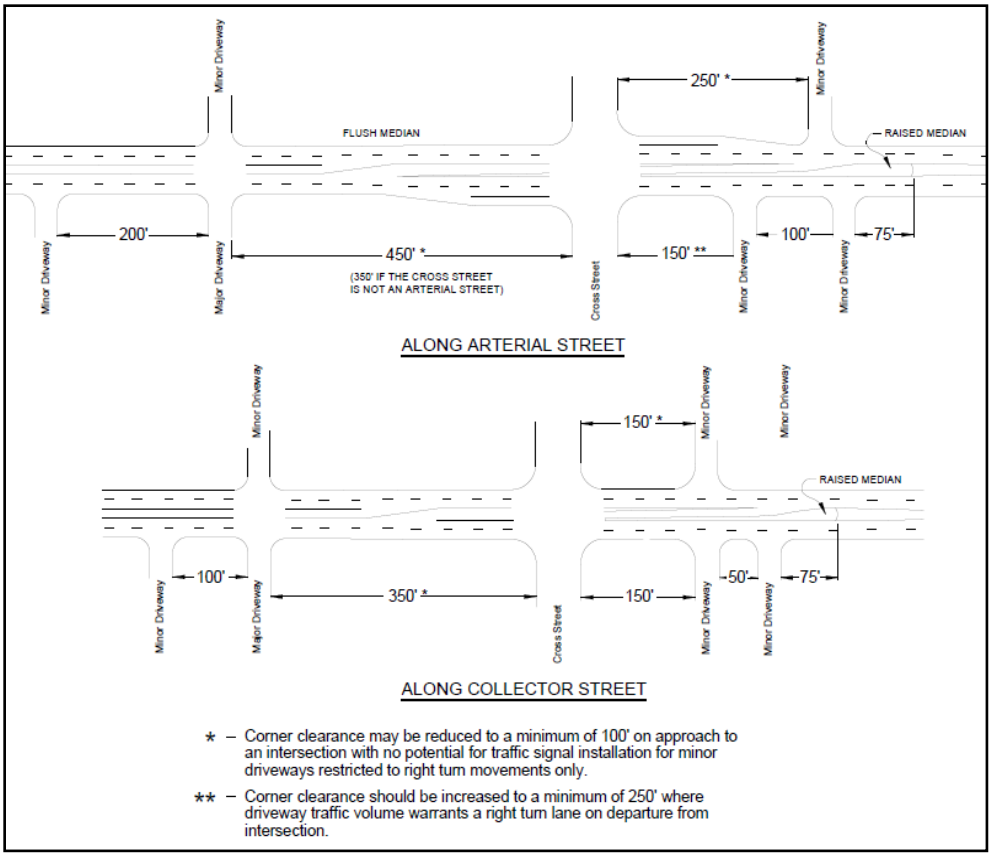
[6] Technical Design Manual Number 4, "Chandler Policies and Guidelines for Street Design and Access Control," City of Chandler, Arizona, January 2016.

- Intermediate intersections with collector and local roadways and major driveways should be limited to a maximum of five per mile.
- Intermediate intersections may be located a minimum of one-eighth mile from the nearest major intersection.
- Desirable intersection spacing is at quarter-mile intervals.
- Intersections should be located at consistent intervals to allow for two-way traffic-signal progression.
- All arterial streets within the City will be provided with medians, and all new arterial streets will be provided with raised medians constructed with curbs and landscaping.

The Manual provides specific guidance with respect to the location of access driveways, particularly with reference to arterial streets, including:

- Number of Access Points,
- Access Point Spacing,
- Access Point Intersection Clearance, and
- Access Driveway Design – Curb Return Radius and Width, Right Turn Deceleration Lanes, and Access Drive Storage Space.

The figure to the right illustrates the minimum driveway and intersection spacing along an arterial street and a collector street.



Source: "Street Design and Access Control," Technical Design Manual #4, City of Chandler, AZ, January 2016.

5.0 LEGAL ISSUES ASSOCIATED WITH CONTROLLING ACCESS

Access management practices are used to establish a desired level of access control on roadways to help retain the capacity of public highways, while ensuring reasonable access to private land and maintaining public safety. Access management is regulated through legal, administrative, and technical strategies that are available to a political jurisdiction under its police powers and authority to maintain the health, safety, and welfare of the jurisdiction's residents. This section presents an overview of legal issues relating to access control of a jurisdiction's roadway network. The discussion is based on a review of Arizona Revised Statues (ARS) and a 1990 report prepared by the Arizona Department of Transportation (ADOT) entitled *Access Management: Practices in Other States and Improvement for Arizona*. It should be noted that ADOT has plans at some future date to create a comprehensive Statewide Access Management Plan, which ultimately will influence how the City assesses future access and connectivity of municipal roadways with roadways on the SHS.

5.8 PROPERTY RIGHT OF ACCESS

Property rights protected by the U.S. Constitution, as well as the Arizona State Constitution, include the right of access. According to the Arizona Constitution (Article 2, Section 17), "no property shall be taken or damaged for public or private use without just compensation…." This means the owner of a property abutting a public roadway has a private right or easement for the purpose of ingress to and egress from the owned property. This right or easement may not be taken or substantially impaired without due process and payment or just compensation for the property taken.

However, as a counterpoint, property right of access is not an absolute right and is subject to the public's right of passage. All private property rights, including right of access, are susceptible to condemnation through the power of eminent domain, which empowers the State and local public entities granted appropriate authority by the State to acquire and use property to further reasonable public goals and objectives. Access rights also are always subject to reasonable regulation through police powers of local governments and the State for the purposes of furthering the public health, safety, and welfare of its residents. Thus, the right of access is a right of "reasonable" access and is not a private right of direct access. That said, once direct access has been established with respect to a non-controlled-access roadway, the property owner has been deemed to have gained an access easement. The property owner has the right to retain reasonable access to the property, which is defined as access suitable for the highest and best use of the property.

5.9 AUTHORITY EFFECTING REGULATION OF ACCESS TO PUBLIC ROADS

As explained above, the State of Arizona and local governments have the power to regulate traffic on roads and highways within their relevant jurisdictions. Such regulation could include any or all of the following roadway design applications:

- Installing curbs along highways and roadways and restricting driveway location, spacing, size, and design;
- Regulating traffic flow;

- Determining the types of vehicles that may use a highway or roadway;
- Restricting traffic movement to one direction of travel; and
- Striping a highway or constructing a median divider that permanently limits property ingress and egress to one direction of travel.

Although access to a property, once established, must be maintained, State and local governments, acting in the general public interest, may close direct access to a property and provide alternative indirect access via a frontage road or another public road abutting the property. If indirect access provides reasonable access for the highest and best use of the property, the owner is not entitled to damages. Also, the property owner is not necessarily due compensation even if the access is more circuitous, unless the property owner suffers a unique injury.

5.9.1 CITY LEGAL AUTHORITY

A local government's (i.e., cities, towns, and counties) powers to control land development within adopted municipal limits and the state-recognized Municipal Planning Area (MPA) include planning, zoning, and land division (subdivision and minor subdivision). Arizona's 'Growing Smarter Act' (ARS 9-461 to 9-463) sets forth State laws establishing the authority and requirements for planning, zoning, and land division of cities and towns.

The City of Maricopa General Plan, *Planning Maricopa*, provides general guidance concerning an array of potential land uses and transportation system infrastructure elements designed to serve those land uses. The City Zoning Ordinance, supports the intent and guidance of the General Plan by defining zoning districts that specify land uses and minimum lot sizes permitted in each zoning district. The authority by which Arizona cities and towns adopt and enforce zoning ordinances is contained in ARS 9-462.01, *Zoning Regulations; Public Hearing; Definitions*. The authority for cities and towns to regulate the use of properties and the minimum size of lots is similar to the zoning authority granted to counties.

Cities and towns derive specific authority for land division through ARS 9-463.01, *Subdivision Regulation.* It is permissible for a city or town to institute a simpler subdivision plat review cycle for divisions of land into ten or fewer lots, whereby a city or town may require a final plat, and "…may waive or reduce infrastructure standards or requirements proportional to the impact of the subdivision." However, "requirements for dust-controlled access and drainage improvements shall not be waived." The city or town may elect, on the other hand, to apply its subdivision ordinance to all land proposed for subdivision into two or more lots.

Based on the authority provided in ARS 9-463.05, *Development fees; imposition by cities and towns; infrastructure improvements plan; annual report; advisory committee; limitation on actions; definitions, any* "…municipality may assess development fees to offset costs to the municipality associated with providing necessary public services to a development…." The fees may be allocated to various uses, as long as the intended use passes four tests:

11. *Development fees shall result in a beneficial use to the development.*
12. *The municipality shall calculate the development fee based on the infrastructure improvements plan adopted pursuant to this section.*
13. *The development fee shall not exceed a proportionate share of the cost of necessary public services, based on service units, needed to provide necessary public services to the development.*

14. *Costs for necessary public services made necessary by new development shall be based on the same level of service provided to existing development in the service area.*

5.9.2 AUTHORITY TO REGULATE ACCESS ON STATE ROUTES

ADOT is granted authority to manage access through police powers granted in ARS, Title 28, *Transportation*. The Director of ADOT is given the authority to exercise powers and duties as are necessary to fully carry out the policies, activities, and duties of the transportation department. The Director exercises complete and exclusive operational control and jurisdiction over the use of State highways and routes and prescribes rules as are necessary for public safety and convenience. The Director has authority to coordinate the design, right-of-way purchase, and construction of controlled-access highways and related grade separations of controlled-access highways, as well as the extension and widening of arterial streets and highways.

Access control can be categorized as either full, partial, or uncontrolled. Full access control adheres to the precept that properties abutting a highway, or other high-speed, high-capacity roadway, do not have direct access to the highway. Access is provided only at grade-separated interchanges. The Interstate system and regional freeways are examples of a facilities with full access control. Full access control is implemented by the designation of a controlled-access highway by the State Transportation Board or local municipal authority. Partial access control allows some crossing and entrance to a roadway at at-grade (usually signalized) intersections and accommodates some private driveway connections. Uncontrolled access means that all abutting properties can have direct access to the highway at-grade. The current authority for partial access control associated with State routes is through ADOT administrative rule, Rule R17-3-712, *Encroachments in Highway Rights-of-Way.* Other methods to control access along a highway often are included in the subdivision approval process and the site plan review process required by local government ordinances.

6.0 METHODS TO CONTROL ACCESS

As noted earlier, access to the SHS and local public street network can be controlled through the use of planning and regulatory tools and through the implementation of technical methods. Access management includes systemwide programs, such as those that may be formulated and exercised through regional policies or local governments, as well as corridor-based improvement programs. The former focuses on development of a comprehensive framework for all roadways in a given area under the specific jurisdiction of the state or local government. The latter focuses on immediate needs of a particular roadway or travel corridor, often a high-priority roadway/corridor identified as having adverse operational and safety conditions. Methods to control access can be categorized as technical, as defined by reasonable and best design practices for roadways relative to functional classification, and planning and regulatory, as may be exercised through land development controls. These tools and methods are discussed in this section.

6.1 PLANNING AND REGULATORY TOOLS

Planning and regulatory tools facilitate the control of access to properties along streets and highways within the jurisdiction of the State's counties and municipalities. The following paragraphs provide guidance in the development and implementation of such tools by the City of Maricopa.

1. **Land Division.** Controlling lot dimensions has an impact on driveway spacing, on-site circulation, and driveway lengths. Lot dimensions can be controlled through minimum lot size, minimum lot footage, setback requirements, etc.
2. **Subdivision Regulation.** The following procedures and regulations are effective tools for assuring reasonable and appropriate access within subdivisions.
   a) **Site Review Process.** The requirement to stipulate all access points during the subdivision site plan review process can be established by the City. Traffic signals, medians, and on-site circulation controls can be required to ensure that access standards are maintained.
   b) **Regulating Lot Splits and Further Subdivisions.** Various types of lot configurations encourage inadequate spacing between access points. The regulation of lot splits by jurisdictions could help to ensure increased spacing between access points, which aids driver's ability to accommodate turning vehicles.
   c) **Subdivision Regulation.** Subdivision regulations at the local level can be used to ensure lots and access points to local streets are oriented away from arterials with high traffic volumes.
3. **Access Controls.** The controls cited below may be used to regulate access to properties from streets and highways.
   a) **Location and Design.** The number of access points in relation to road deceleration and acceleration lanes can be controlled to avoid or minimize the number of conflict points. Adequate design of driveway throat length (i.e., the amount of space available to accommodate vehicles entering a site) can be designed to avoid conflict with the flow of through traffic. Access management design criteria can be used to ensure adherence to standards for adequate driveway spacing, corner clearance, and joint- and cross-access configurations.

b) **Retrofitting Non-Conforming Access.** Permit requests for new driveways, land use intensity changes, and site improvements can require conformance with adopted access control guidelines.

4. **Zoning Regulations.** There are two zoning techniques the City of Maricopa can use to enforce Access management guidelines.

a) **Overlay Zoning.** Overlay zoning can be used to address areas with access control problems, as manifested by congestion or a high frequency of crashes involving vehicle entering or exiting abutting properties. Zoning stipulations can address priorities for access relative to the intensity of access, safety, and congestion problems.

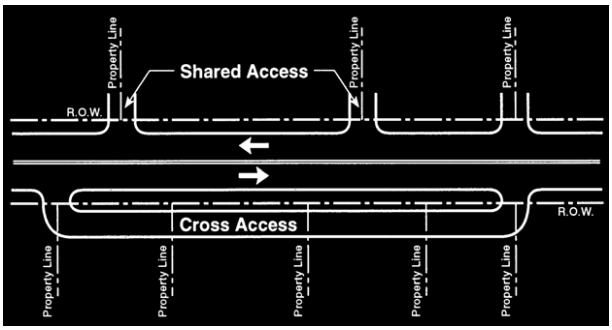
b) **Flexible Zoning.** Flexible zoning can allow, even encourage, alternative site designs, buffering, and screening between incompatible uses.

6.2 TECHNICAL METHODS OF ACCESS MANAGEMENT

Technical methods employed to control access include: driveway consolidation; joint driveway or cross-access agreements; provision of adequate corner clearance; implementation of continuous, two-way, left-turn lanes; construction of alternative access roads; and construction of raised medians.

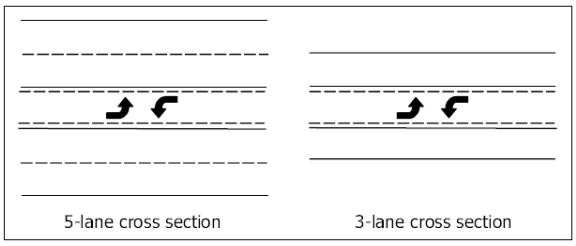
1. **Driveway Consolidation.** Consolidating driveways and ensuring adequate spacing between driveways limits the number of access points per mile, which, in turn, reduces the number of potential conflicts with the flow of through traffic on the roadway.

2. **Shared Access (or Joint Driveway) and Cross-Access.** Shared access and cross-access agreements can be facilitated by connecting adjacent parcels to allow circulation between multiple parcels without using the arterial street system (see graphic at right). In some cases, lot frontage will not adequately and safely accommodate multiple access points in close succession. This can be resolved with shared access or cross-access agreements to achieve adequate access to properties yet increase driveway spacing, i.e., distance between access points.



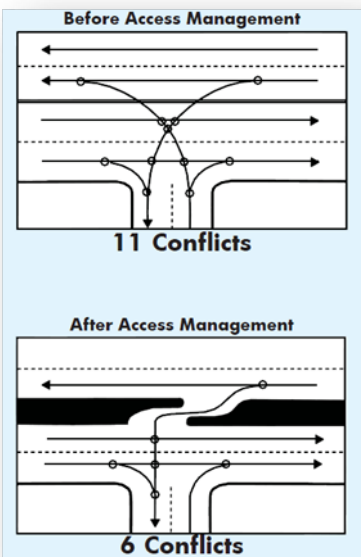
3. **Corner Clearance.** This technical method involves assuring adequate corner clearance (i.e., no driveway or access points within a certain distance of the intersection) by keeping or moving driveway entrances away from intersections. Improving corner clearance reduces conflicts that cause rear-end accidents, resulting from unexpected turns into an adjoining property in the midst of traffic turning movements. In some cases and where feasible, driveways can or should be moved from the main streets to side streets to achieve corner clearance standards.

4. **Continuous, Two-Way, Left-Turn Lanes.** This technical method of access management involves adding a dedicated left-turn lane in the center of the street to separate left-turning traffic from through traffic (see graphic at right). Generally, center left-turn lanes work best where traffic volume and density of driveways is relatively low, and the proportion of left-turning vehicles is moderate to relatively high (approximately 20 percent or greater during the peak hour). This technical method is especially recommended where commercial driveways make up a substantial portion of total driveways.



5. **Alternative Access Ways (Frontage and Backage Roads).** Reasonable alternative access can be provided to sites adjoining the main road by dedicated access roads; either frontage or backage roads. Dedicated access roads can be used to separate numerous turning movements, such as those associated with an intensive commercial development, from through traffic movements on a main arterial street.

6. **Raised Medians.** Raised medians at intersection approaches provide a center barrier preventing left turns into driveways near the intersection. Eliminating left-turn movements in the vicinity of intersections reduces potential conflicts where there is concentrated traffic activity (see graphic at right). Raised medians also can be used to establish a barrier along a high-traffic arterial street, preventing or minimizing both left turns and cross-traffic movements. Raised medians effectively eliminate left-turn access to properties abutting a roadway on the side opposite to the direction of travel, thereby eliminating conflict points which have the potential to produce crashes.



7. **Roundabouts.** Roundabouts also significantly decrease the number of conflict points as compared to traditional intersection design. Acoording to the Federal Highway Administration, "roundabouts are an excellent choice to complement other transportation objectives – including Complete Streets, multimodal networks, and corridor access management – without compromising the ability to keep people and freight moving through our towns, cities and regions, and across the Nation."

7.0 RECOMMENDED ACCESS CONTROL GUIDELINES

The City's access permitting process includes procedures to: 1) accept and review permit applications for access; 2) identify responsibilities of the City and applicant; 3) review development plans associated with the permit application; and 4) coordinate the planning of new and relocated roadways. Although, today, much is known regarding access control methods, the City periodically should form an internal Access Management Team to evaluate and update the permitting and management process.

7.1 GOAL OF ACCESS MANAGEMENT

The ultimate goal of access management guidelines is to support a comprehensive program framed by a uniform application of principles and practices throughout the City and its MPA. Therefore, it is imperative that the City also engage in and maintain an ongoing process of cooperation, collaboration, and coordination with ADOT and the neighboring local governments to ensure zoning and subdivision approvals are consistent with the general principles of access management. Collaborative initiatives will ensure access management through access control is asserted as an appropriate and timely application of State and local powers. General guidance regarding access management with respect to the City's roadway network follows.

- Give high priority to access control initiatives focused on high-speed and high-volume interregional and inter-city roadways.
- Seek to employ the principles, practices, and techniques of access management early in the site plan review process to ensure potential changes in access are fully evaluated and provide a means for initiating changes to improving existing access conditions.
- Focus on strategies to minimize obvious access control situations that represent or have demonstrated qualities of unsafe traffic operations, such as strip commercial areas, where traffic volumes are high and driveways are a frequent occurrence.
- Initiate a review of major arterial roadways with high traffic volumes to identify conflict points that affect vehicles, bicycles, and pedestrians to determine the potential for reducing conflicts through access control improvements.
- Outline and install a formal coordination process with ADOT to ensure improvements to the local roadway network are fully compatible with the functionality of the SHS, and review current connections to determine whether access management methods would aid in reducing congestion and/or improving operational safety.
- Create a unified and systematic citywide approach to roadway classification to promote consistent application of access management principles, specifically defining areas where access can be permitted and where it should be discouraged. This approach would include:
  - Defining access management categories, considering –
    - Level of importance of roadways to the City and regional road networks (i.e., function classification);
    - Roadway characteristics associated with geometric design and traffic operations;
    - Degree of urbanization, or lack thereof, and available land use controls;
  - Establishing permitted access and related access spacing and design for each category; and

- Assigning an access management category to each roadway or roadway segment, as may be appropriate.

7.2 ACCESS MANAGEMENT PERMITTING PROCESS

An Access Permit is required for driveways and private easements/roads that have direct ingress to or egress from a City-maintained roadway. Access to facilities on the SHS should be coordinated with ADOT to ensure full accounting of roadway needs and constraints. The Access Permit customarily would be issued in conjunction with a Construction Permit, which is required for any work within or directly affecting public right-of-way (including guard rails, mailboxes, regulatory signs, and fences). Both permits allow the holder to perform construction of and/or repairs to a road or driveway with access to a public roadway. A copy of the Maricopa Permit Application is included as **Attachment A**.

7.3 GENERAL POLICIES

General access control policies for the City of Maricopa municipal roadway network and connectivity with the SHS within with the City's jurisdictional boundary are presented below.

- Traffic signals should be installed at intersections only when warranted in accordance with criteria provided in the *Manual on Uniform Traffic Control Devices* (MUTCD).
- Left- and right-turn lanes should be provided on all approaches to arterial-arterial intersections. Left-turn lanes should be provided on all arterial approaches to intermediate intersections. Right-turn lanes should be provided at arterial-collector and arterial-local intersections, where warranted by projected traffic demands.
- As new development and redevelopment occurs, existing roadway and driveway access points should be eliminated or consolidated, where it is reasonable and feasible to do so.
- The collector street network of proposed major land developments should provide access to streets that intersect/connect with the City's arterial street system. The review process associated with an Access Permit affecting routes on the SHS must be coordinated through the District Engineer of ADOT's Central District.
- Any proposed median openings along routes on the SHS passing through the City requires application through the District Engineer of ADOT's Central District.
- The minimum spacing of signalized intersections along routes on the SHS and the City's major arterials should be one mile in rural areas and one-half mile in urban areas.

7.4 ACCESS APPLICATION PROCEDURE FOR STATE ROUTES

The police powers of ADOT place the authority to grant or deny access to routes on the SHS with ADOT's District Engineers. As noted earlier, ADOT ultimately intends to formulate and promulgate a Statewide AMP coordinated with the policies of the State Transportation Board. This Plan would provide an access management classification system and design standards for all roadways and highways forming the SHS. The effort also is directed toward developing a comprehensive access management manual to guide the uniform application of access management throughout the State.

Although the Statewide AMP has yet to be developed and promulgated, a presentation of the Intermodal Transportation Division, January, 2014, established three goals for the plan:

- **Planned and Controlled Access** - Establishes a system of access categories which will guide the Department in decisions regarding the level of access to be provided to land abutting state highways.
- **Consistent Statewide Application** - Ensures approaches to state highways are consistent with the intended roadway purpose and the functional level.
- **Achieving Balance** - Maintains the integrity of ADOT's right-of-way and transportation facilities and reduces potential liability while achieving a reasonable balance with the needs of public safety, abutting land development, local road networks and regional mobility

Thus, the intent of ADOT is to provide a systematic approach to balancing the access and mobility necessities of a roadway and adjacent land uses in accordance with established traffic engineering and planning principles.

Therefore, it is imperative that the City of Maricopa maintain an ongoing process of cooperation, collaboration, and coordination with the ADOT District Engineer to ensure zoning and subdivision approvals are consistent with State policies and guidelines – policies and guidelines currently in force and, ultimately, incorporated in the Statewide AMP, when completed. To accomplish this, The City should bring the District Engineer of ADOT's Central District into any discussion of new access to SHS facilities early in the Development Review and Access Permit Review processes. An ongoing partnership with ADOT regarding access control on SHS routes will ensure the Access Permit review process proceeds in a timely manner and the interests of both jurisdictions are upheld. A continuing partnership also will ensure access management is adequately and accurately asserted through appropriate and timely application of State and local powers.

The procedures cited below are to be followed with respect to Access Permit applications affecting routes on the SHS.

- The City informs ADOT of pending developments as soon as possible. This should occur through written notification to the District Engineer of ADOT's Central District.
- The City and ADOT District Engineer coordinate and agree on the access to be allowed. ADOT staff should be given full opportunity to attend and participate in meetings called to address any potential traffic impacts regarding SHS routes through the City.
- Following relevant ADOT and City Traffic Impact Analysis (TIA) Procedures (refer to **Attachment B**), a TIA should be prepared by the party or parties promoting the proposed development. In addition to information required under the referenced TIA Procedures, the TIA should include: type of access requested relative to allowable access; type of proposed traffic control(s); distance to the nearest intersection on SHS routes in both directions; alternative access available; and need for requested access.
- The ADOT District Engineer, upon consultation with the appropriate ADOT Regional Traffic Engineer and local government, approves or denies access.

7.5 ACCESS MANAGEMENT PLANNING

To supplement the citywide guidance, Access Management Plans may be prepared for selected primary streets and travel corridors within the City and for SHS routes. An AMP should include at least the following five components to provide the City with adequate and reliable guidance to: (1) accommodate growth as it occurs and (2) ensure access to new roads added to the municipal roadway network is managed effectively.

- An introduction defining the study corridor and discussing the purpose of the AMP.
- An existing conditions section documenting:
  - Traffic volumes and geometric conditions on the existing or proposed roadway under evaluation; and
  - A comprehensive review of existing roadway access points to identify driveways that have not been permitted and driveways that can be consolidated as redevelopment or new development occurs (Note: Driveways on City streets and SHS routes that have not been permitted should be closed by the City and ADOT, respectively).
- A corridor-specific AMP should include: locations for existing and future signalized intersections locations; driveway access policies; median type and location, if recommended; and median break spacing, as applicable. The AMP should be presented in tabular form and graphically through the use of aerial photos and other graphics, as may be necessary, to provide an adequate description of the proposed actions over which the City intends to assert management of access.
- An implementation section that outlines how the AMP will be carried out, including responsibilities of the City and developers, as well guidance for necessary intergovernmental cooperation and coordination.
- A procedure to adopt the AMP, including how the plan can be updated.

7.6 LAND USE AND LOCAL ACCESS

The City should use its zoning and subdivision powers to influence the location and design of access to the City's major arterial streets and SHS routes. Future access guidelines for various land uses, relative to major City arterials and State routes, should be established to guide and expedite review of Access Permit applications. The Development Review process should be examined to ensure adequate and timely evaluation of Access Permit applications with respect to access to major City arterials and SHS routes. A critical aspect of the Access Permit review process should be whether to maintain or relocate existing access points. The concept of relocating existing access points to maintain minimum spacing between access points must be carefully examined to ensure property rights are upheld.

7.7 ROADWAY DESIGN AND ACCESS MANAGEMENT GUIDELINES

Table 7.1 provides a set of guidelines to be used as a tool for responding to requests for and changes to access on the City's roadway network and SHS routes traversing the City. These guidelines have been adopted as part of the City's Area Transportation Plan. The Guidelines identify recommended spacing of access points, including public streets intersections and private access drives.

The Guidelines also indicate right turns generally are allowed for all roadway classifications for access to public and private driveways. However, the need for dedicated right-turn lanes must be evaluated based on travel speeds, volume, and roadway geometry to ensure turning movements do not severely impeded traffic flows. This is particularly relevant to Parkway and Arterial facilities, which are designed to accommodate a higher volume of traffic over longer distances and at a higher speed of travel. Generally, access to private property is restricted on these higher order facilities unless there is no other reasonable alternative for the property owner.

Recommended spacing for signalized intersections is also indicated. Signalized intersections spacing is important in maintaining traffic flow and minimizing traffic flow conflicts with vehicle queues. Speed and volume are both a consideration with respect to signalized intersections.

A preliminary assessment was completed to identify the anticipated need for, and potential location of, future signalized intersections within the current incorporated area. This assessment was based on a review of the anticipated volume and location of future travel demand associated with buildout of new land uses as cited in the City's general plan. Figure 7.1 illustrates the potential location of future signalized intersections, in response to the anticipated future travel demand, and in conformance with the recommended spacing of signals as cited in Table 7.1. It is important to note that these are recommendations and specific conditions and travel dynamics (e.g., roadway geometry, speed, volume, etc.) may justify different access decisions that may need to be permitted. Variations must be justified through completion of a city-approved Traffic Impact Analysis, the procedures for which are outlined in Attachment B.

Table 7.1 Roadway Design and Access Management Guidelines

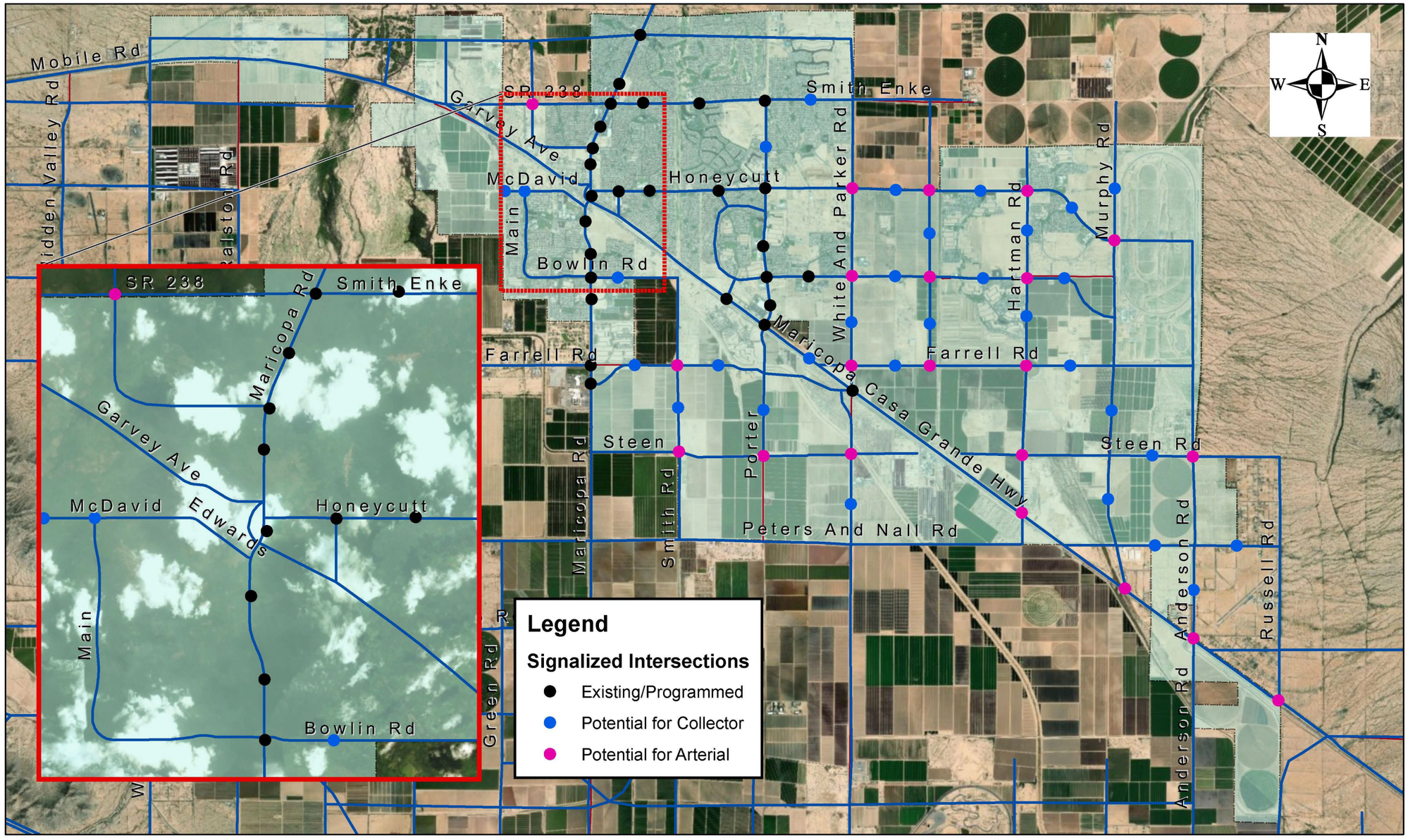
Guidance Criteria	Parkway	Arterials			Collectors		
		Principal Arterial I	Principal Arterial II	Minor Arterial	Collector	Village Collector	60' ROW Collector
Roadway Facility Design Guildlines							
Street Purpose	Mobility	Mobility	Mobility	Mobility	Mobility/Access	Access	Access
Design Speed (Miles Per Hour)	55	45-55	45-55	45	35	35	35
Posted Speed (Miles Per Hour)	50	40-45	40-45	35	30	25	25
Right-of-Way Width (Feet)	200	150	150	110	81.5	108	60
Number of Lanes	6	6	6	4	3	2	2
Street Width (to back of curb) (Feet)	109	109	109	75	51	81	48
Pavement Width (Feet)	2 x 42.5	2 x 42.5	2 x 42.5	57	48	78	45
Lane Width (Directional) (Feet)	12 - 14	12 - 14	12 - 14	12	12	12	11
Median Width/Left-Turn Lane (Feet) (P)=Painted, (C)=Curbed	74C	16C Single Left-Turn; 28C Double Left-Turn	16C Single Left-Turn; 28C Double Left-Turn	16C	14P	14P	None
Design Average Dailyl Traffic (ADT) at LOS 'E' Threshold	70,000	45,000 - 49,200	45,000 - 49,200	29,200	13,000	8,000	4,000
Curb/Edge Treatment	Mountable Curb	Mountable Curb	Mountable Curb	Mountable Curb	Vertical Curb	Vertical Curb	Vertical Curb; Rolled Curb Optional
Pedestrian/Multi-Use Facilities (A)=Attached, (D)=Detached	2 x 12'D (5' Buffer)	10'D with 5' Buffer; 6'D with 5' Buffer	10'D with 5' Buffer; 6'D with 5' Buffer	10'D with 5' Buffer; 6'D with 5' Buffer	10'D with 5' Buffer; 5'D with 5' Buffer	10'D with 5' Buffer; 5'D with 5' Buffer	5'A
Bicycle Facilities	6 1/2-foot lane \1 (Optional)	6 1/2-foot lane \1 (Optional)	6 1/2-foot lane \1 (Optional)	6 1/2-foot lane \1 (Optional)	6 1/2-foot lane \1 (Optional)	6 1/2-foot lane \1 (Optional)	4-foot lane* (Optional)
Parking	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	10' Parallel and 20' Diagonal withiin Striped Shoulder; Diagonal includes 2-foot buffer to Bicycle Lane	Parallel within Unstriped Shoulder
Transit Amenities	Far-Side Bus Pullouts, where warranted \2	Far-Side Bus Pullouts, where warranted \2	Far-Side Bus Pullouts, where warranted \2	Far-Side Bus Pullouts, where warranted \2	Bus Stop	Shuttle or Circulator Service with Bus Stops	Bus Stop
Access Management Guidelines							
Traffic Signal Spacing	1 mile; 1/2 mile, where warranted and permitted	1/2 mile and 1 mile locations, where warranted, fully coordinated and progressed; 1/2 mile Minimum in Urban areas; 1 mile Minimum for highways in rural areas	1/2 mile and 1 mile locations, where warranted, fully coordinated and progressed; 1/2 mile Minimum in Urban areas; 1 mile Minimum for highways in rural areas	1/2 mile and 1 mile locations, where warranted, fully coordinated and progressed; 1/2 mile Minimum in Urban areas; 1 mile Minimum for highways in rural areas	1/2 mile locations: 1/4 mile locations, where warranted	1/2 mile locations: 1/4 mile locations, where warranted	1/2 mile locations: 1/4 mile locations, where warranted
Public Street Access Spacing	1/2 mile Minimum; 1 mile Preferred	1/2 mile Minimum; 1 mile Preferred (1/4 mile, if warranted)	1/2 mile Minimum; 1 mile Preferred (1/4 mile, if warranted)	1/8 milie Minimum; 1/2 mile Preferred	No Restrictions	No Restrictions	No Restrictions
Private Direct Access Spacing	N/A	600 feet Minimum; 1,200 feet Preferred	450 feet Minimum for RI/RO; \3 Limit left-out to 1/4 mile Minimum spacing for major driverways	450 feet Minimum for RI/RO; Limit left-out to 1/4 mile Minimum spacing for major driverways	150 feet Minimum; 300 feet Preferred	150 feet Minimum; 300 feet Preferred	150 feet Minimum; 300 feet Preferred
Driveway Access	RI/RO only; Left turns are discouraged, but can be accommodated by aligning U-turn crossover with side street or driveway	RI/RO Preferred; Full access, where approved, but limited	RI/RO Preferred; Full access, where approved, but limited	RI/RO; Full access, where approved, but otherwise limited	Full access, where approved, otherwise limited	Full access, where approved, otherwise limited	Full access, where approved, otherwise limited
Private Access Geometrics	Right turns allowed; Turn lanes may be required	Right turns allowed; Turn lanes may be required	Right turns allowed; Turn lanes may be required	Right turns allowed; Turn lanes may be required	Right turns allowed; Turn lanes may be required	Right turns allowed; Turn lanes may be required	Right turns allowed; Turn lanes may be required
Private Access - Remarks	Per Arizona Parkway Design Guide	Allowed when no other access is available	Allowed when no other access is available	Allowed when no other access is available	One access per parcel; Two for large developments, when spacing standards can be met	One access per parcel; Two large developments, when spacing standards can be met	One access per parcel; Two large developments, when spacing standards can be met

\1 Includes 1.5' gutter.

\2 The City of Maricopa *Transit Feasibility Review and Implementation Plan* (July 2007) states that "bus stops are generally located on the far side of an intersection to minimize interference with other traffic operations" and that far-side intersection placement of bus pullouts is desirable.

\3 RI/RO means access to/from a property is Right-In/Right Out only.

Figure 7.2 Recommended Locations for Signalized Intersections



Disclaimer: Potential signalized intersection locations are preliminary and are subject to signal warrant validation on a per intersection basis.

7.8 DRIVEWAY SPACING & LOCATION COORDINATION

An important element of the City's access management practice focuses on minimum driveway spacing for all functional classifications of City streets. Standards relating to driveway spacing need to be updated regularly to align with transportation goals for the surface transportation system and current functional classification system roadways defined in the City's Circulation Element and applicable regional and statewide transportation plans.

Specific recommendations regarding access and clearances for six roadway functional classifications are presented in Table 7.1. Exceptions to these guidelines may be made by the City in cases where application of access control practices, standards, or design parameters would create an undue hardship to property owners abutting a City street and good traffic engineering practice can be maintained. However, these guidelines for driveway spacing do not constitute a guarantee by the City to provide access to a property.

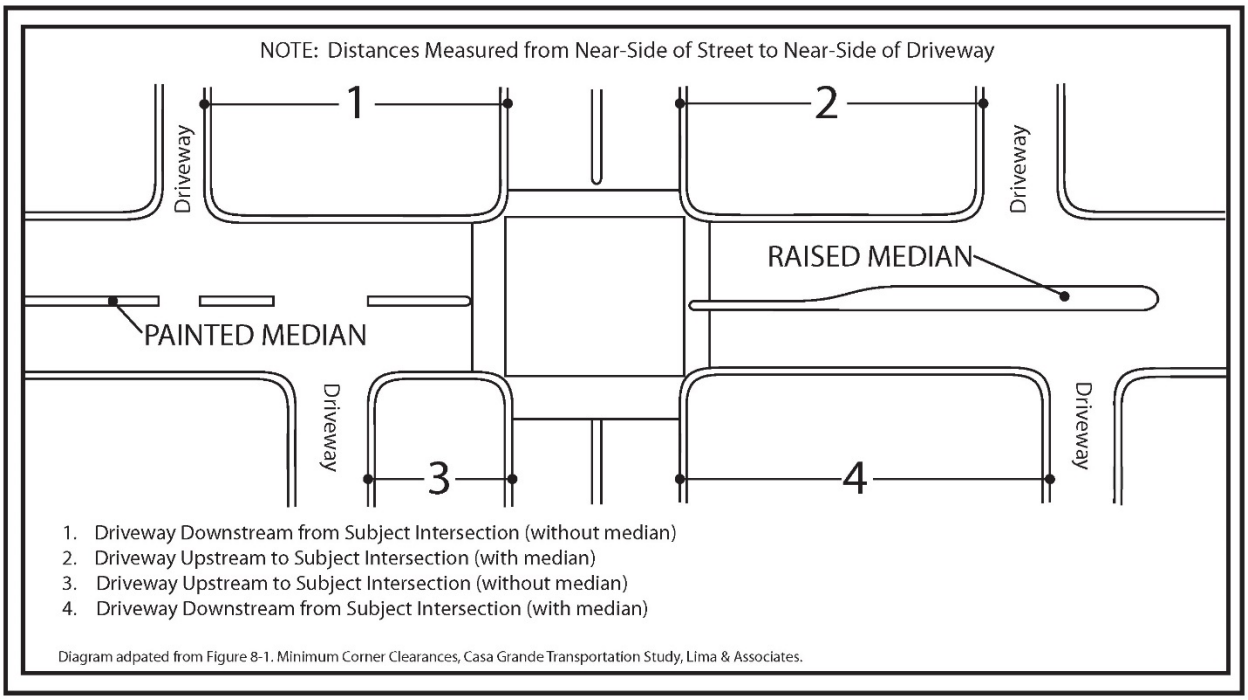
The guidance presented in this section includes recommended minimum corner clearances, which are shown in **Table 7.2** and the accompanying diagram.

Table 7.3
Minimum Clearances

WITH MEDIAN					
Connection Type	≤ 45 MPH Arterial		> 45 MPH Arterial	Collector	Local
	Urban	All Other			
1 Right-In/Right Out (Upstream of Intersection)	125 ft	250 ft	440 ft	85 ft	-
2 Right-In/Right-Out (Downstream of Intersection)	125 ft	250 ft	660 ft	175 ft	-

WITHOUT MEDIAN				
Connection Type	≤ 45 MPH Arterial	> 45 MPH Arterial	Collector	Local
3 Driveway Upstream of Intersection	250 ft	440 ft	175 ft	50 ft
4 Driveway Downstream of Intersection	250 ft	660 ft	175 ft	50 ft

NOTES:
1. Urban is defined as located in an area with a surrounding population of 5,000 or greater.
2. Minimum connection spacing criteria for corner clearance should only be considered when greater spacing cannot be achieved.
3. Minimum spacing criteria only applies to roads in MPO areas (see Appendix) with high density traffic conditions.
4. It is desirable to maximize the distance between the corner parcel connection and adjacent intersections.



1. A request to change access for an existing driveway (or roadway) or access for a new driveway (or roadway) should not be approved if said access violates any one of the following conditions:
   - Within 10 feet (10') of any commercial property line, except when it is a joint-use driveway serving or intended to serve two abutting commercial properties, and access agreements have been exchanged and recorded by the two abutting property owners;
   - Within 25 feet (25') of the end of a guardrail;
   - Within 100 feet (100') of a bridge or other structure, except canal service roads; and
   - Within the minimum spacing as established in **Attachment C**.
2. Requests for a change of access or new access will be denied:
   - When adequate sight distance cannot be provided for vehicles on the driveway (or roadway) that would attempt to access the street – such movements shall be prohibited;
   - When the nearest edge of any driveway flare or radius is less than two feet from the nearest projection of a fire hydrant, utility pole, drop inlet and/or appurtenances, traffic signal, or light standards; and
   - Where parking or loading areas would require backing maneuvers into a public right-of-way, except for single-family or duplex residential uses on local roads.
3. If a property has frontage on more than one street, access will be permitted only on those street frontages where standards provided under these access management guidelines and other applicable City Regulations can be met.
4. If any access point meeting the standards presented herein cannot serve a property:

- The City may designate one or more access points by waiving one or more standards; and
- Designation of an access point(s) with waiver of standards can be based on a traffic safety analysis, operational needs, and conformance to as many of the requirements in these guidelines as possible.

5. The location of access for properties on opposite sides of a roadway or highway shall be coordinated, to the degree practicable, so vehicles moving into and out of the access drive will not be in conflict (i.e., interfere with each other). The following guidelines should be followed in coordinating opposing driveway locations:
   - Driveways should be located directly opposite each other to ensure a single access point is shared with respect to the roadway;
   - Where lots are not sufficiently large to allow access points on opposite sides of the street to be aligned, driveway centerlines not in alignment normally will be offset a minimum of 150 feet (150') on all collector roads and 330 feet (330') on arterial roads – greater distances may be required, if left-turn storage lanes are present; and
   - Joint access may be implemented for two adjacent developments, where the proposed new access will not meet spacing requirements set forth herein, subject to review and approval by the City Engineer.

ATTACHMENTS

ATTACHMENT A

EXAMPLE ACCESS PERMIT APPLICATION

CITY OF MARICOPA
PROUD HISTORY · PROSPEROUS FUTURE

45145 W. Madison Ave.
P.O. Box 610
Maricopa, AZ 85239
Ph: 520.568.9098
Fx: 520.568.9120
www.maricopa-az.gov

ACCESS PERMIT APPLICATION

(For driveway connection to a City-maintained road)

Permit # _____

New ☐ Existing ☐

1. The fee for Access Permit review is $35.00 This fee is doubled if work is performed without a permit.
2. All spaces below must be completed prior to submitting application to City of Maricopa staff.
3. A scaled plan with the exact location of the driveway is required.
4. Schedule an inspection with the Engineering Department prior to construction and at completion.

All inspections should be scheduled at least 72 hours in advance with City of Maricopa staff.

.

Address of Site:

Street _____ City _____ State _____ Zip _____

Legal Description _____

Property Owner _____ Phone _____

Owner's Address:

Street _____ City _____ State _____ Zip _____

Contractor _____ Phone _____ Fax _____

Contractor Address:

Street _____ City _____ State _____ Zip _____

A Grading Permit is required if any of the following conditions apply:

1. Removal or replacement of more than 300 cubic yards of material.
2. Grading of more than 10,000 square feet of area. This is the total disturbed area within the entire project, regardless of ownership. **** If grading is over one (1) acre an SWPPP is required.**

- A Construction Permit is required for any work within the City of Maricopa Right-of-Way (including guard rails, mailboxes, regulatory signs, and fences). **NO OTHER CONSTRUCTION IN THE MARICOPA R.O.W. IS ALLOWED UNDER THIS PERMIT**. (Call the Engineering Department at 520-568-9098).
- The driveway must be inspected by the Engineering Department prior to construction and upon completion.
- An Access Permit is only required for driveways and private easements/roads that are directly off a City maintained roadway.
- This permit allows the above named to perform construction and/or repairs of the driveway. The applicant acknowledges that the permittee is familiar with and agrees to comply with the City of Maricopa Roadway Design Standards and all other requirements.
- Property address must be posted within view of the driveway or roadway to which permit was issued.

PLEASE READ AND CHECK

☐ I hereby acknowledge that I have read this application and state that the above is correct. I agree not to begin this project until this application is approved and a preliminary inspection by the Engineering Department has taken place. I shall comply with the laws of the State of Arizona and the Zoning Regulations and Building Code of the City of Maricopa. Any violation of the above noted terms will cause immediate permit revocation.

☐ I hereby acknowledge that I will not knowingly remove, replace, or alter City property in any way. This includes guard rails, light posts, signs, etc.

Applicant's Signature _____ **Phone** _____ **Date** _____

Print Applicant's Name _____

STAFF USE ONLY

City of Maricopa Staff Approval:

Name	Date	Fee **$35.00**	Receipt #

ATTACHMENT B

MARICOPA TRAFFIC IMPACT ANALYSIS (TIA) PROCEDURES 2015

Technical Memorandum
Regional Transportation Plan Update

Traffic Impact Analysis Guidelines

Prepared for:

CITY OF MARICOPA
PROUD HISTORY • PROSPEROUS FUTURE

City of Maricopa
P.O. Box 610
Maricopa, AZ 85239

Prepared by:

City of Maricopa Transportation Engineering
&

WILSON & COMPANY
ENGINEERS & ARCHITECTS

410 North 44th Street, Suite 460
Phoenix, AZ 85008

September 2008

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

This section has been established to provide uniform guidelines for preparing Traffic Impact Analysis (TIA) for new developments or additions to existing developments within the City of Maricopa. The procedures outlined herein provide the developer (i.e., permit applicant), the developer's consultant, City Council, and City staff with information necessary to provide a balance between land use and transportation infrastructure needs.

2.0 PURPOSE

In general, the purposes of the TIA procedures are to:

- Provide information to the permit applicant on specific requirement of the analysis;
- Ensure consistency in the preparation and review of TIA reports; and
- Identify the necessary infrastructure needed to improve the development;

3.0 REQUIREMENTS

Requirement for a Traffic Impact Analysis

Preparation of a TIA will be required for all new developments, or additions to existing developments, where the ultimate development of the site generates 100 or more peak-hour trips per average weekday.

Requirement of a Traffic Impact Letter

A development that generates less than 100 peak-hour trips per average weekday will be required to submit a Traffic Impact Letter (TIL). A TIL is a letter that examines the trip generated in order to determine if a TIA is required. A TIL would also examine access management and if turn lanes will be required. The specific level of detail for a particular impact letter may vary according to the density of the proposed development, existing and planned development, and the existing roadway conditions

Requirement for Agreement

Those who prepare the analysis must obtain agreement from the Transportation Division on the specific requirements. Traffic analysis for developments on State highways must be performed in accordance with ADOT's *Traffic Impact Analysis for Proposed Development.* The analysis of roadway improvements in the TIA also will follow access management guidelines established for City roadways as discussed in Appendix H, Access Management Plan, of the *Maricopa RTP Update*.

City Authority

The City makes the final decision on requirements of a TIA. A developer will first estimate the number of vehicle trips generated by the development to determine if a TIA is required or a TIL is sufficient. The developer must obtain concurrence from the Transportation Division on the number of trips generated by the development.

Coordination Required

The preparer of a TIA or TIL must coordinate with the Transportation Division and, where appropriate, Pinal County and ADOT. The preparer must submit make contact with the Transportation Division prior to the submittal of the TIA to analyze and agree on specific requirements.

4.0 TIA REPORT CONTENTS

This section specifies the report contents and format that must be followed in preparing a TIA. To enhance consistency and timely review of a TIA, the permit applicant is encouraged to follow the City-prepared report outline shown in Table 1. The following sections provide additional guidance regarding the information and/or data to be reported.

4.9 PROPOSED DEVELOPMENT

A Site Plan is required. The description of the proposed development should provide as much detail as possible including:

- Specific tenants, if known;
- Specific types of uses, such as banks, fast food restaurants, etc.;
- Intensity of each land use in terms of number of dwelling units (DUs) or square foot of gross building area; and
- Special Conditions, e.g., private school without bussing.

The projected opening date for the proposed development must be included. In the case of a large, phased development, the specific project completion dates for each phase also must be included.

4.10 STUDY AREA

The study area will vary according to the extent of the proposed development. A large development will generate more traffic and influence a larger geographical area than a smaller development. Therefore, larger development will have larger relevant study areas. The project type and size of the minimum relevant study area will be determined in accordance with the criteria in Table 2. Permit applicant must provide in the TIA report a description of the existing and expected future land uses in the study area. A map of the study area is required. The preparer of the TIA must contact the Transportation Division to obtain agreement on the study area map.

4.11 ANALYSIS OF EXISTING CONDITIONS

The report must include an analysis of the existing roadway and traffic conditions including a discussion of:

- Physical roadway conditions
- Traffic volumes
- Traffic control of roadways and intersections (stop signs, traffic signals, etc.)

TABLE 4
TIA REPORT OUTLINE

Section	Title/Content	Notes
	Cover/Title Page	
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	Executive Summary	
1	**Background and Scope** Introduction TIA Background and Requirements Study Area Definition (Existing and Future)	
2	**Existing Conditions** Study Area Roadways (Existing & SATS Functional Classifications) Intersection Control Summary Existing Segment ADTs and Intersection Peak Hour TMs	
3	**Project-Related Trip Generation and Distribution** Project Land Use Summary Trip Generation and Pass-By Adjustment Analyses Directional Trip Distribution Analysis Project-Related Intersection Peak Hour Turning Movement Volumes	Document bases for all assumptions Detail rationale/calculations for directional distribution
4	**Background Traffic Volumes** Build-out Year(s) Segment ADTs and Intersection Peak Hour TMs Horizon Year Segment ADTs and Intersection Peak Hour TMs	Discuss relationship between background ADTs and SATS 2020 ADTs and any adjustments required to ensure consistency
5	**Level of Service and Operational Analyses** Existing Conditions on Existing Roadway Network Build-Out Year without Project on Anticipated Roadway System Build-out Year with Project on Anticipated Roadway System Build-out Year with Project and Developer Mitigations Horizon Year with Project on SATS Roadway System Horizon Year with Project on SATS Roadway System and Mitigations	Discuss types/locations/timing of mitigation measures Include queuing analyses and storage lane rqmts Highlight “unacceptable” LOSs
6	**Site Improvements/Mitigations Variances**	Discuss what improvements deviate from City standards/guidelines and their impact on the regional roadway operations; discuss proposed cross sections in relation to functional classifications; discuss additional right-of-way requirements
7	**Project-Specific Required Analyses**	Determined in conference with City
8	**Conclusions and Recommendations**	
	Appendices	As required to support analysis assumptions, findings, and recommendations

TABLE 5
MARICOPA TIA STUDY AREA REQUIREMENTS

Ultimate Development Characteristics	Analysis Years	Minimum Study Area on the City Road(s)
Small development	Opening year Interim year Year 2030	Site access drive Adjacent signalized intersections and/or major unsignalized street intersection
Moderate - single phase 500 – 1, 000 peak-hour trips	Opening year Interim year Year 2030	Site access drive All signalized intersections and/or major unsignalized street intersections within ½ mile
Large - single phase > 1,000 peak hour trips	Opening year Interim year Year 2030	Site access drives - All signalized intersections and/or major unsignalized street intersections within one mile
Moderate or large - multi-phase* * A Master TIA will be required and will need to be updated as each phase develops	Opening year Interim year Year 2030	Site access drives All signalized intersections and major unsignalized street intersections within ½ mile

- Roadway and intersection level of service
- Safety concerns

The description of existing roadway conditions should include:

- Roadways serving the site
- Roadway cross-section and lane configuration
- Lane configuration of intersection approaches
- Posted speed limits
- Location of existing driveways
- Existing traffic signal timing and phasing

The TIA will provide 24-hour traffic volumes on the major roads in the study area. With the approval of the Transportation Division, estimated 24-hour traffic volumes can be used in the case of low volume roads. Recent and available traffic counts can be used, if they are less than one-year old. Several factors may be used to adjust the traffic volumes. Peak-hour turning-movement counts should be taken at all major intersections within the study area. At the discretion of the Transportation Division, the requirement for turning-movement counts at low-volume intersections may be waived.

Capacity analysis will be conducted for all required locations using the procedures prescribed in the latest edition of the Highway Capacity Manual (HCM). The existing roadway system should be reviewed from a safety perspective. The three-year accident history should be analyzed to identify accident problems and patterns.

4.12 FUTURE TRAFFIC FORECASTS

Traffic volumes for the future analysis years will be estimated for the major roadways in the study area. Both site and non-site traffic will be estimated. The estimate of Interm-Year and Year 2030 future traffic volumes will include:

- Generation of site traffic;
- Estimation of non-site traffic (including pass-by trips, if applicable to the type of land use);
- Distribution of site traffic to other land uses and activity centers; and
- Assignment of site traffic to the study area roadways.

Estimates of site traffic will be done for each analysis year. Traffic volumes for the site will be estimated using the trip generation rates or equations published in the latest edition of the *Trip Generation Handbook* published by the Institute of Traffic Engineers (ITE). The methods used to calculate traffic generation must be consistent with the methods included in the most recent ITE Trip Generation Handbook. This includes, but is not limited to, proper choice of average rate or the regression equation. If there is insufficient data, local data for the study will need to be collected. Local or other trip generation rates may be used, if approved by the Transportation Division.

The distribution of site traffic to and from potential origins and destinations must be estimated. The distribution should be indicated in a tabular form or illustrated in a figure as percentages of total site traffic.

Estimated site traffic volumes will be assigned to the roadways using the distributions previously discussed and added to the non-site traffic. The non-site or background traffic is the traffic that would be on the roadways, if the site were not developed. The non-site traffic may be estimated using:

- Trends and growth rates;
- Other approved TIAs;
- Combination of trends and the estimation of other proposed land uses; and
- Application of the Maricopa traffic forecast model.

The site and non-site traffic volumes will be combined to give the total estimated traffic volumes on the roadways.

4.13 TRAFFIC AND IMPROVEMENT ANALYSIS

Roadways in the study area will be analyzed using the estimated total traffic volumes. The analysis of roadways and intersections will include:

- Site access;
- Level of service of the roadways and intersections;

- Traffic control needs;
- Improvement analysis;
- Traffic safety;
- Improvements costs; and
- Compliance to Access Management.

4.14 SITE ACCESS

Access drives should be analyzed with respect to capacity, traffic operations, and safety considerations. Access drives should be designed and located in accordance with the City of Maricopa Design Manual, Access Management Plan contained in the *Maricopa RTP Update*, and applicable Maricopa Association of Government (MAG) Standards.

4.15 LEVEL OF SERVICE

Level of service (LOS) analysis will be conducted for major intersections for the following conditions:

- Base roadway conditions without site traffic for the analysis year(s);
- Base roadway conditions with total traffic (non-site plus site traffic) for the analysis year(s); and
- Roadway and intersection improvements, if required, for analysis year(s).

Base roadway conditions include the existing conditions plus any programmed improvements that will are expected to be completed by the analysis year(s).

The LOS analysis for signalized and unsignalized intersections will be conducted in accordance with procedures outlined in the latest edition of the HCM.

4.16 IMPROVEMENT ANALYSIS

Roadways and intersections within the study area will be analyzed with and without the proposed development to identify any projected impacts concerning LOS and safety. The following conditions need to be noted:

- Where the roadway will operate at LOS 'D' or better without the development, the traffic impact with the development on the highway will be mitigated to LOS 'D'; and
- Where the highway will operate below LOS 'D' in the horizon year(s) without the development, the traffic impact with the development will be mitigated to provide the same LOS at the horizon year(s).

Roadway improvements will be required, if the roadway or intersections will operate at LOS 'D' or better without the improvement, but will operate at LOS 'D' or worse with the improvement. For a Limited TIA, the improvement analysis should focus on whether the existing surface type/condition is appropriate for the proposed development.

4.17 TRAFFIC CONTROL NEEDS

The TIA will indicate the appropriate type and location of traffic control, such as stop signs or traffic signals. If a traffic signal is proposed, the signal must meet traffic signal warrants. Also, if a signal is proposed, the TIA must discuss the following:

- Location of the signal in relation to intersections and access drives;
- Traffic signal actuation and phasing;
- Traffic signal progression, if appropriate;
- Interconnect needs; and
- Pre-emption, if required.

4.18 TRANSPORTATION SAFETY

The TIA will include a review of roadways and site access for safety, including the following considerations:

- Access drives designed to permit vehicles to enter the site without impeding traffic;
- The need for auxiliary speed-change lanes;
- Adequate storage length for turning vehicles;
- Adequate sight distance at intersections and access drives;
- Alignment of intersections and driveways opposite the site's access drives where possible;
- Analysis of three years of accident data;
- Special signage;
- Pedestrian circulation; and
- Language for provisions of transit facilities or infrastructure.

4.19 IMPROVEMENT COSTS

The TIA will include estimated costs of the proposed improvements and will recommend the allocation of these costs among the developer, City, County, State, and other jurisdictions, as appropriate.

4.20 CERTIFICATION

The TIA will be prepared under the supervision of a Professional Engineer (Civil) registered in the State of Arizona. The report must be sealed and signed.