

CITY OF PEORIA, AZ

Access Management Guidelines

2011

CITY OF PEORIA

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1.0 INTRODUCTION

2011 Access Management Guidelines
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Constantly growing traffic congestion, concerns over traffic safety, and the increasing cost of upgrading roads have generated interest in managing the access to the roadway system. Access management attempts to balance the need to provide good mobility for through traffic with the requirements for reasonable access to adjacent land uses

The most important concept in understanding the need for access management is that through movement of traffic and direct access to property are in conflict. An effective access management program will accomplish the following:

- 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;
- Providing turning lanes, designing driveways with large turning radii, and restricting 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.

2.0 FUNCTIONAL CLASSIFICATION

The purpose of this section is to discourage the use of local streets for cut through traffic while maintaining the overall connectivity of the roadway system. In addition to the standards outlined in the Infrastructure Design Guidelines, the provisions of this section are intended to improve the safety and convenience for walking and bicycling; facilitate emergency access; reduce vehicle miles traveled; help preserve the use of major roadways for through traffic by providing alternative routes for short local trips and reduce the need for continued road widening which divides neighborhoods with wide expanses of pavement that are difficult and hazardous to cross. Further, it is expected that these provisions will reduce environmental damage by allowing more compact layouts of streets and lots.

TABLE 1. FUNCTIONAL CLASSIFICATION	
Freeway	A major highway that provides access via interchanges only.
Major Arterial	A roadway of regional importance intended to serve high volumes of traffic traveling relatively long distances. The roadway is also access controlled and primarily intended to serve through traffic.
Minor Arterial	A roadway that is similar in function to major arterials, but operated under lower traffic volumes, serves trips of shorter distances, and provides a higher degree of property access than major arterials.
Major Collector	A roadway that provides for traffic movement between arterials and local streets and carries moderate traffic volumes over moderate distances.
Minor Collector	A roadway that is similar in function to a major collector, but carries lower traffic volumes over shorter distances and has a higher degree of property access. Minor Collectors may also provide direct access to abutting properties except individual residences.
Local Street	A roadway intended to provide access to abutting properties that tends to accommodate lower traffic volumes, serve short trips, and provide connection to collector streets. The roadway also provides mobility within a neighborhood.
Rural Street	Similar to a local roadway, but in a rural setting versus an urban or suburban environment.

- A. Roadways under the jurisdiction of the City of Peoria shall be classified for the purposes of access management.
- B. The City of Peoria's functional classification system is provided in the City of Peoria General Plan.
- C. Existing and planned medians on all major arterials, minor arterials, major collectors, and minor collector roadways.
 - Medians should be identified by type;
 - Non-conforming medians should be identified for future consolidation or closure.
- D. The Engineering Director shall be responsible for assigning an access classification to roadway or roadway segments. Factors to be considered in the assignment of an access classification shall include, but not be limited to:
 - The current and planned functional classification of the roadway;
 - Existing and projected traffic volumes;
 - Growth management objectives, and;

- The location within a Traditional Neighborhood Development (TND).
- E. Separation between access points on all State Highways shall be in accordance with the Arizona Department of Transportation Access Management Guidelines.
- F. Alleys may be included but shall not be required in residential, commercial, or industrial subdivisions, except that alleys shall be required in all subdivisions where:
- The subdivision abuts an existing, partially dedicated alley(s);
 - Extension of an alley(s) from an adjoining subdivision is required to complete the established circulation pattern.

3.0 CONNECTIVITY

3.1 CONNECTIVITY WITH SURROUNDING STREETS

- A. Local streets must provide for intra-and inter-neighborhood connections to knit developments together, rather than forming barriers between them. The street configuration within each parcel must contribute to the street system of the neighborhood.
- B. Potentially signalized, full movement intersections of major or minor collectors with arterial streets should be provided at every 2,640 feet or 1/2 mile along arterial streets, unless rendered infeasible due to unusual topographic features, existing development or a natural area or feature.
- C. Additional non-signalized, potentially limited movement, collector intersections with arterial streets should be spaced at intervals not to exceed 1,320 feet or ¼ mile between full movement collector intersections, unless rendered infeasible due to unusual topographic features, existing development or natural features.
- D. Street alignments shall be extended to the tract boundary to provide future connection with adjoining unplatted lands, unless otherwise indicated by the Engineering Director.
- E. Local streets shall be extended to provide access between adjoining neighborhoods at appropriate intervals.
- Half streets at subdivision boundaries shall be discouraged except where necessary for continuation of existing patterns;
 - Platted half-streets abutting the tract to be subdivided and furnishing the sole access to residential lots shall be platted within the tract.

3.2 COMMERCIAL AND RESIDENTIAL DEVELOPMENT CONNECTIVITY

- A. All new developments should be designed to discourage the use of local streets by cut-through traffic while maintaining the overall connectivity with the surrounding system of roadways. This may be accomplished through the use of modified grid systems, T-intersections, roadway jogs, or other appropriate traffic calming measures within the development.

3.3 BICYCLES/PEDESTRIAN ACCESS AND CONNECTIVITY

- A. Opportunities for bicycle/pedestrian mobility should be enhanced through site design strategies and bicycle/pedestrian access ways that seek to shorten walking distances and increase accessibility between neighborhoods, schools, recreation areas, community centers, shopping areas or employment center.
- All pedestrian crossings should be provided to meet the requirements of the Americans with Disabilities Act (ADA);
 - Where the Engineering Director determines that a bicycle/pedestrian connection is desirable and that such access is not conveniently provided by sidewalks adjacent to the streets, the Engineering Director may require the developer to reserve an unobstructed easement to provide such access.
- B. Commercial developments shall be designed to support bicycle and pedestrian mobility.
1. Site plans for proposed commercial developments shall address steps to incorporate bicycle and pedestrian mobility. The Site Plan shall address connectivity to nearby residential developments, neighborhood community centers, churches, parks, other commercial and office developments, or other compatible land uses.
 - Safe and convenient pedestrian ways should be provided between parking areas and from the building entrance to surrounding streets, external sidewalks and development outparcels.
 - Pedestrian circulation should be provided between abutting commercial properties through the use of walkways and similar pedestrian-oriented facilities. Bicycle circulation and connectivity between commercial properties should be considered, where feasible.
 - Pedestrian facilities may be incorporated into required landscape buffers.
 - Pedestrian ways may be constructed of paver blocks, concrete, or other suitable materials. Pedestrian ways that traverse parking areas should include reflective striping.
 2. Pedestrian refuge shall be incorporated in the design of channelized medians.
 3. Bicycle and pedestrian amenities, such as benches, water fountains, or bicycle racks, should be provided for commercial developments of 10,000 square feet or more of gross floor area in accordance with Table 2.

TABLE 2	
Square Feet/ Gross Floor Area	Required Bicycle and/or Pedestrian Amenity
10,000 to 50,000	One bike rack, one bench
50,001 – 100,000	Two bike racks, two benches
100,001 or more	Four bike racks, four benches, outdoor water fountain

- Bicycle racks should be located within fifty (5) feet of the main entrance of the primary building.
- Commercial developments of 100,001 or more square feet should incorporate shaded areas into the site plan to facilitate pedestrian and bicycle friendly areas. Shower facilities should also be encouraged for use by the bicycle riders
- Priority should be given to usage of U-type bicycle racks spaced at 18" per the manufacture's specifications.

4.0 CONNECTION SPACING

4.1 FUNCTIONAL AREA OF AN INTERSECTION

- A. For the purpose of the access management plan, the functional area of intersection shall be measured as the minimum physical length, including the taper, maneuver distance plus the queue storage.
- B. New connections shall not be permitted within the functional area of an intersection, as established by the minimum connection spacing for each roadway, unless:
 - No other reasonable access to the property is available, including side street access and/or joint and cross access with adjacent properties, and,
 - The Engineering Director determines that the connection does not create a safety or operational problem upon review of a site-specific study of the proposed connection prepared by a State of Arizona registered engineer and submitted by the applicant.
- C. If proposed connections to both the primary and secondary roadway do not meet established spacing standards, then the property shall take access from the roadway with the lower functional classification.
 1. An exception may be made by the Engineering Director if:
 - a. The proposed spacing of the connection to the primary roadway exceeds the proposed spacing of the connection to the secondary roadway by 20 percent or more; or,
 - b. The analysis provided in the site traffic impact analysis demonstrates:
 - The need for access to the primary roadway; and;
 - How sufficient mitigating access management measures, as determined by the Engineering Director, shall be implemented.

4.2 SIGNAL SPACING STANDARDS

- A. The City of Peoria encourages the uniform signal spacing in accordance with a roadway's functional classification.
- B. The City will identify current and future locations of signalized intersections.
 - The Engineering Director may permit a signalized intersection in prohibited areas, as a necessary measure to address safety and operational issues;

- If a variance is warranted, then the Engineering Director will consider consolidating closely spacing signalized intersections to facilitate consistent, uniform signal spacing.
- C. Requests for signalized intersections require a site traffic impact analysis to be conducted by an engineer hired by the applicant. The site TIA must address:
- Speed, cycle length, and minimum progression efficiency for both the peak and off peak periods;
 - The computer software to be used;
 - Traffic volumes;
 - Development conditions;
 - Length of roadway segment to be evaluated; and
 - Other relevant factors, as specified by the Engineering Director and/or Engineering Department.

4.2.1 INTERSECTIONS

- A. The City of Peoria shall maintain a functional classification system and intersection hierarchy.
1. The location and spacing of proposed and existing signalized and unsignalized intersections shall be contingent on the roadways' functional classification. The separation between access points on roadways shall meet or exceed the minimum spacing standards for that classification.
 - The Engineering Director shall approve any deviations from the established signal spacing standards.
 - Deviations from the proposed spacing standards exceeding 10 percent shall not be permitted.
 - An exception may be made by the Engineering Director if a non-conforming signal and/or median opening is closed to accommodate the proposed signalized intersection.

TABLE 3			
FUNCTIONAL CLASSIFICATION		MINIMUM SPACING STANDARD	
Roadway A	Roadway B	Signalized Connections	Unsignalized Connections
Major Arterial	Major Arterial	1 mile	1 mile
Major Arterial	Minor Arterial	1 mile	1 mile
Major Arterial	Major Collector	½ mile	½ mile
Major Arterial	Minor Collector	½ mile	½ mile
Minor Arterial	Minor Arterial	1 mile	½ mile
Minor Arterial	Major Collector	½ mile	½ mile
Minor Arterial	Minor Collector	None*	¼ mile
Major Collector	Major Collector	None*	¼ mile
Major Collector	Minor Collector	None*	1/8 mile

*Signalized intersections at these locations are not desired.

2. New or reconstructed intersections should be limited to locations that preserve functional classification system and maintain the intersection hierarchy.
 3. The City shall maintain the intersection hierarchy by avoiding local street connections to arterials that fail to conform to adopted spacing standards or that pose safety or operational problems.
 4. Collector streets shall intersect with major collectors or arterial streets at safe and convenient locations.
 5. Minor collector and local residential access streets shall connect with surrounding streets to permit the convenient movement of traffic between residential neighborhoods or facilitate emergency access and evacuation, but such connections shall not be permitted where the effect would be to encourage the use of such streets by substantial through traffic.
- B. All proposed intersections shall be evaluated to minimize conflicts and designed for anticipated traffic movements.
1. Intersection evaluations shall address:
 - a. Traffic factors, including:
 - Capacities;
 - Turning movements;
 - Operations;
 - Vehicle speed;
 - Pedestrian and bicycle facilities and movements;
 - Transit operations;
 - Collision history;
 - Auxiliary lanes; and
 - Connections in the functional area of the intersection.
 - b. Physical factors, including:
 - Topography;
 - Existing conditions;
 - Channelization requirements; and,
 - Sight and stopping distance.
 - c. Human factors, including
 - Driver habits;
 - Decision and reaction times; and,
 - Natural paths of movements.
- C. Analysis of proposed intersections shall include turn lane queue lengths for all arterials and critical intersections.
- D. Median openings that encourage U-Turn movements shall be considered before signaling an intersection.

4.2.2 DRIVEWAY CRITERIA

Access Spacing

Minimum access spacing provides with sufficient perception-reaction time to address one potential conflict area at a time. Guidelines for minimum unsignalized driveway or local street spacing should consider the speed of the major roadway, stopping sight distance, the elimination of right-turn conflict overlays and the functional area of the access points. When a driveway is to be located upstream of a major intersection, the possibility of weaving, or lane shifts, to make a left turn at the major intersection should also be considered.

The functional area of any access point should be kept clear of any additional points of access. Guidelines for minimum access spacing are presented in Table 1.

Table 1. Minimum Access Spacing (feet)

<u>Speed (mph)</u>	<u>Spacing</u>
30	150
35	180
40	230
45	260
50	290

Corner Clearance

Corner clearance is the distance between an access drive and the nearest cross road intersection. It should provide drivers with adequate perception-reaction time to access potential downstream conflicts and is aimed at preventing the location of driveways within the functional area of an intersection. It will also minimize driveway/intersection conflicts by preventing blockage of driveways upstream of an intersection due to standing traffic queues. Minimum driveway setback distances should take into consideration typical traffic queue lengths while permitting sufficient movement to driveway traffic. The corner clearance on the upstream side of the intersection should be longer than the longest expected queue, or at a minimum, the distances indicated in Table 2. On the downstream side, the minimum distance should conform to Table 2. Driveways on corner lots should be located on the lesser street and near the property line most distant from the intersection.

Table 2. Minimum Corner Clearance (feet)

<u>Speed (mph)</u>	<u>Distance From Near Side of Street to Near Side of Access Driveway</u>	
	<u>Major Generator</u>	<u>Minor Generator</u>
30	200	145
35	295	230
40	390	310
45	425	325
50	450	345

Major generators are those developments that are estimated to generate 500 vehicle trips or more during either of the a.m. or p.m. peak hours. Other development projects are considered minor generators.

Vehicle service stations, which are almost always on corner lots, will want to have up to two driveways on each street. Only one driveway on the major street, located near the property is desirable. Depending on the classification of the intersecting street, one driveway is desirable, two are maximum.

On streets with posted speed limits or prima facie speed limits of less than 30 mph the minimum access spacing may be reduced to 50 feet. Other provisions of Peoria Detail PE-251-3 (Driveway Criteria) will remain in effect.

Notes:

Location and spacing of driveways affect the safety and functional integrity of streets and highways. Too many closely-spaced streets and driveways increase accident potential and delays. Increasing the spacing and providing a greater separation of conflict points, reduce the number and variety of events to which drivers must respond. This translates into fewer accidents, travel time savings, and preservation of capacity.

Reasonable spacing between driveways is important to the safety and capacity of a road, as well as the appearance of a corridor. Managing driveway spacing is essential on roads intended for higher speeds. At higher speeds drivers have less time and distance to react to unexpected situations.

Inadequate corner clearances can result in poor traffic operation (ingress and egress) along with safety backups and capacity problems. Driveways located too close to intersections can add to traffic congestion.

References:

1. Institute of Transportation Engineers (ITE), Traffic Engineering Handbook, 5th Edition, Washington, DC, 1999.
2. Access Management Manual, Transportation Research Board (TRB), 2003.
3. American Association of State Highway and Transportation Officials (AASHTO "Green Book"), A Policy on Geometric Design of Highways and Streets. Washington, DC, 2001.
4. Federal Highway Administration, "Access Management, Location and Design". National Highway Institute Course No. 15225, June 1998.
5. U.S. Department of Transportation – Federal Highway Administration, Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), Washington, DC 2003.

4.3 INTERCHANGE AREAS

- A. Driveway connections within 825 feet of an interchange will not be permitted, unless no other reasonable access to the property is available including side street access and/or joint and cross access with adjacent properties.

- B. Where interchange area spacing standards cannot be met, the Engineering Director may permit one of the following deviations:
 - Joint and/or cross access
 - Directional connections (right-in, right out only)
- C. Signalized intersections shall be located a minimum of 1,200 feet from interchanges.
- D. Median openings are prohibited within 900 feet of an interchange.
- E. Any permitted deviation from the corner clearance spacing requirements must be located either at or within 10 feet of the property line furthest from the intersection.

5.0 MEDIANS

5.1 MEDIAN OPENINGS

- A. Median openings are prohibited:
 - In the functional area of an intersection or other median opening; or,
 - Within the physical length of a left-turn bay
- B. Median openings should not be constructed:
 - Across exclusive right turn lanes; or
 - Across regularly forming queues from neighboring intersections
- C. Median openings may not exceed the distance specified in the Infrastructure Design Guidelines Manual.
 - Median openings on major arterials may deviate up to 15 percent from the requirements.
- D. Full median openings shall be located, at a minimum:
 - Every 1/2 mile on major and minor arterials
 - Every 1/4 mile on collectors that are not anticipated to become arterials.
 - The Engineering Director may permit median openings at smaller intervals for built-up areas.
- E. Directional median openings shall be limited to every 1/4 mile on arterials and major collectors.
 - The Engineering Director may permit median openings at smaller intervals for built-up areas.
- F. Roadway improvements proposed to any corridor or any development or redevelopment of a property within 600 feet or 1/8 mile of an existing median opening shall trigger an analysis and review of the median opening and median type.
 - The Engineering Director shall review the analysis to determine if any modifications to the median are required to ensure safe operation and continued traffic flow and consistency with the access management Plan.

- G. Median opening spacing shall be contingent on an evaluation of the following criteria addressed in the site plan:
- Stopping sight distance
 - Intersection sight distance
 - Operating speeds
 - Length of turn lanes
 - Right turn conflict overlap
 - The size and type of traffic generator
 - The potential number of left turns into driveways
 - Length of frontage along the street's right-of-way line of the property proposed to be served
 - Distance of the proposed opening from adjacent intersections, median openings, and other connections
 - The length and width of the left-turn storage lanes should be estimated using standard engineering practices.
 - Traffic controls
 - Queue storage
 - Perception/reaction distance
- H. Median openings should reflect street or block spacing and the access classification of the roadway. Spacing between median openings shall be adequate to allow for the introduction of left turn lanes
- I. Full median openings shall be consistent with traffic signal spacing criteria
- J. The Engineering Director may require separate U-turn median openings at the following locations:
- Locations beyond intersections to accommodate minor turning movements not otherwise provided in the intersection or interchange area.
 - Locations just ahead of an intersection to accommodate U-turn movements that would interfere with through and other turning movements at the intersection
 - Locations occurring in conjunction with minor crossroads where traffic is not permitted to cross an arterial but instead is required to turn right, enter the through traffic stream, weave to the left, U-turn, and then return.
 - Locations on high-speed or high-volume arterials where a crossroad with high-volume traffic, a shopping area, or other traffic generator that needs a median opening nearby and additional median openings would not be practical.
 - Locations where regularly spaced median openings facilitate maintenance operations, policing, repair service of stalled vehicles, or other roadway related activities.

- K. The length of a median opening shall provide for 50 foot turning radius left-turning vehicles.

Driveways should be offset from median openings by the following: At least 60 m (200 ft) when two low-volume traffic generators are involved, The greater of 60 m (200 ft) or the established median opening spacing interval when one major traffic generator is involved, and at least two times the established median opening spacing interval when two major traffic generators are involved.

5.2 MEDIAN WIDTHS

- A. Median widths shall be determined by the median function as well as right-of-way acquisition, maintenance, and construction costs.
- The minimum median widths by function are detailed in Table 4;
 - The Engineering Director shall make the final determination on the required median width.
- B. The minimum median width must meet or exceed the standards outlined in the Infrastructure Design Guidelines
- C. U-Turns from the inside (left-most) left turn bay shall be encouraged on arterials and major collectors where medians widths are sufficient to accommodate dual left-turn lanes.

TABLE 4		
Median Function	Minimum Width (in feet)	Desired Width (in feet)
Separation of opposing traffic Streams	6	10
Pedestrian refuge and room for signs and appurtenances	8	14
Storage of left-turning vehicles		
Single left-turn bay	14	18
Dual left-turn bay	25	30
Protection for passenger vehicles crossing or turning left onto mainline	25	30
Design direction openings for selected ingress/egress movements only	18	30

6.0 INTERNAL SITE CIRCULATION AND OUTPARCELS

- A. For the purpose of access management and in the interest of promoting unified access and circulation systems, development sites under the same ownership or consolidated for the purposes of development and comprised of more than one building site shall be considered unified parcels. Accordingly, the following requirements shall apply:

- The number of connections permitted shall be the minimum number necessary to provide reasonable access to the overall site and not the maximum available for that frontage;
 - All easements and agreements required by the access management Plan and the land development regulations shall be provided;
 - Access to outparcels shall be internalized using the shared circulation system and designed to avoid excessive movement across parking aisles or queuing across surrounding parking and driving aisles;
 - The owner and all lessees within the affected area are responsible for compliance with the requirements of this code and both shall be cited for any violation.
- B. Where abutting properties are in different ownership and not part of an overall development plan, cooperation between the various owners in development of a unified access and circulation system is encouraged.
- C. Access to outparcels shall be internalized using the shared circulation system of the principle development or retail center.
1. The Engineering Director may grant direct access from a collector or arterial to an outparcel, when the outparcel and adjacent development meet or exceeds the following standards established:
- Connection Spacing Requirements;
 - Internal Site Circulation;
 - Driveways in the Functional Area of an Intersection;
 - Joint and Cross Access Requirements; and;
 - Access is taken from the roadway with the lower functional classification.
- D. Access to outparcels shall be designed to avoid excessive movement across parking aisles and queuing across surrounding parking and driving aisles.

7.0 FRONTAGE ROADS

- A. Newly installed or retrofitted frontage roads shall be designed and operated as one-way facilities.
- Frontage roads that begin and terminate at each block are preferred and shall be constructed, where feasible.
 - Continuous frontage roads are discouraged unless the frontage road is designed to provide alternate access to a freeway or parkway.
- B. Connections from the arterial roadway to the frontage road shall be permitted as merging and diverging movements only.
- Signalized intersections between the arterial roadway and the frontage roadway are prohibited.
- C. The separation of frontage roads at cross streets should be maximized to ensure sufficient storage for crossroad traffic between the frontage road and arterial.
- The separations between the arterial and the frontage road shall meet or exceed the minimum spacing standards set forth in Table 5 where the arterial and frontage road connect with a perpendicular side street.

- D. A landscaped median between the arterial and the frontage road is required. The landscaped median shall be a minimum of 20 feet wide to provide pedestrian refuge and safe placement of traffic control devices and landscaping.
- The Engineering Director may permit an exception up to 10 feet where conditions warrant.
- E. Pedestrian and bicycle movements are encouraged on the frontage roads.
- F. Parking may be permitted where the frontage roads traverse residential areas.
- G. Major activity centers that front along any arterial roadway should incorporate a reverse frontage road into the site plan.
- Frontage roads or additional access points will not be granted where a reverse frontage road is feasible.

TABLE 5		Minimum Separation *
FUNCTIONAL CLASSIFICATION		
Main Roadway	Perpendicular Roadway	
Arterial (Major)	Arterial (Major)	660 feet
Arterial (Major)	Arterial (Minor)	660 feet
Arterial (Major)	Collector (Major)	300 feet
Arterial (Minor)	Collector (Major)	300 feet

* Between the Main Arterial and Frontage Road