

**T H O R O U G H F A R E  
P L A N**

**Section Four**

**Comprehensive Plan 2009**

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## INTRODUCTION

One of the most important aspects of a community's urban structure is the efficient movement of people and goods. An essential tool cities can use to accomplish this goal is a comprehensive, carefully conceived thoroughfare plan which shows the existing roadway network as well as future thoroughfares that will be needed to ensure efficient movement of traffic within and through the community. The *Thoroughfare Plan* is intended to provide an efficient, structured framework for the smooth flow of traffic throughout the area in and around the City of Bee Cave that will result from future growth and development. It also ensures that existing traffic movement can be accommodated by improving certain aspects of the system. The *Thoroughfare Plan* is an overall guide that will enable individual developments and roadways within the City to be coordinated into an integrated, unified transportation system. The plan encourages the creation of neighborhoods with a minimal amount of through traffic, while providing high capacities for routes that are intended to move both regional and local traffic through the community. In addition, because of the relationship the City has to various regional roadways, including State Highway 71, R.M. 620, and F.M. 2244 (Bee Cave Road), people live in surrounding areas and travel into or through the City of Bee Cave to work, to conduct business, or to buy goods and services. While this relationship benefits the community in a number of ways, it also tends to have a tremendous impact upon the area's traffic circulation system.

The thoroughfare system is one of the most visible and permanent elements of the urban structure. The alignments and rights-of-way of the major transportation facilities are already established and adjacent properties are developed, therefore it will be a continuing challenge for the City of Bee Cave to make significant changes to the thoroughfare system. It is important that the roadways in the City are interconnected in order to provide local citizens with alternative routes, thereby allowing local people to bypass the major thoroughfares and ensuring that the majority of the traffic generated along the major thoroughfares is comprised of regional traffic. In addition, in making transportation decisions, consideration should be given to the preservation of scenic vistas, as well as to the fact that the City of Bee Cave desires a pedestrian-oriented community.

Particular attention should be given to preserving and enhancing the overall system's capacity and efficiency. In many ways, Bee Cave's regional circulation system is already established and, primarily due to existing physical factors, is unlikely to substantially change. A significant element to maintaining the integrity of the City of Bee Cave as a rural, Hill Country community will be the ability to work within the parameters set by these major roadways – to make them assets to the community, not barriers to the City's growth and vitality.

**It is essential that a comprehensive thoroughfare system be developed for the City of Bee Cave that is capable of accommodating the expanding vehicular traffic volumes which future local and regional growth will create, and also provide for alternative routes between various areas within the City in order to allow local residents to bypass regional roadways.**

The *Thoroughfare Plan* also considers multi-modal transportation options, such as bicycle and pedestrian trails. It is the intention of the *Thoroughfare Plan* to provide safe and enjoyable circulation for vehicles, bicyclists and pedestrians alike.

## **FUNCTIONS OF THOROUGHFARE PLANNING**

The Thoroughfare Plan defines a hierarchy of roadway functions that provide for both traffic movement and property access. The plan also provides a clear statement of future roadway alignments, capacities (i.e., number of lanes), and right-of-way requirements within the City and its extraterritorial jurisdiction (ETJ). It has been developed to support the Future Land Use Plan by providing adequate capacity on the City's roadways to move both people and goods.

The Thoroughfare Plan is the basic element for ensuring the orderly implementation of roadways in conjunction with economic growth, and it facilitates the preservation of necessary rights-of-way during the development review process. It is one of the few planning elements cities in Texas can implement in their ETJ. The plan provides guidance for determining appropriate land uses by identifying the ultimate configuration of the thoroughfare network. It also serves as a guide for the programming of projects and allows for rational and systematic provision of roadway capacity. The plan should reflect community goals, provide efficient, continuous traffic routes, complement expected land use patterns and characteristics, integrate with both the regional freeway/highway and arterial system, as well as the roadway systems of surrounding local jurisdictions, be sensitive to topographical features and constraints, and be adaptable to accommodate changing conditions and trends.

The Thoroughfare Plan creates a comprehensive approach by which the various departments and agencies responsible for thoroughfare development can coordinate their individual efforts. Examples of these agencies include the Texas Department of Transportation (TxDOT), Capital Area Metropolitan Planning Organization (CAMPO), Travis County, and the City of Bee Cave itself. The standards and criteria contained within this element are intended to ensure consistent design practices in new roadway development or the redevelopment of certain roadways, as may be appropriate. This element was prepared by analyzing the existing system of thoroughfares and by proposing changes and recommendations for future thoroughfares based upon goals and objectives formulated during the comprehensive planning process.

## **REGIONAL AND LOCAL TRAFFIC CIRCULATION SYSTEM**

Several major highways provide nearly all of the access to and through the City of Bee Cave. State Highway 71 serves as the major regional travel corridor through the area in an east-west direction, R.M. 620 provides access in a northwestern direction, and F.M. 2244 (Bee Cave Road) provides access in a northeastern direction. Hamilton Pool Road provides access for the southwest from the city of Dripping Springs. The recent completion of Bee Cave Parkway also provides important relief around the Galleria area.

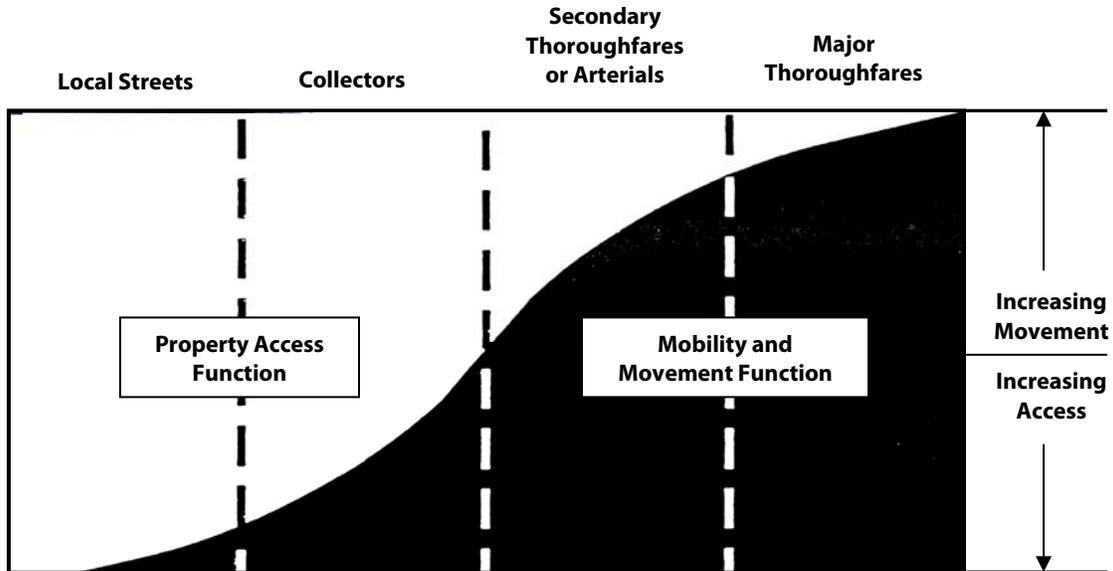
The Colorado River is one of the region's greatest treasures. It is one reason that many people are attracted to the Austin area. While the river is a tremendous asset, it is also a physical barrier to roadway construction. Because few, if any, possibilities are foreseen to cross the river in the west Austin area, R.M. 620 and Bee Cave Road are important roadways that will continue to support growth. The confluence of roadway networks in the City is similar in form to an hourglass – all regional accesses must flow through Bee Cave. This condition exists because there are many environmental and physical constraints to roadway construction in the region. Consequently, traffic through Bee Cave will certainly increase, not solely because of the growth in Bee Cave, but because of regional growth. Therefore, the City of Bee Cave must resign itself to addressing regional traffic concerns while ensuring the least amount of negative impact on Bee Cave residents. Taking all of these factors into account, the area has a sufficient number of major thoroughfares that provide transportation for regional traffic. The main challenges, therefore, are to ensure that the existing thoroughfares continue to provide adequate regional access through the City of Bee Cave, and to provide additional roadways in order to accommodate local traffic.

# FUNCTIONAL CLASSIFICATION SYSTEM AND THOROUGHFARE STANDARDS

To prevent functional obsolescence of the transportation facilities, the City's hierarchical system, which defines the role of each major thoroughfare, needs to be updated. This system, called a functional classification system, establishes the physical design features concerning thoroughfare cross-sections, pavement standards, pavement widths, and access management standards. The *Thoroughfare Plan* element within this Comprehensive Plan is based upon this system. These functional classifications are intended to reflect the role or function of each roadway within the overall thoroughfare system (see **Table 4-1**).

This commonly used functional classification system consists of a hierarchy of streets that range from those which provide for traffic movement to those whose function is access to adjacent properties. **Illustration 4-1** helps to depict the functional street classification system for the community as a whole. The ***mobility and movement function*** refers to the accessibility of adjacent properties from a particular street or thoroughfare. As the illustration indicates, local streets provide the most access to the adjacent properties, but function very poorly in mobility. Principal arterials or major thoroughfares function very well mobility-wise but, because of speeds and volumes, they serve very poorly as access to adjacent roads and properties. With this in mind, streets that carry a higher volume of traffic should have a limited number of intersections and "curb cuts" (driveway openings) so traffic movement will not be impeded. This concept is referred to as the ***property access function***. Collectors are intended to distribute traffic between the arterial system and individual land uses within the area. Arterial or major thoroughfares carry longer trips and should, therefore, form continuous links to carry traffic throughout areas. Collectors supplement the arterial system and should not be continuous for long distances.

**Illustration 4-1**  
FUNCTIONAL CLASSIFICATION SYSTEM



Neighborhoods should be developed between arterials and major collector streets so that traffic is routed around, not through, these areas. In order to further the vision of a pedestrian-oriented community, the City of Bee Cave should ensure the incorporation of the trail system in nonresidential development, and walkways should be included within the rights-of-way of most public streets. Minor collectors should penetrate the neighborhoods to collect and distribute traffic, but not provide convenient cut-through routes. Land use planning efforts should attempt to encourage compatible land uses adjacent to streets. Commercial and retail activities should be developed in such a manner that the primary mobility function of arterial or major thoroughfares is not compromised due to poor access management.

Wherever concentrations of traffic occur on collector streets, consideration should be given to prohibit houses from fronting on these types of streets or thoroughfares. A clustered subdivision design can allow ample lot yield while orienting houses to local streets and not to collectors (refer to the "Cluster Design" concepts described in the *Livability* element of the Comprehensive Plan).

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

CLASSIFICATIONS	FUNCTION	CONTINUITY	SPACING (MILES)	DIRECT LAND ACCESS	MINIMUM ROADWAY INTERSECTION SPACING	SPEED LIMIT (MPH)	PARKING	COMMENTS
Freeway and Expressway	Traffic Movement	Continuous	4	None	1 mile	45 to 55	Prohibited	Supplements capacity and arterial street system, and provides high-speed mobility.
Arterial or Major Thoroughfare	Moderate distance inter-community traffic movement.	Continuous	1/2 to 1 1/2 <sup>(1)</sup>	Restricted - some movement may be prohibited; number and spacing of driveways controlled.	1/8 mile	35 to 45	Prohibited	"Backbone" of the street system.
	Minor function - land access should primarily be at intersections.				1/4 mile on regional route.			
Collector	Primary - collect/distribute traffic between local streets and arterial systems.	Not necessarily continuous; may not extend across arterials	1/4 to 1/2 <sup>(2)</sup>	Safety controls; limited regulation.	300 feet	30	Limited	Through traffic should be discouraged.
	Secondary - land access.			Residential access prohibited; commercial access allowed with shared driveways.				
	Tertiary - inter-neighborhood traffic movement.							
Local	Land Access/Sidewalk	None	As needed	Safety controls only.	300 feet	30	Permitted	Through traffic should be discouraged.

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

<sup>(2)</sup> Denser spacing needed for commercial and high density residential districts.

The City street system should consist of arterials (the major thoroughfares are already in place), collectors and local streets. Freeways and highways are generally under the jurisdiction of the Texas Department of Transportation (TxDOT). Application of a functional classification system and design principles can help produce an optimized traffic circulation system. Major advantages include preservation of residential neighborhoods, long-term stability of land use patterns, increased values of nonresidential properties, fewer traffic accidents, and a decreased portion of urban land devoted to streets. **Table 4-1** describes the most important characteristics of functional classifications. The arterial classification includes major arterials and major secondary thoroughfares. The collector classification system includes major and minor collector streets.

The following recommended cross-sections have been developed to reduce the chance of obsolescence of the area's thoroughfare system. The sections outline the various recommended standards of streets and thoroughfare cross-sections appropriate for the City of Bee Cave, as well as for the region.

## **FREEWAYS AND HIGHWAYS**

Freeways are high capacity highways in which direct access from adjacent properties is eliminated or significantly reduced, and where ingress and egress to the traffic lanes is controlled by widely spaced access ramps and interchanges. No new freeways/highways are expected to be constructed within the City of Bee Cave and its ETJ in the near future.

## **MAJOR THOROUGHFARES OR ARTERIALS**

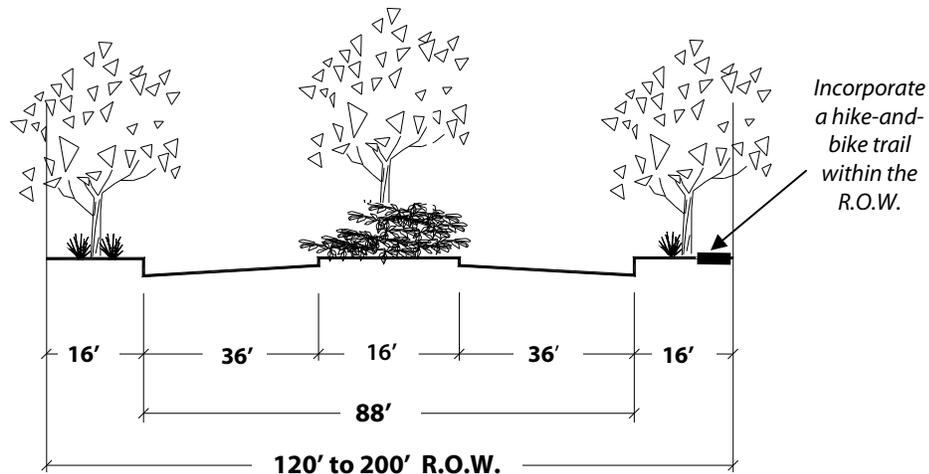
The primary urban traffic carrying system is made up of principal arterials or major thoroughfares. The primary function of major thoroughfares is to provide for continuity and high traffic volume movement between major activity centers (neighborhoods, commercial centers, etc.). These thoroughfares are usually spaced at approximately one-mile intervals unless terrain or other physical barriers create a need for deviation. The minimum major thoroughfare cross-section contains four moving lanes, two in each direction. Right-of-way requirements for major thoroughfares typically range from 100 to 120 feet.

Often, four lanes are constructed within the full right-of-way, leaving a wider median than for a six-lane thoroughfare. This concept allows for an interim solution until traffic volumes warrant the construction of the additional two inside lanes. Due to the fact that these thoroughfares will carry high traffic volumes (15,000 to 42,000 vehicles per day), it is essential that they have continuous and direct alignment and that they interconnect with highways.

## TYPE AA: MAJOR REGIONAL ARTERIAL

A Type AA major regional arterial provides three 12-foot wide lanes in either direction with a 16-foot wide median, with a total right-of-way minimum of 120 feet. **Illustration 4-2** shows an example of this type of thoroughfare. Although the existing State Highway 71 is labeled a “highway”, its local function is termed “major regional arterial”. Currently, however, State Highway 71 provides two lanes in either direction with a turning lane in the center that is not divided with a median. The efficiency of this thoroughfare would be increased with the addition of one lane in both directions, and with a median dividing the three lanes, thereby providing for additional control of where and when left turns are allowed. These and other recent improvements are helping improve the circulation around the Galleria. It should be noted that landscaping within this median would greatly contribute to the overall community image of the City of Bee Cave, especially due to the fact that there are numerous travelers on this thoroughfare on a daily basis (refer to the “Design Criteria for Nonresidential Development” section within the *Livability* element of the Comprehensive Plan).

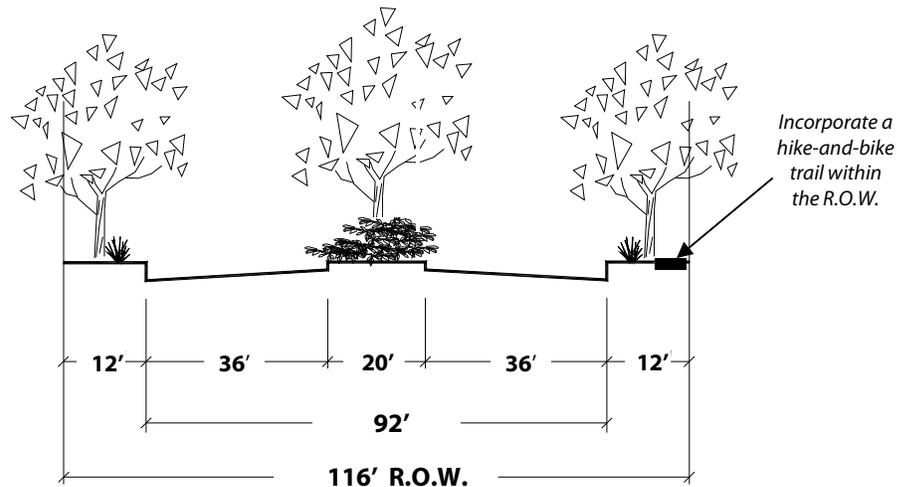
The primary concern in regard to State Highway 71 is that if ingress and egress are not controlled in the future, the Texas Department of Transportation (TxDOT) may feel it necessary to expand the thoroughfare in such a way that would likely have an adverse affect on the City of Bee Cave, especially in terms of the desired aesthetics and atmosphere of the community. The TxDOT 2007 traffic counts in the vicinity of F.M. 2244 (Bee Cave Road) and State Highway 71 show that there are approximately 42,000 vehicles per day in this area. It will be significant, therefore, for the City of Bee Cave to address this roadway, and to ensure that adequate, efficient access controls are provided along State Highway 71. Another thoroughfare of this type is not anticipated in the future. Due to the nature of State Highway 71, a right-of-way of approximately 200 feet is recommended.



**Illustration 4-2**  
TYPE AA: MAJOR REGIONAL ARTERIAL

## TYPE A: MAJOR ARTERIAL

Existing R.M. 620 and F.M. 2244 (Bee Cave Road) are the thoroughfares that would be considered Type A in the area. In addition, the existing Hamilton Pool Road, as well as its proposed extension (refer to **Plate 4-1**), are considered major arterials. A Type A major arterial (see **Illustration 4-3**) also provides three lanes in either direction (i.e., six lanes total) with a 20-foot center median for a total right-of-way of 116 feet. The median should also be raised (i.e., with a curb and a landscaped center) to create a divided roadway. Currently, both R.M. 620 and F.M. 2244 are roadways with two lanes in either direction and with painted center medians. Hamilton Pool Road is a roadway with one lane in either direction, also with a painted center median. However, with the additional growth that is expected, these thoroughfares should be expanded to provide for more efficient traffic flow, and for safer, more controlled turning.

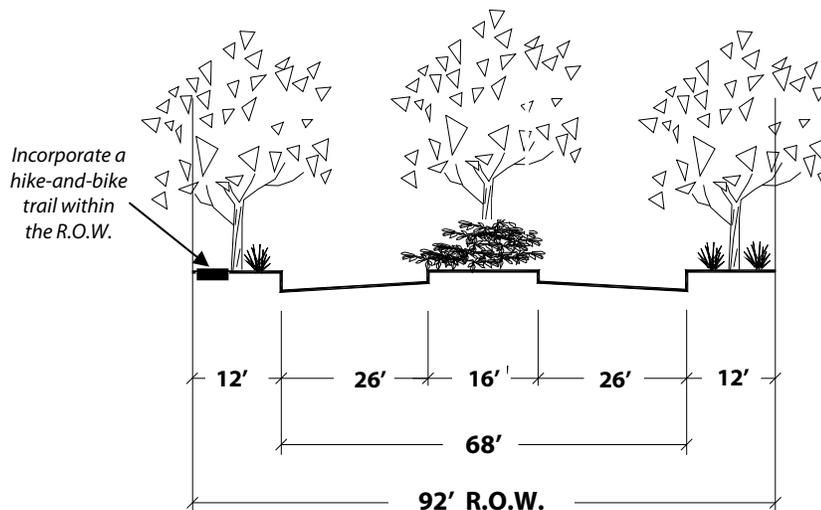


**Illustration 4-3**  
TYPE A: MAJOR ARTERIAL

Divided roadways are generally considered safer than undivided roadways due to the fact that a raised median tends to minimize the number of potential head-on traffic conflicts in the middle of the roadway. As previously mentioned, raised medians also provide an opportunity for landscaping or other aesthetic enhancements within the road right-of-way. The minimum right-of-way for a principal arterial is 116 feet, and 120 feet is preferred; these widths would allow either a divided or undivided street cross-section.

## TYPE B: MINOR ARTERIAL

Where traffic volumes are expected to be more moderate (less than 20,000 to 25,000 vehicles per day), it should be possible to use a four-lane, divided or undivided thoroughfare, indicated as Type B. This arterial has 26-foot wide pavement sections and a 16-foot wide median that can either be raised (i.e., with a curb) or painted to serve as a dual (i.e., flush) left-turn lane, with a total right-of-way of 92 feet. The Type B standard may also be utilized for divided minor arterials or major collector streets that may be appropriate for a specific area with special parkway and landscape treatments. **Illustration 4-4** shows the cross-section for Type B minor arterials with 92 feet of right-of-way.



**Illustration 4-4**  
TYPE B: MINOR ARTERIAL

Two proposed minor arterials are within the City. One is the proposed roadway located south of State Highway 71, which is intended to provide for alternative access for local citizens. Specifically, this road intersects State Highway 71 between Hamilton Pool Road and R.M. 620, and then intersects State Highway 71 again east of F.M. 2244 (Bee Cave Road). The other is the Hamilton Pool Road extension north of State Highway 71, and connecting to R.M. 620.

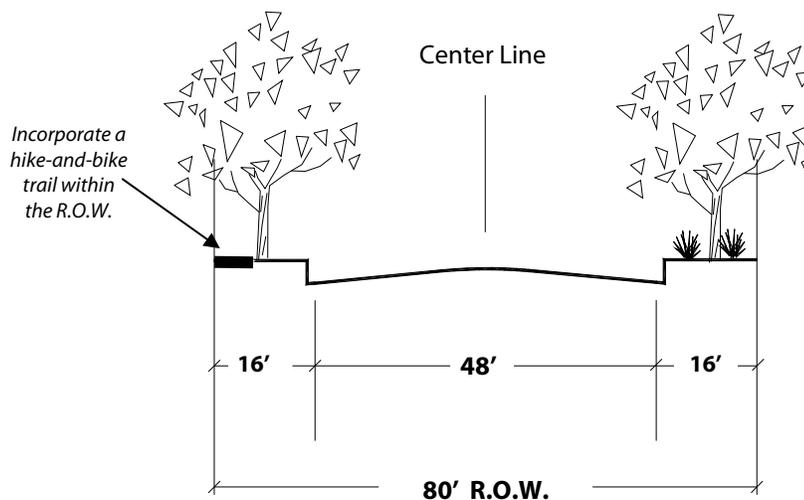
## COLLECTOR STREETS

A collector street's primary function is to collect and distribute traffic from local access streets, as in residential neighborhoods, to a major arterial or the major street system. Collector streets should be located in a manner that discourages through traffic movement. To discourage such movements, these traffic-collecting streets are typically disrupted at some point by offsetting intersections or by incorporating curvilinear design. The collector street may also be used as a local street internal to nonresidential areas or adjacent to multiple-family areas, as well as an access route to amenities such as neighborhood playgrounds.

For these types of developments, 60 to 80 feet is the minimum right-of-way requirement with a minimum pavement width of 48 feet. The minimum right-of-way requirement for collectors within a typical residential neighborhood setting is 60 feet, which will generally accommodate two moving lanes of traffic plus any on-street parking.

### **TYPE C MAJOR COLLECTOR**

Type C major 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 principal or secondary arterial. The average daily traffic volumes for these types of streets should not exceed 10,000 trips per day. Hamilton Pool Road is an example of a major collector street. The Type C major collector street provides for 80 feet of right-of-way with 48 feet of paving for four lanes. This standard may be used as a traffic collection facility within nonresidential areas. **Illustration 4-5** shows the cross-section for Type C major collectors.

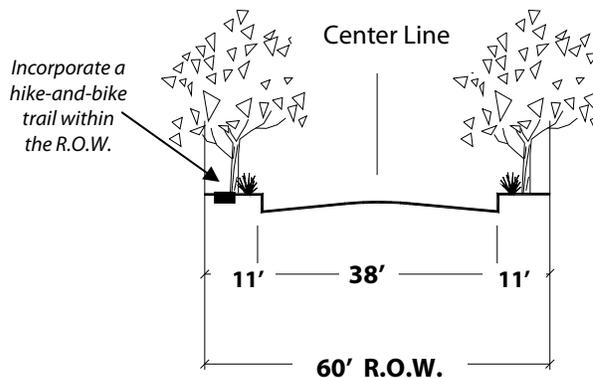


**Illustration 4-5**  
TYPE C: MAJOR COLLECTOR

## TYPE D MINOR COLLECTOR

Type D minor collector streets are low- to moderate-volume facilities whose primary purpose is to collect traffic from residential streets and to transport it to the nearest principal or secondary arterial. The Type D street standard generally provides for two moving lanes of traffic and incidental on-street parking on 36 to 40 feet of pavement, with 60 feet of right-of-way. In general, minor collector streets should be shorter than one mile in length, and are expected to collect moderate volumes (less than 10,000 vehicles per day) of traffic from the internal neighborhood and convey it to a principal or secondary arterial on the neighborhood periphery. Uplands Ridge Boulevard (in the Uplands development) and Great Divide Drive (in the Homestead development) are examples of minor collectors.

As with the Type C collector, the Type D collector street may also be used as a “local” street within nonresidential areas. Where heavy turning movements can be expected at intersections with principal or secondary arterials, the right-of-way width could be flared at intersections (and then transitioned back down to the normal width) to provide for a short length of greater pavement width to accommodate higher traffic volumes and/or larger vehicles through the intersection. **Illustration 4-6** shows the cross-section for Type D minor collector streets.



**Illustration 4-6**

TYPE D: MINOR COLLECTOR

## TYPE E LOCAL/RESIDENTIAL STREET

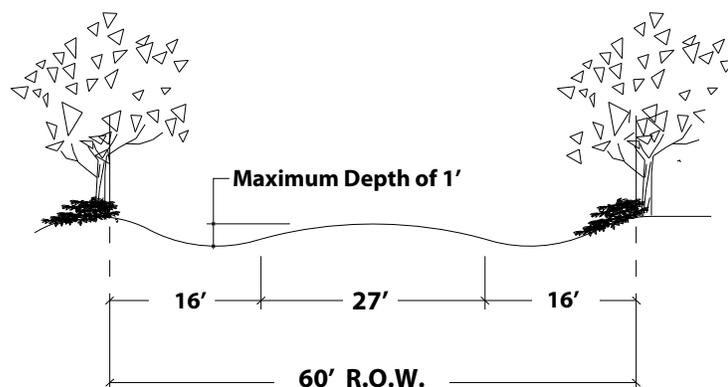
The internal streets within a neighborhood which provide access to residential lots and building sites should be arranged to discourage most through traffic, except that which is directly related to the area. The alignment of residential streets should be either of a curvilinear, discontinuous, looped, or court configuration. Because only limited traffic is attracted to residential streets, they may have more narrow rights-of-way and pavement widths than other types of streets. The usual minimum paving width of a residential street is 30 feet, and the right-of-way requirements are usually a minimum of 50 feet of right-of-way. Residential streets are usually designed to accommodate up to 500 vehicles per day.

Streets no smaller than 22 feet in paving width may be approved by the City in areas that utilize special residential design concepts that put specific emphasis on environmental integrity. This width should not be approved unless it contributes to the clustering technique, or to sound planning concepts such as Traditional Neighborhood Design and New Urbanism (these concepts are described in further detail within the *Livability* element), and must be based on sound traffic engineering analysis (i.e., traffic impact analysis).

## TYPE F RURAL STREET

The City should consider a rural street standard cross section for large-lot residential areas. The following standards should be followed to determine if rural streets are appropriate:

- Minimum lot size of 30,000 square feet;
- Runoff coefficients of 5 cubic feet per second or less;
- Proper swale design; and,
- No curb-and-gutter.



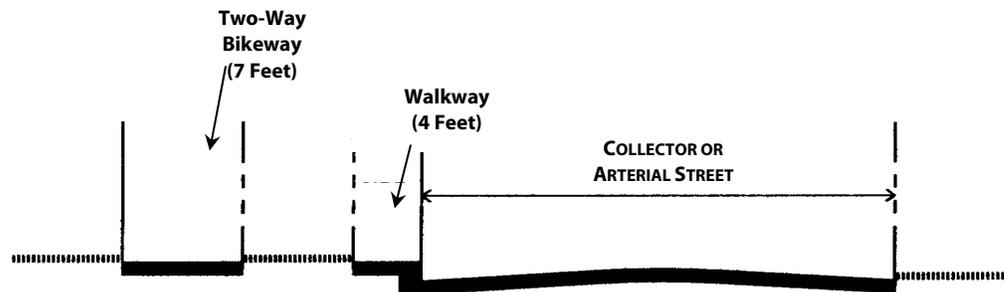
**Illustration 4-7**  
TYPE F: RURAL STREET

## OTHER TRANSPORTATION ELEMENTS

Roadways should be designated to include extra pavement and/or right-of-way width to accommodate bicycle lanes/routes/walkways. The City of Bee Cave has several natural drainage and creek areas that could be used for an off-street trail system, but it will likely be necessary to utilize roadway rights-of-way in many locations in order to create a trail system that connects various areas of the community. In many areas, the use of street pavement and/or right-of-way for bicycle transportation purposes will be possible in the future if the roadways are properly sized and designed. For collectors or arterials that are designated as part of the bicycle route system, extra right-of-way may be required to accommodate bike lanes.

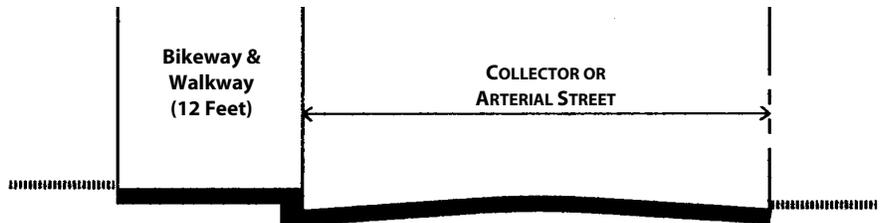
**Illustration 4-8**

TYPE A: EXCLUSIVE BIKEWAY



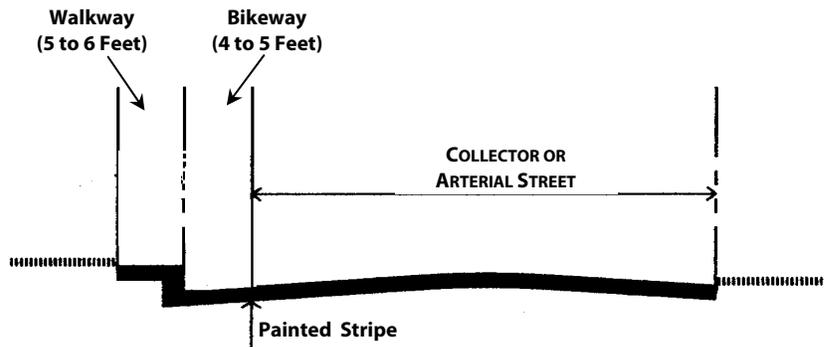
**Illustration 4-9**

TYPE B: SIDEWALK BIKEWAY  
(Separated by curb and grade change)



**Illustration 4-10**

TYPE C: BIKE LANE  
(Same grade as roadway)



## LEVEL OF SERVICE AND TRAFFIC CAPACITY

Capacity is the measure of a street's ability to accommodate the traffic volume along the street. *Level of service* (LOS) is a phrase representative of several factors, including speed, travel time, traffic interruptions, and operating costs of a traffic facility (roadway), used to measure the quality of the facility. In addition, a roadway link refers to a specific length of a roadway, usually between two intersections. Levels of service "A" through "F", from best scenario to worst scenario, are defined in the following table.

**Table 4-2**  
DEFINITION OF LEVEL OF SERVICE FOR ROADWAY LINKS

LEVEL OF SERVICE (LOS)	DESCRIPTION
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.
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.
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.
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.
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.

Level of service "C" is generally the recommended minimum level of service in most communities, and is also the recommended level for roadway design purposes. With the exception of roadway intersections on State Highway 71 (i.e., Bee Cave Road and R.M. 620) that are congested during peak time periods, most other thoroughfares within the City of Bee Cave presently appear to fall within the level of service category of "C". In deciding an acceptable level of service, safety should also be included as an important design consideration.

## THOROUGHFARE PLAN

A number of elements must be considered in the process of developing a Thoroughfare Plan, including the Future Land Use Plan, regional travel demands, traffic movement and access requirements, and existing physical constraints to roadway construction (e.g., major topographical features, floodplains, slope constraints, etc.). The types of land uses that are existing and planned for an area affect the roadway capacity and access needs for that area. Moreover, special efforts will be required in the thoroughfare planning process to ensure that the integrity of residential neighborhoods is protected from unwanted and undesired vehicular traffic.

Balancing the movement and access functions of the thoroughfare system is another consideration in the planning process. Roadways serve two competing functions: the movement of traffic and access to individual properties; these functions are graphically described in **Illustration 4-1**. Inherent conflict exists where ingress and egress maneuvers from individual properties impede the efficient movement of traffic on major roadways, and where high traffic volumes impede turning movements into and out of private driveways. Controlling access so that these two competing functions occur on separate sections of the thoroughfare system is a primary objective of the planning process.

The primary purpose of the *Thoroughfare Plan* is to provide a long-range plan to assist in thoroughfare facility planning and the dedication of needed rights-of-way to implement such a plan. Due to the fact that the major roadways that traverse the City have basically established the thoroughfare system, the majority of the recommendations made are intended to promote and protect the integrity of local transportation needs. The recommended *Thoroughfare Plan* is shown on **Plate 4-1**, for both the City of Bee Cave and its ETJ. One of the benefits of the *Thoroughfare Plan* is the identification of areas of need, upon which resources can be concentrated for additional roadways or expansions of existing roadways, therefore ensuring that these monies are spent efficiently. The *Thoroughfare Plan* is designed to identify the proposed location of collector and arterial streets with the intent to facilitate movement and serve higher volumes of traffic that will occur with future development.

## **THOROUGHFARE PLANNING ISSUES**

The following five broad issues have been considered in developing policies for the City's Thoroughfare Plan:

**(1) Maintaining an adequate, appropriate and efficient roadway network.**

Increased regional population, as well as increased single-person trips, will increase traffic on existing roadways, especially as growth continues in the areas surrounding the City of Bee Cave, throughout Travis County, and along the major thoroughfares. A carefully planned network of streets with access standards can help maintain adequate circulation without sacrificing the community's development potential. The roadway network should include a hierarchy of streets, with each class of street being designed to serve an appropriate function. Standards for each class of street must balance the volume and speed of traffic, public safety, roadway construction and maintenance costs, as well as impacts upon adjacent development. The challenge to provide adequate transportation improvements will continue with increased development.

**(2) Coordinating roadways and adjacent development.**

Land use and thoroughfare planning are closely linked. Just as inappropriate land uses can dramatically reduce the effectiveness of adjacent roadways, poorly planned roadways can reduce the viability of adjacent land uses. Transportation planning in the City of Bee Cave has been impacted by zoning and development activity, by previously established roadways that now carry higher traffic volumes than they were originally designed to carry, as well as by changing traffic patterns. By coordinating land use and roadway decisions within Bee Cave and its ETJ area and with other communities in the vicinity, future compatibility problems between roads and adjacent land uses can be minimized. The City should work closely with CAMPO, TxDOT and other agencies to solve regional transportation issues which affect Bee Cave.

**(3) Cost-effective infrastructure investment.**

Building and maintaining an efficient street network requires significant investment of local resources. Careful planning is needed to ensure that the most cost-effective investments in the street network are made for the community as a whole. Funding is usually based upon general obligation funds and impact fees. Other sources of funding should be considered in the future.

**(4) Network for non-automotive (multi-modal) transportation.**

America's heavy reliance upon automobiles has led many communities to forget about or ignore other alternative modes of transportation. Through appropriate design and planning, a low-cost system of trails and paths that encourage residents to travel by foot or bicycle can be developed throughout the community. Increased use of other modes of transportation would improve the health of local residents, and would have a positive impact upon the environment and community character.

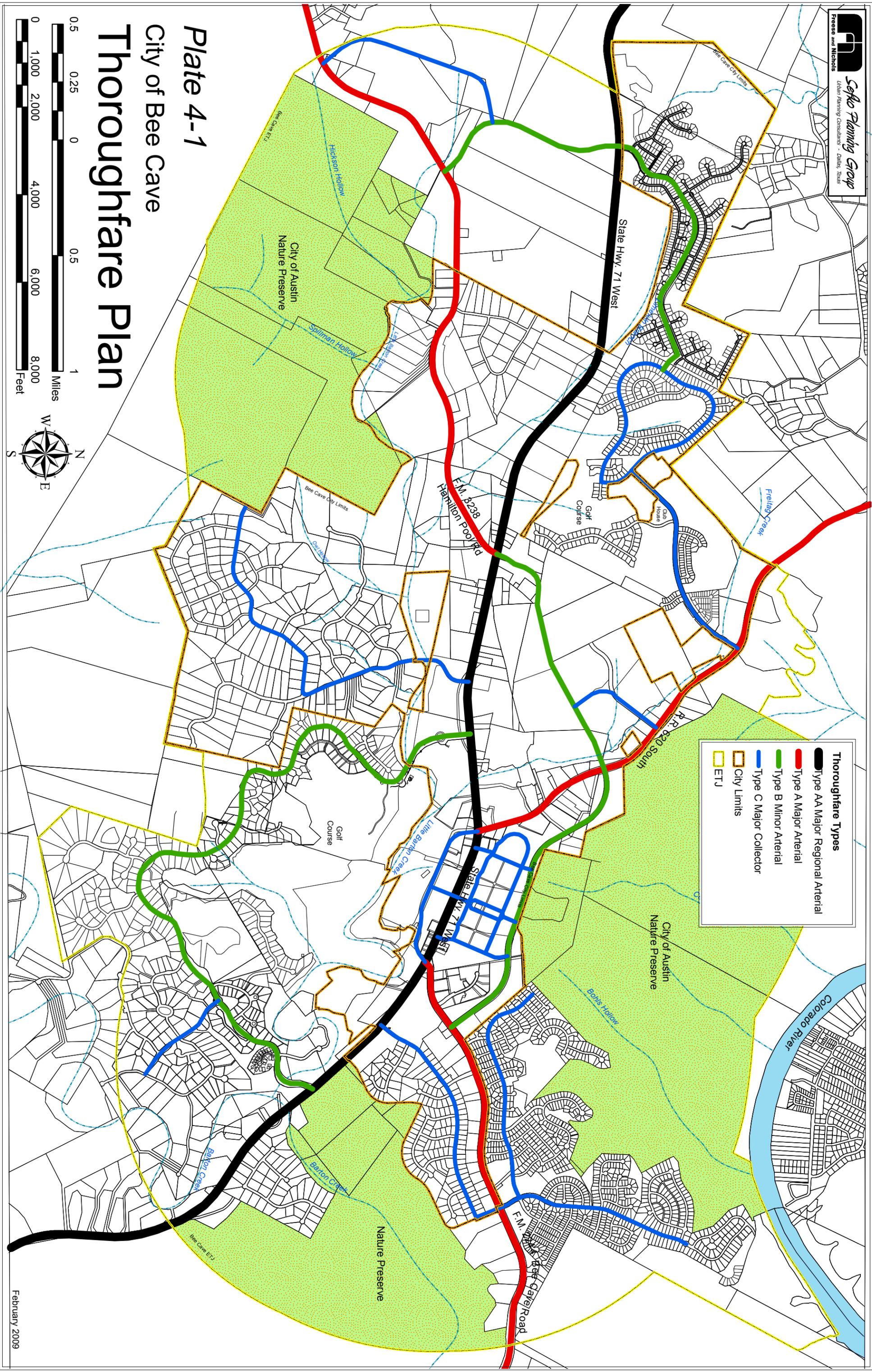
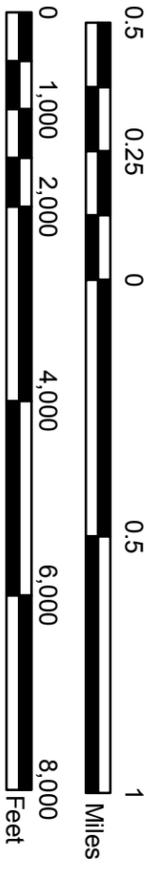
**(5) Local access within the City of Bee Cave.**

Regional access throughout the area has already been established by such roads as State Highway 71, R.M. 620, and F.M. 2244 (Bee Cave Road). Therefore, the challenge is to provide alternative access for local citizens, in order to allow the majority of the traffic generated along these roadways to be through-traffic.

# Plate 4-1

## City of Bee Cave

### Thoroughfare Plan



Thoroughfare Types	
	Type AA Major Regional Arterial
	Type A Major Arterial
	Type B Minor Arterial
	Type C Major Collector
	City Limits
	ETJ



## **THOROUGHFARE SYSTEM RECOMMENDATIONS**

The City of Bee Cave will face two basic challenges in improving its overall traffic circulation system. First, the City will need to upgrade existing streets while addressing right-of-way constraints and minimizing the disruption of existing residential neighborhoods. The second challenge will be the provision and protection of needed rights-of-way for roads, and the timing and continuing construction of new roadways in developing areas. The majority of the proposed roadways are intended to facilitate future movement around and within the City of Bee Cave. Therefore, several linkages between and extensions of existing roadways within Bee Cave are recommended. **Plate 4-1** shows the recommended Thoroughfare Plan for the City of Bee Cave and its ETJ area. It will be extremely important for the City to work with CAMPO and TxDOT to solve major transportation issues as growth in the area continues.

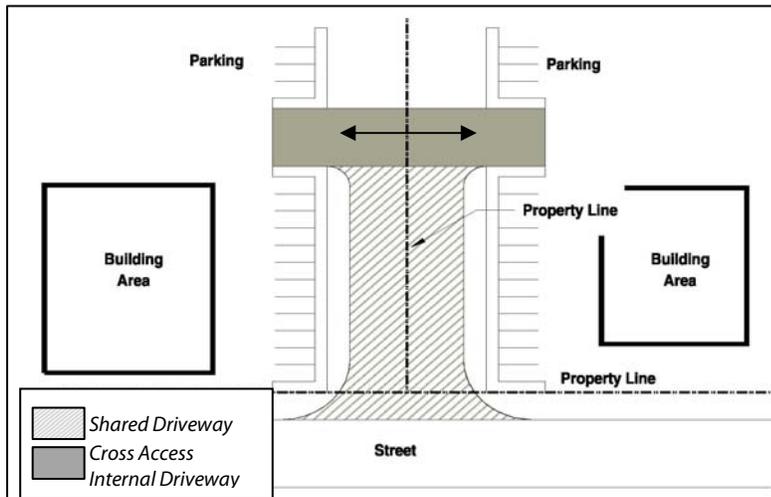
The area currently within the ETJ that is located north of State Highway 71 and west of R.M. 620 has substantially developed since 1999. A major arterial that was recommended in 2000, which is actually an extension of the existing Hamilton Pool Road has been partially constructed and will connect to R.M. 620. The construction of this connection would allow residents an alternative access to R.M. 620 from State Highway 71, and would allow them to avoid the intersection of State Highway 71 and R.M. 620. Another thoroughfare recommended in 1999 is a minor arterial, is located south of State Highway 71, and is another area within Bee Cave's ETJ that is developing. Again, this thoroughfare is intended to provide for alternative access for local citizens, allowing them to avoid both the intersection between State Highway 71 and R.M. 620 and the intersection between State Highway 71 and F.M. 2244 (Bee Cave Road). Both of these connections are shown in **Plate 4-1**. Other recommended roadways that are shown on the Thoroughfare Plan consist primarily of collector streets and residential streets in the western portion of the City of Bee Cave. Connections have been provided between these roadways and all major thoroughfares, with the exception of F.M. 2244 in the eastern portion of the City.

Another roadway recommended in 2000 was an optional "bypass" shown adjacent to the nature preserve between R.M. 620 and Bee Cave Road. This roadway is substantially complete (now named Bee Cave Parkway).

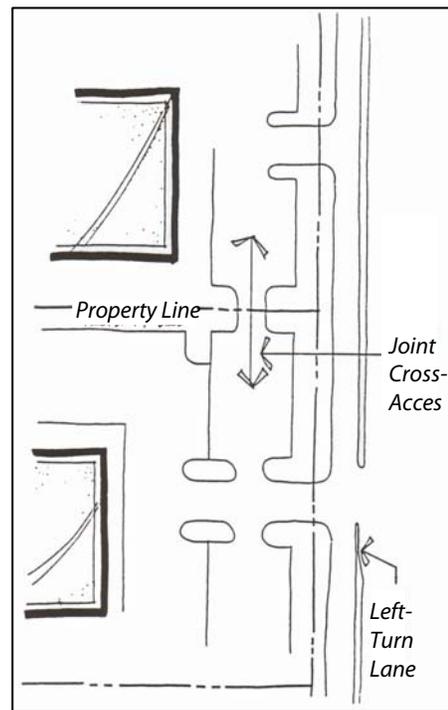
## ACCESS STANDARDS

In order to protect the integrity of the existing major thoroughfares in Bee Cave, access design standards should be developed and (often approved by TxDOT) adopted in a separate thoroughfare standard ordinance. The flow of traffic is typically a major concern for most communities. Communities desire to provide a transportation infrastructure that moves traffic efficiently and ensures public safety. The ability to move traffic efficiently along a corridor with minimal interference from traffic turning from and onto intersecting driveways / streets is a major benefit to motorists. Ideally, traffic should be able to avoid unnecessary "stop-and-go" inconvenience due to over abundance of intersecting driveways / streets (refer to **Illustration 4-11**).

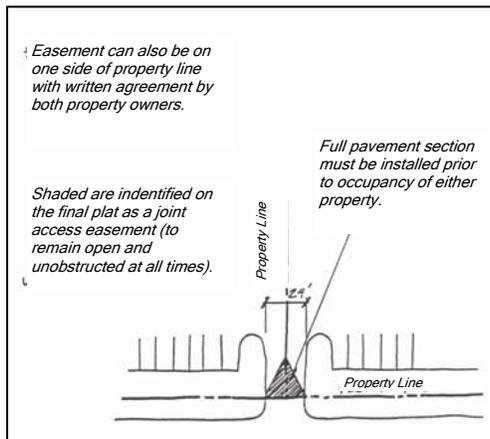
**Illustration 4-11**  
ACCESS MANAGEMENT



Shared Access Driveway & Cross-Access Internal Driveway



Cross-Access



Shared Access - Joint Property Openings for Nonresidential Sites



Example of a Shared Driveway between Two Nonresidential Uses

**Shared Driveways** – Currently, a growing number of cities across Texas limit the number of intersections and driveway openings (curb cuts) that are permitted along major roadways in order to maximize traffic efficiency and safety. The concept of “shared driveways” has been promoted as a method to limit the over abundance of driveways along major roadways. The general concept of shared driveways allows existing driveways to remain in place, but requires new developments to incorporate the use of shared driveways and to provide cross-access between developments.

**Driveway Spacing** – In addition to the concept of “shared driveways,” the City should investigate developing minimum driveway spacing standards. These standards would detail the minimum distance that a driveway must be spaced from intersections and existing driveways. Therefore, as a result of regulating driveway spacing, traffic safety and traffic integrity (the consistent movement of traffic with minimal interruptions to traffic flow) will be improved.

**Cross-Access** – Additionally, cross-access is a simple site design concept that ensures neighboring developments have access to one another without the need for a vehicle to go out onto a roadway unnecessarily. For example, a retail development at a major intersection is anchored by a major retailer, such as a Home Depot or Target, with smaller restaurant pad sites along the public roadway frontage. If cross-access among these lots/users is provided for in the design and construction of the overall development, then someone is able to drive from one of the restaurant pad sites to the retail anchor, and back again, without having to go out onto the public roadway, thus reducing the amount of traffic on the road.

## RELATIONSHIP BETWEEN THOROUGHFARES AND NEIGHBORHOODS

The importance of the major thoroughfare system is providing the skeletal framework within which logical residential neighborhood areas can be developed, as has been previously mentioned. A "neighborhood" usually results from the assembly of a series of subdivisions into a logical, functional unit. The major thoroughfares shown on **Plate 4-1** have primarily been designed to allow for the formulation of residential areas.

A neighborhood park, and other neighborhood amenities such as swimming pools, are generally located near the center of the neighborhood area, and should be made accessible from all parts of the neighborhood by a system of collector streets. The internal neighborhood streets should be arranged to be discontinuous and curvilinear, and thereby discourage through traffic movements, while providing alternative choices, such as Traditional Neighborhood Development (TND). Guidelines should be developed which require a minimum percentage of residential streets within a new residential subdivision to be curvilinear in form. In addition, pedestrian linkages to such amenities should be provided, in order to decrease the amount of traffic within residential areas.

When retail/service uses (e.g., a neighborhood-serving shopping center) adjacent to neighborhood areas are appropriate, such retail/service uses should be located at the edge of the neighborhood, preferably at the intersection of major thoroughfares. Likewise, churches, when an integral part of the neighborhood, should be located on major thoroughfares or near the intersection of major thoroughfares. Both the shopping center and the church will serve a larger area than the immediate neighborhood, and both involve periods of heavy traffic and parking concentrations that, unless properly handled, can adversely affect the adjacent residential areas.

The basic major thoroughfare system shown on **Plate 4-1** should be considered as the structuring framework for future neighborhoods and as the framework for any redevelopment and rehabilitation of existing areas within the City of Bee Cave, as well as within the neighborhoods located within the City's ETJ.

The preponderance of vehicular traffic movement within the community should be concentrated upon the major arterial roadway system and, to a lesser extent, on major collector streets, while the internal (i.e., local/residential) street system should have only very light vehicular traffic when it is related to local access of property and homes. Through careful pre-planning of neighborhood areas and with developer cooperation, it will be possible to achieve the basic major and secondary thoroughfare system arrangement recommended by the Thoroughfare Plan for the community as a whole. The roadway system should be designed to provide a choice of alternative routes for area residents to the furthest extent possible.

To achieve the thoroughfare system envisioned by the plan, it will require the cooperation of all levels of government responsible for highway and thoroughfare development as well as that of private developers. The significant thoroughfare facilities provided in and near the City of Bee Cave have resulted mainly by the combined efforts of County, State and Federal agencies. Continued local efforts will be necessary to finance future thoroughfare development and, in some cases, require widening of rights-of-way at the time of subdivision platting and development. State laws (i.e., Chapter 395 of the Texas Local Government Code) now affect developer participation for off-site facilities such as roadways, and Bee Cave should seriously consider re-evaluating roadway construction participation policies in the near future in areas which are primarily vacant.

## **TRANSPORTATION PLANNING POLICIES**

The following sections describe the recommended policies to guide the City of Bee Cave's transportation planning efforts:

- (1) **Plate 4-1** shows the proposed major Thoroughfare Plan for both the City of Bee Cave and its ETJ area. The plan shows the location of existing or planned roadways other than local streets. The City should use this plan to determine the classification of planned roadway segments. Additional collector streets may be needed to serve traffic within new developments. The alignment and capacity of these streets should be determined as part of any action on a preliminary plat, final plat, site plan or zoning case, and they should also be based upon the Thoroughfare Plan. Construction standards and design guidelines enforced in the area, as well as the subdivision regulations of Bee Cave, provide detailed standards for roadway design and construction. Any plat, site plan or zoning change request not in conformance with the Thoroughfare Plan should not be approved unless an acceptable alternative is developed and approved.
- (2) General planning guidelines for roadways within the City of Bee Cave and throughout the area, including the function of each type and key design characteristics, are included in illustrations in this *Thoroughfare Plan*. The City should use these illustrations in conjunction with design guidelines established within the *Livability* element of the this *Comprehensive Plan 2009*, and with detailed specifications found in the Subdivision Ordinances to determine the appropriate design standards for planned roadway improvements.
- (3) The City should seek to maintain a minimum level of service (LOS) standard of "C", as described in **Table 4-2**, on its roadways. This standard should be used in reviewing the transportation needs of development proposals. In addition, TxDOT should be involved if the LOS on State Highway 71 is less than Level "C".

- (4) The City should prioritize, phase and schedule transportation system improvements in accordance with this *Comprehensive Plan 2009* and the ability of the community to fund such improvements.
- (5) On-site local and collector streets that are constructed by developers must be in accordance with the City of Bee Cave's regulations. Bee Cave may also require construction of off-site streets or street improvements needed to provide adequate access to the development. This policy should be implemented through specific provisions of the Subdivision and Zoning Ordinances.
- (6) The City of Bee Cave should coordinate with TxDOT and other local jurisdictions, such as surrounding communities and Travis County, when planning transportation improvements.
- (7) Streets should be designed in a comprehensive fashion considering street trees, ADA-accessible pedestrian walkways and bike lanes, signage, lighting and air quality whenever any of those factors are applicable. Citizen involvement in major street-widening projects should be sought.
- (8) Retail and other nonresidential uses that generate high volumes of traffic should be limited to locations where major arterial roadways provide sufficient access for non-local/regional traffic.
- (9) Except as specifically approved by the City, all development should provide adequate on-site parking for normal operations. Exceptions to this condition can be made for specific areas, especially environmentally sensitive areas. Shared parking areas for nonresidential land uses are encouraged in order to reduce the amount of impervious surface within the City. This policy should be implemented through specific provisions in the City's Subdivision and Zoning Ordinances.
- (10) A bicycle and pedestrian trail system should be considered.

## IMPLEMENTATION

The existing thoroughfare system within the City of Bee Cave has been established by three primary entities: (1) County or State participation; (2) local construction of facilities; and (3) developer participation. Due to changes in State law (Impact Fees, Chapter 395 of the Texas Local Government Code), the City will still be able to require assistance from developers in building thoroughfares (as well as water and wastewater facilities), but will require different administrative techniques.

Monies for capital improvements in communities across Texas are generally becoming more difficult to secure each year. It is necessary, therefore, for Bee Cave to carefully manage its available funding resources in the implementation of not only the thoroughfare system, but other public facility systems as well. The proper administration of the Thoroughfare Plan will require the following actions:

### COORDINATION OF CAPITAL IMPROVEMENTS

Many of the major thoroughfares that are improved in the City of Bee Cave, as well as its ETJ area, will involve cooperation with TxDOT, Travis County and, in some cases, will involve some financial participation by the City itself. Bee Cave will likely have to assume the responsibility for constructing a reasonable portion of its thoroughfare system for its residents as it expands its physical boundaries. The responsibility of accommodating regional traffic should be primarily lie with TxDOT, with input and help from the City. It must be recognized that the thoroughfare system will be built incrementally over an extended period, perhaps 20 or 30 years. It should be of prime importance for the City to work with CAMPO and TxDOT on major improvement projects.

### SUBDIVISION CONTROL

The subdivision of land into building sites represents the first step in the development of urban land uses and the creation of traffic generators. Reasonable land (i.e., right-of-way) must be set aside at the time of subdivision platting so that adequate thoroughfares can be created without adversely affecting the value, stability, and long-range character of the area being developed. ***Specifically, right-of-way must be dedicated in accordance with the Thoroughfare Plan as each plat is approved.*** Right-of-way protection and reservation within the City's ETJ is particularly significant.

## **ZONING AND LAND USE CONTROL**

The adequacy of existing and planned thoroughfares must be taken into consideration in all changes of zoning and land use. When such changes occur, the space allocated for street use (i.e., right-of-way) should be provided commensurate with the overall use contemplated within the area.

## **BUILDING LINES**

Where widening of an existing thoroughfare right-of-way is contemplated, buildings should be set back to allow for the planned widening to ensure that the uses function properly with the new thoroughfare after the proposed improvement is made. In some cases, it will be desirable to establish building lines by ordinance to help ensure the orderly and uniform development of thoroughfare frontage.

## **OTHER CONSIDERATIONS**

Certain aspects of the plan, such as access controls along major arterials, should be implemented through other design and technical standards that may or may not be included in the City's respective Zoning or Subdivision Ordinances. Examples of other standards that need to be implemented are sight and visibility standards and joint (i.e., shared) access standards. Impact fees, if adopted, should also be established under a separate process.