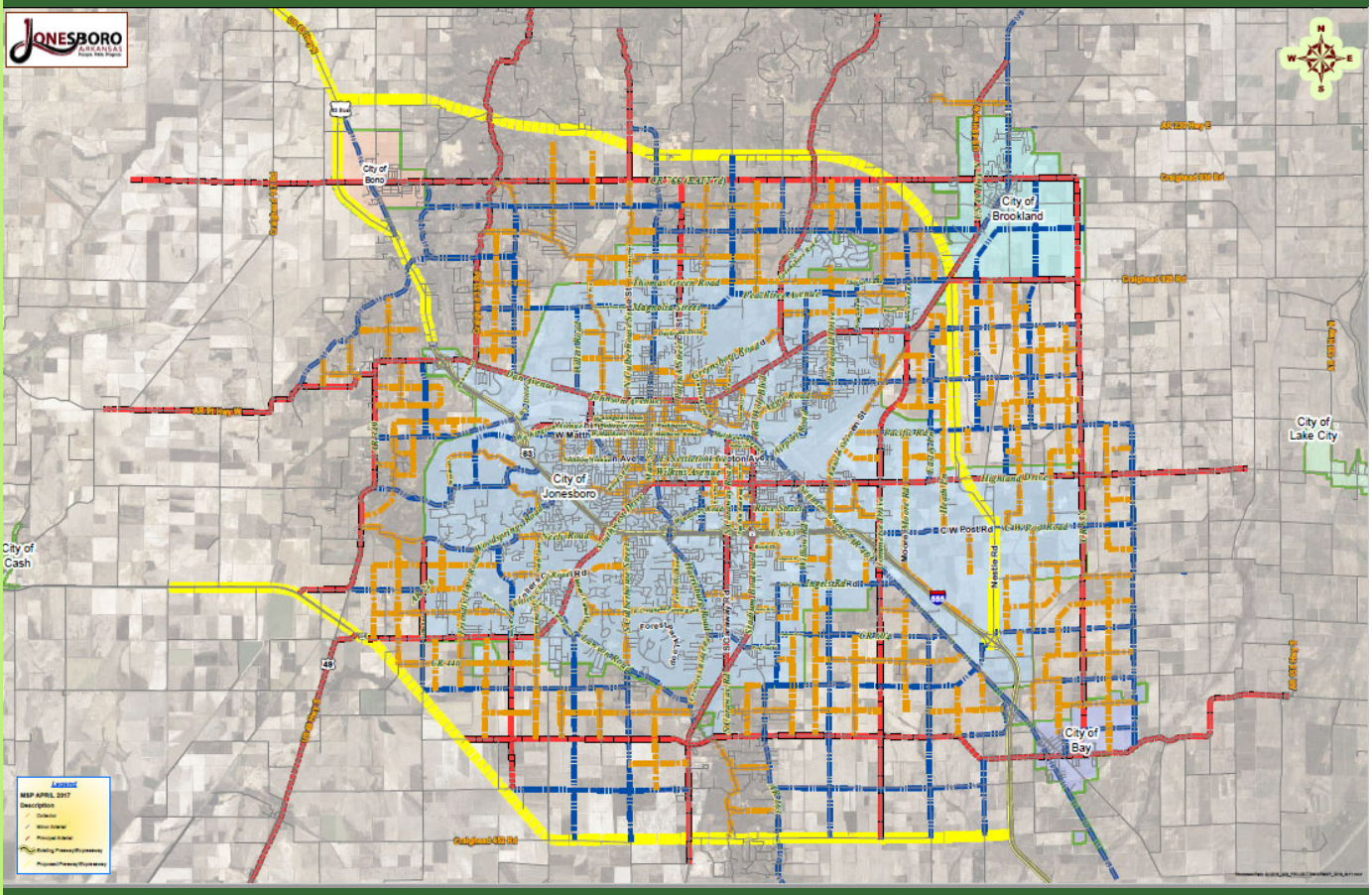
MASTER STREET PLAN



Jonesboro, Arkansas

Municipal Center

300 S. Church St.

www.jonesboro.org

January 2020

MASTER STREET PLAN COMMITTEE

DECEMBER 2019

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INTRODUCTION

The *Master Street Plan of Jonesboro, Arkansas* (*Plan*) is the official guide for the City of Jonesboro, Arkansas (City) and the Jonesboro Metropolitan Area Planning Commission (MAPC) in making decisions regarding land development proposals and street improvements within its planning jurisdiction. The *Plan* is designed to provide for the orderly growth and development of the City, particularly concerning the future location and function of its street system.

The street system strongly influences land use patterns and urban activities. Likewise, the type and intensity of land development influence the operation of the street system. For this reason, decisions that affect land use and the street system should be guided by a general plan for the City, and the overall goals and objectives of this general plan should be realized by conformance with the plan and with the enforcement of zoning, subdivision and other regulations adopted by the City.

The primary objectives of the *Plan* are:

- To functionally classify each roadway in the street network;
- To identify the approximate location or conceptual alignment of any new roadways to be added to the street network;
- To provide typical roadway sections, design criteria, and right-of-way widths for each roadway classification; and,
- To recommend general standards to guide street and roadway improvements and new construction.

Since it is intended that this plan be reviewed and amended at least every two (2) years as more detailed traffic studies and corridor specific planning is completed.

The locations of classified streets which do not physically exist at the time of *Plan* adoption are shown as general corridor locations. When an area develops which includes a proposed street, the MAPC will approve that street's specific location, taking into consideration both topography and economics. Further, the MAPC may approve revisions to the stated standards and alignments at the time of subdivision, in order to address site-specific concerns and interests while assuring that the goals of the plan are achieved.

Note that the intent of this plan is not to dictate what improvements are to be constructed as land is subdivided. Rather, it is to preserve sufficient right-of-way so that the desired facilities shown in the typical roadway sections can be constructed as they become necessary.

SECTION 1: LEGAL AUTHORITY AND RESPONSIBILITES

Preparation

Arkansas municipalities of the first class and second class derive their authority to prepare and adopt a master street plan for the municipal planning area from Arkansas Code (A.C.A.) §14-56-414(d), which states:

> (1) Master Street Plan. The commission may prepare and adopt a master street plan which shall designate the general location, characteristics, and functions of streets and highways.
>
> (2) (A) The plan shall include the general locations of streets and highways to be reserved for future public acquisition.
>
> (B) The plan may provide for the removal, relocation, widening, narrowing, vacating, abandonment, and change of use or extension of any public ways.

The "commission" in this case is the MAPC, which was established by Ordinance 1141 of 1966. The role of the MAPC was subsequently clarified by Ordinance 1212 of 1968 and Ordinance 1224 of 1999.

The *Master Street Plan of Jonesboro, Arkansas* is composed of both the text that follows in this document and the map entitled, *Master Street Plan Map, Jonesboro, AR*. It is developed for the City of Jonesboro and any extraterritorial jurisdiction it may choose to exercise in accordance with Act 1053 of 2013, which amended A.C.A §14-56-413 to allow cities with population greater than 60,000 to prepare plans, ordinances, and regulations for an area two miles beyond the corporate limits.

Implementation

Implementation of the Master Street Plan is accomplished at both the state and local government levels. A.C.A. §14-56-417 states what the City may do at the local level:

> (1) (A) Following adoption of a master street plan, the planning commission may prepare and shall administer, after approval of the legislative body, regulations controlling the development of land.
>
> (B) The development of land includes, but is not limited to:
>
> (i) The provision of access to lots and parcels;
>
> (ii) The extension or provision of utilities;
>
> (iii) The subdividing of land into lots and blocks; and
>
> (iv) The parceling of land resulting in the need for access and utilities.
>
> (2) (A) The regulations controlling the development of land may establish or provide for the minimum requirements as to:

(i) The information to be included on the plat filed for record;

(ii) The design and layout of the subdivision, including standards for lots and blocks, street rights-of-way, street and utility grades, consideration of school district boundaries , and other similar items; and,

(iii) The Standards for improvements to be installed at the developer at his or her own expense such as:

(a) Street grading and paving;
(b) Curbs, gutters and sidewalks;
(c) Street lighting, street trees; and
(d) Other amenities.

(3) (A) The regulations may permit the developer to post a performance bond in lieu of actual installation of required improvements before Final plat approval by MAPC.

(B) They may provide for the dedication of all rights-of-way to the public.

The City may also:

- Establish setback lines parallel with street rights-of-way (A.C.A. §14-56-304); and,
- Control entry to streets and roadways (A.C.A. §14-56-419).

Additionally, if it chooses to exercise its extraterritorial jurisdiction under A.C.A. §14-56-413, the City has authority to approve the platting of streets in unincorporated areas and may authorize them to be filed for record; however, Craighead County must determine whether to receive the dedication and future maintenance responsibility.

Adoption

The Master Street Plan is adopted by the process outlined in A.C.A. §14-56-422, which states:

All plans, recommended ordinances, and regulations shall be adopted through the following procedure:

(1) (A) The planning commission shall hold a public hearing on the plans, ordinances, and regulations proposed under this subchapter.

(B) Notice of public hearing shall be published in a newspaper of general circulation in the city at least one time fifteen days prior to the hearing.

(C) Notice by first class mail to the boards of directors of all school districts affected by a proposed plan, ordinance, or regulation shall be provided sufficiently in advance to allow representatives of all affected school districts a reasonable opportunity to submit comments on any proposed plan, ordinance or regulation.

(2) Following the public hearing, proposed plans may be adopted and proposed ordinances and regulations may be recommended as presented or in modified form by a majority vote of the entire commission.

(3) Following its adoption of plans and recommendations of ordinances and regulations, the commission shall certify adopted plans or recommended ordinances and regulations to the legislative body of the city for its adoption.

(4) The legislative body of the city may return the plans and recommended ordinances and regulations to the commission for further study or recertification or by a majority vote of the entire membership may adopt by ordinance or resolution the plans and recommended ordinances or regulations submitted by the commission. However, nothing in this subchapter shall be constructed to limit the city council's authority to recall the ordinances and resolutions by a vote of a majority of the council.

(5) Following adoption by the legislative body, the adopted plans, ordinances and regulations shall be filed in the office of the city clerk. The city clerk shall file the plans, ordinances, and regulations as pertain to the territory beyond the corporate limits with the county recorder of the counties in which territorial jurisdiction is being exercised.

SECTION 2: ROAD CLASSIFICATIONS AND DESIGN STANDARDS

Functional Classification

Functional classification is used to designate the intended purpose or function of roadways based on the character of service they are intended to provide. The following classifications are used in this Plan:

Freeways and Expressways provide high-speed travel through the urban area. Freeways maintain this high level of service by limiting access to adjacent land. Access is provided by freeway interchange ramps that provide a transition for movements between the two roadways. Access on expressways is partially controlled and may include signalized intersections and turn-around median breaks

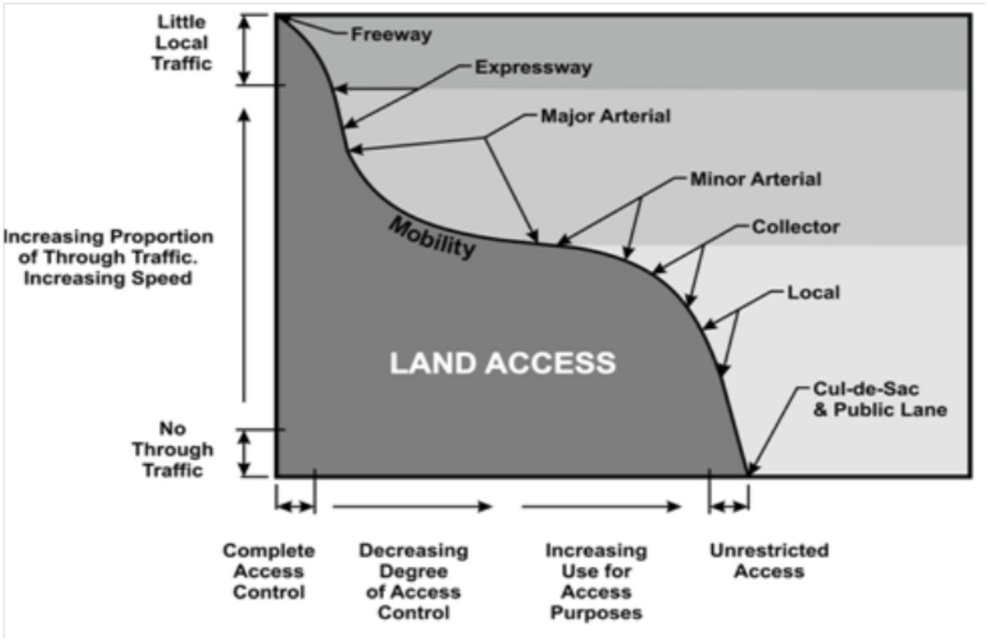
Principal Arterials provide both long distance connections through the urban area and to major traffic generators within the community. Roadways are designated principal arterials to imply the need to focus more on moving traffic rather than providing direct access to adjacent land. Traffic management techniques used to maintain a high level of traffic capacity on these roadways include the use of medians, restricting curb cuts per some spacing policy, and limiting the use of traffic signals to the intersection with other significant roadways.

Minor Arterials function similarly to principal arterials, but operate under lower traffic volumes, serve trips of shorter distances, and provide a higher degree of property access than principal arterials.

Collectors provide for traffic movement between arterials and local streets. They carry moderate traffic volumes over moderate distances and have a higher degree of property access than arterials.

Local Streets serve the lowest traffic volumes. Low traffic volumes combined with slow travel speeds help to create a good residential setting. New developments should be reviewed to avoid creating cut-through streets that become commuter routes that generally lower quality of life for residents,

The functional classification of the roadway determines the spacing of the road from other roadways, and the cross-section and other design elements of the roadway. The functional classification also determines the level of access to the property served by the roadway, as shown in the following figure.



Roadway Spacing

The concept of roadway spacing is closely linked with functional classification. In order to ensure an efficient roadway system, roads that are able to carry a larger volume of traffic at higher speeds should be appropriately spaced throughout the city. A well-connected system of collector roads helps complete the system.

In general, principal arterials should be placed every three to four miles and minor arterials should be spaced at one mile intervals from other arterials (principal or minor). Collector streets should be spaced roughly one-half mile from arterials. Local streets complete the network, with a block spacing of 300-500 feet in business districts and 250-600 feet in residential neighborhoods.

Undeveloped areas or unplanned areas of the *Master Street Plan Map* should be laid out in accordance with these recommendations to help provide connectivity and prevent or reduce traffic and congestion.

CRITERIA FOR DESIGN STANDARDS

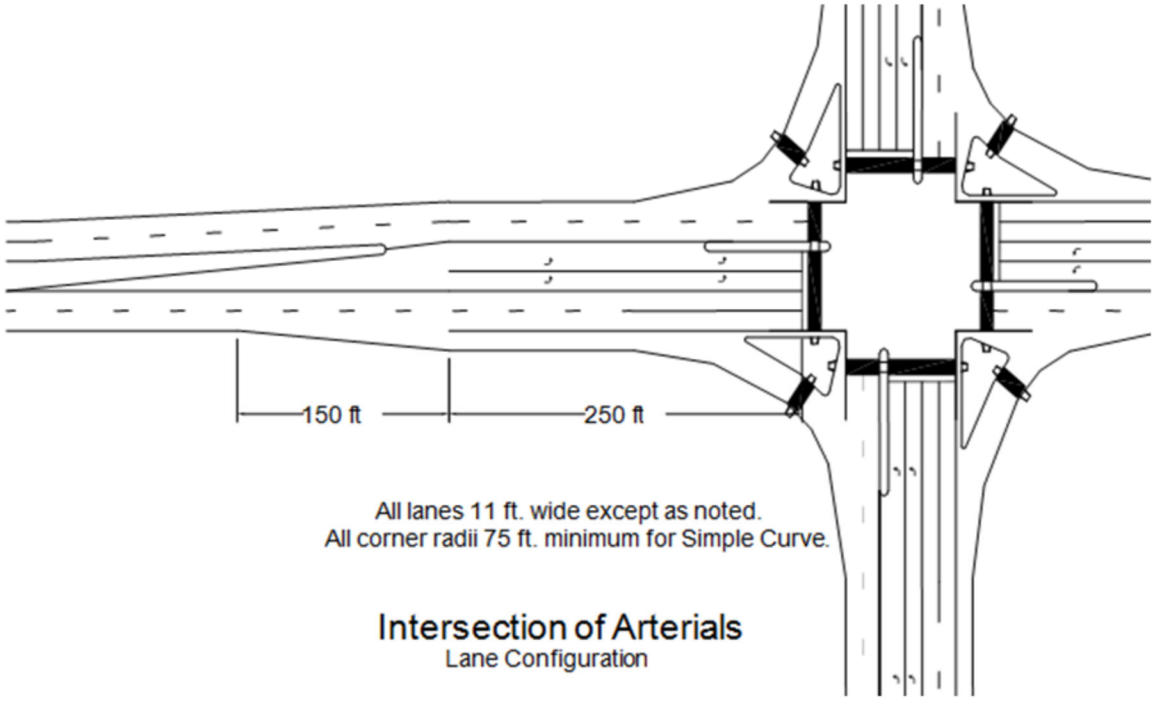
Street design standards promote traffic safety and continuity in street improvements and orderly development of the street system. Right-of-way widths accommodate adequate space for travel lanes plus adequate space between the curb of the traffic lane and the adjacent property line to allow for placement of pedestrian ways and utility lines for water, gas, electricity, telephones, cable TV, etc. Typical standards and cross sections for each road classification are presented in the following subsections. The MAPC, with the advice of City Staff through platting, site plan review, and the conditional use permit processes may approve variances from design standards presented herein.

The City will require additional right-of-way when it is apparent that grade problems, horizontal curve problems, intersections, floodway or other constraints require greater rights-of-way to

permit construction. The City also may require additional right-of-way and additional pavement width adjacent to parcels related to a particular development application, where increased traffic demands additional road capacity as determined by the City Engineer.

The City may accept less right-of-way on a particular roadway or roadway section when it has been demonstrated through engineering design that the proposed right-of-way is adequate for all elements of the required roadway section including any drainage and utility improvements. Any reduction in right-of-way must be approved by the City Engineer and the Jonesboro City Water and Light Engineering Services Director.

At the intersection of Arterial and Collector Streets, the City may require additional right-of-way if the anticipated turning movements warrant extra lanes. Each intersection will be reviewed on its own merits at the time of application to the City. The intersection right-of-way requirement shall generally not exceed 120' for a depth of 250 feet from the point of intersection of right-of-way lines as shown in the figure below.

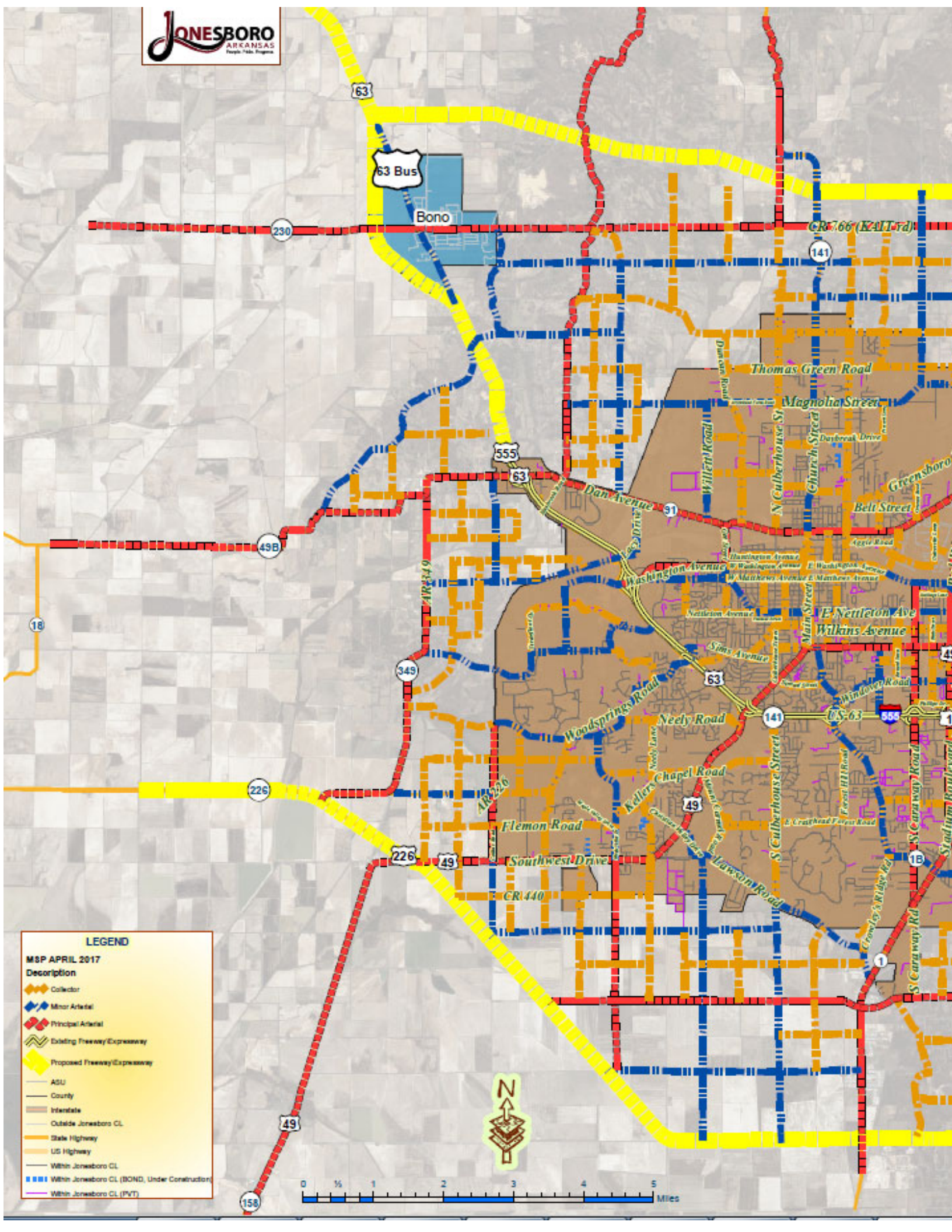


Traffic Calming

All new residential and non-residential developments shall include traffic calming measures on each street, excluding arterial streets, within the development. The intent of the traffic calming devices is to maintain traffic at the design speed for the facility. The location and type of traffic calming measures shall be subject to approval by the City Engineer. Traffic calming measures include but are not limited to: curb extensions, chicanes, splitter islands, traffic circles, roundabouts and changes in horizontal alignment.

Please see the Institute of Transportation Engineer's book Traffic Calming: State of the Practice Chapter 10 "Traffic Calming in New Developments" for more information on appropriate traffic calming measures.

The intent of the cross sections in the sections to follow, are to be used as a guide to plan and design streets within the City of Jonesboro. All new street construction and major street expansion shall be designed using the following cross sections as a guide. Any deviation from the cross section must be approved by the Traffic Control Committee.


JONESBORO
ARKANSAS
63
63 Bus
Bono
230
CR 766 (KAIT rd)
141
Thomas Green Road
Magnolia Street
555
63
Dan Avenue
Willett Road
N Culberhouse St
Church Street
Greensboro
Belt Street
91
49B
Washington Avenue
AR 349
18
E Nettleton Ave
Wilkins Avenue
Main Street
Nettleton Avenue
Sims Avenue
349
63
Windover Road
US-63
Woodsprings Road
Neely Road
141
555
226
AR 226
Keller Chapel Road
49
S Culberhouse Street
Flemon Road
226
49
Southwest Drive
Lawson Road
CR 440
1B
Crowley's Ridge Rd
1
49
158
LEGEND
MSP APRIL 2017
Decription
Collector
Minor Arterial
Principal Arterial
Existing Freeway/Expressway
Proposed Freeway/Expressway
ASU
County
Interstate
Outside Jonesboro CL
State Highway
US Highway
Within Jonesboro CL
Within Jonesboro CL (BOND, Under Construction)
Within Jonesboro CL (PVT)
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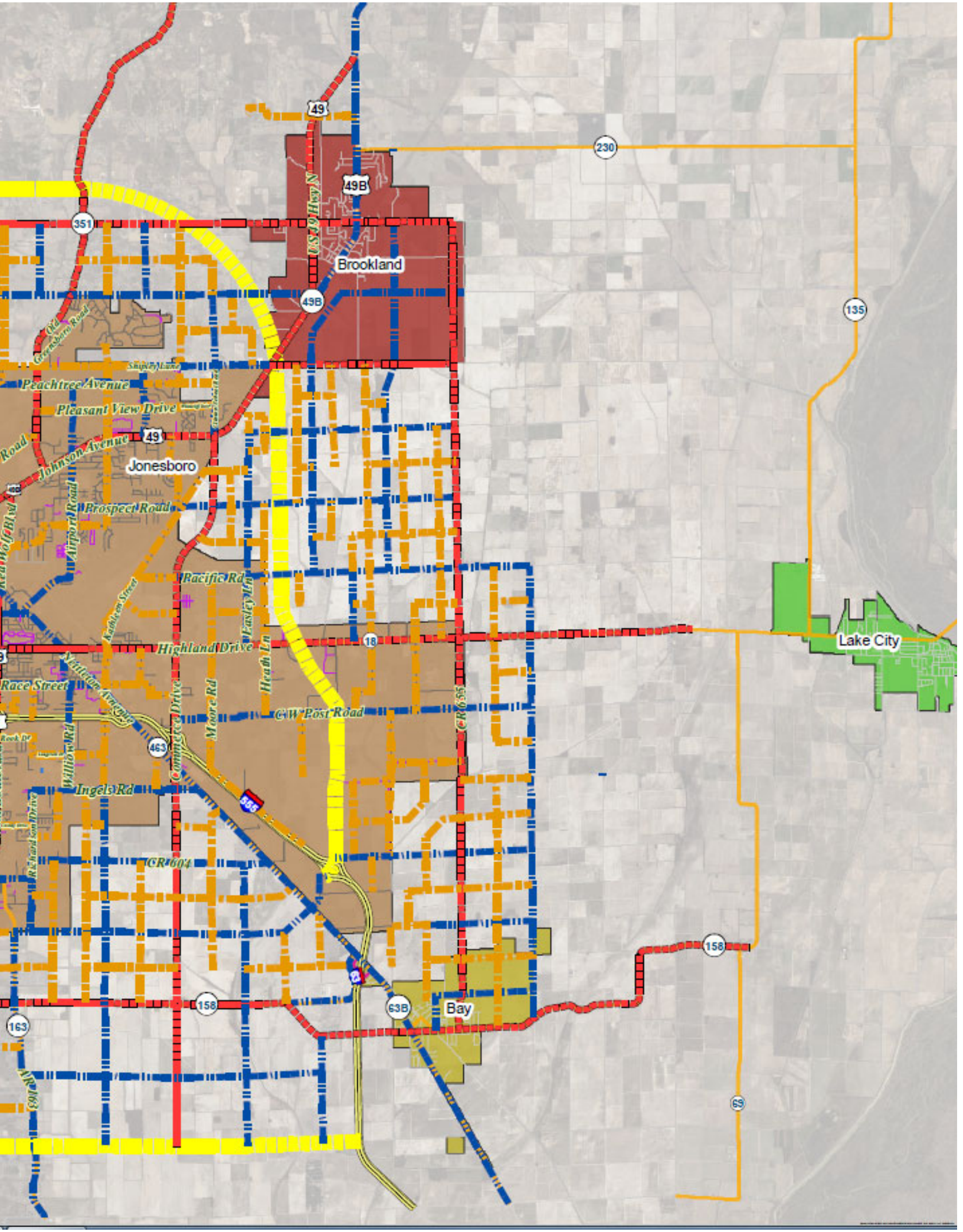
Miles


49
230
49B
351
Brookland
49B
135
Peachtree Avenue
Pleasant View Drive
49
Johnson Avenue
Jonesboro
Prospect Road
Pacific Rd
Lake City
18
Highland Drive
Race Street
Heath Ln
Moore Rd
GW Post Road
463
Ingels Rd
CR 604
158
63B
Bay
158
163
63

FREEWAY

FUNCTION: Freeways are generally part of the Interstate Freeway Network, and their design standards are established by the federal government. Because Freeways are intended to serve through long distance trips, they are always designed as full access control roads (no direct access). The spacing of Freeways is variable since they relate to regional transportation needs.

DESIGN: Design considerations for this road class are not included as these are determined by the Federal Highway Administration and the Arkansas Department of Transportation (ARDOT).

EXPRESSWAY

FUNCTION: Expressways are devoted to movement of traffic with little or no access function. This road class is intended to provide a high level of service to through long distance trips within and around the urban areas. Partial access control is used with wide medians and a right of way of 200 feet or more. Future widening to six lanes plus left and right turn lanes are included in the design. Right of way may vary due to topography and connections with other roads. The spacing of Expressways is variable since they relate to regional needs.

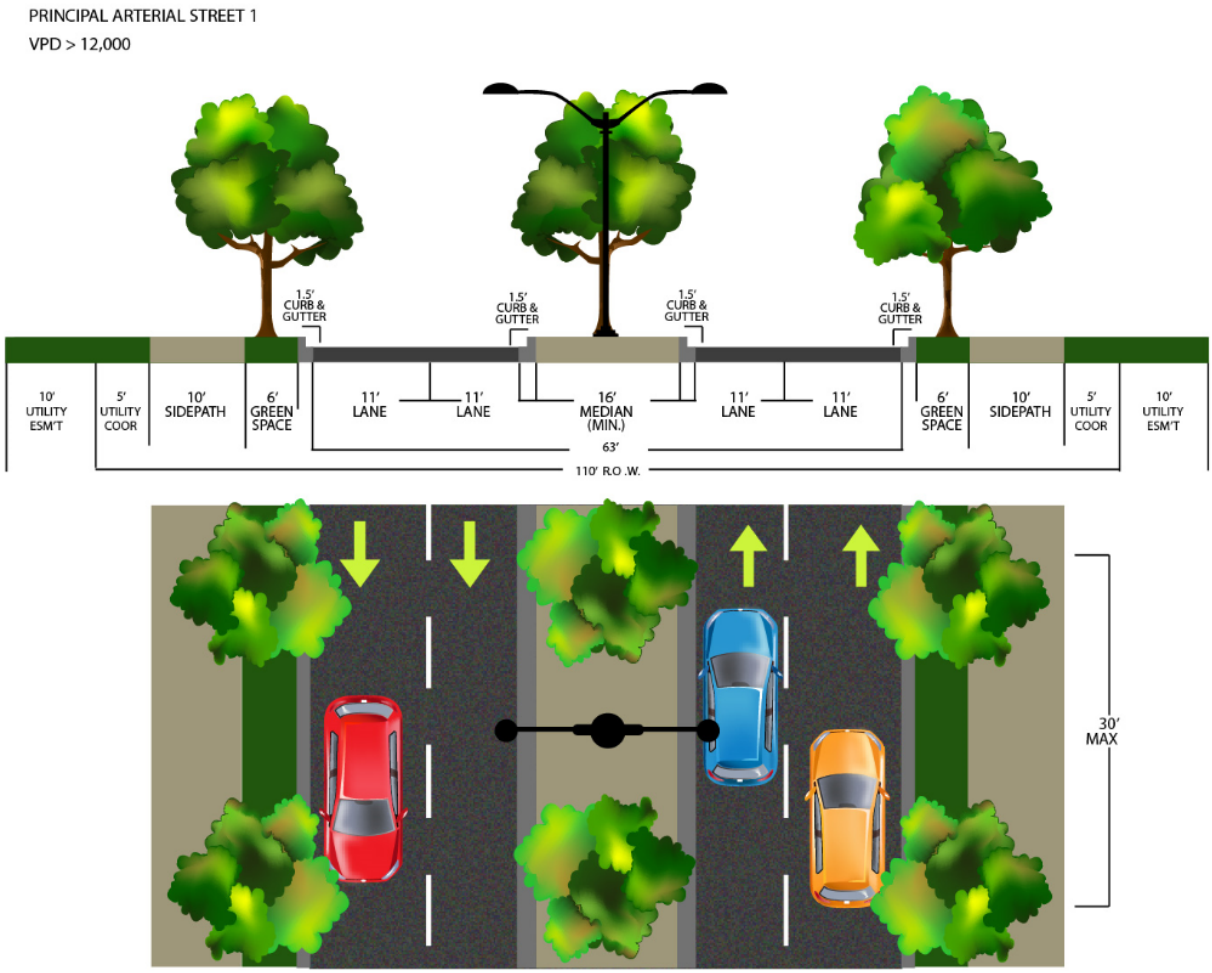
Direct access to abutting property is discouraged except for major commercial centers and breaks in the median are allowed only at intersections with collector or higher classification roads. Special engineering studies have or will be performed for these facilities in order to ensure that specific alignments and rights of way are established prior to development.

DESIGN: Expressways should be designed as designated by Federal Highway Administration and ARDOT.

PRINCIPAL ARTERIAL

FUNCTION: The primary function of a Principal Arterial is to serve through traffic and to connect major traffic generators or activity centers within an urbanized area. Since these roads are designed for through traffic and are generally located three or more miles apart, dedication of additional right-of-way is required to allow for future expansion to four through lanes plus left and right turn lanes. At intersections with Collector Streets or other Arterials (principal or minor), additional right-of-way may be required if the anticipated turning movements warrant extra lanes.

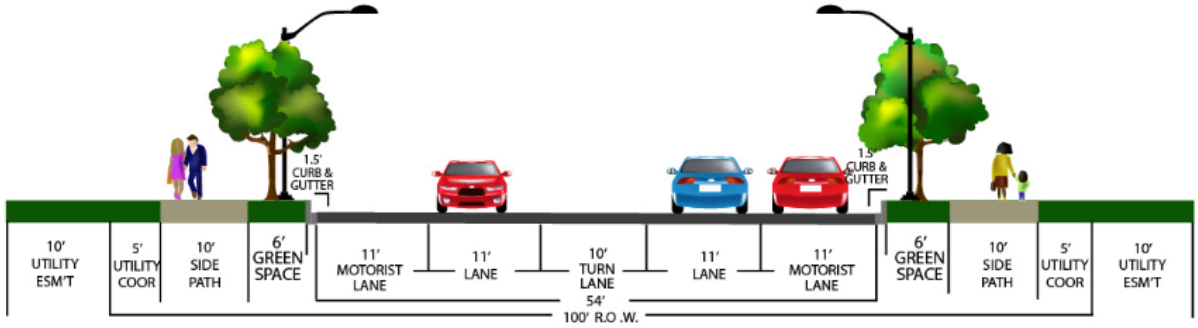
DESIGN: The standard Principal Arterial is to be used in all cases except where City Staff and the MAPC find that an unusual condition occurs. In such cases, the Other Principal Arterial

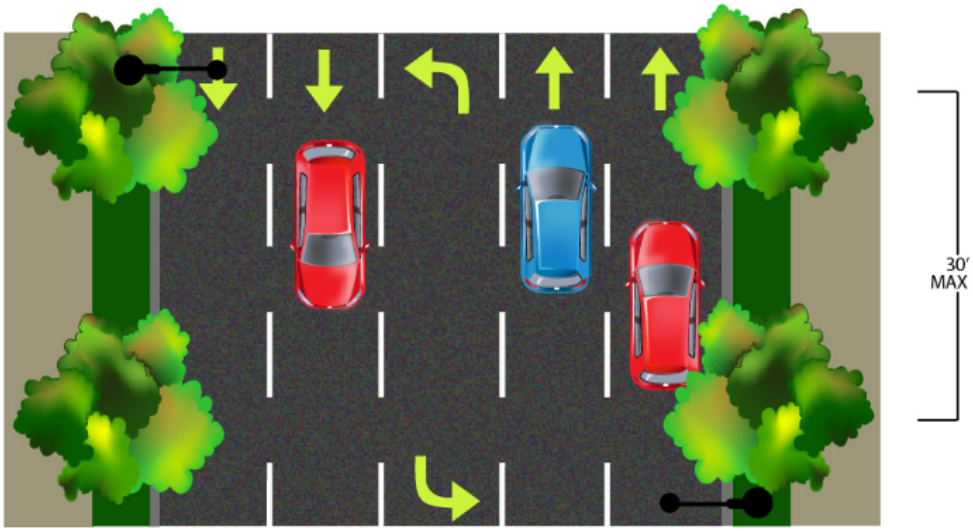


Design Option provided in this section may be used. Cross-section selection shall be based

on traffic impact analysis. Design in accordance with AASHTO policy on Geometric design of highways and streets (current edition).

PRINCIPAL ARTERIAL STREET 2
Existing Routes





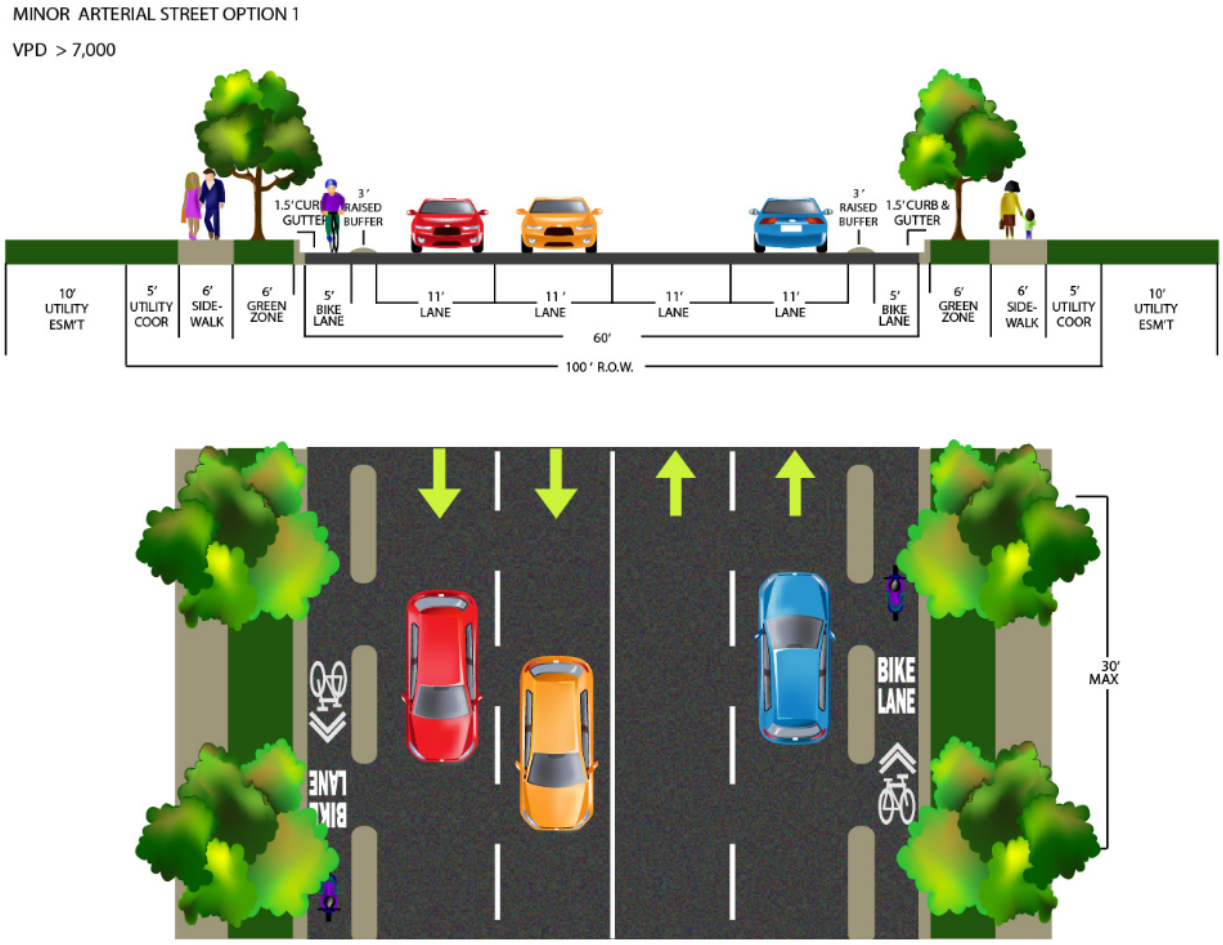
Note: Where VPD is >12,000 and speed is ≥ 35 mph principal cross section should be utilized.

OTHER PRINCIPAL ARTERIAL DESIGN OPTION:

:

MINOR ARTERIAL

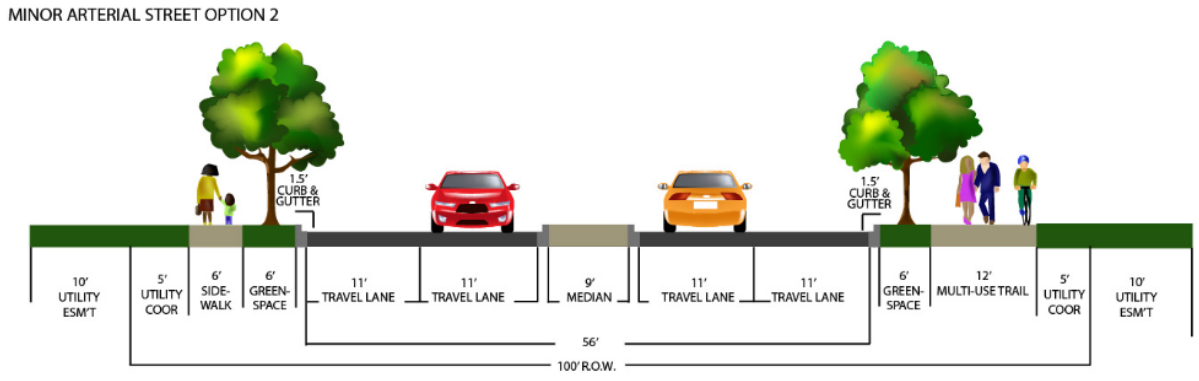
FUNCTION: Minor Arterials provide the connections to and through an urban area. Their primary function is to provide short distance travel within the urbanized area. Since a Minor Arterial is a high volume road, a minimum of 4 travel lanes is required. At intersections with Collector Streets or other Arterials (principal or minor), additional right-of-way may be required

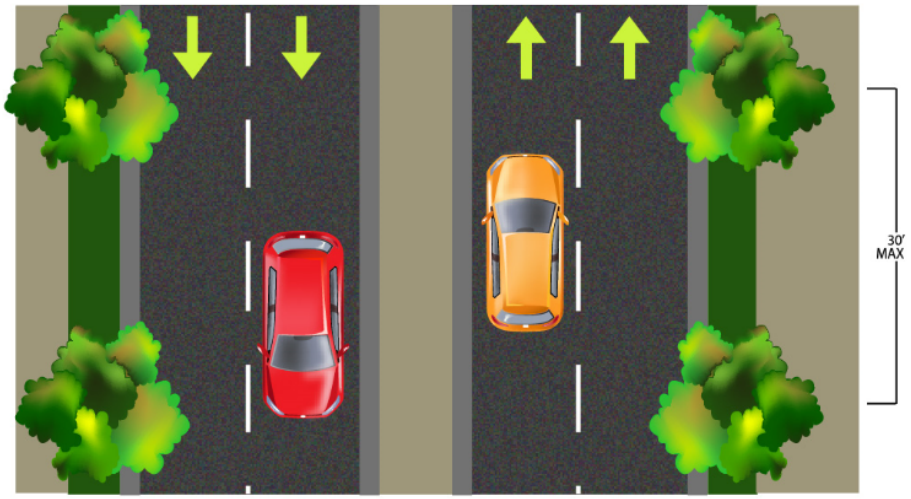


if the anticipated turning movements warrant extra lanes.

DESIGN: Cross-section selection shall be based on anticipated traffic volume and speed limit, or traffic impact analysis, if applicable. Design in accordance with AASHTO policy on Geometric design of highways and streets (current edition).

Note: Where VPD is > 7,000 and speed is <35 mph, three foot wide raised buffers should be used.

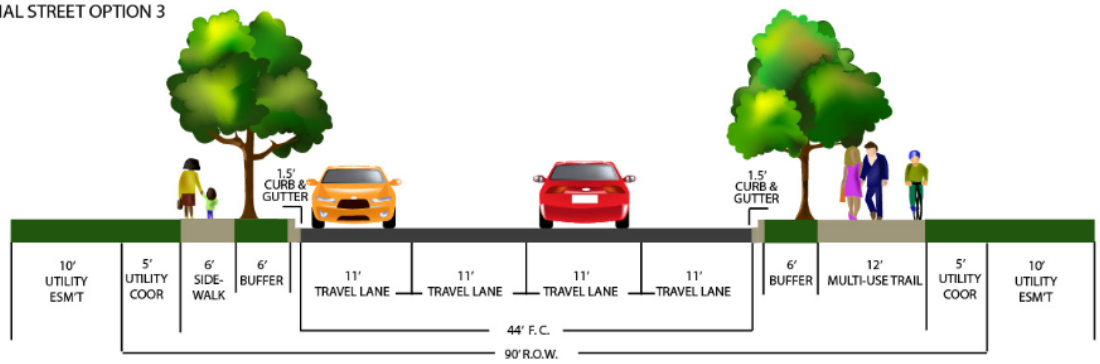


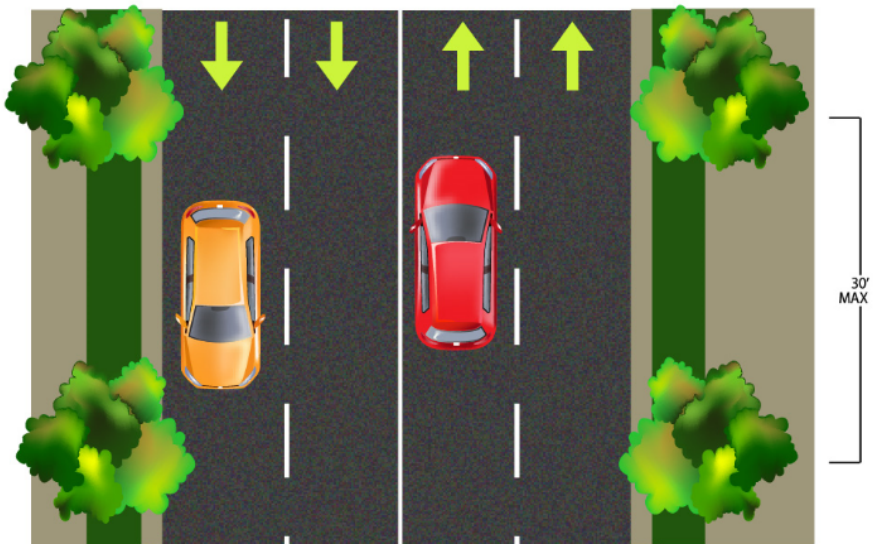


OTHER MINOR ARTERIAL DESIGN OPTIONS:

Note: Where VPD is > 7,000 and speed is ≥ 35 mph, separate bike lanes or a shared path should be utilized.

MINOR ARTERIAL STREET OPTION 3





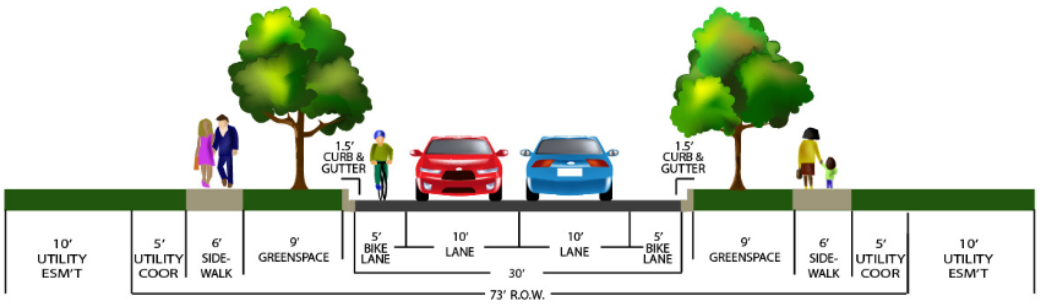
Note: Where VPD is > 7,000 and speed is ≥ 35 mph, separate bike lanes or a shared path should be utilized.

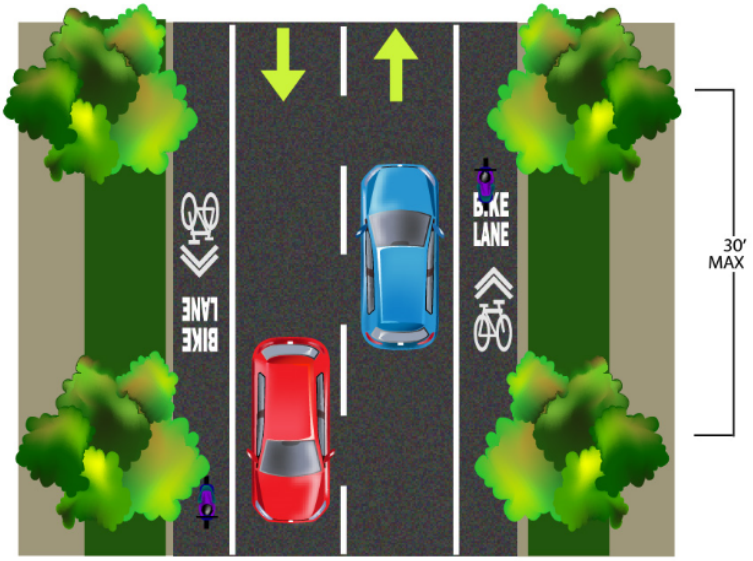
COLLECTOR

FUNCTION: A Collector Street is the traffic connection from Local Streets to Arterials, with the secondary function of providing access to adjoining property. The Collector system should not be continuous but should direct traffic to Arterials. This class of road is generally at a spacing of a quarter mile. At the time of the subdivision, the exact location and additional need for Collectors will be determined by the MAPC upon advice of the City Staff.

COLLECTOR STREET OPTION 1

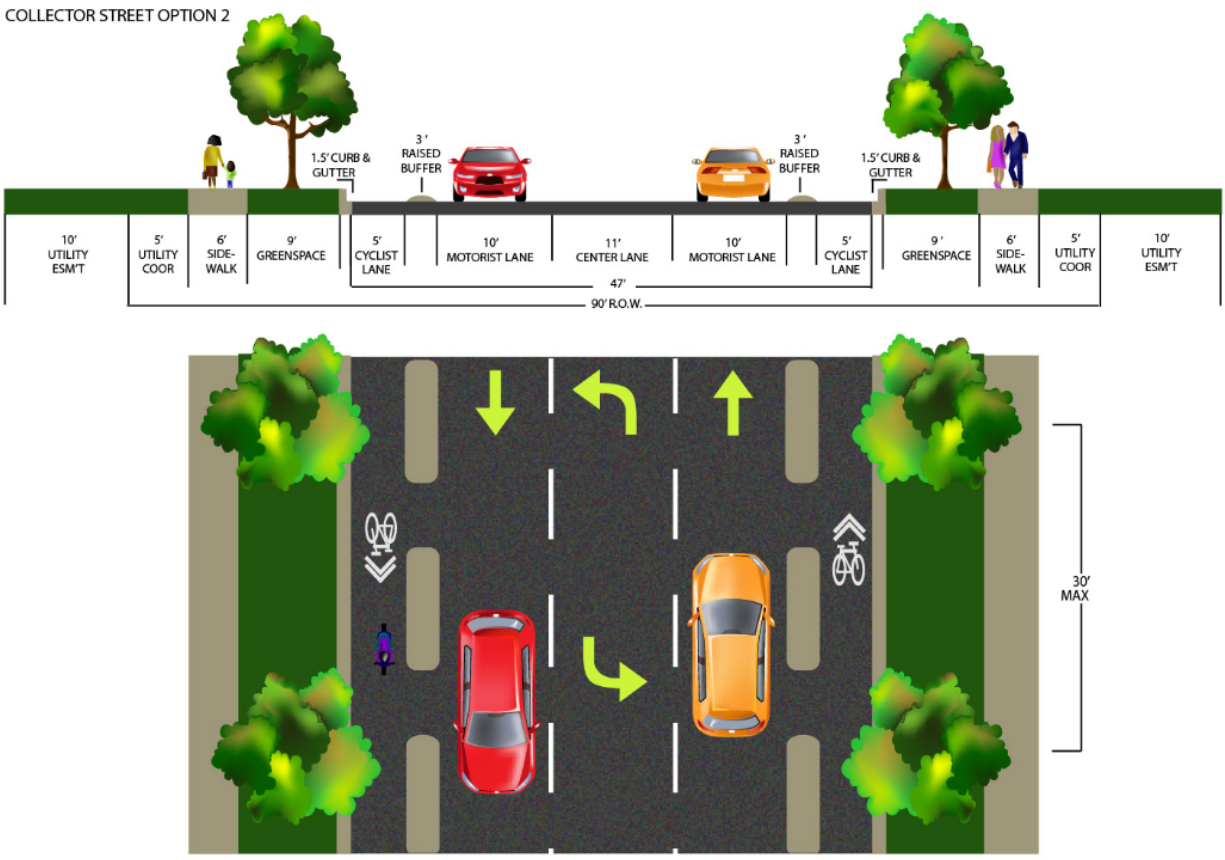
VPD > 3,000





DESIGN: Cross-section selection shall be based on anticipated traffic volume and speed limit, or traffic impact analysis, if applicable. Design in accordance with AASHTO policy on Geometric design of highways and streets (current edition).

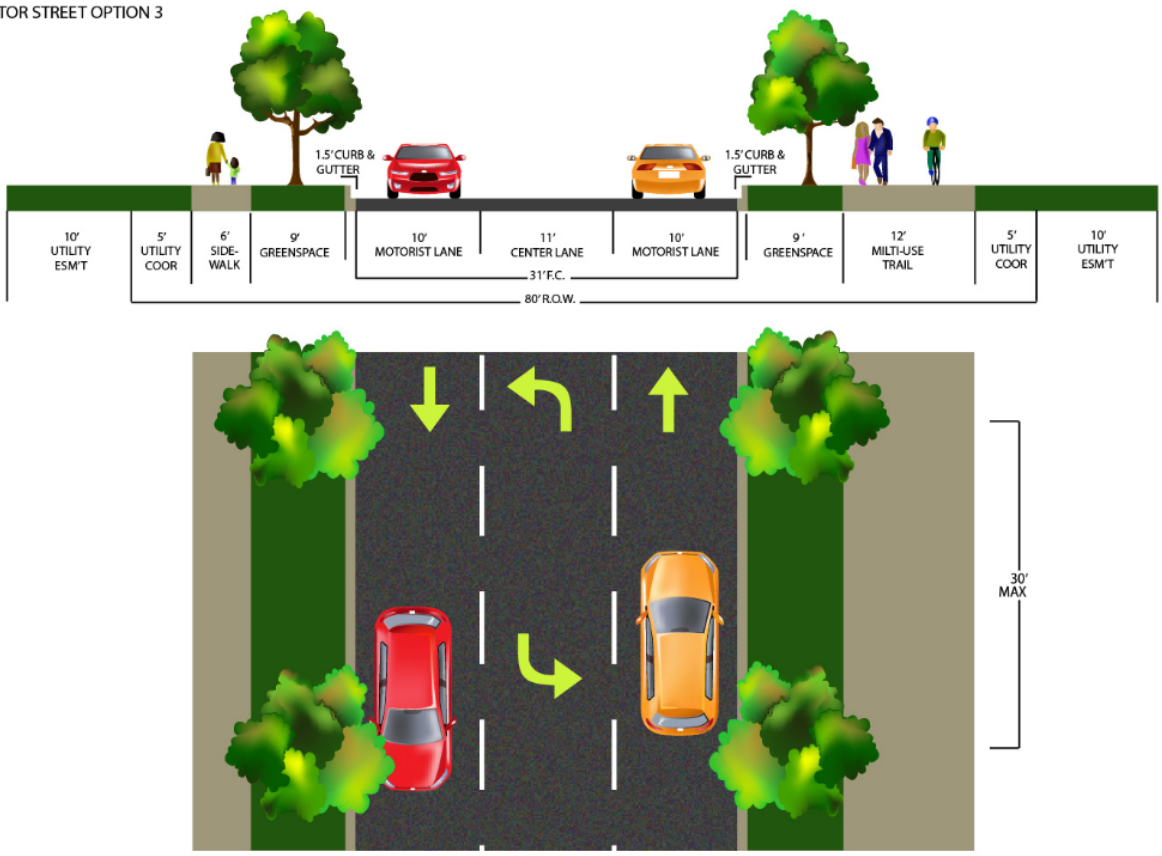
Note: Where VPD is > 3,000 and speed is < 30 mph bike lanes may be utilized.



OTHER COLLECTOR DESIGN OPTIONS:

Note: Where VPD is > 3,000 and speed is ≥ 30 mph, three foot wide raised buffers should be used..

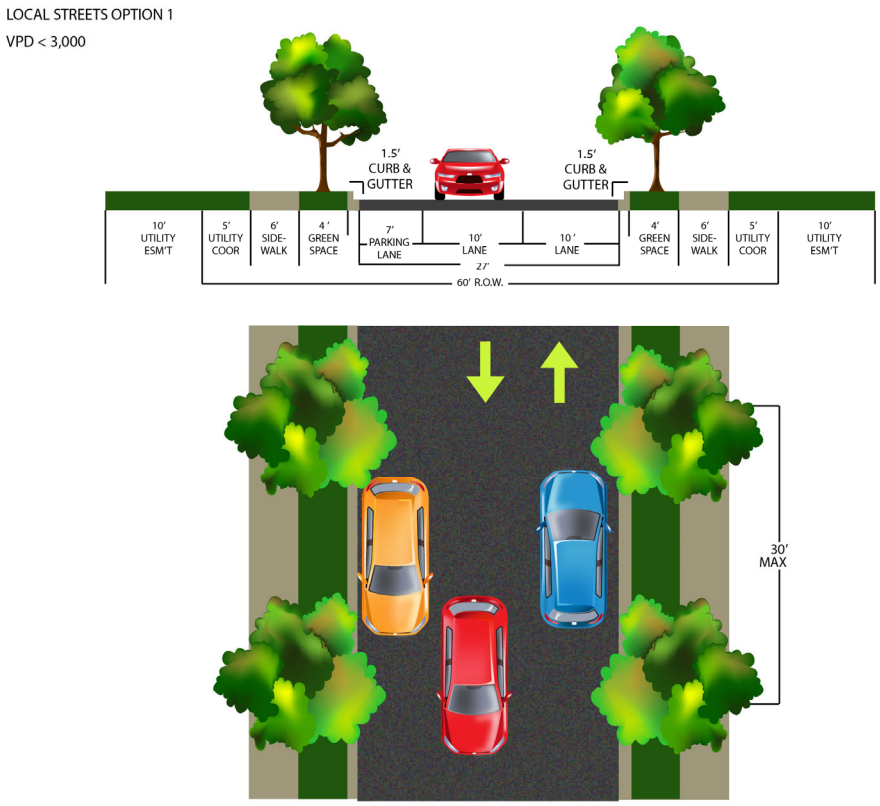
COLLECTOR STREET OPTION 3



Note: Where VPD is > 3,000 or speed is ≥ 35 mph, utilize multi-use trail..

LOCAL STREET

FUNCTION: The Local Street function is to provide access to adjacent property. The movement of traffic is a secondary purpose. The use of a Local Street in a residential area by heavy trucks and buses should be minimized.

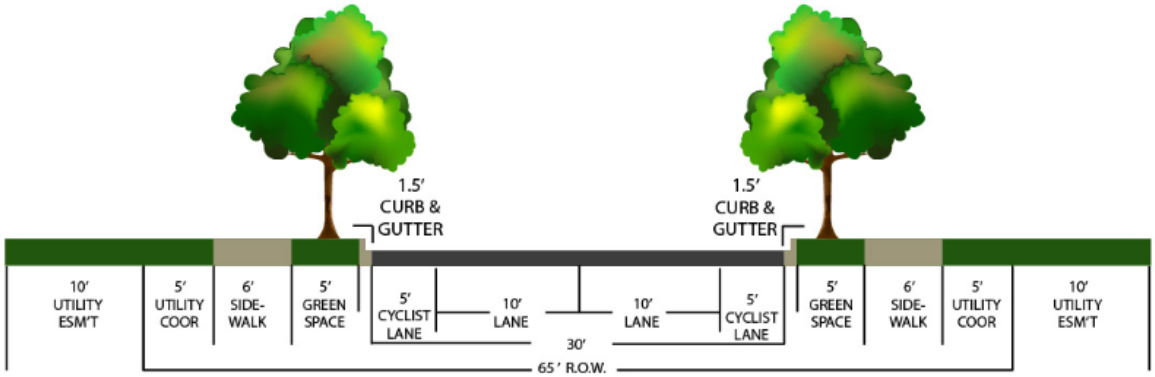


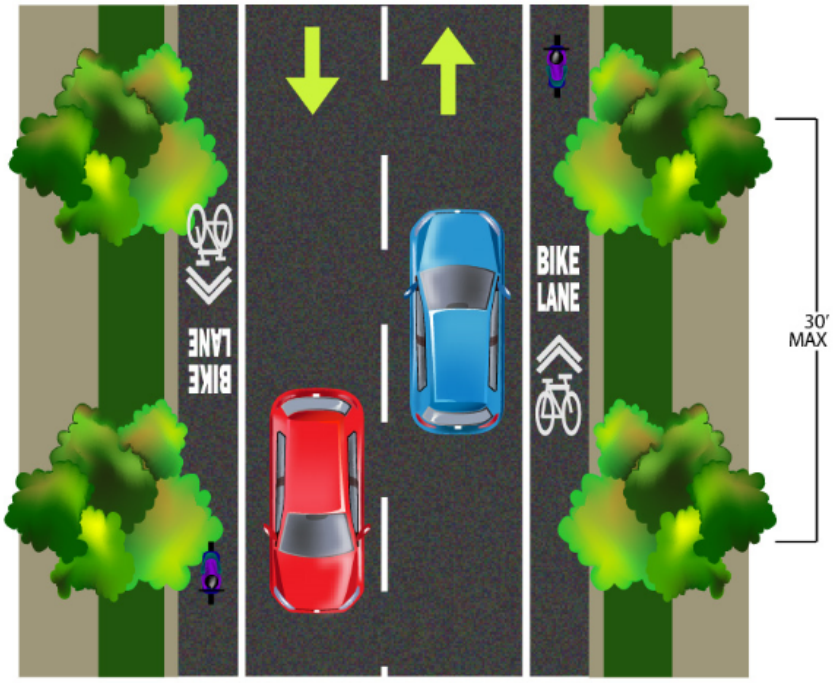
Note: Where VPD is < 3,000 and speed is < 25 mph bikes may share the travel lanes.

DESIGN: Local Street Option 1 is to be used when on-street parking is provided within the development. Option 2 is to be used when on-street parking is not provided within the development. Option 3 is to be used in commercial mixed use areas.

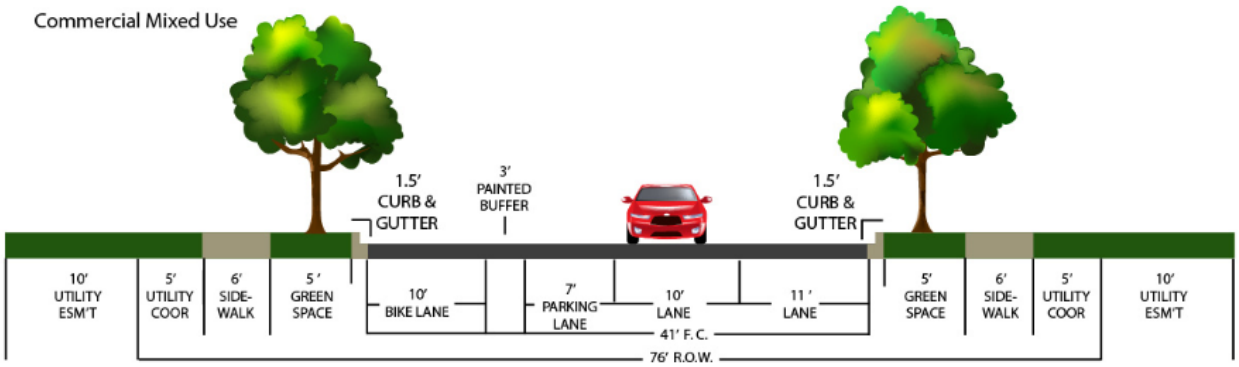
Note: Where VPD is < 3,000 or speed is < 25 mph, bikes may share the travel lanes.

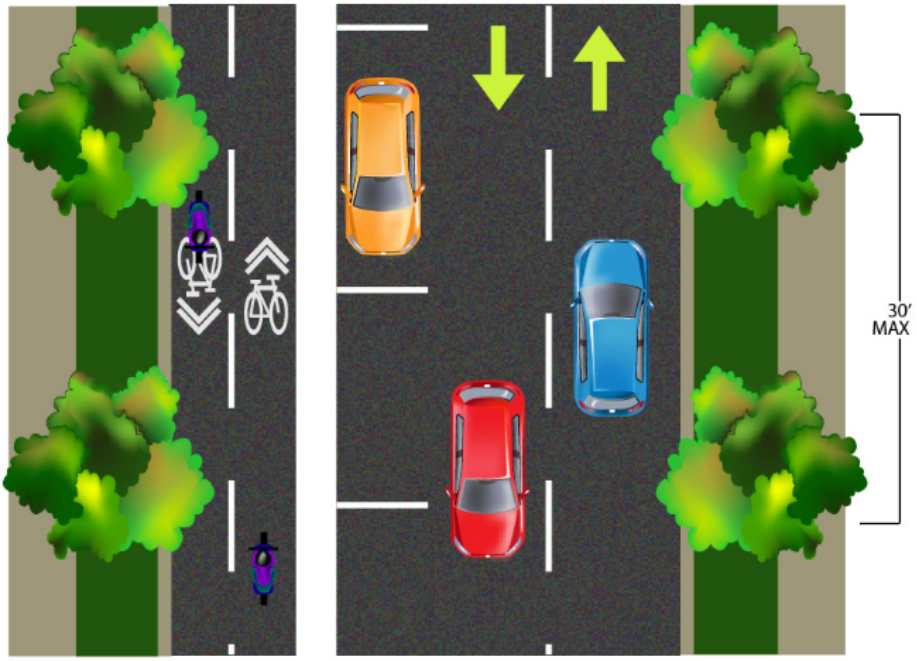
LOCAL STREETS OPTION 2





LOCAL STREETS OPTION 3
Commercial Mixed Use





Note: Where VPD is < 3,000 and speed is < 25 mph, bikes may share the travel lanes.

SECTION 4: Access Management

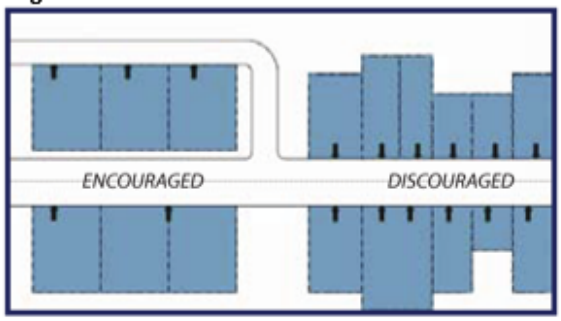
PREFACE

This section was prepared by the City of Jonesboro Engineering Department, in cooperation with the Northeast Arkansas Transportation Planning Commission, to establish design standards to limit the impact of developments on the transportation system.

Chapter 1 Access Requirements

In order to preserve the smooth flow of traffic along adjoining streets and highways, the number of curb cuts allowed shall be limited. Furthermore, driveway sharing shall be required for all properties abutting streets functionally classified as major arterial, minor arterial, and collector, as identified by the Master Street Plan.

Figure 1. Indirect Access



Internal roads provide access to multiple lots with minimum curb cuts on the adjacent road.

Table 1. Curb Cut Spacing

Type of Corridor	Spacing
Major Arterial	300' to 500'
Minor Arterial	200' to 300'
Collector	100' to 200'

Proper access spacing is essential to the safety and efficiency of roadways.

1.1 Curb cuts shall be a minimum of 15' in width for one lane and a maximum of 40' in width for three lanes. Typical two-way travel driveway (curb cut) width is 30'.

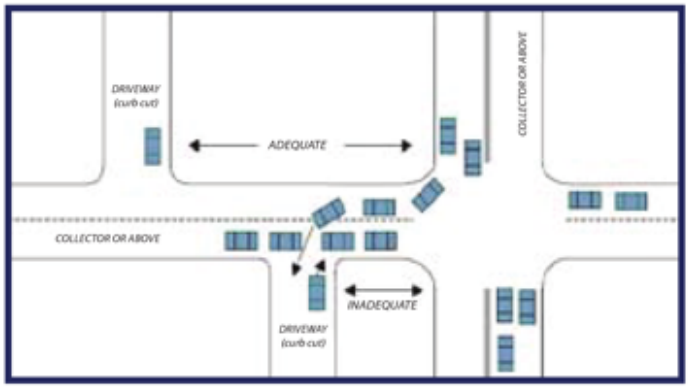
1.2. Curb cuts shall be spaced according to **Table 1**. These measurements shall be taken from the nearest respective edge of each curb cut, driveway, or intersecting public right-of-way.

1.3 For lots having 240' of street frontage or more, curb cuts shall be no less than 100' from the closest side lot line.

1.4 No curb cut shall be within 225' of any signalized intersection.

1.5 Curb cuts shall be coordinated with existing or planned median openings and shall, where possible and reasonable, line up with driveways or streets on the opposite side of the roadway.

Figure 2. Curb Cut Spacing



Curb cuts in close proximity to intersections create conflicts between site traffic and through traffic.

Chapter 2 Joint/Cross Access

2.1 For lots along collector and above classification that have less than 240' of street frontage along, joint access with the adjoining property owner(s) shall be required as indicated in Figure 3.

2.2 The two adjacent property owners shall enter into a joint-access agreement whereupon they will share a single driveway which is ideally, but not necessarily, along their common property line.

2.3 Parcels that cannot comply immediately due to undeveloped adjoining property or lack of a preexisting joint-access agreement and/or easement may be allowed a temporary curb cut at a location designated by the City Engineer or his/her designee. This temporary curb cut shall be contingent on the property owner meeting the following conditions:

a. A joint access easement with a width of no less than 24' and no more than 40', depending on the number of lanes, is depicted on the record plat filed with the Circuit Court Clerk, and
b. A joint maintenance agreement defining maintenance responsibilities of each property owner is filed with the Circuit Court Clerk.

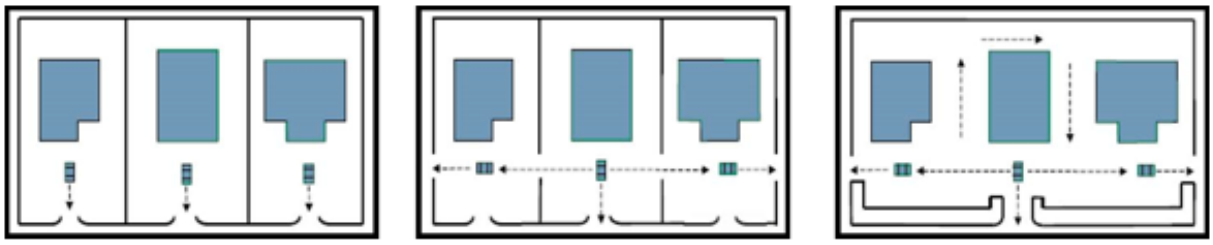
2.4 Temporary curb cuts shall be closed when easements, agreements and improvements providing joint access are complete upon future development. The permittee is responsible for removing the temporary drive once the joint access drive is complete.

2.5 All parking lots for commercial properties shall have at least one vehicular connection to all adjacent properties. A unified access and circulation system plan that includes coordinated or shared parking areas should be offered wherever feasible.

2.6 Stub-outs and other design features shall be required to make it visually obvious that the abutting properties may be tied in to provide cross access via a service drive. Stub-outs shall be required so that cross access to abutting properties is ensured.

2.7 A cross access easement of no less than 24' in width shall be shown on the record plat per Section 2.3.

Figure 3. Multi-site Circulation

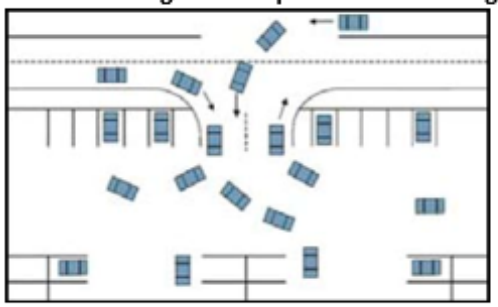


Complete multi-site circulation is strongly encourage

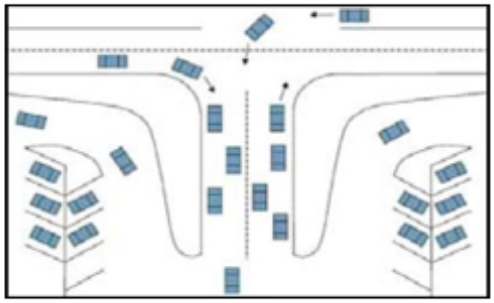
Chapter 3 Driveway Throat Length

3.1 Driveways shall be designed to prevent queuing of site traffic on public streets. The depth of the formal entranceway, where vehicles may queue without interfering with traffic circulation, is referred to as the "throat length." The length of this "throat" is particularly important for businesses that generate a high number of vehicle trips per day.

Figure 4. Impact of Throat Length on Traffic Flow



Insufficient throat length and poor site planning can result in unsafe conditions and may result in vehicles queuing, or stacking, in the roadway, interrupting traffic flow.



With adequate throat length, queuing occurs on site, rather than on the roadway. This reduces driver confusion, traffic problems, and unsafe conditions.

3.2 Throat length should be determined on a case-by-case basis, but generally it will vary according to the number of trips generated by the land use, as indicated in **Table 2,** and the available area for constructing the driveway throat. A traffic impact study based on peak hour demand is the best way to determine the extent of potential queuing problems and how best to resolve them.

3.3 The City Engineer or his/her designee, working in coordination with the project engineer, shall make all driveway throat length determinations based upon the characteristics of the given site.

Table 2. General Throat Length Recommendations

Size / Impact of Development	Throat Length (from right-of-way)
Small / 200 ADT	20' (2 vehicles)
Moderate / 750 ADT	40' to 80' (4-6 vehicles)
Large / 2,000 ADT	180' to 240' (9-12 vehicles)

Parking systems should be designed to internalize the circulation of site traffic to prevent disruption of public streets.

Chapter 4 Traffic Impact Study

4.1 The City Engineer or his/her designee will review the development plan to determine if the developer is required to provide a traffic impact study. Traffic impact studies shall be required for all developments that are expected to generate 100 peak hour trips. The scope of the study shall be determined in accordance with the provisions of the City of Jonesboro's Traffic Impact Study Guidelines.

4.2 If a traffic impact study is required, it must be submitted, reviewed and approved by the City Engineer or his/her designee, and any warranted improvements included in the site plan before final approval.

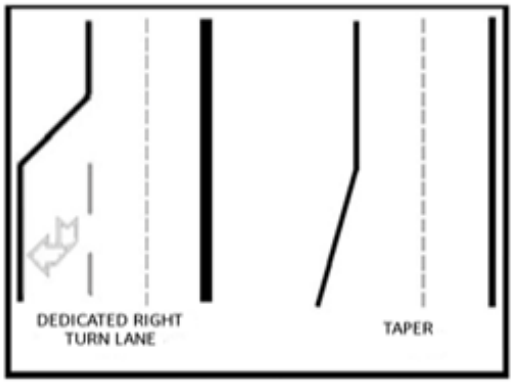
4.3 The developer shall be responsible for all costs related to traffic impact studies and any associated improvements. All traffic engineering studies and associated improvements shall be conducted at the developer's expense.

Chapter 5 Right Turn Deceleration Lanes

5.1 A dedicated right turn lane is often necessary when the speed limit 35 miles per hour or greater. In most cases, only moderate to large-scale developments will warrant a right turn lane. However, certain circumstances may make the addition of a deceleration lane necessary. A 10% impact is acceptable as outlined in **Figure 5.**

5.2 On lower driveways or in areas with limited right-of-way, tapers may be required to help remove turning vehicles from the roadway more quickly. Tapers may be most useful in rural areas, where speeds are high and volumes low.

Figure 5. Deceleration Lanes

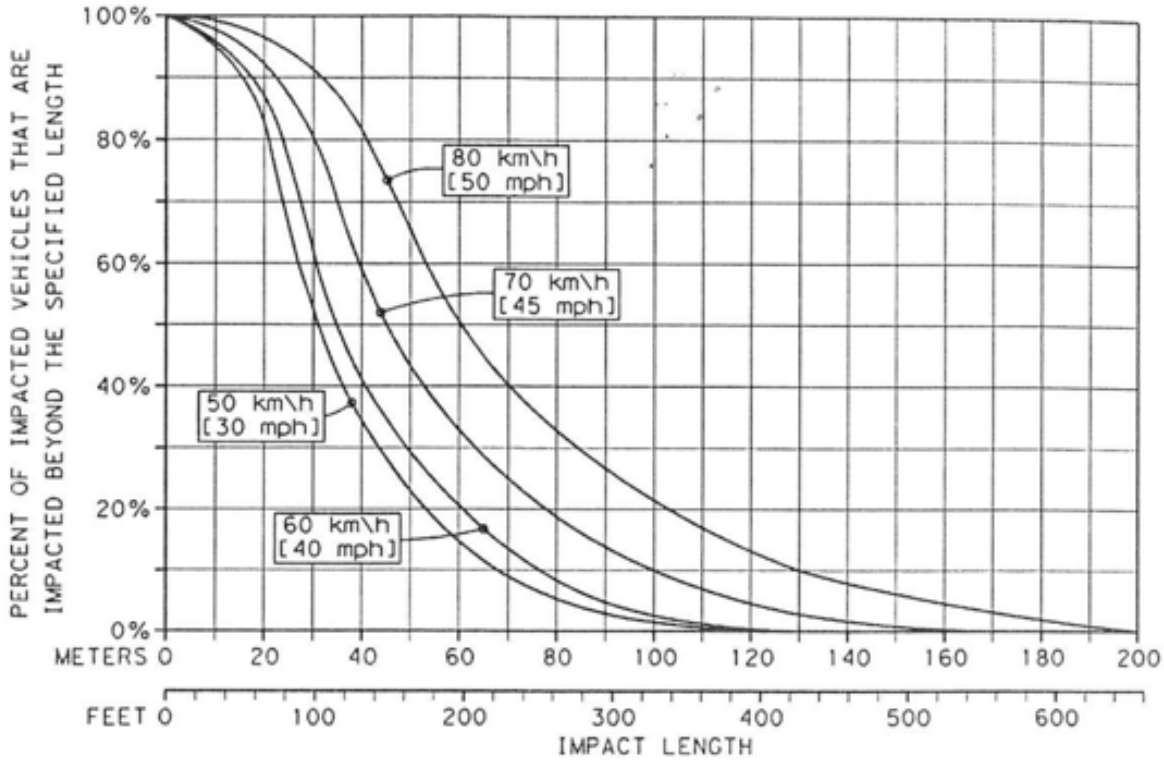


The length of this lane will vary according to the speed of traffic on the roadway an expected traffic volumes. However, the lane or taper should be of sufficient length so as to allow the turning vehicle to leave the through lane at the posted speed limit, decelerate, and negotiate the turn.

5.3 The City Engineer or his/her designee, working in coordination with the project engineer, shall determine if a deceleration lane or taper is appropriate for a given site, and, if so, the design characteristics of the deceleration lane or taper, based upon the criteria identified in **Figure 6.**

5.4 If a dedicated right turn lane or taper is required, designs for the improvement must be submitted, reviewed and approved by the City Engineer or his/her designee, and included on the site plan before final approval. The developer will be responsible for all costs associated with such improvements.

Figure 6. Traffic Impact Curves



SECTION 5: Transportation Impact Study Guidelines

PREFACE

This section was prepared by the City of Jonesboro Engineering Department, in cooperation with the Northeast Arkansas Regional Transportation Planning Commission, to establish a methodology for assessing the impacts of proposed developments on the transportation system.

Chapter 1: Introduction

The purpose of a transportation impact study is to examine the anticipated effects of a proposed development on the surrounding transportation network, determine what necessary measures are needed to mitigate these effects and determine what provisions are reasonable and necessary for site access and circulation. A typical transportation impact study will answer the following questions, among others:

- What are the existing and background traffic conditions in proximity to the proposed development?
- How much and what type of traffic will the proposed development generate, and how will it be distributed on public streets?
- How many access points are necessary to adequately serve the proposed development?
- What impact will the proposed development have on the safety and efficiency of the public street system, with and without recommended on-site and off-site improvements?

This handbook has been developed to provide open, objective and consistent standards for conducting transportation impact studies pursuant to the Code of Ordinances of the City of Jonesboro, Arkansas; to promote sound planning of site access and internal circulation; and, to identify needed off-site improvements with regard to the proposed project. To ensure consistency with accepted practice, the guidelines included in this handbook were modeled on the recommendations in *Transportation Impact Analyses for Site Development* (Institute of Transportation Engineers 2010). Developers are encouraged to take these guidelines into account throughout their planning process.

1.1 Qualifications

All transportation impact studies shall be conducted by a Professional Engineer, currently licensed to practice in the state of Arkansas, with specific training or experience in traffic and transportation engineering and planning.

1.2 Consultation

Prior to the initiation of a transportation impact study, the preparer shall consult with the City Engineer or his designee to determine the scope of the study, identify data requirements and availability, discuss the methodologies that will be utilized, and agree upon the contents of the study report. Following the pre-study consultation, the preparer shall draft a scope of work outlining the parameters of the study, as agreed to by the parties. The transportation impact study should not begin until the scope of work has been

reviewed and approved by the City Engineer or his designee. Additional consultations may be requested by City staff or the preparer, as necessary.

1.3 Review

Transportation impact study reports shall be reviewed by appropriate staff from the City of Jonesboro's Engineering and Planning Departments. After reviewing a transportation impact study report, City staff may submit questions or concerns about the study to the preparer, who shall be given an opportunity to respond to those questions or concerns. This process shall continue until the objectives of the transportation impact study have been met, as determined by the City Engineer or his designee.

Chapter: 2 Scope of Study

This plan implements gradient levels of traffic impact analysis (TIA) based on the number of expected peak hour trips a development is expected to generate. All developments will be required to submit trip generation estimates as part of the permit application process to see of a TIA is required. Very small developments (fewer than 100 trips during the peak hour) are exempted from performing a TIA. The impact of these developments generally will be limited to the vicinity of the access connection. While these developments may not be required to perform a TIA, if the site plan review process identifies traffic related concerns generated by the development, these should be addressed with sound engineering judgement and practices.

2.1 Study Area

The area of the Traffic Impact Analysis shall be based on the peak hour trips to be generated by the project development, as set for the following table. As illustrated in Figures 2.1, 2.2 and 2.3, the larger the development, as measured by the number of trips generated, the larger the area that may experience measurable traffic impact due to the development.

Peak Hour Trips	TIA Level	Scope Radius
Less than 100	Trip Generation Worksheet (no TIA required)	N/A
$100 \leq T < 300$	Level 1	1/8 mile
$301 \leq T < 500$	Level 2	1/8 – 1/2 mile
$T > 501$	Level 3	1/2 – 1 mile

Figure 2.1: Level 1 TIA

Figure 2.2: Level 2 TIA

Figure 2.3: Level 3 TIA

2.2 Traffic Study Elements

Table 1: Requirements for Various Types of Traffic Impact Studies

Study Requirements	Trip Generation Threshold		
	Small Development Level 1 TIA	Medium Development Level 2 TIA	Large Development Level 3 TIA
	100 ≤ T < 300	301 ≤ T < 500	T > 501
Existing Conditions			
Existing LOS Analysis	*	✓	✓
Background Traffic Growth	*	✓	✓
Existing Roadway Layout	✓	✓	✓
Existing Traffic Volumes	✓	✓	✓
Site Design			
Traffic Generation	✓	✓	✓
Traffic Distribution	✓	✓	✓
Evaluate Number, Location, and Spacing of Access Points	✓	✓	✓
Evaluate Access Design	✓	✓	✓
Evaluate Site Circulation	✓	✓	✓
Proposed Conditions			
LOS Analysis with Site Traffic	*	*	✓
Mitigation Identification	*	*	✓
Proposed LOS Analysis	*	*	✓
Other Analyses			
Analysis of Proposed Signal Locations	*	*	✓
Effect on Traffic Signal Progression	*	*	✓

* Indicates this aspect may have to be included in the study if conditions warrant

Table 1

Chapter 3: Existing Traffic Conditions

3.1 Existing Level of Service (LOS) Analysis

Turning movement and overall levels of service for intersections shall be determined using the procedures documented in the latest edition of the *Highway Capacity Manual* (Transportation Research Board). Study preparers are expected to use the Highway Capacity Software, Synchro or another software package that implements the methods described in the latest edition of the *Highway Capacity Manual* to perform the computations. Questionable computed levels of service for existing conditions should be confirmed through field observations. The LOS at an intersection as defined in the Highway Capacity Manual is shown in the following table.

Level of Service Criteria		
Level of Service	Signalized Intersections Average Control Delay (Seconds/Vehicle)	Unsignalized Intersections Average Control Delay (Seconds/Vehicle)
A	0 to 10	0 to 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

3.2 Background Traffic Growth

Any development that has been approved but not yet occupied should be considered for use as background traffic. These projects should be reported as cumulative projects in a table format with the name of project, location description, ADT, and AM/PM peak hour trips indicated. The growth rate for the adjacent streets should be provided in a table format indicating the AADT value from the past five years when available.

3.3 Existing Roadway Layout

A drawing indicating the existing roadway configurations, geometric features, intersection lane configurations, driveway locations, traffic signal phasing, speed limits, transit stops and any other noteworthy roadway feature which will affect traffic shall be submitted.

3.4 Existing Traffic Data

The preparer should consult with City staff to determine the availability traffic volume data. Data collected by the City or by other studies within the past two years may be used. If recent traffic data is not available from the City, traffic volume data collection shall be the responsibility of the preparer and shall be conducted in accordance with professional data collection practices. If the type of development lends to high traffic volumes during the noon hour such as a restaurant Noon Peak counts will also be required. The following data should be collected

- Peak period turning movement counts in 15 min increments
  - 7:00 a.m. – 9:00 a.m. and 3:00 p.m. – 6:00 p.m.
- 24 Hour Counts
  - 24 Hour counts in 15 min increments
- Noon Peak Counts (if Applicable)
  - 11:00 a.m. – 1:00 p.m.

Chapter 4: Site Design Analysis

4.1 Traffic Generation

In general, study preparers will be expected to follow the guidelines and procedures set forth in the latest edition of the *Trip Generation Handbook* (Institute of Transportation Engineers) to produce trip generation estimates. Traffic Generation and Distribution Data shall be provided in a table format along with the, proposed land use, approximate size of the development, ITE code, 24-hour tow-way weekday volume, am peak hour volume, pm peak hour volume and the pass-by reduction factor. The method utilized to determine the pass-by reduction factor shall be referenced in the TIA report.

4.2 Traffic Distribution

Distribution and assignment of site traffic may be performed manually or by computer modeling, as appropriate. Whatever the approach, preparers are encouraged to consult with City staff to verify the plausibility of proposed distribution and assignment patterns prior to preparing subsequent analyses.

Trip distributions should be made in consideration of the size and type of the proposed development, the presence of competing developments, surrounding land uses and

demographic characteristics, the conditions of the surrounding street system, and other relevant considerations.

Consideration should be given to whether inbound and outbound trips will have similar distributions. If the site will generate considerable truck traffic, a separate distribution and assignment of truck trips may be warranted.

4.3 Evaluate Number and Location of Access Points

Driveways shall be limited to the number of access points necessary to achieve reasonable and safe site access. Capacity and signal warrant analyses will need to be performed to determine whether site access is appropriate given anticipated demand.

The location of driveways in relation to one another should take into account the potential for traffic conflicts and minimize the likelihood of conflicts where possible. In particular, closely-spaced and opposite-right alignments should typically be avoided.

At a minimum, driveways should be spaced far enough from intersections that they are not obstructed by typical intersection queues and entering/exiting site traffic does not interfere with intersection operations. Appropriate analyses such as proper geometry and driveways sight distance analyses should be conducted to verify that proposed driveways will function safely and efficiently.

4.4 Access Design

Access points should be designed such that alignment, width, grade, break-over, sight distances and other geometric considerations are conducive to safe and efficient ingress and egress for expected vehicle types, volumes and operating speeds. Driveways should be designed such that queuing takes place on site and does not spill onto adjacent streets. Queuing analyses should be performed to estimate the storage space necessary to accommodate anticipate traffic.

Right turn deceleration lanes and tapers are strongly encouraged on access points located on Principal and Minor Arterials to limit the speed differential and rear end crash potential.

4.5 Site Circulation

Internal service roads, drive aisles, storage areas, pedestrian pathways, and parking and loading areas should be designed such that:

(1) Conflicts between on-site and off-site traffic are minimized;
(2) All vehicle types that are expected to access the site can be accommodated safely, including bicycles, delivery vehicles, emergency vehicles and transit (if transit stops are planned or warranted); and
(3) Pedestrians can move safely and directly to and from parking areas and between structures.

Typical considerations for designing a safe and efficient internal circulation system include: potential for conflict, particularly between vehicles and pedestrians; queue storage; traffic calming; and pavement markings, signage and barriers; in addition to geometric considerations, such as sight distances, turning radii, and horizontal and vertical alignments.

Chapter 5: Analysis of Proposed Conditions

5.1 LOS Analysis With Site Traffic

A LOS analysis utilizing projected traffic volumes with existing traffic operating conditions shall be performed utilizing software programs such as Synchro. This information will be compared to the existing LOS analysis to see the true impact the development will have on the public roadway system.

5.2 Mitigation Identification

If the delay is increased within the study area as a result of development traffic, mitigation measures shall be identified to counteract this increase. The preparer shall investigate a range of mitigation alternatives that are viable, efficient and economical. These mitigation measures may be presented to the governing body for consideration of implementation.

5.3 Proposed LOS Evaluation

A LOS analysis utilizing projected traffic volumes with each proposed mitigation measure shall be conducted and displayed in table format.

Chapter 6: Other Analyses

6.1 Analysis of Proposed Signal Locations

The investigation for the need for a traffic control signal (if requested by the City) shall be conducted in accordance with the current edition of the Manual on Uniform Traffic Control Devices for Streets and Highways. The investigation of the need for a traffic control signal shall include an analysis of factors related to the existing operation and safety at the study location and the potential to improve these conditions, and the applicable factors contained in the following traffic signal warrants:

Warrant 1, Eight-Hour Vehicular Volume
Warrant 2, Four-Hour Vehicular Volume
Warrant 3, Peak Hour
Warrant 4 Pedestrian Volume
Warrant 5, School Crossing
Warrant 6, Coordinated Signal System
Warrant 7, Crash Experience
Warrant 8, Roadway Network
Warrant9, Intersection Near a Grade Crossing

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. The ultimate decision will be with the City Council and/or ARDOT as the case may be.

6.2 Effect on Traffic Signal Progression

Signalized intersections shall not be spaced less than 2,000 ft apart. A time-space analysis utilizing existing cycle lengths and phase sequences shall be conducted when a proposed traffic signal is located within 1 mile of an existing traffic signal. If the time-space analysis indicates the existing bandwidth of the system will be compromised as a result of the proposed signal, the signal shall not be installed unless proper mitigation improvements are installed to maintain the existing bandwidth. These efforts may include aligning drives to eliminate split phasing or increasing the capacity of the side streets, to reduce the split time needed.

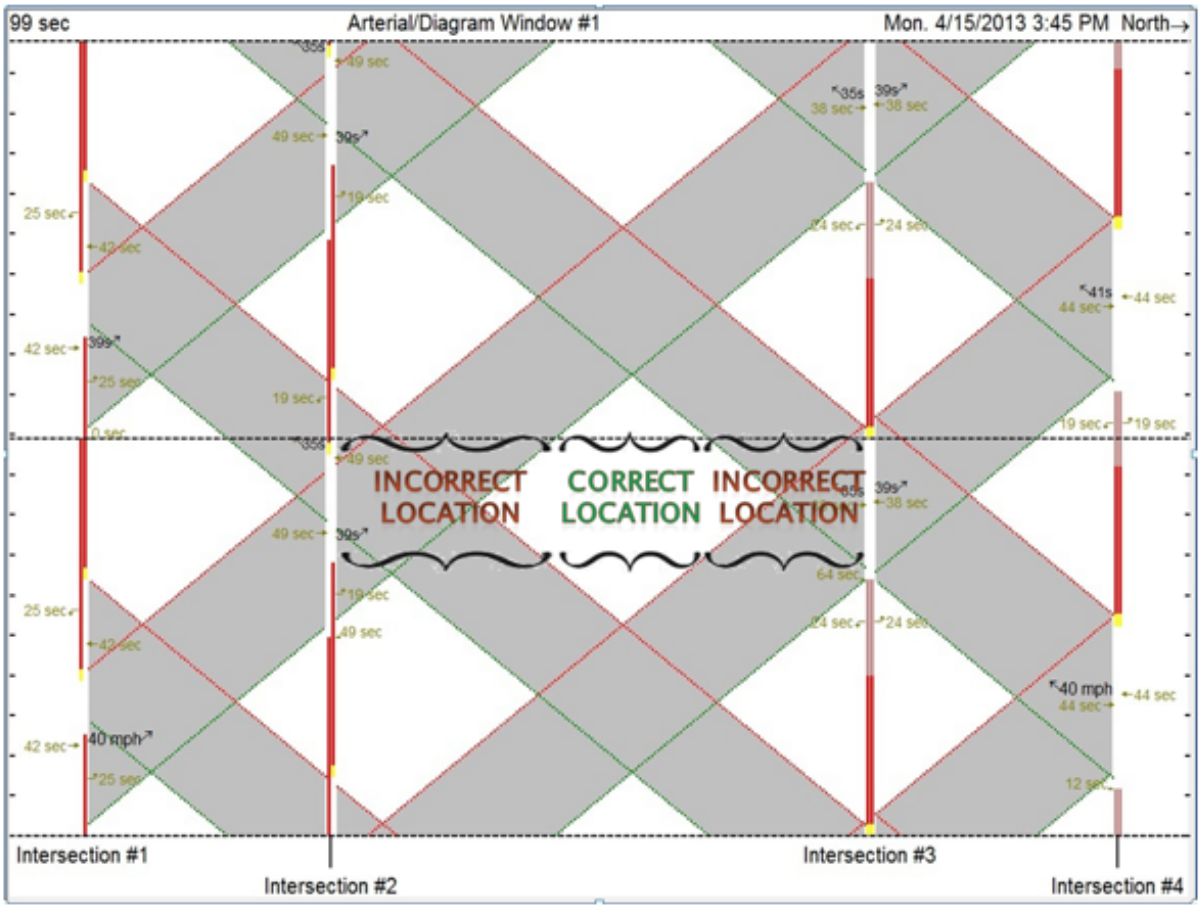


Figure 6.1: Traffic Signal Location Selection Related to Time-Space Analysis

Chapter 7: Recommendations

Recognizing that not all transportation problems have simple solutions, in developing study recommendations, the preparer should:

- Consider low-cost improvements;
- Recognize right-of-way limitations;
- Account for the phasing of the development and scheduled roadway improvements;
- Recognize accepted access-management principles; and,
- Maintain consistency with local policies;

Chapter 8: Report

The transportation impact study report shall document the purpose, procedures, assumptions, sources, findings, and recommendations of the study. Technical elements of the report shall be written in sufficient clarity and detail to allow City staff to evaluate the soundness of the methodology employed and the veracity of the findings and recommendations included in the report. Whenever possible, for clarity and ease of review, information should be presented in tables, graphs, diagrams or maps, rather than narrative text. The report shall be sealed, signed and dated by the preparer, who shall certify that the study was conducted consistent with these guidelines, applicable laws and regulations, the agreements between the parties and accepted engineering and planning practices. At the conclusion of the study, one hard copy of the report and one electronic copy of the report (preferably in a PDF) shall be submitted to the City Engineer or his designee.

In general, the format of the report shall be consistent with the outline attached hereto as *Appendix A*.

Appendix A: Report Outline

Cover (name and location of the proposed development; name, address and telephone number of the developer; name, address and telephone number of the preparer; and date of submission)

Certification (seal and signature of the preparer; attestation that the study was conducted consistent with the City of Jonesboro's Transportation Impact Study Guidelines, applicable law, the agreements between the parties, and accepted engineering and planning practices; and date of attestation)

Table of Contents (including lists of figures and tables)

Executive Summary (concise summary of the study, including descriptions of the proposed development and study area; and a discussion of the principal findings and recommendations of the study)

I. Introduction (scope and objectives of the study) [section 2]

II. Proposed Development (description of the proposed development, including location, zoning, land use and intensity, site plans, and phasing and timing)

III. Study Area (description of the area of influence of the proposed development, including location, zoning, land use and intensity of existing and anticipated development) [section 2.1]

IV. Existing Conditions (descriptions of the existing infrastructure and traffic volumes within the study area; and analyses of existing traffic conditions)

A. Background Traffic Growth
B. Existing Roadway Layout and Features
C. Existing Traffic Data
D. Existing LOS analysis

V. Site Traffic & Design (discussion and analysis of site access and layout) [*cf.* section 4.2]

A. Traffic Generation
B. Traffic Distribution and Assignment
C. Evaluate Number and Location of Access Points
D. Evaluate Access Design
E. Evaluation of Site Circulation, Parking and Loading

VI. Projected Conditions

A. Total Projected Traffic Volumes
B. Projected LOS Analysis
C. Mitigation Identification

VII. Findings and Recommendations (discussion of principal findings; detailed descriptions of recommended improvements with implementation schedules, itemized cost estimates, and discussions of the impacts of recommended improvements on system performance)

A. Roadways and intersections
B. Site access and layout
C. Other (*e.g.*, transportation demand measures, policy changes)

Appendices (*e.g.*, level-of-service worksheets, trip generation calculations)

Suggested Tables and Figures (included in the body of the report as necessary and where appropriate)

Site layout	Figure depicting the proposed development, including adjacent streets, access points, internal circulation and parking systems and structures
Site location	Map depicting the location of the proposed development in relation to the corporate boundaries of the city of Jonesboro
Study area	Map depicting the area of influence of the proposed development
Existing transportation system	Figure depicting the existing transportation system within the study area, including the configurations of all streets; transit, bicyclist and pedestrian routes; signal locations; and rights of way
Existing traffic volumes	Figure depicting current-year traffic volumes within the study area, including daily traffic volumes on all streets and peak-hour movement volumes for all intersections and access points
Existing levels of service	Table or Figure depicting current-year levels of service for intersections, access points and roadways within the study area
Horizon-year transportation system	Figure(s) depicting the horizon-year transportation system within the study area, including the configurations of all streets; transit, bicyclist and pedestrian routes; signal locations; and rights of way
Non-site horizon-year traffic volumes	Figure(s) depicting horizon-year non-site traffic volumes within the study area, including daily traffic volumes on all streets and peak-hour movement volumes for all intersections and access points
Horizon-year levels of service, non-site traffic	Table(s) or Figure(s) depicting levels of service for intersections, access points and roadways within the study area, reflecting only non-site traffic volumes
Site traffic generation	Table(s) containing estimated daily and peak-hour trips generated by the proposed development
Directional distribution of site traffic	Figure(s) depicting (by percentages) the portion of site traffic approaching or departing the site on each roadway within the study area
Site traffic	Figure(s) depicting daily and peak-hour traffic volumes at each site access

Total horizon-year traffic volumes	Figure(s) depicting total horizon-year traffic volumes within the study area, including daily traffic volumes on all streets and peak-hour movement volumes for all intersections and access points
Horizon-year levels of service, total traffic	Table(s) or Figure(s) depicting levels of service for intersections, access points, and roadways within the study area, reflecting total horizon-year traffic volumes
Recommended improvements	Diagram(s) depicting recommended improvements to the transportation system, site access or site layout