

Chapter 4: The Thoroughfare Plan

COMPREHENSIVE PLAN 2022



Introduction

A community's thoroughfare system is vital to its ability to grow in a positive manner. Transportation is inherently linked to land use. The type of roadway dictates the use of adjacent land, and conversely, the type of land use dictates the size, capacity and flow of the roadway. Many of the decisions regarding land uses and roadways within Live Oak have already been made; rights-of-way in the developed areas of the City were established and roadways were constructed years ago. A major challenge for the City of Live Oak now lies in the accommodation of population growth within the existing thoroughfare system and in the accommodation of new land development through the expansion of that system.

As stated within the *Goals & Objectives*, Live Oak's thoroughfare system should ultimately:

- Be based on a system of classification and related level of service;
- Provide for regional transportation;
- Provide for adequate mobility, as well as access to local land uses;
- Meet current and future needs of the City;
- Recognize the need for pedestrian access.

The Functional Classification System & Related Level of Service

The *Thoroughfare Plan* for Live Oak is based upon a classification system that recognizes that every roadway within the City has a classification according to either its size or function. Thoroughfare types, as discussed in the following sections, include freeways, major thoroughfares, collectors, and local streets. Their functions can be differentiated by comparing their general ability to provide *mobility* with their ability to provide *access* to various locations. **Illustration 4-1**, which graphically depicts these functional differences, and **Table 4-1** should be used as a reference for the discussion herein.

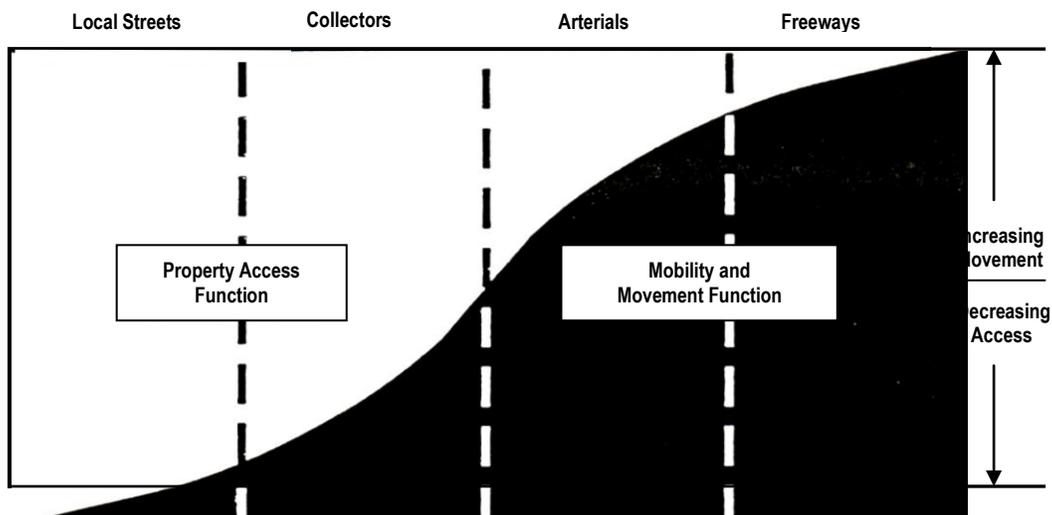


Illustration 4-1
FUNCTIONAL CLASSIFICATION SYSTEM

**Table 4-1
ROADWAY FUNCTIONAL CLASSIFICATIONS AND GENERAL PLANNING GUIDELINES**

CLASSIFICATION	Function	Continuity	Approx. Spacing	Direct Land Access	Minimum Roadway Intersection Spacing	Speed Limit (mph)	Parking	Comments
FREEWAY (Interstate Highway 35, Loop 1604)	Traffic Movement	Continuous	4 miles	None	1 mile	60 to 70 mph	None	Supplements capacity and major thoroughfare system, and provides high-speed mobility.
MAJOR THOROUGHFARE (Topperwein Road)	Moderate distance inter-community traffic; Land access should be primarily at intersections	Continuous	1/2 to 1 1/2 ¹ miles	Restricted; some movements may be prohibited; Number & spacing of driveways controlled; May be limited to major generations on regional routes.	1/8 mile 1/4 mile on regional route	35 to 45 mph	None	"Backbone" of the street system.
COLLECTOR (Village Oak Drive)	Collect / distribute traffic between local & major streets; Direct land access; Inter-neighborhood traffic movement.	Not necessarily continuous May not extend across a major thoroughfare.	1/4 to 1/2 ² mile	Safety controls; limited regulation. Residential access prohibited; commercial access allowed with shared driveways.	300 feet	30 mph	Limited	Through traffic should be discouraged.
LOCAL	Land Access Sidewalks	None	As needed	Safety controls only.	200 feet	30 mph	Permitted	Through traffic should be discouraged.

¹ Spacing determination should also include consideration of (travel projections within the area or corridor based upon) ultimate anticipated development.

² Denser spacing needed for commercial and high-density residential districts.

³ Spacing and intersection design should be in accordance with state and local thoroughfare standards.

Source: North Central Texas Council of Governments

LEVEL OF SERVICE

The phrase level of service refers to the level of adequateness with which a roadway (or segment of roadway) is serving the transportation needs of those utilizing it. As **Table 4-2** shows, the descriptions of each level of service relates to how traffic is flowing, maneuverability, and operational problems. Several roadways within Live Oak experience low levels of service at peak hours; however, most roadways within the City at most times during the day can generally be described as providing a high level of service. Level of service “C” is considered to be acceptable in most cities across Texas. Generally, level of service “D” is used by municipalities to justify the need for roadway improvements. Live Oak should ensure that local roadways are operating at a level of service “C”.

Table 4-2 DEFINITION OF LEVEL OF SERVICE FOR ROADWAY LINKS		
LEVEL OF SERVICE (LOS)	Description	Example
A and B	Light, free-flowing traffic volumes. Virtually no delays with smooth progression of traffic, and speed is generally unaffected by other vehicles. Slight decline in the freedom to maneuver from A to B.	Residential or rural streets
C	Basically satisfactory to good progression of traffic, but at that point where individual drivers become affected by interactions with other vehicles. Light congestion, and speed is affected by the presence of other vehicles.	Urban thoroughfares at off-peak hours
D	High density, but stable, traffic flow. Speed and freedom to maneuver are restricted. Small increases in traffic flow will cause significant operational problems. This LOS is generally used to justify thoroughfare improvements.	Secondary streets at peak hours
E	Operating conditions at or near capacity level. All speeds are reduced to low, but remain relatively uniform, meaning generally not stop-and-go. Operations at this level are usually unstable, because small increases will cause severe speed reductions.	Primary streets at peak hours
F	Forced flow. Heavy congestion. Total breakdown with stop-and-go operation. Queues (i.e., vehicle stacking) at intersections on these lengths may exceed 100 vehicles.	Developed areas in larger cities at the A.M. or P.M. peak hours
Source: North Central Texas Council of Governments		

Regional Transportation Facilities

Freeways, which are discussed herein as the primary regional transportation facility, can be described as high-capacity thoroughfares along which direct access to property is generally minimal or eliminated altogether. Ingress and egress are controlled by access ramps, interchanges and frontage roads; regional examples include Interstate Highway 35 and Loop 1604. Construction and maintenance of freeways is not usually the responsibility of municipalities. The Texas Department of Transportation (TxDOT) and federal monies generally fund improvements of this type of roadway facility.

INTERSTATE HIGHWAY 35

Interstate Highway 35 has been and will continue to be key to the growth of Live Oak. The City should ensure that it is aware of and involved in any discussions or decisions related to Interstate Highway 35. Especially important for Live Oak would be any discussion or decision of widening or controlling access onto and off of the highway. The fact that Interstate Highway 35 links several major Texas cities has led to the need for widening and for controlling access along some portions. NAFTA (the North American Free Trade Agreement) has been one of the catalysts for the increased traffic numbers that have led to this need for widening and controlled access. The portion of Interstate Highway 35 through the city of Austin is currently undergoing construction to widen it in order to accommodate increasing traffic flows; this may very well be necessary in the future in relation to San Antonio communities as the area continues to grow.

LOOP 1604

Loop 1604 serves as the San Antonio area's outer loop. This roadway is also a major corridor for Live Oak, and its intersection with Interstate Highway 35 is especially important to the City's economic development prospects. Access onto and off of this thoroughfare is controlled through the use of ramps.

The San Antonio-Bexar County Metropolitan Planning Organization, in cooperation with other state and local agencies, has made improvements to various segments of Loop 1604 in recent years. As with Interstate Highway 35, it would be important for Live Oak to be involved in any alterations to this major transportation corridor in proximity to the City.

RECOMMENDATIONS RELATED TO INTERSTATE HIGHWAY 35 AND LOOP 1604

Live Oak needs to ensure that the City is made aware of and involved in discussions of implementing any measures leading to further controlling access by decreasing the number of on- and off-ramps in relation to Interstate Highway 35 and Loop 1604, although none are planned at this time. One of the ways in which the City can achieve this is to be involved in the San Antonio-Bexar County Metropolitan Planning Organization (MPO) and the Alamo Area Council of Governments (AACOG). Involvement in these groups would further enhance Live Oak's position during such discussions and decision-making processes on a regional basis.

In addition, because Interstate Highway 35 and Loop 1604 are such a well-traveled regional transportation corridors, it is extremely important for the City to ensure that land uses along this roadway reflect positively on Live Oak. Aesthetically pleasing restaurant and retail uses, such as those that have developed in the past few years in this area, make a positive contribution to the City because of the additional sales tax they create from travelers on these regional highways. This important concept is discussed in further detail in the *Future Land Use Plan*, Chapter 3 and will be discussed within the *Neighborhood & Business Enhancement Plan*, Chapter 5.

Providing for Mobility & Access Locally

The following recommended roadway sections are intended to help the City provide for adequate mobility along high-traffic roadways, while also providing for access to local land uses. It should be noted that an increased width has been recommended for some roadways; however, this is not intended to result in the displacement of existing residents or businesses. Roadways within Live Oak should be initially constructed to the following standards, but existing roadways may never be able to be rebuilt to achieve the widths recommended herein. **Plate 4-1** shows the roadways

TYPE "A": MAJOR THOROUGHFARE

Roadways identified as major thoroughfares are designed to convey relatively heavy volumes of traffic. The thoroughfares provide mobility, but because of the speed and volume of traffic, access to properties should be minimal. Therefore, a limited number of intersections and curb cuts (driveway openings) should be permitted along major thoroughfares in order to protect the integrity of the high-speed traffic flow. A small number of existing roadways have been classified within this *Thoroughfare Plan* as major thoroughfares, either due to their respective right-of-ways, current function, or future projected function. These existing roadways are as follows:

- Topperwein Road, and
- Judson Road.

The recommended right-of-way for a major thoroughfare is shown within **Illustration 4-2**. Roadways of this size are intended to be able to support in excess of 40,000 vehicles per day. The City does not currently have a thoroughfare section of this size within its Subdivision Ordinance. This right-of-way should be incorporated into the Subdivision Ordinance subsequent to this *Thoroughfare Plan* adoption; the City will need to use this for expansion of the recommended roadways as growth and development occurs and the additional capacity is needed.

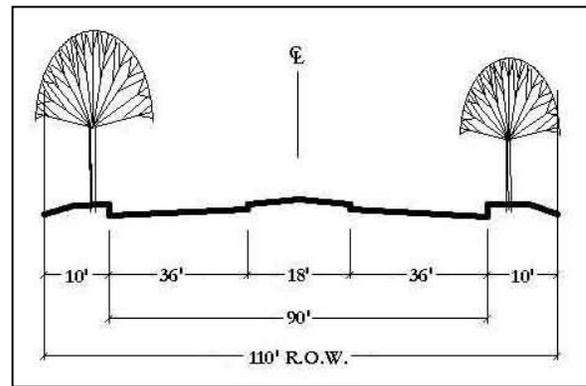
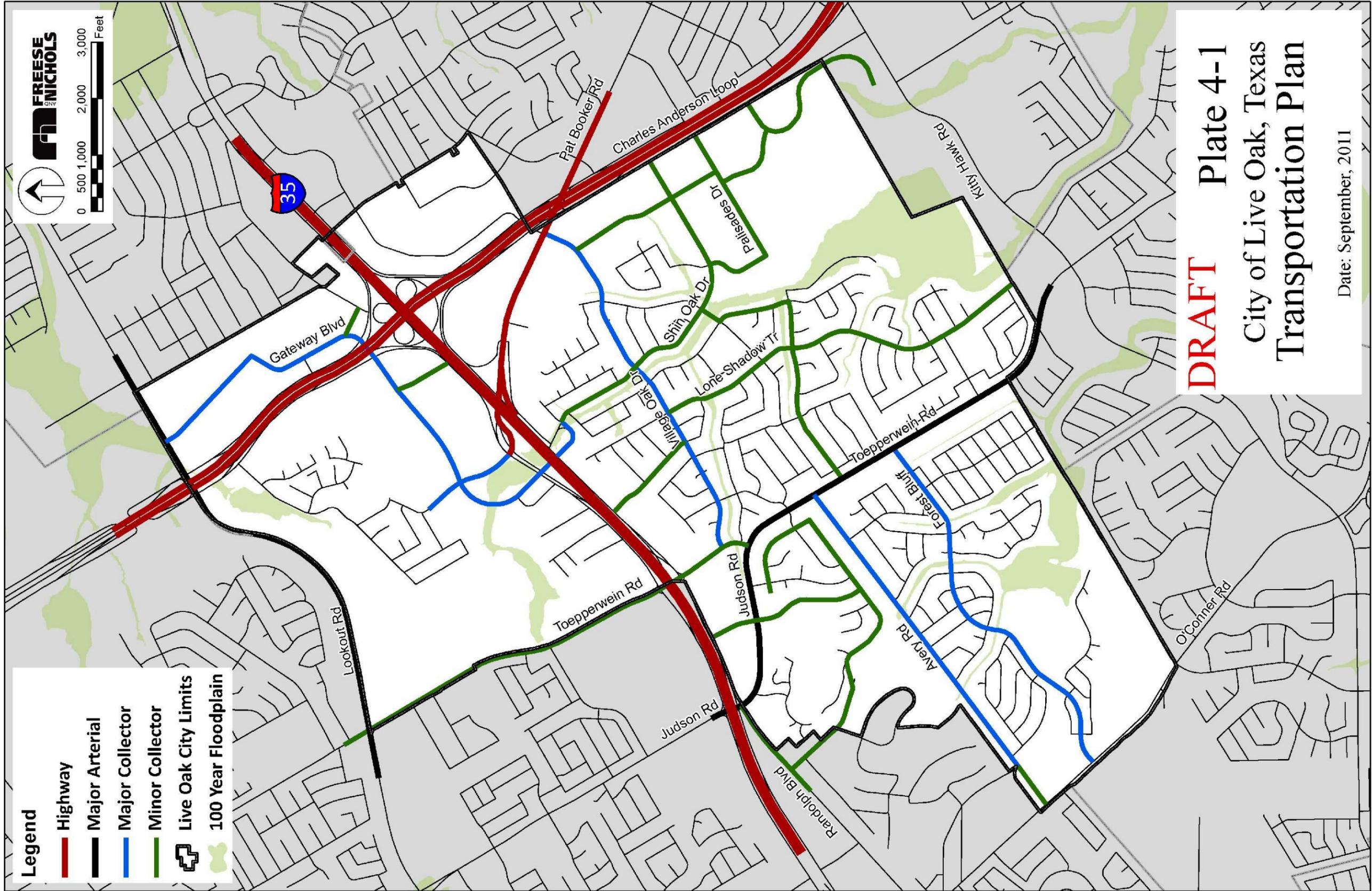


Illustration 4-2
TYPE "A" MAJOR THOROUGHFARE

COLLECTOR STREETS

Collector streets are generally designed to distribute traffic from local access streets and funnel it to major roadways (i.e., from residential developments). Collectors should provide more access to adjacent land uses than do major thoroughfares, but access should still be controlled through the use of shared driveways (refer to **Illustration 4-3**) and other techniques that minimize disturbance of the free-flow of traffic. This type of roadway should provide an equal



Legend

- Highway
- Major Arterial
- Major Collector
- Minor Collector
- Live Oak City Limits
- 100 Year Floodplain

DRAFT Plate 4-1
 City of Live Oak, Texas
 Transportation Plan
 Date: September, 2011

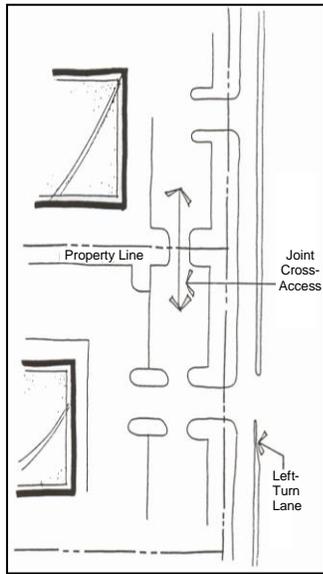


Illustration 4-3
SHARED DRIVEWAY ACCESS
RECOMMENDED FOR COLLECTOR
STREETS

amount of mobility and access to land uses. Neighborhoods should be developed between major thoroughfares and collector streets in the future so that traffic may be diverted from residential areas. In addition, good subdivision design should orient residences to local streets, not to collector streets. Following existing roadways have been classified as major or minor collectors within this *Thoroughfare Plan*:

- Avery Road,
- Lookout Road,
- Shin Oak Drive,
- Village Oak Drive,
- Leafy Hollow,
- Loan Shadow Trail, and
- Forest Bluff.

Two types of collector street sections, major and minor, are recommended within this *Thoroughfare Plan*. The following discussion describes these recommendations.

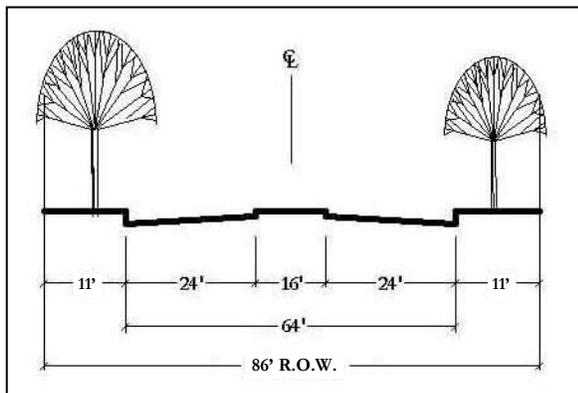


Illustration 4-4
TYPE "B" MAJOR COLLECTOR

Type "B": Major Collector

Equipped to serve up to 40,000 vehicles daily, the Type "B" Major Collector (see **Illustration 4-4**) consists of 4 lanes of traffic, two lanes in each direction of 12 feet, with 86 feet of right-of-way. The center median, which should be a minimum of 16 feet in width, may be painted or raised. The flat median offers ease of access, but can be dangerous. The raised, curbed median creates a divided roadway, which is considered safer and offers opportunities for beautification elements, such as landscaping, to be incorporated within it.

It is recommended that wherever possible, the City construct major collectors with raised medians, for safety as well as aesthetics. No on-street parking should be permitted on this type of thoroughfare. It should be noted that this right-of-way width is consistent with the "Major Street" requirement within the City's Subdivision Ordinance.

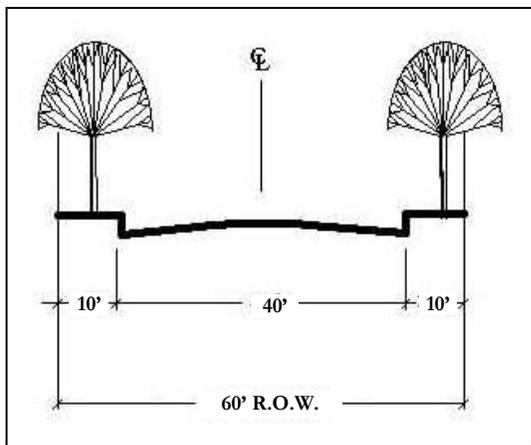


Illustration 4-5
TYPE "C" MINOR COLLECTOR

Type "C": Minor Collector

Type "C" minor collector streets are low to moderate volume facilities whose primary purpose is to collect traffic from smaller streets within an area and to

convey it to the nearest major collector or major thoroughfare. The average daily traffic volume for this type of street is approximately 10,000 to 15,000 trips per day. **Illustration 4-5** shows cross-section of Type “C” undivided major collectors, with 60 feet of right-of-way with 40 feet of paving. It should be noted that this cross-section is consistent with the “Secondary Street” right-of-way within the City’s Subdivision Ordinance.

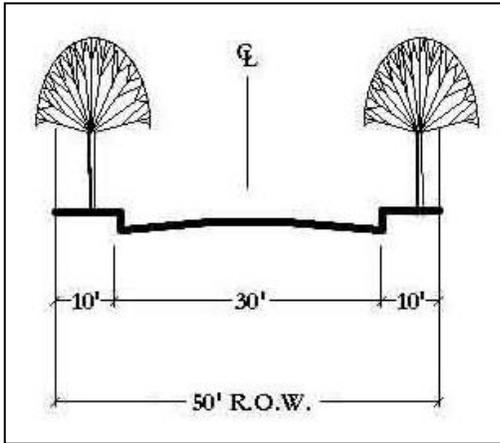


Illustration 4-6
TYPE “D” LOCAL STREET

TYPE “D” LOCAL STREET

Local streets provide the greatest access to adjacent properties, but they function poorly in terms of mobility. Due to the fact that local streets are generally constructed within residential areas, safety is an important issue. To ensure that these roadways are not used a great deal for mobility purposes and to ensure that their ability to provide access safely, local streets should be configured to discourage through-traffic movement by using traffic calming elements, such as offset intersections, curvilinear streets, discontinuous streets, and stop signs. Structured to convey lighter traffic volume (approximately 500 to 1,000 vehicles per day), the local street section shown

in **Illustration 4-6** has a total right-of-way of 50 feet, with 30 feet of paving. This recommended cross section is consistent with the City’s current “Minor Street” requirement. It should be noted that no roadways of this type have been shown on **Plate 4-1**, due to the fact that these roadways are typically interior roadways within residential developments.

Meeting the Current and Future Needs of the City

A number of issues must be considered in the process of developing a *Thoroughfare Plan* for Live Oak. First, the Plan must be compatible with the City’s *Future Land Use Plan* (Chapter 3) and related growth and development considerations. Second, it must address the integrity of existing residential and nonresidential areas; the Plan must balance functions of the thoroughfare system through efficient moving of traffic, and facilitate access requirements. It must consider alignments and right-of-way issues. Finally, the *Thoroughfare Plan* must also incorporate realistic recommendations within the context of budgeting constraints. The following discussion addresses these issues.

COMPATIBILITY WITH THE FUTURE LAND USE PLAN

Land use and roadway planning are closely linked; just as inappropriate land uses can reduce the effectiveness of adjacent roadways, poorly planned roadways can reduce the viability of adjacent land uses. Inappropriate zoning, various types of development activity, the existence of older roadways that now carry higher traffic volumes than originally intended, and continually changing traffic patterns can have negative impacts on the City's thoroughfare system. As previously mentioned, Live Oak should ensure that adequate access (driveway) spacing standards are implemented for land uses located on major thoroughfares and major collector streets in order to promote a smooth flow of traffic and to minimize the impact of individual developments on the safe and efficient function of these roads. The different mobility and access needs of residential and nonresidential land uses are recognized within the *Future Land Use Plan*, and have resulted in the various land use location recommendations therein.

EXISTING RESIDENTIAL AND NONRESIDENTIAL LAND USES

As **Plate 4-1** shows, none of the recommended roadways or roadway extensions causes displacement of any existing residential or nonresidential use. The importance of continued access to nonresidential uses has been reflected primarily in the recommendations for major thoroughfares in areas of the City that are characterized by high concentrations of nonresidential uses. The thoroughfare system as it exists today in Live Oak has evolved over decades, especially from the early 1970's when Live Oak experienced marked growth. Many areas of the City have been previously developed with rights-of-way and land uses firmly in place. Therefore, opportunities for improving traffic flow and access in such areas will mainly be the product of street maintenance and widening, wherever possible. As stated previously, it is not the intent of this *Thoroughfare Plan* to endorse the displacement of existing businesses or residences; existing roadways should generally only be widened to the widths recommended herein wherever existing rights-of-way allow.

FUNDING THOROUGHFARE SYSTEM IMPROVEMENTS

In addition, building and maintaining an efficient street network requires significant investment of local resources. Careful planning is needed to ensure that Live Oak makes the most cost-effective investments in its street network. Funding is usually based upon general obligation bonds or the general fund budgeting process. The City should also coordinate efforts with regional transportation-related agencies, such as the San Antonio-Bexar County MPO and the AACOG, and with the Texas Department of Transportation (TxDOT) in order to maximize the potential for shared financing. Consistent participation in MPO and AACOG planning efforts may also help Live Oak foster relationships that would ultimately help with funding improvements.

Providing for Pedestrian Access

Our nation relies heavily on automobiles, and therefore, alternative modes of transportation have often been neglected during the planning process. The City, however, as recognized the need to accommodate pedestrian circulation, and is in the process of designing and planning for a system of trails to encourage walking, cycling or other forms of alternative transportation. The trail system has been included on the *Thoroughfare Plan* map, **Plate 5-1**. This system would not only add to the overall physical health of the community, but would also contribute to the enhancement of the overall quality of life and environment in Live Oak. Detailed recommendations for a pedestrian and bicycle circulation system are discussed in detail within the *Park, Recreation & Open Space Master Plan* that is currently being developed for the City. In general, pedestrian walkways should be required for all new site plans and redevelopment plans, along major thoroughfares and collector streets, and in areas where connections to existing sidewalks could be made as a result of development.

In Conclusion

Implementation of the *Thoroughfare Plan* will require consistent administration by the City; this will be specifically addressed within the *Implementation Strategies*, Chapter 6. Design and technical standards should continue to be contained within the City's adopted Subdivision Ordinance, and should be consistently reviewed to ensure that such practices are uniform in terms of required size of right-of-way, access controls along rights-of-way (i.e. joint or shared access to mitigate traffic congestion). It should be noted that proposed changes and recommendations for future thoroughfares are predicated upon the goals and objectives formulated during the comprehensive planning process (Chapter 2). Live Oak's recommended *Thoroughfare Plan* policies are summarized within **Table 4-3**.

Table 4-3 THOROUGHFARE PLAN RECOMMENDATIONS City of Live Oak, Texas	
	Ensure that local roadways are operating at a level of service "C" (refer to Table 4-2).
	Continue to be aware of and involved in the San Antonio-Bexar County MPO and the Alamo Area Council of Governments (AACOG) and any regional transportation plans; ensure that such regional plans acknowledge Live Oak's needs and that they are reflected in localized transportation planning efforts.
	Utilize the roadway sections within the <i>Thoroughfare Plan</i> as a guide for roadway requirements within the City's Subdivision Ordinance.
	Construct arterials with raised medians, for safety as well as aesthetics.
	Ensure that adequate access spacing standards are implemented for land uses located on arterial and major collector streets in order to promote a smooth flow of traffic and to minimize the impact of individual developments on the function of the roadways.
	Note that the recommended roadways, roadway extensions, or increased roadway widths are intended to cause displacement of any existing residential or nonresidential use.
	Investigate different funding mechanisms to ensure that future roadways can accommodate population growth. Coordinate efforts with regional transportation-related agencies, such as the San Antonio-Bexar County MPO and the AACOG, and with the Texas Department of Transportation (TxDOT) in order to maximize the potential for shared financing.
	Ensure that future development provides for adequate automobile as well as pedestrian circulation.
Note: Not in any order of priority. Source: City of Live Oak's <i>Thoroughfare Plan</i> .	