

CHAPTER 3: THOROUGHFARE PLAN



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INTRODUCTION TO THE THOROUGHFARE PLAN

The Thoroughfare Plan is designed and developed to provide an efficient, structured framework for future growth and development. It also ensures the existing traffic movement can be accommodated by improving certain aspects of the system. The Thoroughfare Plan is an overall guide used to enable individual developments within the City to be coordinated or integrated into a unified system. Additionally, the Plan encourages the creation of neighborhoods with a minimal amount of through traffic while providing high capacity to routes for moving regional traffic and local traffic throughout the community. The Thoroughfare Plan specifies routes or alignments, pavement and right-of-way cross sections, and other recommendations based upon future traffic needs of Copperas Cove.

The Thoroughfare Plan also creates a comprehensive approach by which the various departments and agencies responsible for thoroughfare development can coordinate their individual efforts. Examples of these agencies are the Texas Department of Transportation (TxDOT), the Killeen-Temple Urban Transportation Study (K-TUTS) Policy Board, Coryell and Bell Counties, and the City of Copperas Cove. The standards and criteria contained in this element are intended to ensure consistent design practices in new or redeveloped areas, as may be appropriate. This element was prepared by analyzing the existing system of thoroughfares; proposed changes and recommendations for future thoroughfares were based upon goals and objectives formulated during the comprehensive planning process.



Illustration 3-1
**U.S. Highway 190 in
Copperas Cove**



Illustration 3-2
Tank Destroyer Boulevard

THE EXISTING STREET SYSTEM

Although U.S. Highway 190 accommodates the preponderance of traffic in Copperas Cove today, the community had originally developed adjacent to the Gulf, Colorado and Santa Fe Railroad in the vicinity of the downtown area at the convergence of Farm to Market (F.M.) Roads 1113 and 116. As the community developed, regional traffic generators influenced the development of much of the circulation system that now exists in Copperas Cove. There are two basic classifications of traffic generators that affect the transportation system in Copperas Cove. Regional generators such as Fort

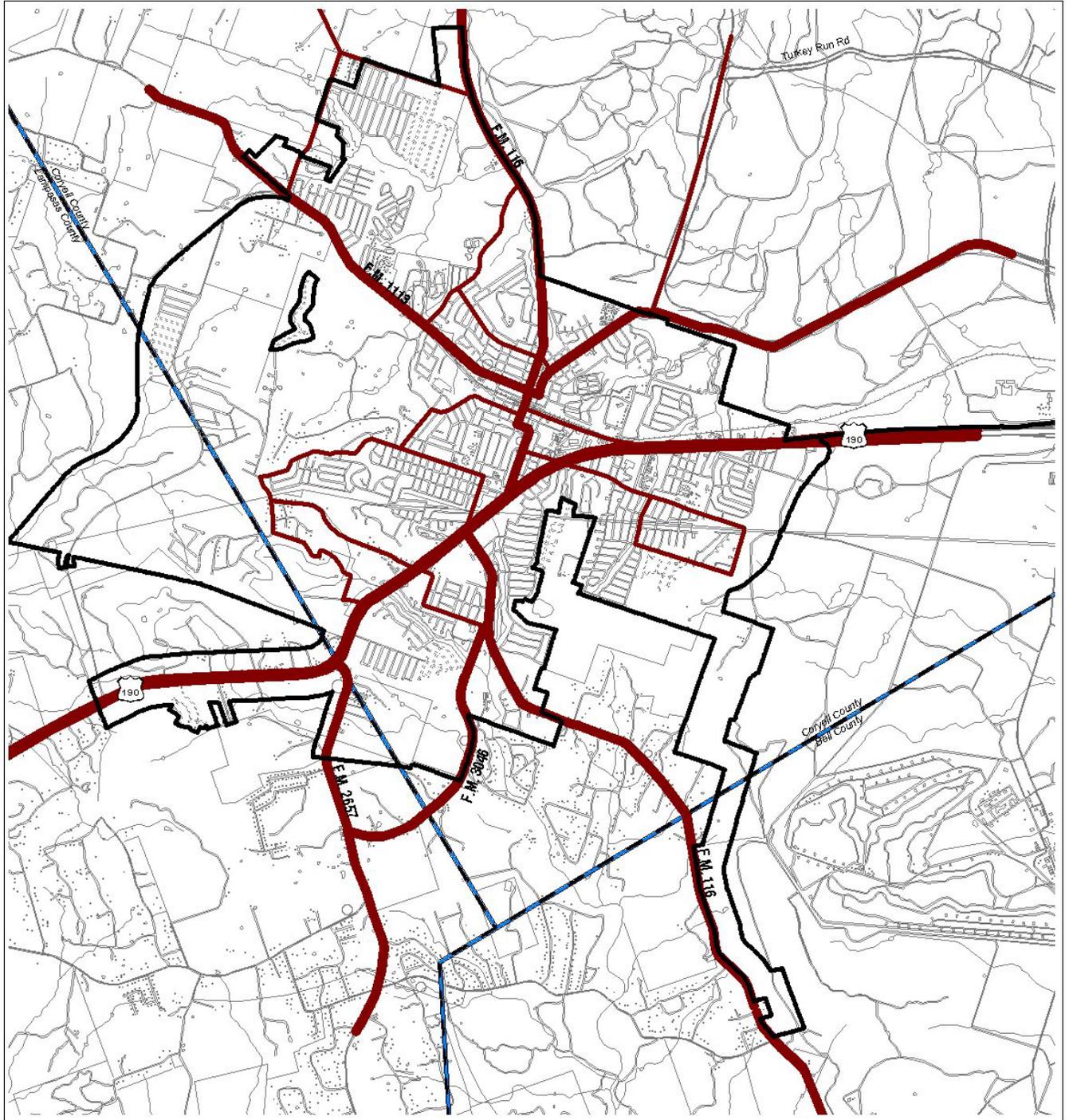
Hood influence traffic on U.S. Highway 190, while local traffic generators such as high schools and business areas affect not only U.S. Highway 190, but also local streets. The following is a list of traffic generators that are considered to significantly affect circulation in the Copperas Cove area:

1. Copperas Cove High School,
2. Junior High, Intermediate, and Elementary Schools,
3. City Hall (and other government activity centers),
4. The downtown area,
5. Shopping and business areas along U.S. Highway 190, and
6. The Copperas Cove Municipal Golf Course.

It is essential that a thoroughfare system be developed in Copperas Cove that is capable of accommodating the expanded vehicular traffic volumes which future growth will create and also provide convenient access to the various existing major traffic generators. The daily (24-hour) volume of traffic, which moves on the basic arterial street system in Copperas Cove, can provide important insights to the flow and direction of traffic. **Table 3-1** and **Plate 3-2** display and illustrate daily traffic volumes as compiled by the Texas Department of Transportation for 2003. U.S. Highway 190 carries the greatest amount of traffic ranging from 29,000 vehicles per day between Main Street and Avenue D to 55,000 vehicles a day just east of the intersection of F.M. 1113 and Avenue D. As can be expected, the increase in traffic on Copperas Cove streets has increased with population. **Table 3-1** illustrates how traffic volumes, since 1993, have risen in all the given locations. Until alternate routes are constructed, traffic volumes on U.S. Highway 190 can be expected to increase and carry the majority of traffic in the region, since there is currently no other thoroughfare providing continuous east-west access.

Year	U.S. 190 at Main St.	U.S. 190 at Ave. D	U.S. 190 at F.M. 116	F.M. 1113 at Main St.	F.M. 116N at Courtney	F.M. 116S at U.S. 190
1975	N/A	16,990	6,420	5,210	1,390	2,890
1985	N/A	34,180	10,430	6,850	1,870	8,450
1990	19,400	40,000	11,000	5,900	3,000	7,700
1993	20,000	40,000	11,000	9,500	4,800	10,000
2003	29,000	55,000	18,800	10,300	7,400	10,800
Percent Change (From 1993-2003)	45%	38%	71%	8%	54%	8%
Number Change (From 1993-2003)	9,000	15,000	7,800	800	2,600	800

Source: TxDOT



Existing Roadway System

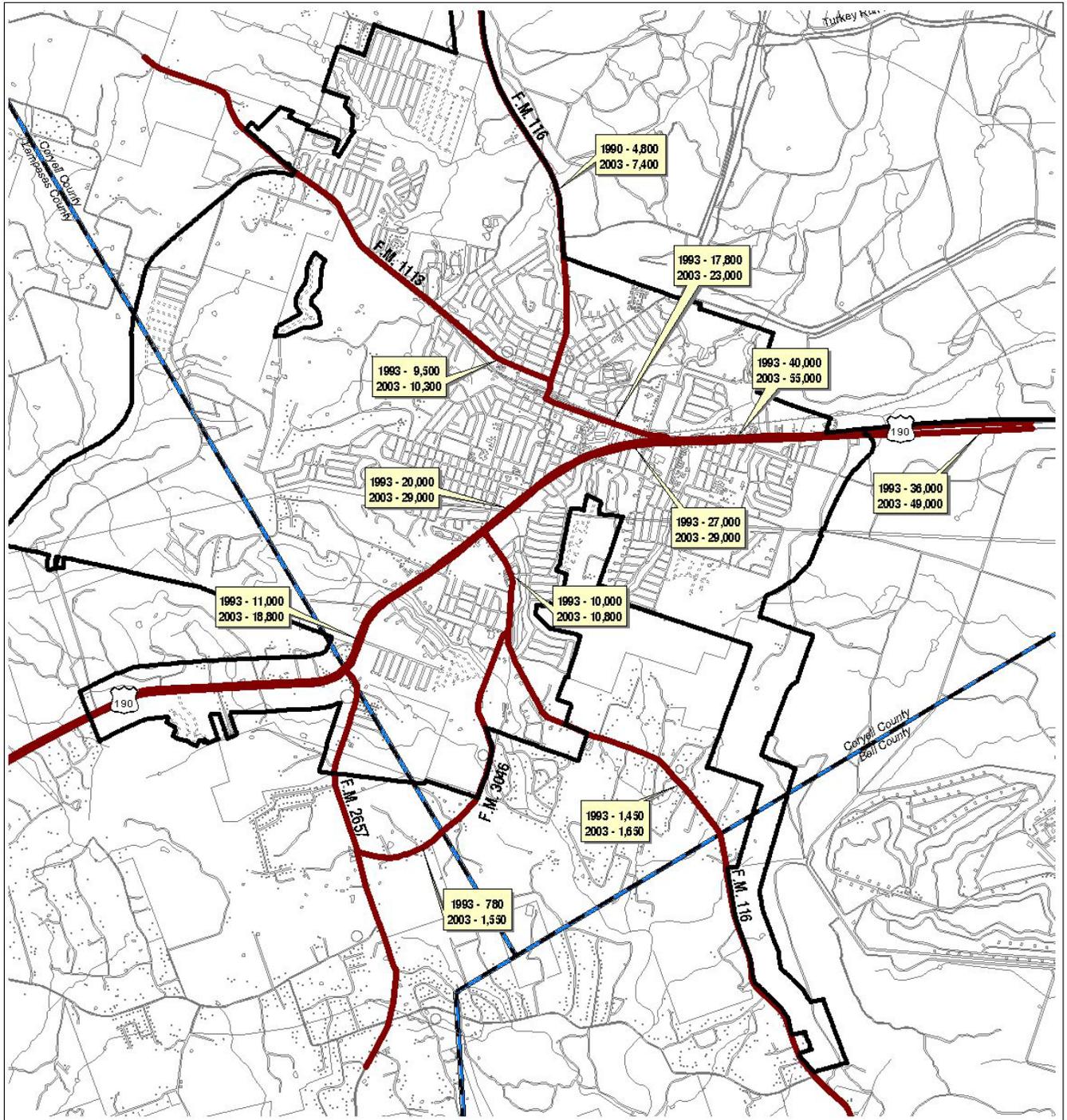
Plate 3-1



Dunkin Sefko & Associates, Inc.
Urban Planning Consultants, Dallas Texas
Date: May 2007



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Daily Traffic Volumes

Plate 3-2



Dunkin Sefko & Associates, Inc.
 Urban Planning Consultants, Dallas Texas
 Date: May 2007



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PROBLEMS AND DEFICIENCIES

Copperas Cove's existing street system suffers from several recognized problems and deficiencies. Some areas have been observed to have peak-hour congestion that should be noted and addressed by the Plan. Congestion means the level at which local officials decide that the transportation system performance is no longer acceptable due to traffic interference. The level of acceptable system performance may vary by the type of transportation facility, geographic location, and time of day. The following are problems or deficiencies identified as part of Copperas Cove's existing street system.

1. Lack of east/west and north/south major arterials or thoroughfares to connect residential and employment areas. Presently U.S. Highway 190 is the only major continuous roadway in the community.
2. Certain intersections along U.S. Highway 190 and other major arterials are experiencing congestions that have been determined to be unacceptable during certain periods of peak hours. These areas are:
 - a. Ave. D at First Street (downtown area),
 - b. Main Street at Robertson Avenue,
 - c. U.S. Highway 190 at Main Street,
 - d. U.S. Highway 190 at Robertson Avenue, and
 - e. U.S. Highway 190 at the intersection of Avenue D.
3. Lack of a clearly defined collector street system.
4. Lack of adequate access standards for properties adjacent to major thoroughfares.
5. Major thoroughfares and collectors terminated or significantly altered due to terrain and topography constraints.
6. Streets originally designed as low volume residential streets now acting as high capacity collector streets.
7. Lack of divided thoroughfares such as on many portions of U.S. Highway 190.

8. Lack of clearly designed administration policies regarding thoroughfare placement, alignments, and construction.

The Thoroughfare Plan for the City of Copperas Cove and its ETJ should address as many of the above problems and deficiencies as possible. Each deficiency should be addressed in some manner through future policies developed by the City in assessing its transportation needs for the future. Most of the areas of congestion in Copperas Cove occur on either F.M. 1113 or U.S. highway 190. Depending upon the factors used, the roadway capacity of U.S. Highway 190 on the western portions is about 24,000 vehicles per day. In the eastern portions of U.S. Highway 190, the roadway capacity is approximately 36,000 cars per day. As can be seen from **Table 3-1**, existing traffic volumes are approaching or exceeding these levels based on 2003 counts. Since more development has occurred since 2003, counts conducted today can be expected to be higher than the counts conducted in 2003.

THOROUGHFARE STANDARDS AND FUNCTIONAL CLASSIFICATION SYSTEM

To prevent functional obsolescence of the transportation facilities, a hierarchical system that defines the role of each major thoroughfare needs to be established. This system, called a functional classification system, in turn translates into physical design features concerning thoroughfare cross-section, pavement standards, pavement widths, and access management. The Thoroughfare Plan for the City of Copperas Cove is based on this system. These functional classifications are intended to reflect the role or function of each roadway within the overall thoroughfare system (see **Table 3-2**).

The 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 3-4**, on the following page, refers to the functional street classification system or hierarchy for Copperas Cove.

Mobility 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, serve very poorly as access to adjacent roads and properties. With this in mind, streets carrying a higher volume of traffic, such as major thoroughfares, should have a limited number of intersections and curb cuts,



Illustration 3-3
Residential Street

so traffic movement will not be impeded. Collectors are intended to collect and 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 through, as well as to, areas. Collectors supplement the arterial system and should not be continuous for long distances.

Neighborhoods should be developed between arterials and major collector streets so that traffic is routed around, not through, these areas. 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 activities should be developed in such a manner that the primary mobility functions of arterial or major thoroughfares are not degraded through poor access management. Wherever concentrations of traffic occur on collector streets, consideration should be given to prohibit houses to front on these types of streets or thoroughfares. Good subdivision design can allow ample lot yield while orienting houses to local streets and not collectors.

The City street system should consist of arterials (major thoroughfares), collectors, and local streets. Freeways and highways are normally under the jurisdiction of the State Department of Transportation. U.S. Highway 190 is an example of a State-supported highway.

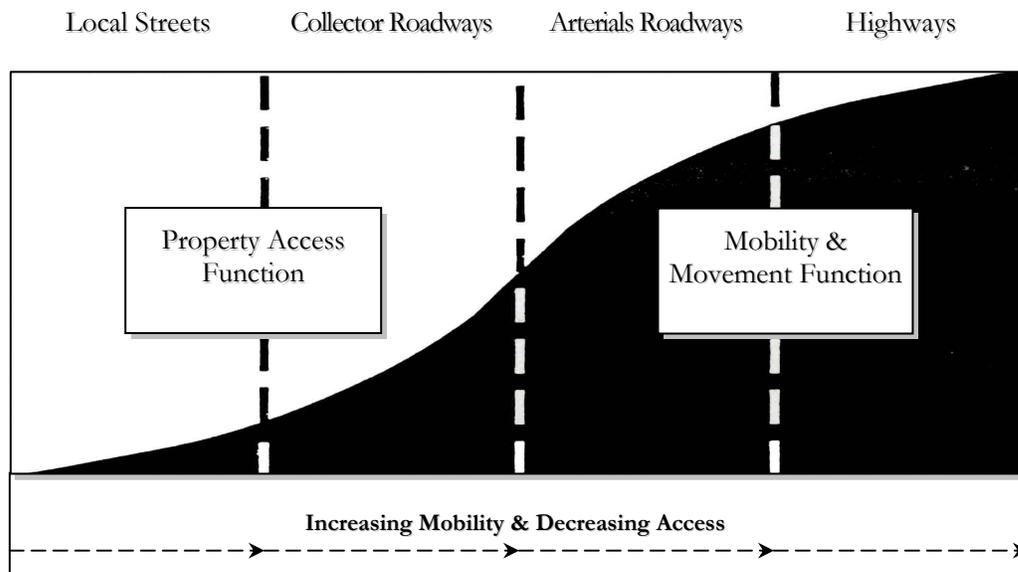


Illustration 3-4
U.S. Highway 190 in Copperas Cove

**Table 3-2
Roadway Functional Classifications & General Planning Guidelines**

TYPE OF ROADWAY	Function	Approx. Spacing	Direct Land Access	Minimum Roadway Intersection Spacing⁽³⁾	Speed Limit (mph)	Parking	Comments
FREEWAYS	Traffic Movement	4 miles minimum	None/limited (to frontage roads)	1 mile	55 to 45 mph	None	Supplements capacity & major thoroughfare system; provides high-speed mobility.
ARTERIALS OR MAJOR THOROUGHFARES	Moderate distance inter-community traffic	1.5 ⁽¹⁾ to 0.5 miles	Restricted; some movements may be prohibited; number & spacing of driveways controlled; may be limited to major traffic generators on regional routes.	1/8 mile 1/4 mile on regional route	45 to 35 mph	None	“Backbone” of the street system.
COLLECTOR STREETS	Collect and distribute traffic between local & major streets; direct land access; between neighborhood traffic movement.	0.5 ⁽²⁾ to 0.25 mile	Safety controls; limited regulation. Residential access allowed; commercial access allowed.	300 feet	35 to 30 mph	Limited	Through traffic generally discouraged.
MINOR AND RESIDENTIAL STREETS	Land Access	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.

Application of a functional classification and design principles can lead to an optimized circulation system. Major advantages include preservation of residential neighborhoods, long-term stability of the land use pattern, increased values of commercial properties, fewer traffic accidents, and a decreased portion of urban land devoted to streets. **Table 3-2** describes the most important characteristics of functional classifications. The City's arterial classification, described in the remainder of this Thoroughfare Plan, includes major arterials and major secondary thoroughfares. In addition, the City's collector classification system includes minor and major collector streets.

The following recommended cross-sections have been developed to reduce the chance of obsolescence of Copperas Cove's thoroughfare system. The following outlines the various standards of streets and thoroughfare cross-sections appropriate for Copperas Cove.

GENERAL DESCRIPTION OF STANDARDS FOR FREEWAYS AND MAJOR ROADWAYS

Freeway

A freeway is a high capacity highway in which all direct access from adjacent property is eliminated or significantly reduced, and where ingress and egress to the traffic lanes is controlled by widely spaced access ramps and interchanges. Access may be provided where separate frontage roads exist, but only to the frontage roads. Interstate Highway 35 and U.S. Highway 190 through Killeen are examples of freeways with access to frontage roads. These roadways are funded primarily through the Federal Highway Administration and administered through TxDOT.



Illustration 3-5
Interstate Highway 35

Major Roadways or Arterials

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

way requirements for major roadways typically range from 100 to 120 feet. Often, four lanes are constructed in the full right-of-way leaving a wider median than for a six-lane thoroughfare. This concept allows an interim solution until traffic warrants construction of the additional two inside lanes. Since these thoroughfares will carry high traffic volumes (20,000 to 40,000 vehicles per day), it is essential that they have continuous and direct alignment and that they interconnect with freeways. For the same reasons, access from adjacent property should be closely managed. This can be accomplished by limiting the number and location of driveways or curb cuts that access this thoroughfare type. In addition, principal arterials are normally divided, since it is important to provide left turn lanes with adequate stacking that are separate from the normal traffic lanes. Divided or raised medians also offer opportunities for landscaping and other aesthetic treatments. Divided or raised medians should be considered as possible additions to various roadway construction projects, when medians would prove to enhance motorist safety or could substantially enhance the image of the City and be a benefit to the community as a whole. It is recognized that raised medians will not be possible in many areas of Copperas Cove, but the City should strive for roadways with medians wherever possible.



Illustration 3-6
Examples of Medians

MAJOR ROADWAY TYPES AND STANDARDS

Regional Highway (Formerly: Roadway Type AA)

The highest roadway standard recommended in Copperas Cove is for a regional highway. The only facility designated as a regional highway is the proposed by-pass route considered for U.S. Highway 190. As of the printing of this report, the ultimate cross-section for this facility and its exact alignment have not been determined; however, the proposed right-of-way will most likely be greater than 120 feet.

Primary Arterial (Formerly: Roadway Type A+)

A primary arterial provides three twelve-foot wide lanes in either direction with a fourteen-foot wide median. Existing U.S. Highway 190 is the only thoroughfare recommended as a primary arterial at this time. The following displays the proposed concept for the existing U.S. Highway 190 route.

Standards:

- Traffic Lanes:
 - Total of six lanes
 - All lanes – each 12 feet wide
- Parking Lanes:
 - None
- Median:
 - If possible, raised median – 14 feet wide measured from the back of the curb to the back of the curb
- Street Width:
 - Total of 94 feet
 - This total includes four 2-foot curb and gutter sections
- Right-of-Way Width:
 - 120 feet

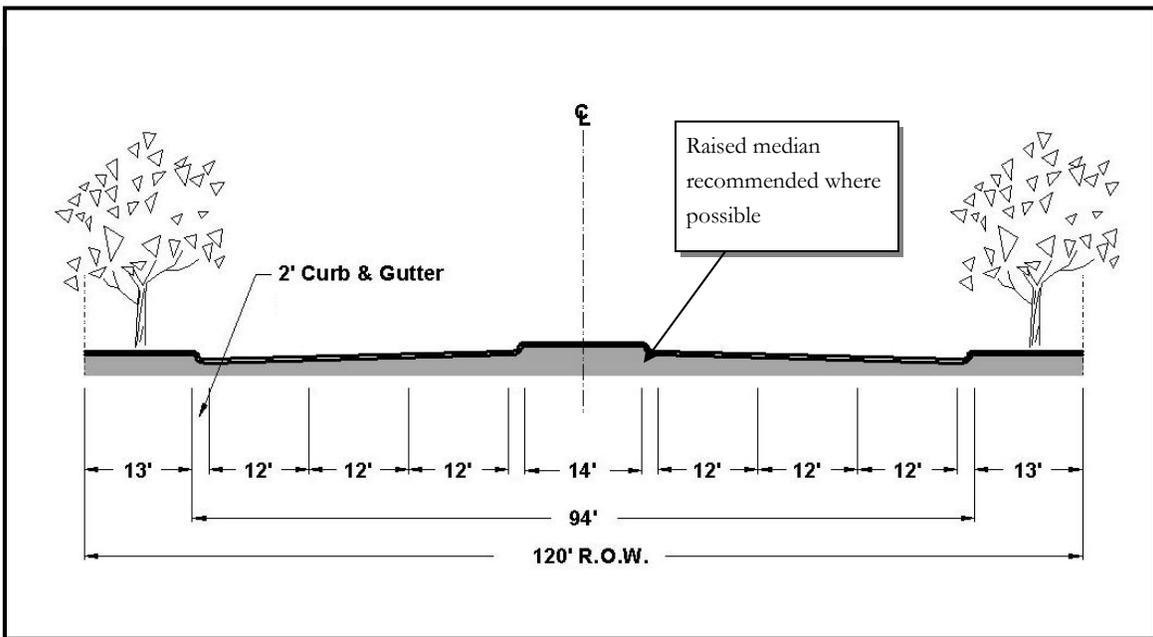


Illustration 3-7
Primary Arterial

Secondary Arterial (Formerly: Roadway Type A)

Secondary arterials are designed to utilize 110 feet of right-of-way. Two 36-foot roadway surfaces will be separated by a painted fourteen-foot median. An additional ten feet of right-of-way will buffer adjacent properties.

Standards:

- Traffic Lanes:
 - Total of six lanes
 - Four inner lanes – each 12 feet wide
 - Two outer lanes – each 14 feet wide
- Parking Lanes:
 - None
- Median:
 - Painted median – 14 feet wide
- Street Width:
 - Total of 94 feet
 - This total includes two 2-foot curb and gutter sections
- Right-of-Way Width:
 - 110 feet

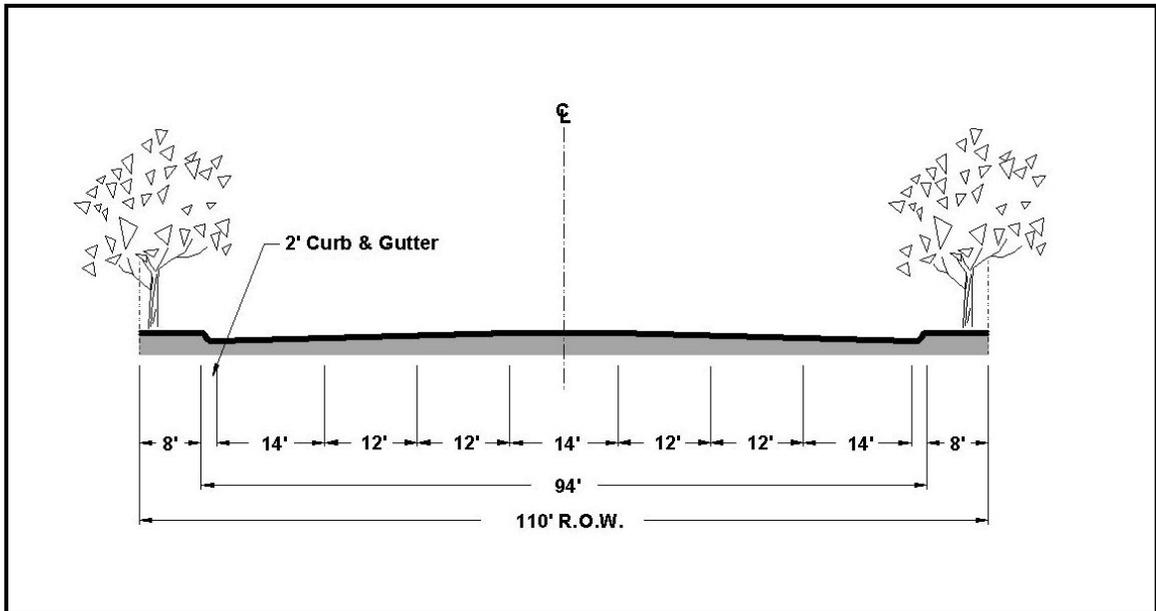


Illustration 3-8
Secondary Arterial

Minor Arterial (Formerly: Roadway Type B+)

Where traffic volumes are expected to be more moderate (20,000 to 25,000 vehicles per day), it should be possible to use a four lane undivided thoroughfare, indicated as a minor arterial. This thoroughfare has two 26-foot wide pavement sections and a 14-foot wide painted median. The minor arterial standard may also be utilized for divided secondary thoroughfare or major collector streets that may be appropriate with special parkway and landscape treatments.

Standards:

- Traffic Lanes:
 - Total of four lanes
 - Two inner lanes – each 12 feet wide
 - Two outer lanes – each 14 feet wide
- Parking Lanes:
 - None
- Median:
 - Painted median – 14 feet wide
- Street Width:
 - Total of 70 feet
 - This total includes two 2-foot curb and gutter sections
- Right-of-Way Width:
 - 90 feet

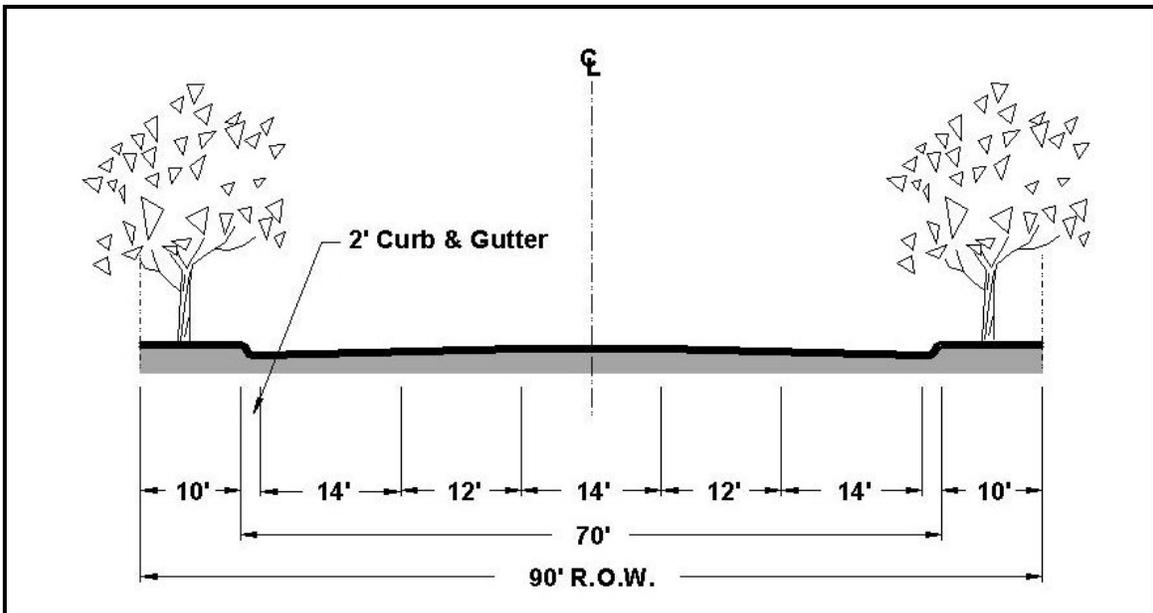


Illustration 3-9
Minor Arterial

COLLECTOR AND RESIDENTIAL ROADWAY TYPES AND STANDARDS

A collector street's primary function is to collect and distribute traffic from local access streets to the major street system. The collector street is usually located in a manner to discourage through traffic movements. To discourage such movements, these streets are typically disrupted near the center of the neighborhood, or at some other point, by offsetting intersections or incorporating curvilinear design. The collector street may also be used as a local street, internal to industrial areas or adjacent to multiple-family areas, as well as an access route to elementary schools and neighborhood playgrounds. In these developments, 60 to 70 feet is the minimum right-of-way requirement, while the minimum pavement is usually 42 to 54 feet. The minimum right-of-way requirement for a collector street is 60 feet. Two moving lanes of traffic plus any on-street parking and sections for curbs and gutters represent the minimum paving requirements for a collector street.

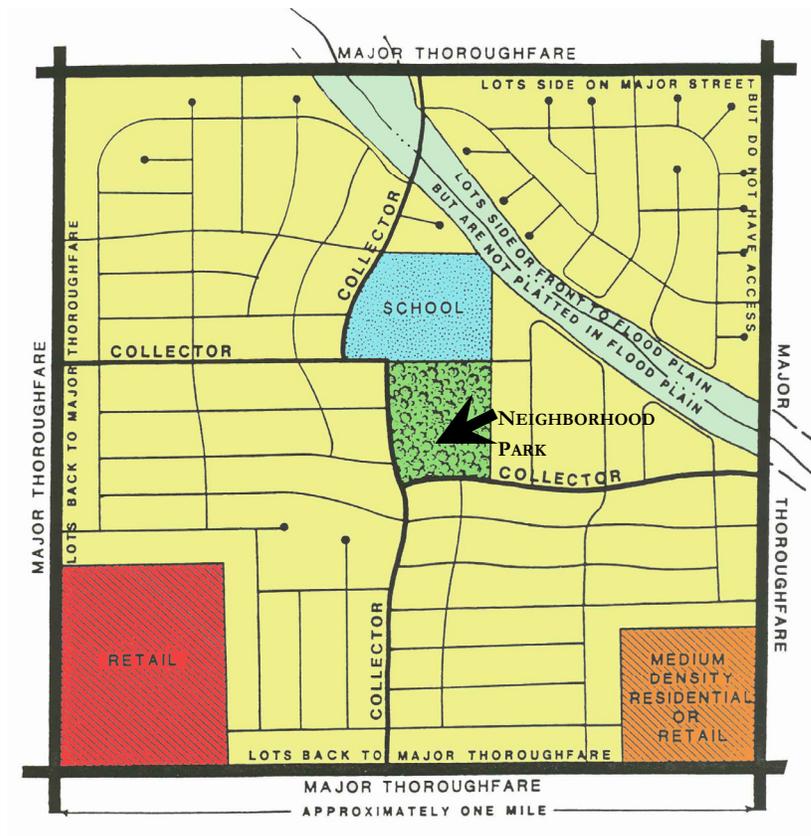


Illustration 3-10
**Example of Collector Streets Discouraging Through Traffic
 (Neighborhood Unit Concept)**

Major Collector (Formerly: Roadway Type C+)

Major collector streets are low to moderate volume facilities whose primary purpose is to interrupt traffic from residential streets and accommodate this movement to the nearest major collector or arterial. The average daily traffic volumes for these types of streets should not exceed 15,000 trips per day. The major collector street provides for 70 feet of right-of-way with 44 feet of paving. This standard may also be used as a local street in industrial or commercial areas.

Standards:

- Traffic Lanes:
 - Total of four lanes
 - All lanes – each 12 feet wide
- Parking Lanes:
 - None
- Median:
 - None
- Street Width:
 - Total of 52 feet
 - This total includes two 2-foot curb and gutter sections
- Right-of-Way Width:
 - 70 feet

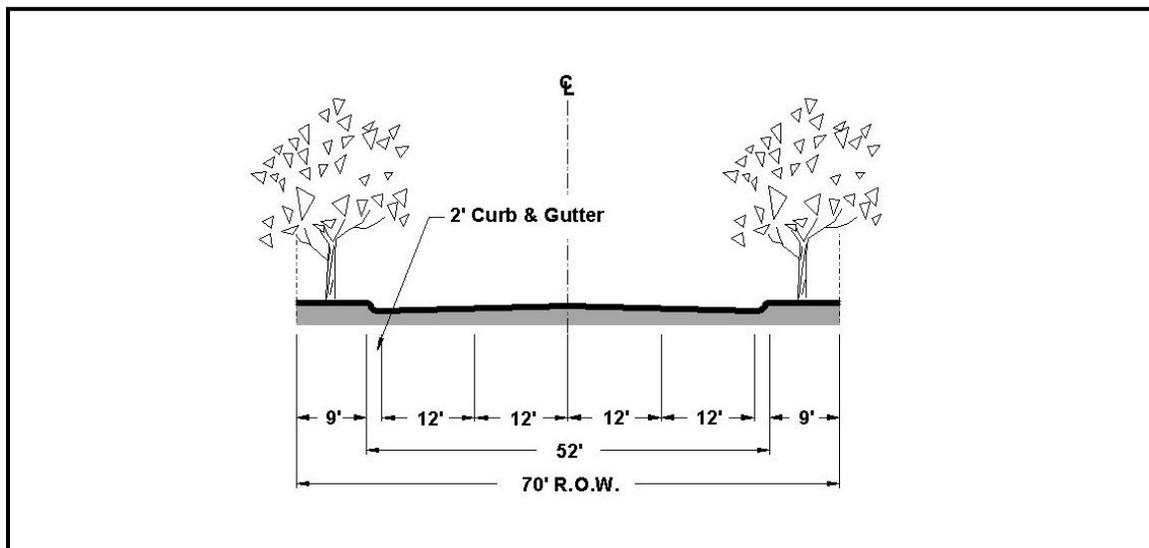


Illustration 3-11
Major Collector

Collector (Formerly: Roadway Type C)

The collector standard provides a street, with two moving lanes of traffic and two parallel parking lanes, on 36 to 40 feet of pavement with 60 feet of right-of-way. Generally, collector streets should be shorter than one mile in length, and are expected to collect moderate volumes (less than 5,000 vehicles per day) of traffic from the internal neighborhood and convey it to a major thoroughfare on a neighborhood boundary. As with the major collector street, the collector streets may also be used as a local street in industrial or commercial areas. Where heavy turning movements can be expected at intersections with major thoroughfares, intersections could be flared to provide for a short length of wider section to accommodate higher traffic volumes.

Standards:

- Traffic Lanes:
 - Total of two lanes
 - All lanes – each 11 feet wide
- Parking Lanes:
 - Two lanes – each 8 feet wide
- Median:
 - None
- Street Width:
 - Total of 42 feet
 - This total includes two 2-foot curb and gutter sections
- Right-of-Way Width:
 - 60 feet

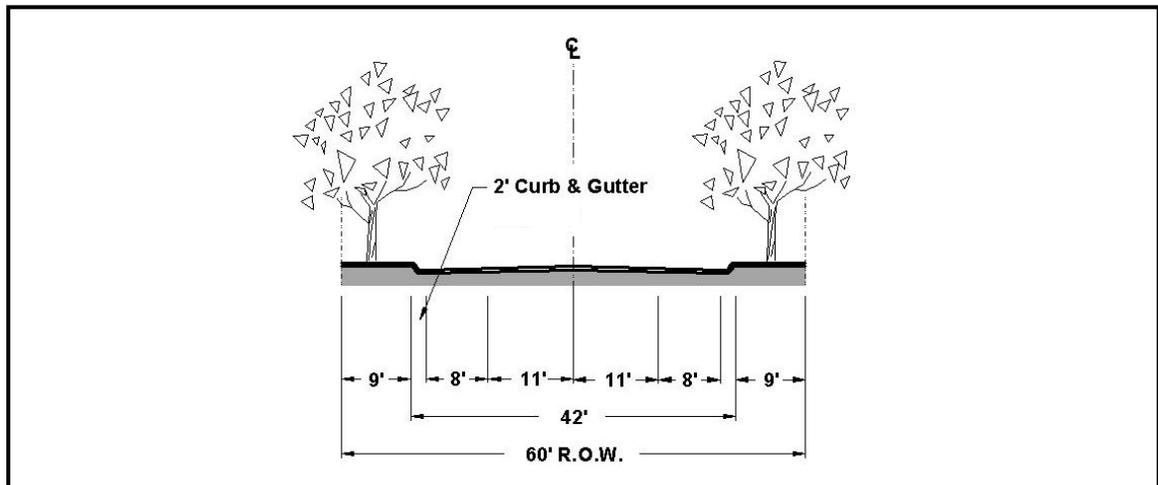


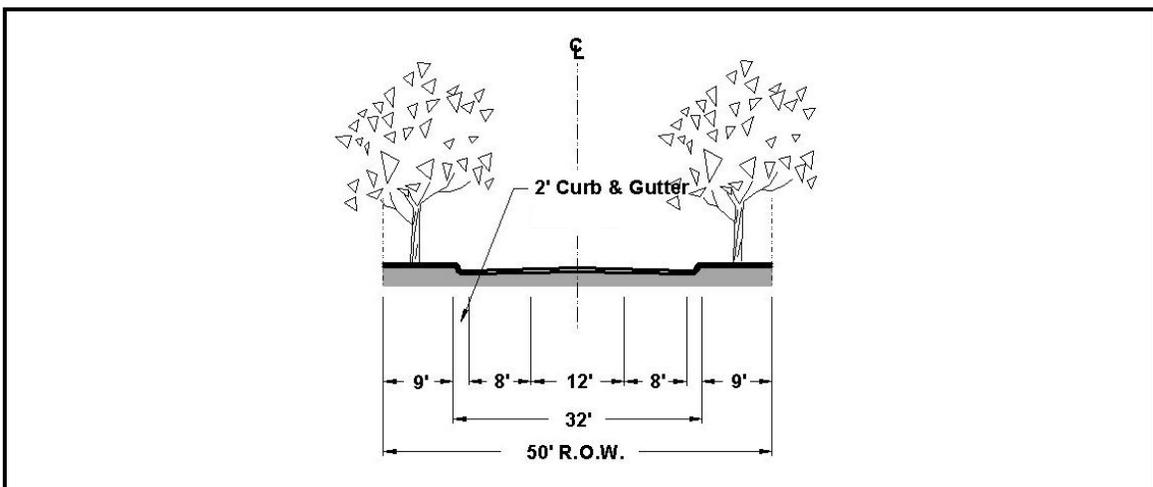
Illustration 3-12
Collector

Residential (Formerly: Minor Residential Street)

The streets within a neighborhood which provide access to residential lots and building sites should be arranged to discourage most through traffic, except that of which is directly related to the area. The alignment of minor residential streets should be either of a curvilinear, discontinuous, loop, cul-de-sac, or court type. Because only limited traffic is attracted to the minor residential streets, they have more narrow right-of-ways and pavement widths than other types of streets. The paving width of a residential street is 32 feet and the right-of-way requirement is 50 feet. Residential streets are usually designed to accommodate up to 500 vehicles per day.

Standards:

- Traffic Lanes:
 - Total of one lane
 - 12 feet wide
- Parking Lanes:
 - Two lanes – each 8 feet wide (each side)
- Median:
 - None
- Street Width:
 - Total of 32 feet
 - This total includes two 2-foot curb and gutter sections
- Right-of-Way
 - Width: 50 feet



**Illustration 3-13
Residential**

SUMMARY TABLE FOR ROADWAY TYPES AND STANDARDS

The following table provides a summary of the standards listed within this section for each roadway type. This table serves as an alternative means to communicate the standards for each roadway type, which are listed on the previous pages. This table condenses the information from the text and illustrations (**Illustration 3-7** to **Illustration 3-13**) and allows for an overview of roadway types and standards.

<p align="center">Table 3-3 2007 Comprehensive Plan Update Summary of Roadway Standards</p>						
Roadway Type	Traffic Lanes	Parking Lanes	Median	Curb & Gutter Sections	Street Width*	Right-of-Way
Primary Arterial	6 @ 12 ft	None	14 ft Raised*	4 @ 2 ft	94 ft	120 ft
Secondary Arterial	4 @ 12 ft 2 @ 14 ft	None	14 ft Painted	2 @ 2 ft	94 ft	110 ft
Minor Arterial	2 @ 12 ft 2 @ 14 ft	None	14 ft Painted	2 @ 2 ft	70 ft	90 ft
Major Collector	4 @ 12 ft	None	None	2 @ 2 ft	52 ft	70 ft
Collector	2 @ 11 ft	2 @ 8 ft	None	2 @ 2 ft	42 ft	60 ft
Residential	1 @ 12 ft	2 @ 8 ft	None	2 @ 2 ft	32 ft	50 ft

* Measured from the back of the curb to the back of the curb (B-B)

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TRAFFIC CAPACITIES

Capacity is the measure of a street's ability to accommodate traffic volume. It is normally measured at a traffic-signalized intersection where traffic flow is regulated and traffic congestion is present during the peak hours of traffic flow. The ability of a signalized intersection to accommodate traffic is usually expressed in terms of level of service (LOS). Levels of service (A through F) are shown and defined on **Table 3-4**.

Level of service “C” is generally the recommended level of service in most cities and the recommended level for design purposes. With the exception of some congested intersections, as previously noted along U.S. Highway 190, most intersections in Copperas Cove presently function at level of service C or better.

Table 3-4		
Definition of Level of Service for Roadways		
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: Dunkin, Sefko & Associates, Inc.		

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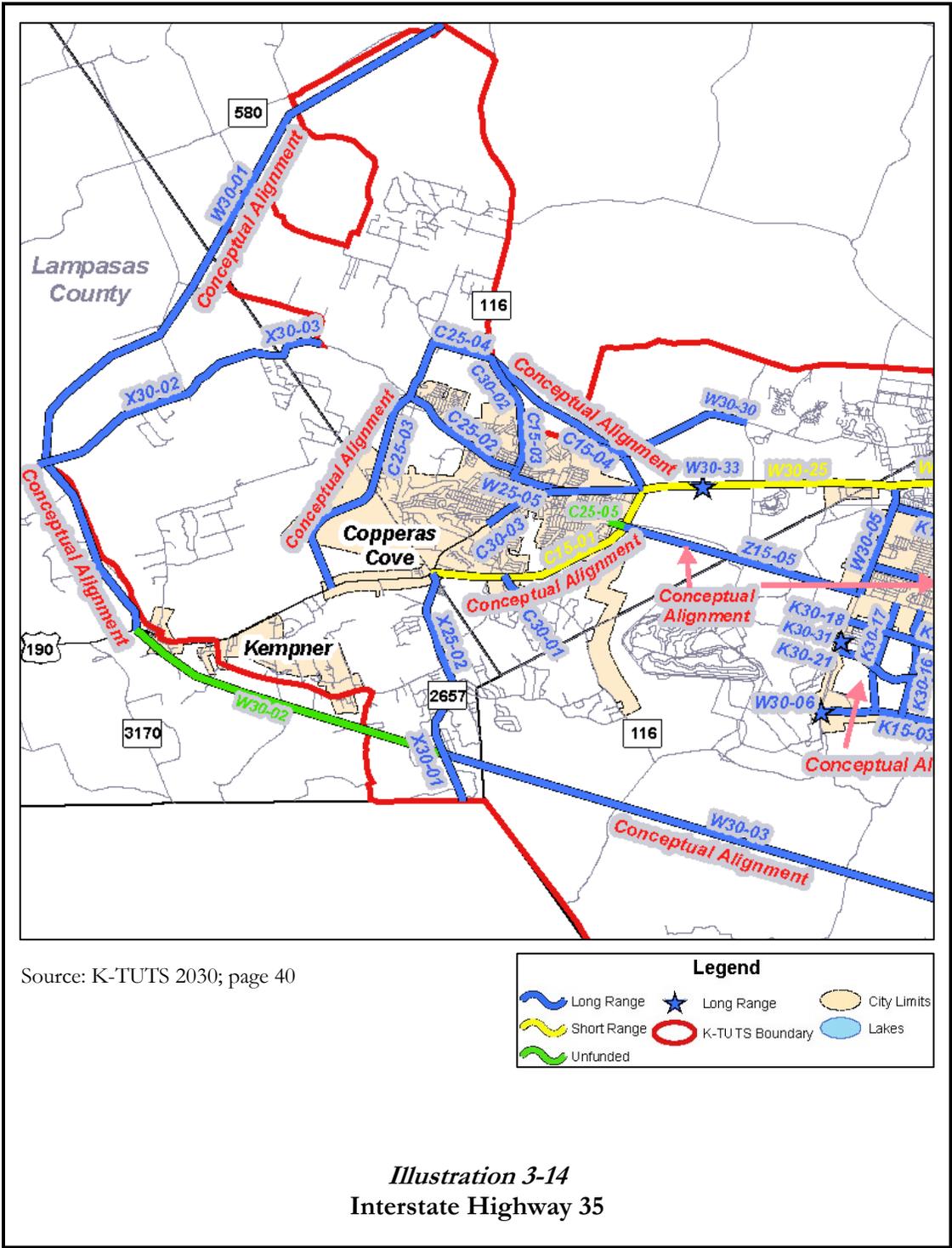
THE KILLEEN-TEMPLE URBAN TRANSPORTATION STUDY/MOBILITY 2030

The Central Texas Council of Governments (CTCOG) in response to Federal requirements has published the Killeen-Temple Urban Transportation Study (K-TUTS), which was last revised in January 2005. The planning area for this study covers the Temple, Belton, Killeen, and Copperas Cove regional area. Although regional in nature, the plan recommends one specific program, K-TUTS #C15-01, for Copperas Cove within the short-range plan (10 year).¹ This program is to construct a four-lane U.S. Highway 190 bypass around the present urbanized area of Copperas Cove. The approximate length of this project is 5.2 miles; the estimated cost is \$56.3 million. Although not in the Copperas Cove city limit, the short-range plan also calls for a widening of U.S. Highway 190 from four to six lanes from the eastern Copperas Cove city limits to Fort Hood's main gate, at a cost of \$15.4 million.

Eight projects also occur on the 25-year long-range plan. They are as follows:

Table 3-5 K-TUTS 2030 Project Rankings (Long Range Plan): Copperas Cove Projects Only						
K-TUTS Number	Facility	Location	Project Description	Length (Miles)	Score	Estimated Cost
C30-03	US 190	S. FM 116 to Liberty Bell Lane	Add curb and gutter	3.1	64	\$528,000
C25-02	FM 1113	FM 116 to W Copperas Cove City Limits	Widen from 2 to 4 lane divided roadway	1.8	48.1	\$9,125,000
C25-03	West CC LP	US 190 to FM 1113	Construct 2 lane w/ shoulder	5	42.8	\$6,318,000
C30-02	FM 116	House Creek to Lutheran Church Road	Widen from 2 to 4 lane divided roadway	0.6	40.6	\$2,457,000
C15-03	FM 116	FM 1113 to House Creek	Widen from 2 to 4 lane divided roadway	1.76	40.4	\$4,329,000
C15-04	NE CC Bypass	US 190 to FM 116	Construct 4 lane divided roadway on new location	4	37.7	\$13,440,000
C30-01	FM 116	End of 5 lane segment to Copperas Cove City Limits	Widen from 2 to 5 lane with curb and gutter	0.5	32.1	\$907,000
C25-04	NW CC LP	FM 1113 to FM 116	Widen from 2 to 4 lane divided roadway	2	27.1	\$4,709,000
Total						\$41,813,000
Source: K-TUTS 2030, Table 5.2, pages 32-36						

¹ K-TUTS 2030, Table 5.1, page 31



THE THOROUGHFARE PLAN

The purpose of the Thoroughfare Plan is to provide a long-range plan to assist in thoroughfare planning and the dedication of needed right-of-ways to implement such a plan. The recommended major Thoroughfare Plan is shown on **Plate 3-3**. One of the benefits of the Thoroughfare Plan is the identification of streets to concentrate resources for improvement and assure that these monies are spent efficiently. The Thoroughfare Plan is designed to identify the location of collector and major arterial streets to carry high levels of traffic. Presently, the City of Copperas Cove has very few collectors or major thoroughfares meeting the standards outlined herein. The existing State and Federal Highways constitute the only streets with the necessary length to serve as major connectors, yet even some of these have their continuity and alignment separated by offsets.

The transportation planning process in Copperas Cove has been complicated by zoning and other development activity. Related to this issue has been the complicating factor of the City's terrain, which makes it expensive to construct thoroughfares in certain locations. Therefore, this Thoroughfare Plan concentrates specifically on assuring that thoroughfare continuity can be improved as future development occurs.

THOROUGHFARE PLANNING ISSUES

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

- A. **Maintaining an adequate, appropriate, and efficient roadway network** - An increasing population will increase traffic on Copperas Cove roads. A carefully planned network of streets can help maintain adequate circulation without sacrificing the community's development potential. The network should include a hierarchy of streets such as shown on **Table 3-2**, with each street classification being designed to serve an appropriate function. Standards for each street classification must balance the volume and speed of traffic, public safety, roadway construction and maintenance costs, and impacts on adjacent development.

- B. **Coordinating roadways and adjacent development** - Land use and roadway planning are closely linked. Just as inappropriate land uses can dramatically reduce the effectiveness of adjacent roads, poorly planned roadways can reduce viability of adjacent land uses. By coordinating land use and roadway decisions, Copperas Cove can minimize future compatibility problems between roads and adjacent land uses.

- C. **Cost effective infrastructure investment** - Building and maintaining an efficient street network requires significant investment of local resources. Careful planning is needed to ensure that Copperas Cove makes the most cost-effective investments in its street network. Funding, based on a capital improvements plan, can ensure that the City addresses its highest priority roads first. Because of recent proportionality requirements in State law, it will be important for the City to plan for future roadway participation by developers.
- D. **Network for non-automotive transportation** - America's heavy reliance on automobiles has led many communities to ignore other modes of transportation. Through appropriate design and planning, Copperas Cove can develop a low-cost system of trails and paths that encourage residents to travel by foot or bike through the community. Increased use of other modes will improve the health of Copperas Cove residents and have a positive impact on the environment and community character.
- E. **Roadway network in the western portion of the City** - With residential growth and annexations in the western portion of the City, planning for roadways is critical to ensure that traffic flows smoothly and that roadways will be adequate to handle the demands of motorist. Currently, in the western portion of the City, Big Divide Road is being constructed to provide improved north/south access. Planning for alternative north/south routes that will bypass the center of the City should be considered in this thoroughfare planning process.

THOROUGHFARE PLAN RECOMMENDATIONS

The following are the recommendations for Copperas Cove's thoroughfares:

1. **U.S. Highway 190** – For the foreseeable future, this facility will be the primary traffic-carrying facility in the City of Copperas Cove. For this reason, it will be important that the traffic-carrying capacity of this facility will be enhanced and/or preserved as necessary. Additionally, the highest ranking project on the K-TUTS Long Range Plan (#C30-03) is to add curb and gutter to U.S. Highway 190. Furthermore, it is recommended that certain aesthetic improvements to the thoroughfare be undertaken at the same time. For example, landscaping cannot only enhance the beauty of the adjacent properties, but also the image of the City as people pass through Copperas Cove. Up to one percent of the construction cost for improvements of highway facilities can be allocated for landscape improvements.

The City should also develop a set of thoroughfare access controls and design criteria for private development adjacent to U.S. Highway 190. Many businesses adjacent to U.S. Highway 190 have shallow parking lots (e.g., parking lots with a short distance between the highway and parking spaces) that force vehicles to back onto and maneuver on the highway when entering and existing the parking lot, see **Illustration 3-15**. Thus, access standards could be developed and adopted by ordinance and applied to all new development to avoid potentially dangerous traffic situations.



Illustration 3-15
Shallow Parking Lots Backing U.S. 190

2. **U.S. Highway 190 Bypass** – This proposed roadway is very important to Copperas Cove’s future. The proposed bypass should have limited access and development should be strictly controlled adjacent to it. It is anticipated that this would be a limited-access facility. As traffic volumes on existing U.S. Highway 190 indicate, it will be necessary to alleviate these traffic volumes in some manner in the future. Without such an alternate facility, existing conditions along U.S. Highway 190 will likely deteriorate further.
3. **Tank Destroyer Boulevard Connection/Extension** – Tank Destroyer Boulevard Connection/Extension has the potential to be a major asset to the City of Copperas Cove. This connection and roadway extension can provide a link between U.S. Highway 190 and F.M. 116 on the north side of the City, refer to **Plate 3-3**. It can serve as a means to bypass the center of the City and can potentially relieve some traffic congestion on U.S. 190. The City of Copperas Cove and Fort Hood should work collaboratively to determine the best alignment for Tank Destroyer Boulevard Connection/Extension.
4. **Avenue D Extension** – Avenue D joins U.S. Highway 190 and extends to the northwest portion of the City. This roadway is expected to handle more traffic as the western portion of the City experiences urbanization. Additionally, this roadway will serve as an important link to Grimes Crossing Road/Big Divide Road. Therefore, it is recommended that the City extend Avenue D in accordance to the major Thoroughfare Plan, **Plate 3-3**.
5. **Grimes Crossing Road/Big Divide Road** – As mentioned previously, planning for roadways in the western portion of the City is critical at this time. In order to accommodate the current and future residential growth in the western portion of the City, the City should plan to connect Grimes Crossing Road and Big Divide Road to form a major north/south roadway that would have the advantage of bypassing the center of the City.
6. **F.M. 116** – Although the north segments and the south segments of F.M. 116 are not continuous through the community, the thoroughfare still provides some of the most significant north/south access available. It is recommended that the south and north segments be minor arterials. Improvements for the northern segment are presently in the K-TUTS 25-year plan.
7. **Railroad Overpass** – Presently, the City does not have a grade-separated overpass connecting the north and the south sides of the existing railroad through the community. In the future, it will be beneficial for the City to have an overpass for safety and general circulation needs. One overpass is shown on the Thoroughfare Plan along Grimes Crossing

Road/Big Divide Road and the future extension of Avenue D, just west of Copperas Cove City Park. A proposed grade-separation intersection is also suggested at the railroad and the Tank Destroyer Boulevard Connection/Extension.

8. **Tank Destroyer Boulevard Extension (west of F.M. 116)** – In order to improve the community’s street connectivity and traffic, it is recommended that Tank Destroyer Boulevard be extended west of F.M. 116 via Ashley Drive to intersect with Grimes Crossing Road, refer to **Plate 3-3**. This will allow residents in the northwestern half of the City to access both Fort Hood and U.S. Highway 190 without having to travel through the City center. Additionally, this road may serve as a linkage between Fort Hood and quality existing and future single-family residential units for Fort Hood personnel. Fort Hood has already embraced the primary route for this roadway.

9. **Margaret Lee Street Extension** – It is recommended that Margaret Lee Street be extended south to beyond where the new U.S. Highway 190 bypass will be located. **Plate 3-3** illustrates that a Margaret Lee Street extension could allow residents living south of U.S. Highway 190 another means to enter and exit their neighborhoods. The additional connection could relieve some of the congestion that is currently experienced on U.S. Highway 190.

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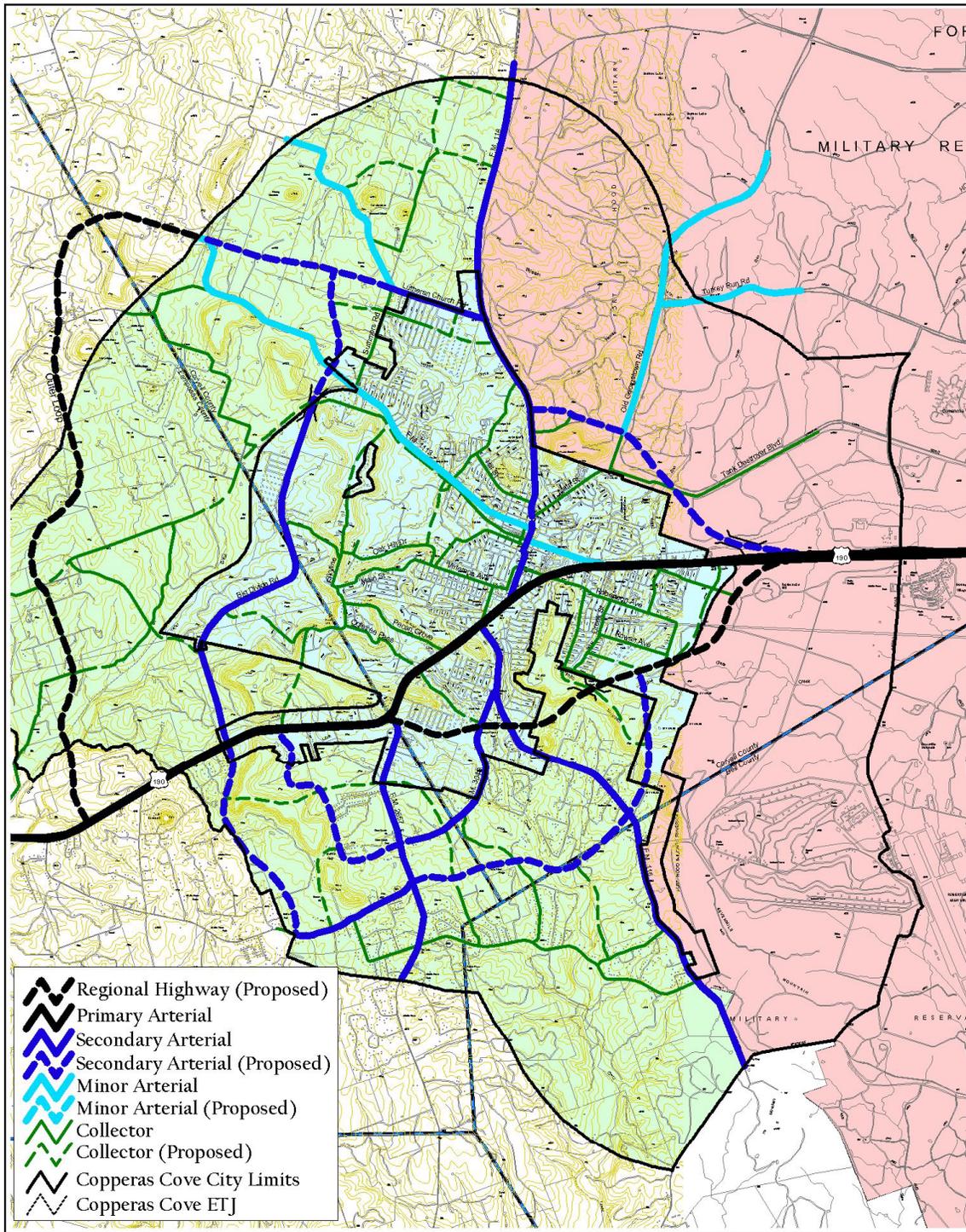


Plate 3-3



Future Thoroughfare Plan

Dunkin Sefko & Associates, Inc.
 Urban Planning Consultants, Dallas Texas
 Date: May 2007

Scale: 0 3000 6000 9000 Feet

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THOROUGHFARE AND NEIGHBORHOOD RELATIONSHIP

One important aspect of the major thoroughfare system is to provide the skeletal framework for residential neighborhoods to develop. A neighborhood usually results from the assembly of a series of subdivisions into a logical, functional unit. The major thoroughfares shown by **Plate 3-3** have been designed to allow for the formulation of residential areas. A neighborhood playground, and sometimes an elementary school, are normally 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 and minor thoroughfares. **Illustration 3-10** and **Illustration 6-6** in Chapter 6 (Community Image and Urban Design Guidelines) show this concept. The internal neighborhood streets should be arranged to be discontinuous and curvilinear, thereby discouraging through traffic movements. When retail service to neighborhood areas is appropriate, such service should be located at the edge of the neighborhood, preferably at the intersection of major thoroughfares. Likewise, churches, an integral part of the neighborhood, should be located on major thoroughfares or near the intersection of major thoroughfares. Both a shopping center and a church serve a larger area than the immediate neighborhood; therefore, both involve periods of heavy traffic and parking concentrations, which, unless properly handled, can adversely affect the adjacent residential areas.



Illustration 3-16
Tank Destroyer Boulevard

The basic major thoroughfare system (indicated by **Plate 3-3**) should be considered as the structuring framework for future neighborhoods in Copperas Cove and the framework for redevelopment and rehabilitation of existing neighborhoods. The preponderance of vehicular traffic movement in the community should be concentrated within the major thoroughfare system, while the internal street system should have only very light vehicular traffic when it is related to local access of property. Through careful preplanning 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.

To achieve the thoroughfare development envisioned by the Thoroughfare Plan will require the cooperation of all levels of government responsible for highway and thoroughfare development. The significant thoroughfare facilities provided in and near Copperas Cove have resulted mainly from the combination of efforts by the City, County, State, and Federal agencies. Continued local City effort will be necessary to finance future thoroughfare development and require widening of right-of-ways at the time of subdivision platting and development. State laws now affect developer participation of off-site facilities such as roadways; therefore, and the City should seriously consider roadway construction participation policies in the future.

TRANSPORTATION PLANNING POLICIES

The following are the recommended policies to guide Copperas Cove's transportation planning efforts:

1. **Table 3-2** establishes general planning guidelines for roadways in Copperas Cove, including the function of each type and key design characteristics. The City should use this table in conjunction with design guidelines established in the Urban Design component of the Comprehensive Plan and detailed specifications found in the Subdivision Ordinance to determine the appropriate design standards for planned roadway improvements.
2. **Plate 3-3** shows the proposed major Thoroughfare Plan for the City of Copperas Cove. It shows the location of existing and planned roadways other than local streets. The City should use this Thoroughfare 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, or zoning case. The City's construction standards, design guidelines, and subdivision regulations provide detailed standards for roadway design and construction.
3. The City should seek to maintain a minimum level of service standard "C" as described in **Table 3-4**. This standard should be used in reviewing the transportation needs of development proposals.
4. The City should use the Comprehensive Plan to help guide its capital improvements program (CIP).
5. The City should prioritize, phase, and schedule transportation system improvements in accordance with the Comprehensive Plan and the ability of the City to fund such improvements.
6. On-site local and collector streets should be constructed by developers in accordance with City regulations. The City 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 City's subdivision and zoning ordinances.

7. Copperas Cove should coordinate with TxDOT, CTCOG, and other local jurisdictions when planning transportation improvements.
8. The City should design streets in a comprehensive fashion considering street trees, pedestrian walkways, bike lanes, signage, lighting, and air quality whenever any such factors are applicable. Citizen involvement in major street-widening projects should be sought.
9. The City should consider all alternatives for increasing roadway capacity before physical road widening is recommended for roadways within existing neighborhoods.
10. The City should limit commercial and other nonresidential uses that generate high volumes of traffic to locations where collector or arterial streets provide access for non-local traffic.
11. The City should develop buffering standards for residential projects that abut the proposed U.S. Highway 190 Reliever Route and other major arterials or thoroughfares.
12. Except as specifically approved by the City, all development should provide adequate on-site parking for normal operations. This policy should be implemented to specific provisions of the City's subdivision and zoning ordinances.
13. The City should develop access management spacing standards for lots located on arterial and collector streets to promote a smooth flow of traffic and minimize the impact of individual developments on the safe and efficient function of these roads. These standards should be drafted by the City staff or a transportation engineer, reviewed by the Planning and Zoning Commission, and adopted by ordinance by the City Council.
14. The City should develop thoroughfare access management and driveway spacing standards designed specifically for U.S. Highway 190.
15. Copperas Cove should support car and van pooling by assisting in the development of a ride-sharing information system coordinated with regional efforts.
16. The City should establish a system of public trails and pathways for travel in the City by pedestrian, bicycle, or other non-motorized modes of travel where possible.

17. Copperas Cove should participate with CTCOG and other local jurisdictions to establish regional transportation management programs such as the K-TUTS study, as long as such programs do not contain policy objectives contrary to those of Copperas Cove.

18. Use the major Thoroughfare Plan (**Plate 3-3**) and other appropriate development regulations to secure adequate right-of-ways and improvement through development review and approval processes.

19. The U.S. Highway 190 Reliever Route should be considered a top and foremost priority in the City's transportation needs.

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THOROUGHFARE IMPLEMENTATION

Copperas Cove has relied on three primary entities in the implementation of its thoroughfare system: (1) participation by the County or State; (2) the City's own construction of facilities; and (3) developer participation. State proportionality statutes now govern developer participation; therefore, the City should not rely on developer participation as a major funding source for roadways. Monies for capital improvements are becoming more difficult to secure each year. It is necessary that the City carefully manage its available resources in the implementation of not only the thoroughfare system, but other public facilities as well.

The proper administration of the Thoroughfare Plan will require:

1. **Coordination of Capital Improvements** - Many of the major thoroughfares that are improved in Copperas Cove will involve cooperation with Bell or Coryell Counties, and in many cases, involve some financial participation by the City. Future Capital Improvement bond programs should be coordinated with the State's ability to participate in any of these facilities. Copperas Cove will likely have to assume the responsibility for constructing a reasonable portion of its thoroughfare system as it expands its physical boundaries. It must be recognized that the thoroughfare system will be built in increments over an extended period, perhaps 20 or 30 years.
2. **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 must be set aside at the time of subdivision 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-ways must be dedicated in accordance with the Thoroughfare Plan as each plat is approved.
3. **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 (right-of-way) should be provided commensurate with the overall use contemplated in the area.
4. **Building Lines** - Where widening of existing thoroughfare right-of-ways is contemplated, buildings should be set back to allow for the planned widening and 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 assure the orderly and uniform development of thoroughfare frontage.

5. **Other Considerations** - Certain aspects of the Thoroughfare Plan, such as access controls along U.S. Highway 190, should be implemented through other design and technical standards, which may or may not be included in the zoning or subdivision ordinances. Examples of other standards, which need to be implemented, are sight and visibility standards and joint access standards.