Chapter 4--Transportation and Circulation

Chapter 4
Transportation and Circulation

4.1 INTRODUCTION AND INTENT

The Transportation & Circulation Chapter is a State-required component of the *Merced Vision 2030 General Plan*. Circulation is concerned with the movement of people and goods through and around the City. Transportation is concerned with the means by which these movements are made. This chapter addresses the City's major road system, local street patterns, air facilities, bus and rail transit, and bicycle and pedestrian facilities. The goal is to identify the most effective ways to plan for circulation while enhancing the community and protecting the environment.

State law recognizes that circulation and land use are especially related and emphasizes a definite correlation between these two required General Plan Elements. California Government Code Section 65302 requires Circulation Elements to identify:

> *"...The general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the Land Use Element..."*

The goals and policies presented here are intended to coordinate transportation/ circulation with land use and other pertinent areas of the General Plan, while promoting the efficient movement of people, goods and services within the Merced area. The overall public benefit is twofold. The public enjoys a broader choice of realistic options for circulating through the urban area. Secondly, their trips are easier and more efficient.

4.1.1 Coordination of Land Use and Circulation

The *Merced Vision 2030 General Plan* contains land use policies aimed at concentrating higher residential densities and major trip destinations in the vicinity of major roadways and public transit corridors. Such corridors also offer the option of effective transit routes.

Specific goals and policies linking land use to transportation/circulation concerns are found in various locations within this plan, including the Land Use, Urban Expansion, and Urban Design Chapters.

The location and intensity of development has an effect on traffic levels in the surrounding area and on the City as a whole.

Transportation engineers have developed several mathematical tools to monitor the relationship between land use and the transportation system. One tool is the traffic forecasting model. This model forecasts traffic volumes and simulates traffic conditions under future land use scenarios based on a) estimates of traffic which will be generated by new development; b) streets the traffic will use; c) and the amount of new traffic the street system can ultimately accommodate.

To evaluate the General Plan Land Use Plan, the City used a traffic model developed by the Merced County Association of Governments (MCAG) for use in analyzing the effects of land use development and roadway system improvements. The resulting roadway level of service capacity is summarized in the Appendix (Section 4.8.4). Major street projects contained in the 2007 MCAG Regional Transportation Plan (Tier 1), and roadway improvements that would be constructed to support development of the proposed land use plan are summarized in ***Table 4.1***. The financing of these needed improvements is discussed in Section 4.7.5. The resulting Circulation Plan (map) is shown in ***Figure 4.1***.

4.2 CIRCULATION PLANNING

Historically people have tended to drive more each year than in previous years with the number of vehicle miles traveled and the number of automobiles registered per person increasing throughout the State. At the same time, shifts in employment patterns and other factors have concentrated auto use during peak daily use periods. This has had special implications for an area like Merced, which has grown from a small, relatively isolated community to a large metropolitan urban area within much less than a lifetime. However, with the passage of recent legislation designed to improve overall air quality, including reduction of Greenhouse Gases produced by automobiles, and significant increases in the cost of fuel, this trend may be reversing

4.2.1 Merced's Historic Circulation Planning

The City of Merced has grown dramatically in the past quarter century. The 1968 General Plan formally re-oriented proposed community growth from east-west to a north-south orientation. This change was based upon significant environmental constraints as well as growth pressures. To this day, the City has a strong north-south growth pattern although some development to the east and west has occurred in certain areas. More growth to the east and west is proposed with this General Plan.

In 1997, certain features were incorporated into the *Merced Vision 2015 General Plan.* These features include:

- a comprehensive system of arterial streets in a one-half to one mile grid system;
- an upgraded Highway 59 to serve as a beltway or "ring-road" to carry cross-town traffic around established portions of the community; and,
- a major transit corridor (M Street) designated along the central core of the entire City.

The M*erced Vision 2030 General Plan* builds upon the *Merced Vision 2015 General Plan* and has added other circulation features, including:

- The addition of two expressways (Atwater/Merced Expressway and Campus Parkway) for prospective growth areas. An interchange was constructed in 2008 at Mission

Avenue/Highway 99 that will connect with Campus Parkway. The completion of Campus Parkway depends on the timing of build-out of UC Merced, and will be phased in over the next 10 to 20 years as traffic conditions warrant;

- Bellevue Road and Mandeville Lane have been designated as Transit Corridors in the City's Circulation Plan. The area near the intersection of M Street and Bellevue Road, the location of proposed future major commercial and office park sites, would also be the central transfer point between these two transit corridors.
- Ultimately, Mandeville Lane offers the opportunity for direct public transit access eastward to the UC Merced campus east of Lake Road, whereas Bellevue Road offers it to the west and south toward Atwater/Castle and Highway 99 via the Atwater-Merced Expressway. The Atwater-Merced Expressway replaces the Highway 59 bypass that was proposed in the *Merced Vision 2015 General Plan.*

Table 4.1
Major Street Improvement Projects

Project #	*Project Type*	*Location/Improvement Summary*
1	Upgrade Arterial	Thornton from SR 140 to Mission and Yosemite to Bellevue
2	Upgrade Arterial	North SR 59 from 16th to north end of SUDP/SOI
3	Upgrade Arterial	South SR 59 from Childs to south end of SUDP/SOI
4	Extend/Upgrade Arterial/Collector	R St. from Gerard to Area of Influence Boundary
5	Upgrade Arterial/Extend Transitway	M St. from Yosemite to Old Lake
6	Upgrade Arterial	G St. from Yosemite to north end of SUDP/SOI
7	Upgrade Arterial	Parsons/Gardner from Coffee to Old Lake
8	Extend Expressway	Campus Parkway from Mission to Yosemite Avenue
9	Extend/Upgrade Arterial	Old Lake from SR 59 to Gardner/Golf
10	Upgrade Arterial/Expressway	Bellevue from Campus Parkway to Atwater/ Merced Expressway
11	Extend Arterial	Tyler Road from Childs to Mission
12	Extend Arterial	Cardella from Hwy 59 to Campus Parkway
13	Upgrade Arterial	Yosemite from Hwy 59 to Campus Parkway
14	Upgrade Arterial	SR 140 from Parsons Avenue to Tower Road
15	Upgrade to 6 Lanes, with the potential for auxiliary lanes between major interchanges.	SR 99 through Merced
16	*Modify Ramps & Complete 13th/14th 1-way Couplet	SR 99 @ Martin Luther King Jr. Way, G St., & Childs Avenue
17	Upgrade/Extend Arterial	Childs from SR 59 to Tower Rd
18	Upgrade Arterial	Dickenson Ferry/Mission from Thornton to Tower
19	Extend Expressway	Atwater/Merced Expressway from SR 99 to Bellevue Road
20	Interchange	Atwater/Merced Expressway @ SR 99
21	Interchange	Atwater/Merced Expressway @ Santa Fe Drive
22	Interchange	Atwater/Merced Expressway @ Bellevue Road

* This project (which is the responsibility of the State) is currently listed as a Tier I project in the MCAG Regional Transportation Plan (RTP).

4.2.2 Opportunities and Challenges

The transportation/circulation environment of Merced offers a number of challenges and opportunities. Chief among these is the location of the University of California (UC) campus southeast of Lake Yosemite. The UC will have major circulation needs, but also offers a significant opportunity for a concentrated transit destination.

Merced's many creeks (Bear, Black Rascal, Cottonwood, and Fahrens), while a significant community asset, are also a challenge to the circulation system. Bridges must be built at each location where a roadway crosses a creek and bridges are costly to build and pose environmental challenges.

Merced's two railroad corridors (BNSF and UP) also present challenges and barriers to City circulation. At-grade railroad crossings are limited and cause delays, especially to emergency services. Separated grade crossings are expensive but necessary to ensure adequate cross-town circulation. In 2011, the City completed the construction of an undercrossing of the BNSF tracks on G St.

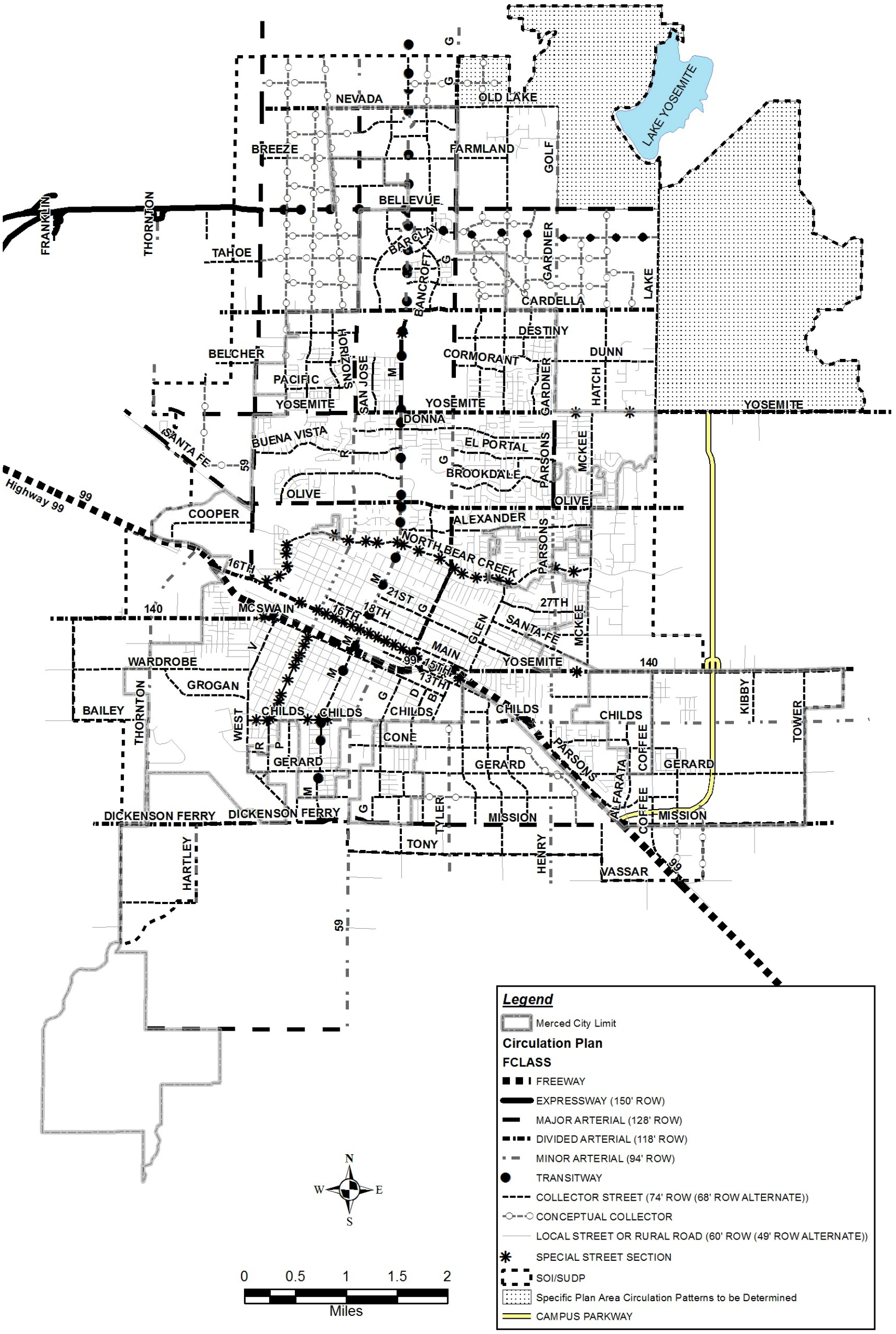
When considering circulation alternatives, Merced has year-around weather that is quite favorable to non-automobile options, such as bicycles. In addition, an enhanced M Street transit corridor, within an urban area that remains strongly oriented north-south, could continue to offer convenient non-automobile access to nearly every major destination in Merced--a truly unique opportunity!

4.2.3 Coordination of Circulation System Planning

Coordination between various transportation planning agencies is an important method of managing traffic growth as well as local and regional traffic problems. It is important that land use and transportation/circulation policies be carefully coordinated on a regional level. This offers the best possible opportunity for achieving consistent comprehensive planning including a well-balanced job to housing relationship, which in turn can reduce the length and number of commute trips in the Merced urban area.

Merced County's land use and circulation decisions in the area have significant potential for affecting the City's circulation system. As an example, a large number of subdivision lots/dwellings located miles from the City of Merced can create peak hour traffic impacts on a particular urban area road if most of the subdivision residents commute to and from work in Merced at similar times.

The Merced County Association of Governments (MCAG) is Merced County's regional (county-wide) planning agency, responsible for coordinating circulation planning with the State. MCAG, through a governing board composed of representatives from Merced County and each of its incorporated communities, is tasked with the following: a) assesses regional transportation needs; b) establishes related transportation priorities; c) provides regional transportation planning; and d) administers regional programs, etc.



CITY OF MERCED CIRCULATION PLAN

Figure 4.1

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The California Department of Transportation (Caltrans), in addition to its state-wide transportation-related duties, assists and guides delivery of local and regional transportation services, through coordination with MCAG. Caltrans also has direct contact with the City of Merced and other local agencies for local projects that have connection to or impact upon the State highway system. Highways 59, 99 and 140 are important State links in the County's local and regional systems.

It will be important for the City to continue to work closely with Caltrans, the County, and MCAG in the future regarding several important regional circulation issues which are discussed in more detail later in this chapter:

- High Speed Rail Station [Section 4.7.1]
- Transit Oriented Development [Section 4.7.2]
- Non Motorized Transportation Planning [Section 4.7.3]
- Development of a Climate Action Plan [Section 4.7.4]

In addition to these issues, the City will continue to work with Caltrans and MCAG on other regional transportation studies:

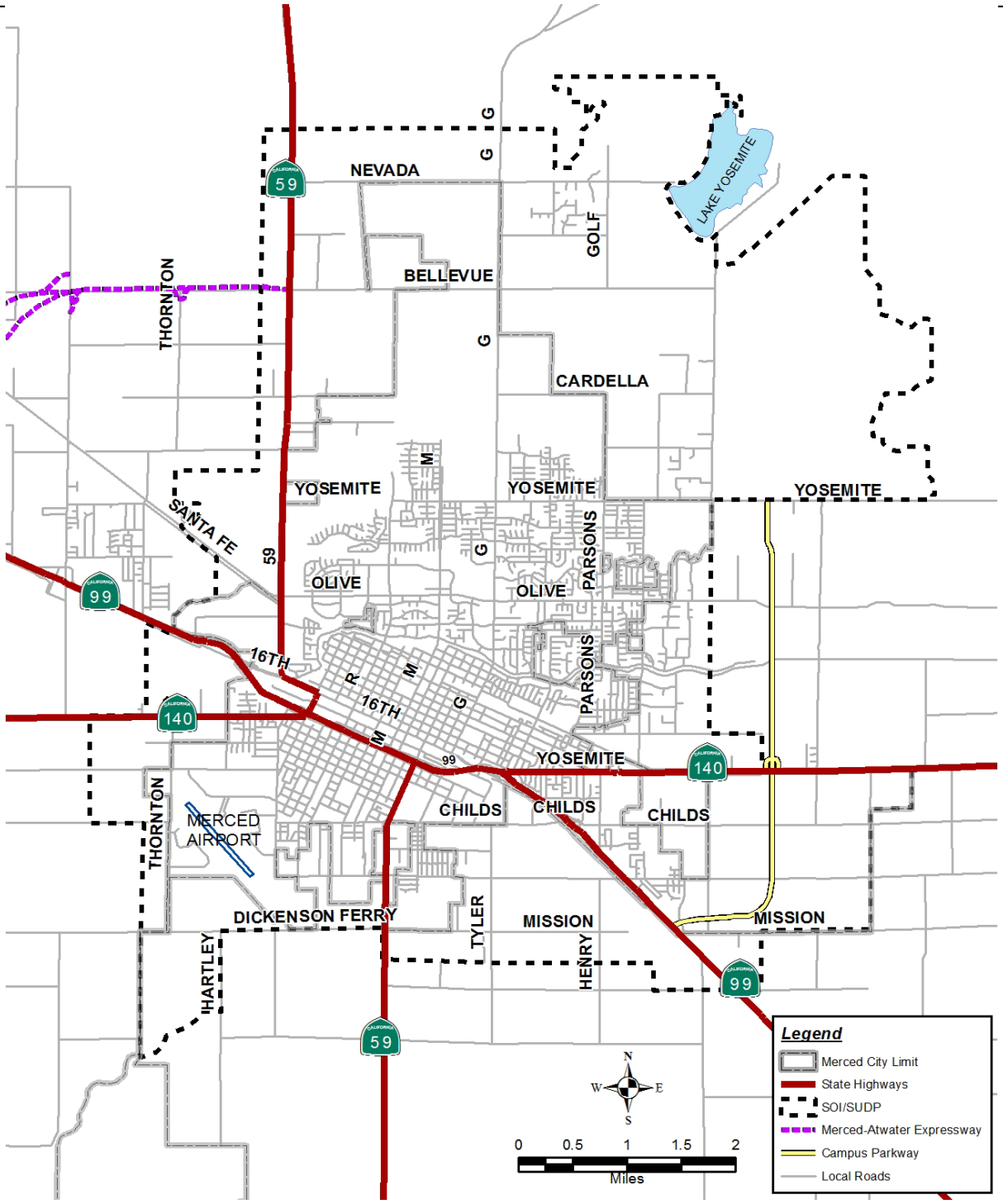
- The Merced County Regional Transportation Plan (RTP)--A 20-year plan, which must be updated every two years, that outlines the regional goals, transportation improvements, and funding sources.
- The Regional Transportation Improvement Program (RTIP)--A 7-year program of State and Federally funded transportation projects within the region. The RTIP also nominates projects to the California Transportation Commission for funding through the State Transportation Improvement Program (STIP)
- Project Study Reports (PSR)--These reports need to be completed for projects on the State highway system before they can be funded. PSR's address a project's alignment, scope, preliminary engineering, right-of-way, and costs. Such PSR's will be needed or are currently being prepared for the Atwater/Merced Expressway, Childs Avenue Interchange improvements, and other improvements to Highways 59, 99, and 140 in the Merced area.

4.3 ELEMENTS OF THE CIRCULATION SYSTEM

4.3.1 Regional Circulation System

Current Regional Access

Three routes currently provide regional access for the City of Merced. In addition, the Merced Atwater Expressway and the Campus Parkway are planned for completion during the life of the *Merced Vision 2030 General Plan* (***Figure 4.2***).



MAJOR REGIONAL ROUTES

Figure 4.2

State Route 99 is an important north/ south highway through the State (although it actually runs east-west through Merced) connecting the major cities of the Great Central Valley. It is a four to six lane facility extending from Interstate 5 near Bakersfield at its southern end to Interstate 5 near Redding at its northern end. It passes through a number of Valley communities, including Bakersfield, Visalia, Fresno, Merced, Modesto, Lodi, Stockton, and Sacramento.

State Route 99 serves as the primary farm-to-market route for the transportation of agricultural products, as a major commuter route within many of the cities it serves, and as a popular route for recreational traffic. SR 99 is also a major freight corridor, with trucks comprising up to 30% of total traffic on a typical weekday.

State Route 59 is a north/south facility extending from Route 152 south of El Nido to Snelling north of Merced. It enters Merced from the south via Martin Luther King Jr. Way (South J Street), crosses the City via Route 99, and continues northward on its own Highway 59 corridor.

State Route 140 is an east/west facility connecting I-5 and Yosemite National Park. It is a two-lane road serving local traffic and a high volume of recreational traffic. It enters the City from the west at the intersection of 13th and V Streets, crosses the City via Route 99, and continues eastward on its Route 140/Yosemite Park Way corridor.

G Street and Santa Fe Drive, west of Highway 59, play more limited regional roles by connecting Merced with the nearby communities of Snelling and Atwater respectively.

Expanded Regional Access

As a part of the *Merced Vision 2015 General Plan* in 1997, the City adopted a circulation plan of major streets (arterials) and western and eastern expressways (Highway 59 and Campus Parkway, then known as the Eastern Beltway) to serve prospective growth areas north of the existing community. That system has been subsequently modified and expanded in concept over time and the western expressway has shifted further west to become the Atwater-Merced Expressway although Highway 59 will remain a major City arterial.

As part of the *Merced Vision 2030 General Plan*, the circulation plan also contains a future regional loop or beltway system, designed to provide additional options for regional traffic to travel around the fringes rather than through the urban area. This prospective loop system is formed by the Merced-Atwater Expressway to the west, Mission Avenue to the south, Campus Parkway to the east, and Bellevue Road to the north. An interchange was constructed in 2008 at Mission Avenue/Highway 99 and will connect with Campus Parkway. The completion of Campus Parkway depends of the timing of buildout of UC Merced, and will be phased in over the next 10 to 20 years as traffic conditions warrant.

4.3.2 Functional Road Classifications and Design Standards

City and regional streets and highways are classified by categories that reflect their importance and function. Freeways are the highest level of roadway, with fully controlled access, high operating speeds and volumes, and highest design standards. Local streets and alleys are the lowest functional classification, with low speeds and volumes and direct access to adjacent property.

The accompanying table (***Table 4.2***) and representative cross-sections which follow summarize the characteristics of roadway categories. *(More detailed design standards and additional cross-sections are described in Section 4.8.1.)* Specific design requirements are found in the City of Merced's Standard Designs of Common Engineering Structures, which are amended on a regular basis.

Table 4.2
City of Merced
Summary of Street and Highway Standards

Road Classification	*Right-of-Way*	*# of Lanes*	*Driveway Access Restrictions*	*Street Intersection Spacing*	*Parking*
Expressway (Atwater-Merced & Campus Parkway)	150	4-6	Full	1/2 – 1 mile	No
Major Arterial	128 feet	4-6	Full	1/4 - 1/2 mile	No
Arterial	128 feet	4-6	[1]Partial	1/4 - 1/2 mile	No
Divided Arterial	118 feet	4-6	[1]Partial	1/4 - 1/2 mile	No
Minor Arterial	94 feet	2-4	[1]Partial	1/8 - 1/4 mile	Generally Not Permitted
Major Collector	[2]68-74 ft	2-4	[3]Partial	As needed	[3]Permitted in Selected Areas
Collector	68 ft	2	[4]Partial	As needed	[4]Permitted in Selected Areas
Local	[5]51-62 ft	2	No	As needed	Permitted
Transitway	[6]Varies	2-6	[6]Varies	[6]Varies	[6]Varies

[1] Generally no direct access to adjacent property. Right-turn-in/right-turn-out local streets or combined access driveways may be permitted at the City's discretion at 1/8 mile points.

[2] Less (68 feet) right-of-way (ROW) may be permitted where supported by a traffic analysis to assure that the narrower street would not be overloaded. Analysis would include trip generation and distribution based on existing and future land use and circulation system. Additional width may be necessary at intersections where analysis shows need for turn lane(s).

[3] Generally no direct access (fronting lots and residential driveways) allowed.

[4] Fronting lots would be permitted on Collectors where a traffic analysis shows daily traffic volumes will not exceed 1,500 vehicles under ultimate conditions. Driveways or other direct access and parking are to be avoided if feasible within 300 feet of existing signalized intersection or an intersection with realistic prospects for future signalization

[5] 36 foot minimum distance required from curb to curb

[6] There are different kinds of transitways, depending on their function. Some segments will allow buses only (refer to Bellevue Ranch Master Development Plan) while others will function as normal arterials except they will offer exclusive "High-Occupancy Vehicle" lanes.

NOTE: These are general standards appropriate for most situations. Higher standards may be required or less standards may be permitted based on detailed design studies. Expanded ROW's may be required at intersections to accommodate turn lanes. On-street parking may be deleted if adequate, convenient off-street parking is provided in a subdivision design. A subdivision design deleting on-street bicycle lanes may be permitted if an adequate, convenient Class I bicycle path(s) is available (subject to possible reimbursement and/or maintenance costs for existing system).

Currently adopted standards are contained in the City of Merced Standard Designs of Common Engineering Structures.

Roadway characteristics and standards described in the Circulation Element apply to most common situations and generally should be considered as minimums. However, detailed traffic and design studies for specific development projects or roadway improvements may indicate that higher levels of improvements are required or that other standards may be permitted. Like other infrastructure, circulation improvements will be required as development occurs (See Chapter 5, Public Services and Facilities, for related policies regarding the timing of improvements.)

4.3.3 Streets and Highways

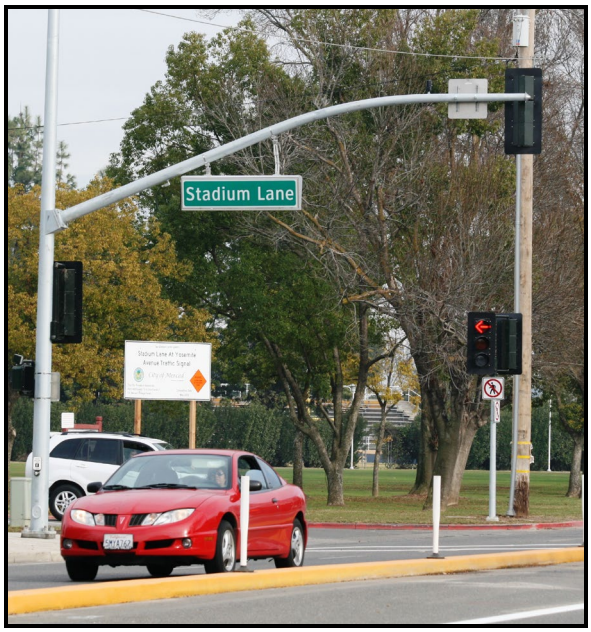
Major Road System

The City has had a one-mile grid system of major north-south roadways identified for many years (Highway 59, R Street, G Street, and Parsons/Gardner/Golf Avenue are all one mile apart). This existing system will be extended to serve Merced's new growth areas.

The circulation system concept for projected new growth areas provides for one-mile grids formed by major arterial and arterial roadways. The north-south major arterials in the City's primary growth area would distribute traffic throughout the community. East-west arterials would carry traffic to a convenient north-south major arterial or expressway for ultimate distribution to the downtown, other more distant community destinations, or to Highway 99 (***Figure 4.3***).

Rights-of-Way and Access Spacing

The arterial grid system has two basic requirements if it is to be successful: 1) adequate right-of-way (ROW) preservation to accommodate the amount of traffic expected from major future growth; and 2) strict access control to maintain efficient movement for this greatly expanded traffic.



For the street system to function properly, enough capacity must be built into the roadways to handle the traffic for the next 10 to 20 years and beyond. For that purpose, the rights-of-way (ROW's) for major arterials, such as Bellevue Road, G Street, and R Street, may need to be substantial.

Along with the amount of right-of-way, access control greatly affects street capacity. Every street has a maximum traffic-carrying capacity -- the maximum number of vehicles that can be carried at a particular speed past any given point.

To maintain this capacity, speed must be maintained. Therefore, unnecessary disruptions to peak hour traffic flow must be avoided. Carefully controlling the number of intersections is the key to maintaining such roadway efficiency.

The intersections that are allowed must also be located at specific distances from each other. This in turn allows future traffic signals to be located at proper distances to provide the most efficient timing possible. The more effective the timing coordination,

the more efficient the system (more vehicles carried more quickly over a given period of time). An efficient traffic signal system also allows vehicles to flow more smoothly though the roadway system, with fewer fluctuations in speed, reducing greenhouse gas emissions associated with uneven traffic flow.

City traffic studies have indicated that the most efficient spacing for signalized intersections should be: a) no less than one-half mile apart on Major Arterials (G and R Streets north of Yosemite Avenue); and, b) at least one-quarter mile apart on Arterials (Bellevue Road) and Divided/Minor Arterials (Cardella Road). This spacing maintains an adequate flow of traffic and allows proper synchronization of traffic signals.

Right-turn-in/right-turn-out intersections (regulated by a road median) are allowed at the one-quarter mile points on Major Arterials and at the one-eighth mile points on Arterials and Divided/Minor Arterials. This conceptual arterial grid system was first recommended by the Planning Commission and adopted by the City Council in 1992 and formalized in the *Merced Vision 2015 General Plan* in 1997.

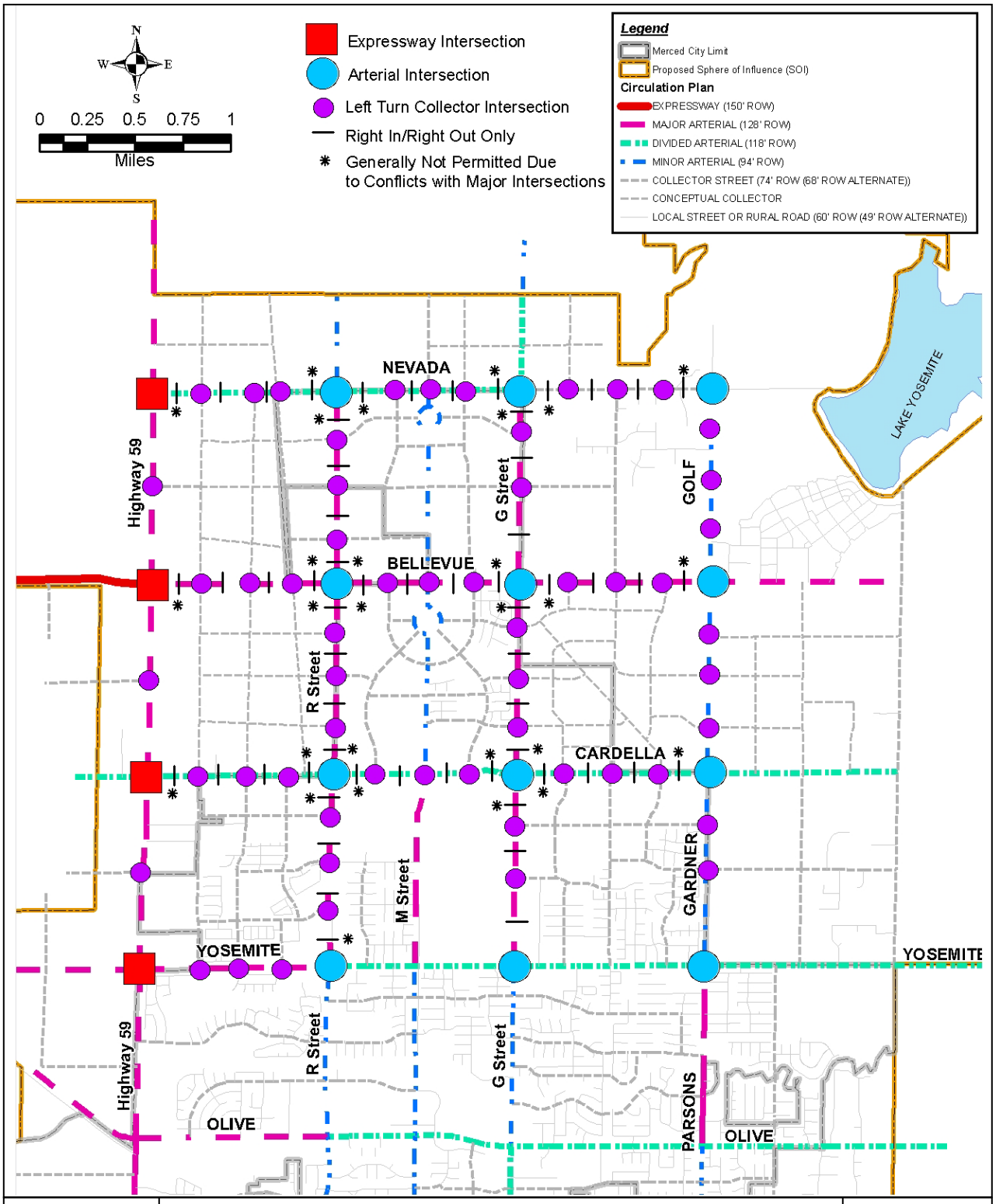
Designation and function of the following major roadways are to a large degree based upon the level of required access restrictions.

Atwater/Merced Expressway

- Anticipated to be the major cross-town traffic carrier for Merced's prospective growth areas to the north in the foreseeable future;
- East-west minor arterials to feed traffic onto Highway 59 and then onto the Expressway;
- By-passes the existing City road system and Atwater's system, to provide direct access to Highway 99

R Street/G Street/SH 59 (Arterials)

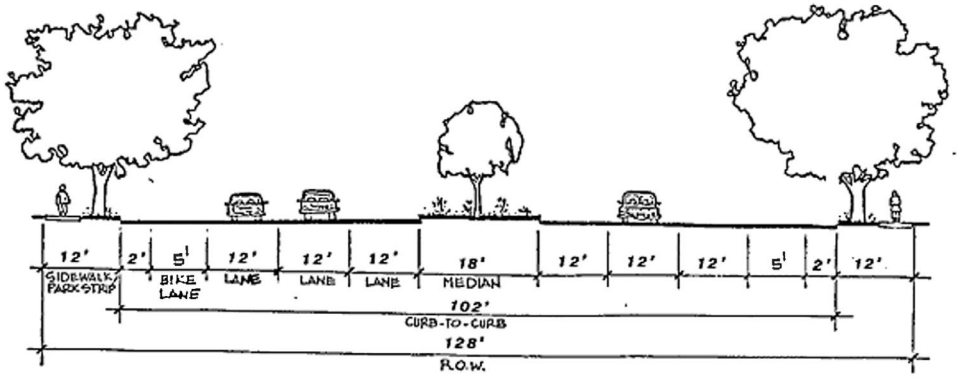
- Located parallel to each other at one-mile intervals, in the direction (north-south) that is anticipated over time will carry the longer distance, higher speed cross-town vehicle trips for Merced's prospective growth areas to the north (***Figure 4.3***); and,
- Cross-town function anticipated to become more important as the City extends further northward; Access to Major Arterials ***(Figure 4.4)*** is limited to no more than every quarter mile; signalized (four-way) intersections only allowed at every mile (at east-west Arterials) and intervening half-mile point at major collectors; (other access points, at intervening quarter miles, limited to right-turn-in, right-turn-out traffic only).



NORTH MERCED ARTERIAL STREET NETWORK

Figure 4.3

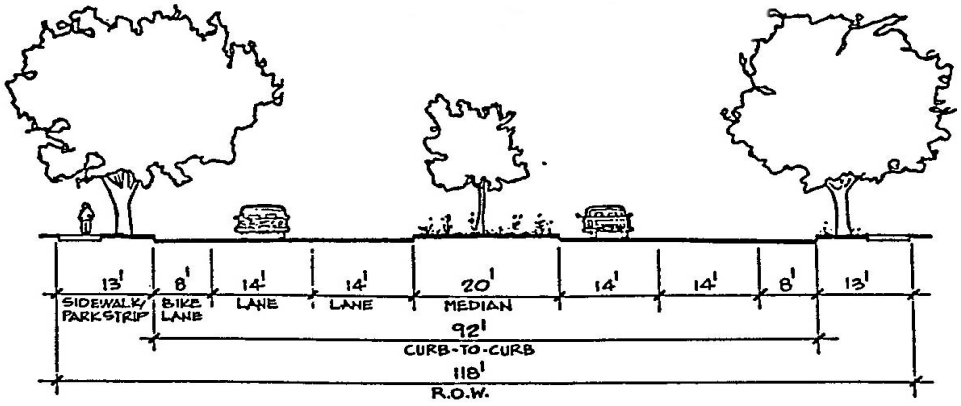
Figure 4.4
Major Arterial/Arterial
Cross-Section



Yosemite Avenue/Bellevue Road and Cardella Road (Arterials)

- Arterials, one mile apart in a parallel (east-west) pattern perpendicular to the major arterials.
- Anticipated to accommodate more, but shorter, vehicle trips, distributing vehicles to major arterials.
- Less stringent access restrictions, to accommodate heavier traffic loads for shorter periods of time – basically, designed to carry traffic to the nearest appropriate major arterial, expressway or collector, for further trip distribution.
- Bellevue Road has a larger right-of-way requirement (128 feet, 150 feet at major intersections) because it is designated as a transit-way (west of G Street) in addition to its designation as an arterial. Cardella Road and Old Lake Road are both designated Divided Arterials (118 feet, 140 feet at intersections) (***Figure 4.5***).
- The unique street cross-sections and design features of roads and rights-of-way within the *Bellevue Community Plan* and described in that plan take precedence over the comparable language of the *Merced Vision 2030 General Plan.*

Figure 4.5
Divided Arterial Cross-Section



4.3.4 Public Transportation Services

Transit System

The City of Merced is served by a local public bus system, inter-regional private bus companies, and private taxi-cabs, as well as rail and air passenger services that are both dealt with under separate headings. The public bus system, created in 1974, served the community as the Merced Transit System (MTS)/City Shuttle for more than two decades. Its primary goal over time remained to serve senior citizens, low-income people and the disabled, even as the system expanded. Originally created solely as a demand responsive Dial-A-Ride operation, the service extended as time passed to include a number of fixed routes within the City.

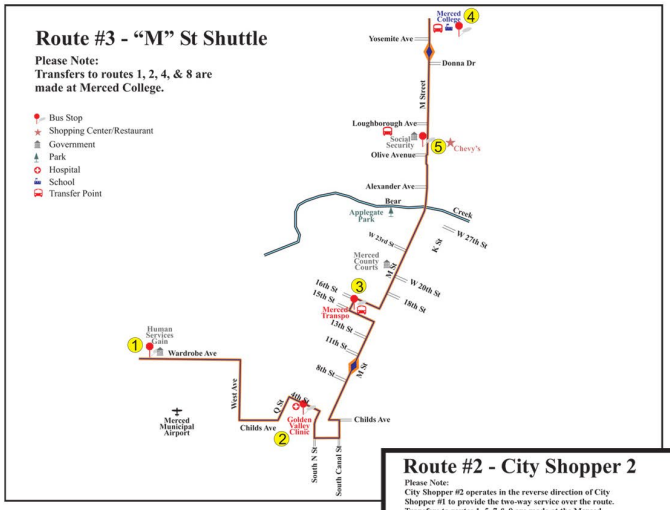
In 1996, this system merged with other transit systems within the County to form "The Bus"-Merced County Transit. The consolidated system includes the City Shuttle plus the former Merced County MARTS and the Los Banos system. "The Bus" operates on 16 fixed routes and also provides demand responsive service. Weekday and Saturday service is provided.

The intent of the combined operations has been to retain as much as possible previous local service options to City transit riders, while reducing overall system costs and enhancing regional transit opportunities for all riders.

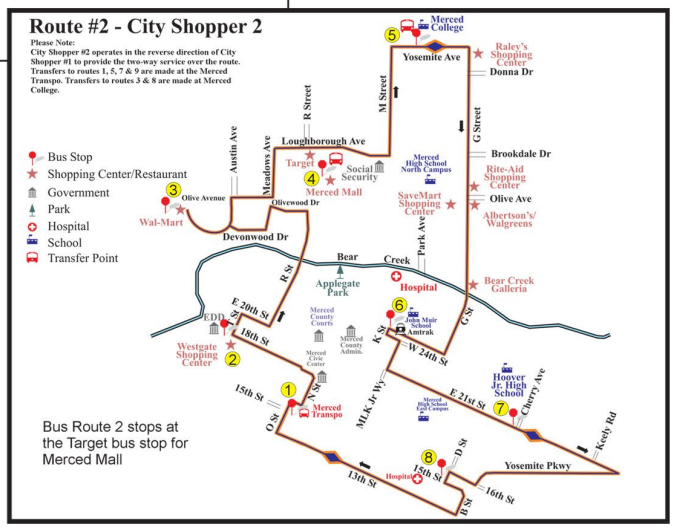
Transit routes within the City connect downtown Merced, adjacent neighborhoods, and major trip generators such as the Merced Civic Center, hospitals, shopping areas, and many local schools including Merced College ***(Figures 4.6a, 4.6b, 4.6c and 4.6d).*** Rural destinations through-out the County are also served. In addition, the service continues to provide Dial-A-Ride for seniors and disabled individuals.

Through MCAG, the City continues to contribute its representative portion of funds necessary for the operation of the expanded, regional system. These funds help to maintain the existing system as well as provide for new equipment such as communications gear, bus shelters, and replacement vehicles.

A public bus system is expected to remain the most cost-effective method of public transportation for the community in the foreseeable future. A key factor is the amount of assistance contributed by other levels of government to help operate and maintain the system.

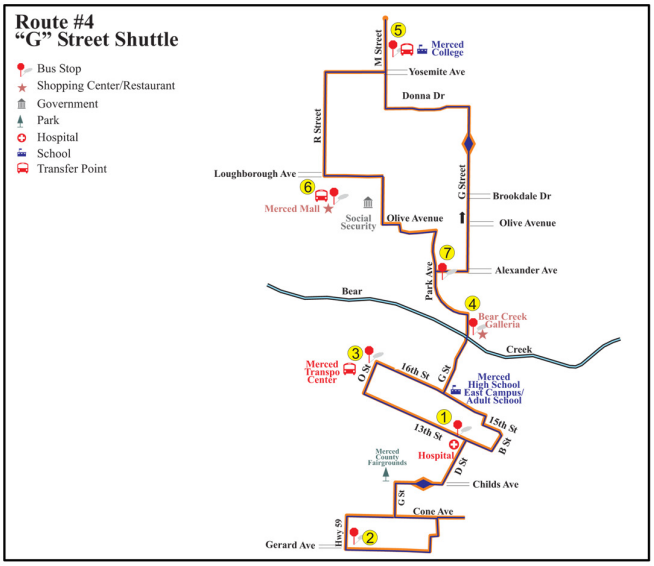


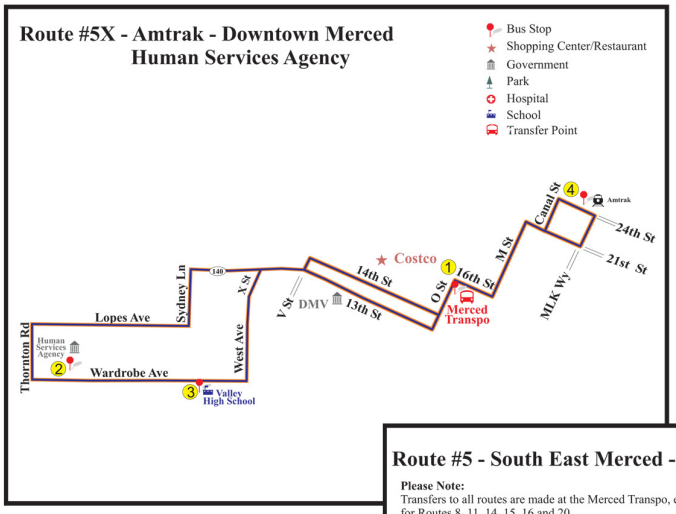
Note: Transit Routes Are Subject to Change



CITY TRANSIT ROUTES

Figure 4.6a





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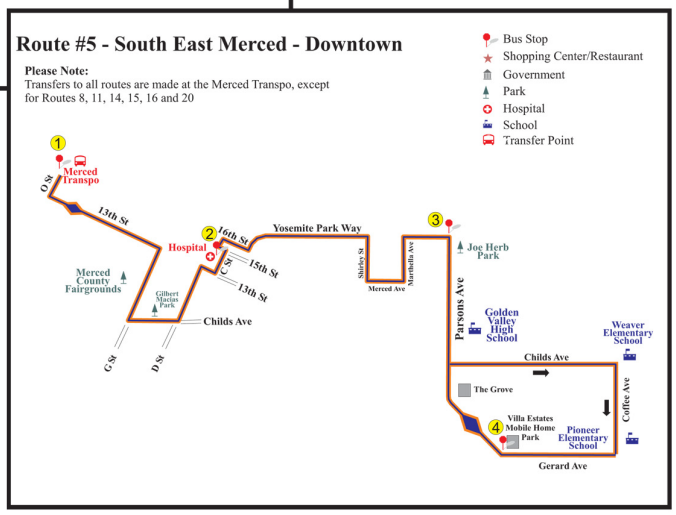
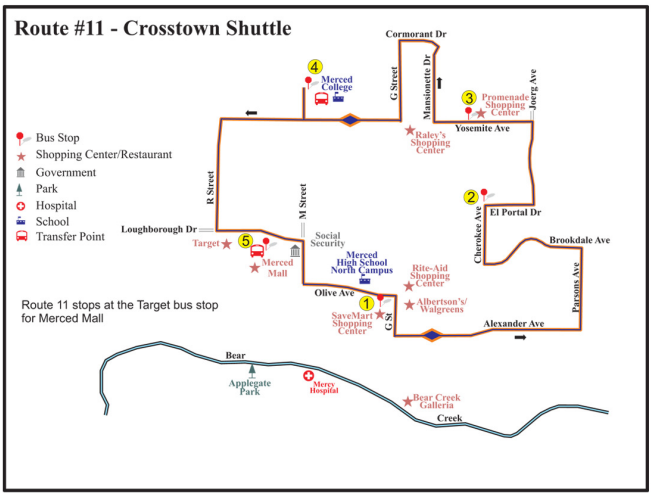
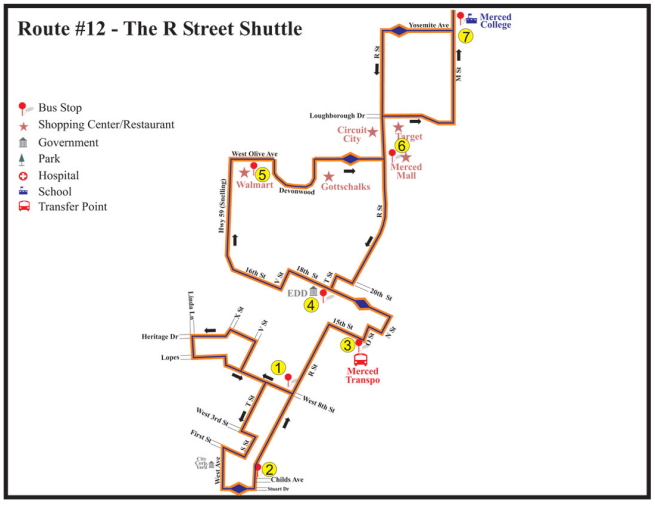


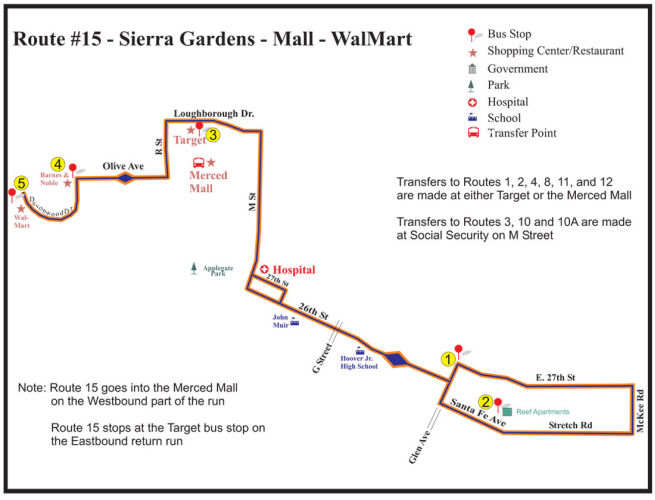
CITY TRANSIT ROUTES

Figure 4.6b



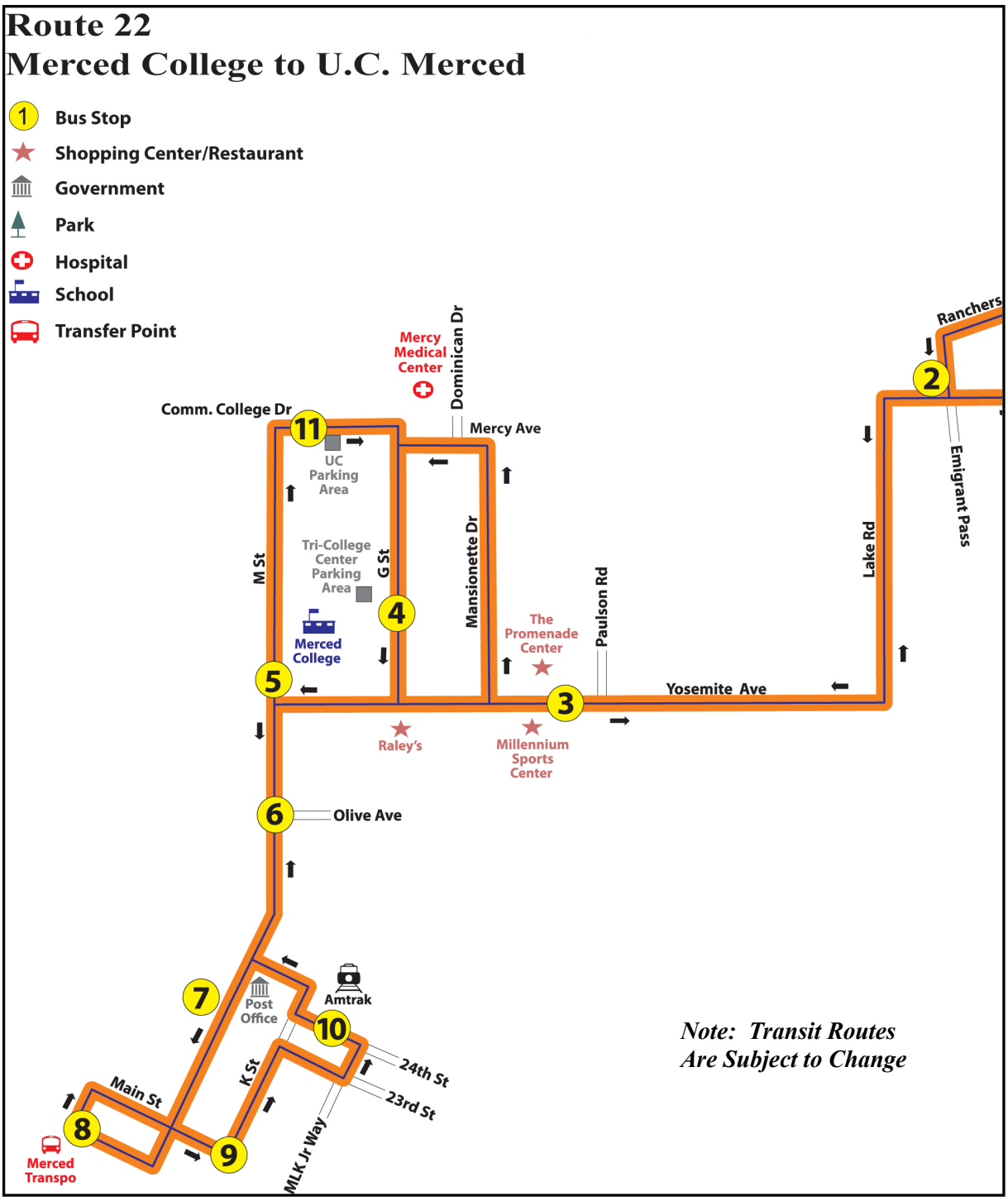


Note: Transit Routes Are Subject to Change



CITY TRANSIT ROUTES

Figure 4.6c



CITY TRANSIT ROUTES

Figure 4.6d

Transitways

The City of Merced has maintained a strong north-south growth pattern for many years, consistent with its proposed expansion areas. This pattern has contributed to a relative clustering of major destinations in proximity to "M" Street ***(Figure 4.7)***.

This M Street "core" has been formally designated a "Transitway" or "Transit Corridor." This corridor is a logical location for centralized bus service to run along or closely parallel to "M" Street throughout the entire north-south length of the City.

In this location, public transit would be able to provide convenient access to nearly all major Merced destinations. A pattern of intersecting bus routes could tie the entire community into an efficient public transit system.

The pattern of major destinations in proximity to this central transit corridor has been continued through the City's proposed North Merced growth area. As Bellevue Ranch is built-out, additional major commercial sites will be constructed along the M Street corridor. A special section for the M Street Transitway has been developed from Cardella to Old Lake through the Bellevue Ranch Master Development Plan.

Bellevue Road and Mandeville Lane have been designated as Transitways in the City's Circulation Plan ***(Figure 4.1)***. The area near the intersection of M Street and Bellevue Road, the location of proposed future major commercial and office park sites, would also be the central transfer point between these three transit corridors.

Mandeville Lane offers the opportunity for direct public transit access eastward from M Street to UC Merced. The opportunity should also be studied regionally for extending a transitway westward along Bellevue Road to provide a tie-in to the regional employment sites at Castle Airport.

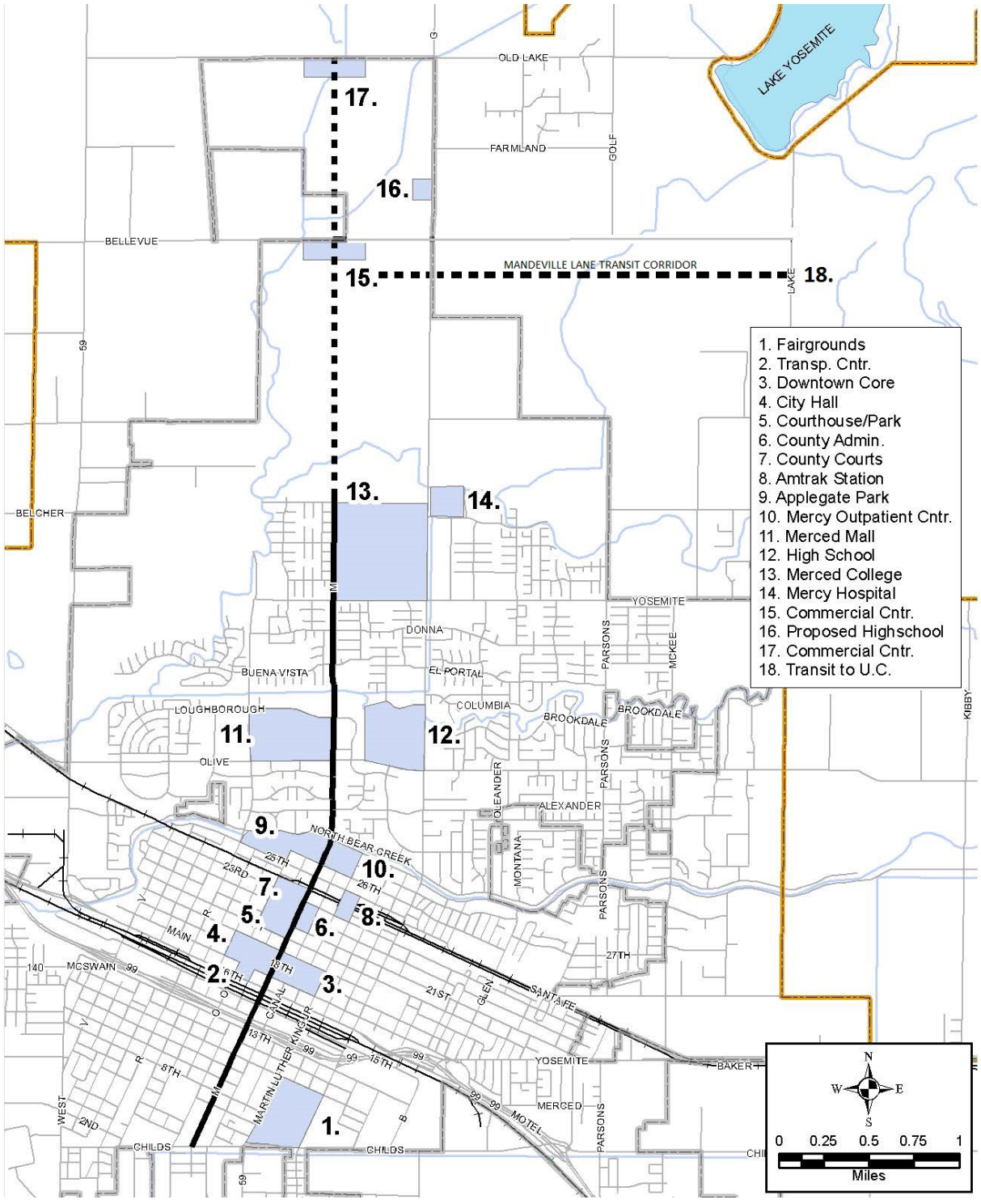
4.3.4 Private Transportation

The future of private transit operators (taxis, vanpools, etc.) is difficult to predict because of the volatile nature of the business in recent years. Future service levels of intercity transit will be influenced by changing market forces and state and federal government regulations.

Demand for service to and from the Merced area can be expected to increase. With increasing demands brought about by efforts to improve air quality and congestion, the private intercity operations in Merced County and the San Joaquin Valley could be expanded. It should be noted that if the private sector is unable to respond to this commuter demand, some of the demand could shift to the public sector.

4.3.6 Social Service

The City of Merced partners with several agencies, public and private, to provide social service transportation. Demand response service is available for senior citizens and disabled citizens residing within the community through the Consolidated Transit System of Merced County. Special fare discounts are typically provided for seniors and disabled persons.



M STREET TRANSITWAY CORRIDORS (MAJOR EXISTING AND FUTURE LAND USE DESTINATIONS)

Figure 4.7

4.3.7 Rail Service

Passenger Service

There are two railroad companies that operate through Merced County and the City of Merced. Both the Union Pacific Railroad (UPRR) and Burlington Northern/Santa Fe (BNSF) railroad provide freight service to Merced, while the BNSF provides Amtrak passenger service.

The UPRR rail line parallels 16th Street through much of the City. The BNSF line runs primarily along segments of Santa Fe Avenue (***Figure 4.8***). The Amtrak passenger station is located at 24th and K Streets.

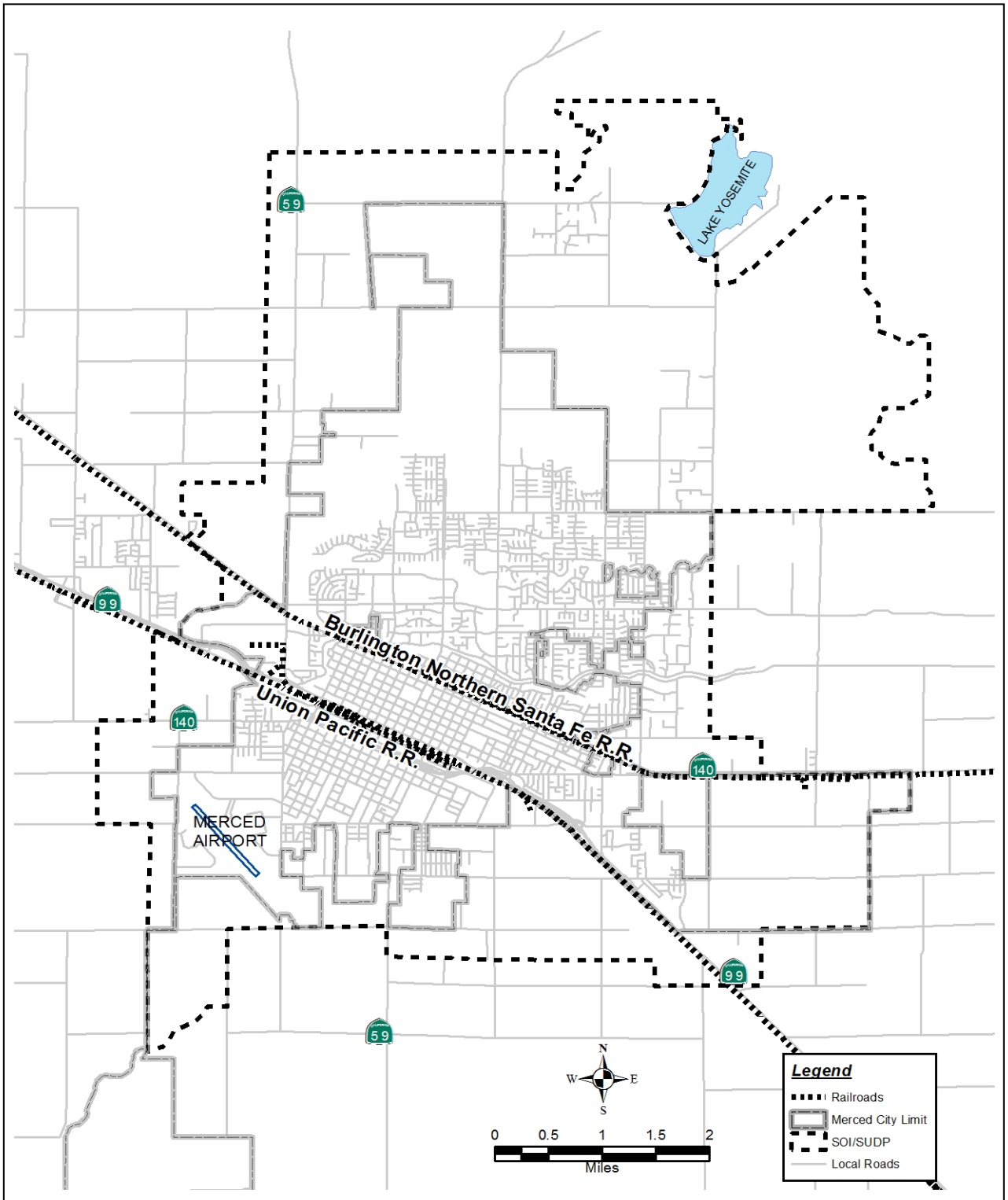
The Amtrak San Joaquins have been serving Merced since 1974. These trains provide direct passenger service from Oakland and Sacramento to Bakersfield, with a bus feeder route running to southern California. Provision of direct rail service to Los Angeles remains both a local and State objective as a primary way for improving service and increasing ridership.

Much attention was focused in the past on possible rerouting of Amtrak onto the UPRR tracks. In anticipation of this possibility, local jurisdictions renovated the old Southern Pacific Rail Depot at 16th and N Streets, as part of an expanded Transpo Center complex completed in 1990. Shifted State priorities make it unlikely that Amtrak will be rerouted in the foreseeable future. Nonetheless, the Transpo Center does serve as the center for all other land-based area transportation, including private bus lines and taxi-cabs, as well as the central transfer point for public bus service.

High Speed Rail

An additional regional issue is proposed high speed rail service between San Diego and San Francisco, passing through the Central Valley. In 1996, the California Intercity High Speed Rail Commission selected a Highway 99 route rather than an Interstate 5 route due to the larger number of people and communities which could be served along Highway 99. The preferred route has been selected and would locate a station in Merced. Stops are anticipated in Bakersfield, Tulare, Fresno, and Merced before the trains continues on over SR 152 into the Bay Area. A 2nd line to Sacramento will be added in future phases.

The project was approved by California voters on November 4, 2008 with the passage of Proposition 1A authorizing $9.95 billion for the project. The California High-Speed Rail Authority (CHSRA) is currently tasked with completing final planning, design, and environmental efforts. Construction efforts are anticipated to begin in the next few years.



RAILROADS THROUGH MERCED

Figure 4.8

4.3.8 Bicycle/Trail System

Bicycles

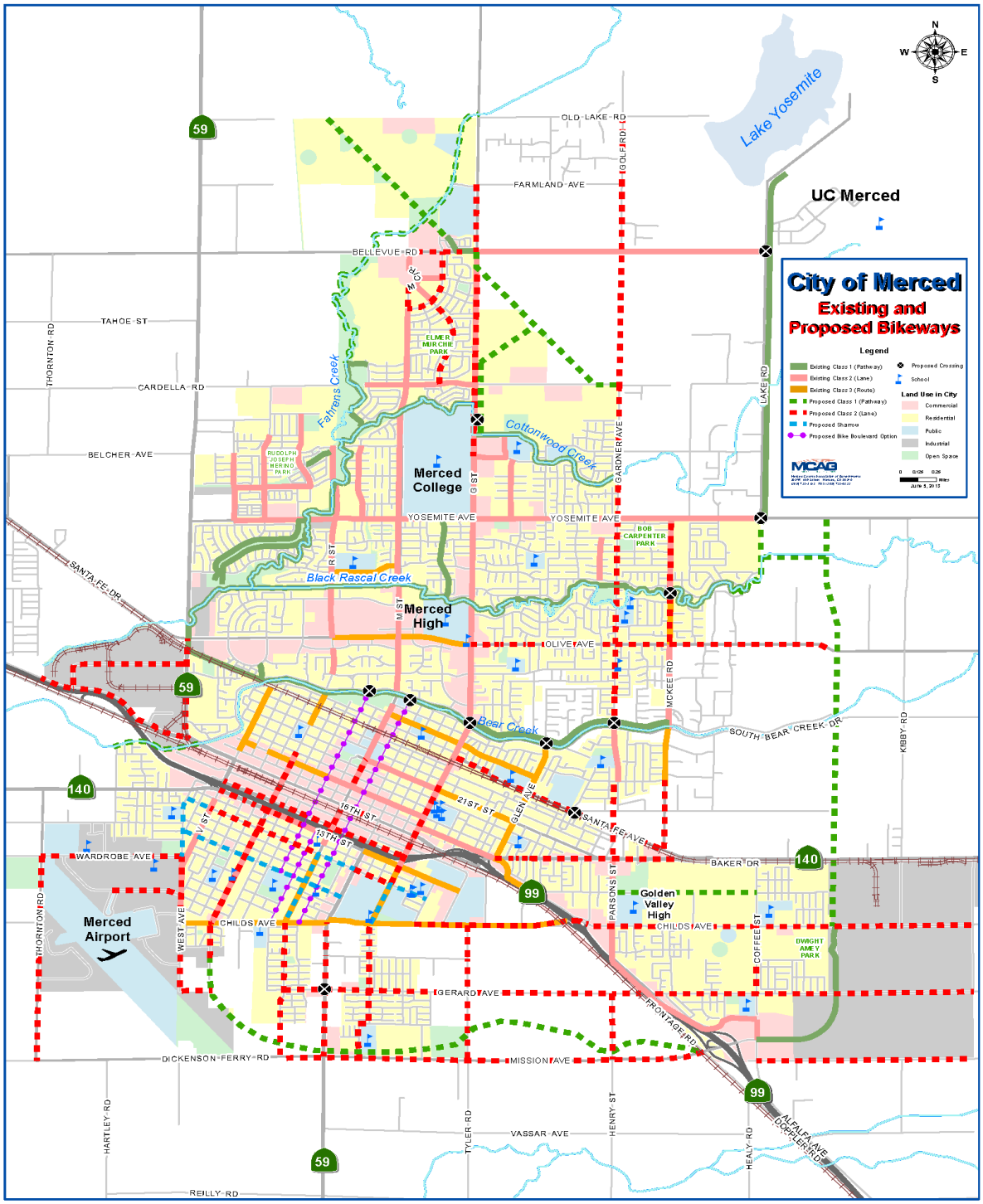
Bicycles are an important mode of transportation in the community. Merced has both a favorable climate and terrain to encourage the use of bicycles for both recreation and transportation functions. As bicycle use increases, adequate facilities must be provided to furnish direct routes of access between destinations while minimizing conflicts with automobiles.

Bikeways are categorized by the degree in which they separate bicycle movement from vehicular movement. There are two major types of bikeways: (1) off-street bikeways, and (2) on-street bikeways.

Based on the State Department of Transportation classification system, off-street bikeways should be Class I (Bike Paths or Bike Trails) whenever possible. Class I bike paths provide a completely separated right-of-way designated for the exclusive use of bicycles and pedestrians, with cross flows by motorists minimized. In Merced, Class I bike paths generally take advantage of creekside locations and other non-street facilities, such as canals or railroad corridors. Although the off-street bikeways provide extensive recreational opportunities, another primary focus is on safe and efficient transportation linking major land uses and connecting with on-street bikeways at strategic locations.

On-street bikeways are intended to be Class II (Bike Lanes) whenever possible. Class II bike lanes provide a restricted right-of-way on the street for the exclusive or semi-exclusive use of bicycles. Through travel by motor vehicles or pedestrians is prohibited, but cross flows by pedestrians and motorists are permitted. The on-street bikeway system may use Class III (Bike Route) designations occasionally where Class II bike lanes are not feasible. Sharrows are another type of on-street bikeway. Information about all bikeways (definitions, characteristics, and standards) are detailed in the Bicycle Transporation Plan.

On-street bikeways should utilize existing or proposed major streets that provide the quickest, shortest, and safest route to take for bicyclists.



BICYCLE TRANSPORTATION PLAN

Figure 4.9

Bicycle Transportation Plan

The City of Merced has a significant number of existing and proposed Class I off-road bicycle/ pedestrian trail systems. Much of this system is located along existing waterways (Bear, Black Rascal, Cottonwood, and Fahrens Creeks). Details of the existing and planned system are presented in the Merced Bicycle Transporation Plan, adopted in 2013 (***Figure 4.9***), an implementing action of the General Plan, which is updated every five years. The alignments shown are conceptual and subject to further refinement prior to actual construction.

As proposed, the current Class I system will ultimately be extended to form one complete loop sub-route along Bear/ Black Rascal Creeks, between McKee Road and Highway 59. The system will also be extended to complete a larger loop sub-route along Fahrens Creek, to Lake Yosemite and down Lake Road to Black Rascal Creek. Ultimately, this could allow the system to be extended to provide regional bicycle access to the UC campus. Class I bikeways will also extend along powerline easements and the old Yosemite Valley Railroad corridor that criss-cross the northern growth area.

The Merced Bicycle Transportation Plan also identifies regional bicycle connections to provide bicycle mobility though the region. Area bicycle planning has, to a major degree, focused on development of an off-street trail system along the region's existing creeks. Because these creeks are located in central and north Merced, the off-street system has developed there. The Merced Bicycle Transportation Plan identifies a number of bikeways to be constructed as new development occurs throughout the City.

Bicycle Advisory Commission

In 2009, the City established the Bicycle Advisory Commission, made up of 7 Merced citizens plus two non-voting, ex-officio members, who can reside in the County. The Bicycle Advisory Commission is an advisory body to the City Council advising the City on matters relating to improving conditions for bicyclists, promoting bicycling as a means of transportation with the associate benefits of improved air quality, and improving safety conditions for bicyclists.

4.3.9 Pedestrian Circulation

Pedestrian routes should provide safe and convenient movement to major destinations. The needs of school children and the special problems of the disabled are of special importance. Care must be taken where development is phased or non-contiguous to provide adequate and safe pedestrian facilities at all times.

Both sidewalks and separate paths can be provided for pedestrian movement. As with bicycles, separate public easements or rights-of-way provide unique opportunities for pedestrian circulation.

Indirect street systems, found in modern subdivisions, are often inconvenient to the pedestrian. The planning of residential areas needs to recognize pedestrian movements, whether to schools, parks, shopping, or public transit routes. A system of pedestrian-ways can also serve a secondary use as bicycle access to local streets and other portions of the bicycle path system.

4.3.10 Air Service

Merced Regional Airport

Merced Regional Airport is a publicly owned, public use facility. It is a basic transport airport, providing commercial air service, general aviation, and freight air cargo service. Runway length is approximately 5,900 feet, capable of handling jet aircraft. Available hangar space in 2010 was approximately 100,000 square feet.

In 2010, Great Lakes Aviation (in conjunction with United Airlines) provides two daily roundtrip flights to Las Vegas, Nevada. The airport is the only "General Aviation Airport" in the County according to criteria used by the Federal Aviation Administration. A "General Aviation Airport" is one used for both private and commercial air transport.

The Great Lakes Aviation service as well as its predecessors is subsidized by the federal government under the Essential Air Service (EAS) Program. EAS was designed to provide smaller communities access to the national air transportation system by

subsidizing airline service should it be necessary.

EAS was established after air service was deregulated in the late 1970's. It was originally approved through 1988. The subsidy, which was due to expire in August 2010, has since been renewed. If the subsidy was ever eliminated, Merced would need to obtain alternative funding or seek other solutions in order to maintain this air service. The City's current intent is to keep the regional airport operating.

Castle Airport

Castle Air Force Base (CAFB) was closed in 1995 after over 50 years of military service. Castle Airport has since been converted to civilian use with industrial development and general aviation uses.

4.4 CIRCULATION SYSTEM IMPROVEMENT ISSUES

Ultimate buildout of the City's proposed SUDP/Sphere of Influence area is anticipated to require significant public improvements to the circulation system. Based upon traffic projections, the system will need new and upgraded Highway 99 interchanges, two transitways, new or improved major streets, separated-grade railroad crossings, and numerous new bridges and traffic signals.

With such improvements, the circulation system would be expected to maintain satisfactory movement in and around the community. Overall, levels of service (LOS) for major streets would not fall below standards currently expected by the public. Limited areas (downtown, etc.), however, may experience significant traffic congestion at peak hours.

4.4.1 Level of Service (LOS)

Level-of-Service (LOS) standards is one method for expressing how well traffic is moving on a road or through an intersection in relation to the capacity of that road or intersection. LOS ranks the quality of traffic movement on a scale of A through F.

Often LOS is used to specifically describe "worst-case" situations or traffic flow during "peak-hour" times. Typically, as in Merced, there are three peak-hour periods (when the largest number of vehicles are on the road together) during the typical weekday, centered generally around 8:00 a.m., noon, and 5:00 p.m. ***Table 4.3*** presents daily roadway segment level of service thresholds by roadway type.

Table 4.3
Daily Roadway Segment Level of Service Thresholds by Roadway Type

Type of Roadway	*LOS A Threshold*	*LOS B Threshold*	*LOS C Threshold*	*LOS D Threshold*	*LOS E Threshold*
4 Lane Freeway	25,900	42,600	57,800	68,400	76,000
6 Lane Freeway	40,000	65,800	89,200	105,600	117,400
8 Lane Freeway	54,000	89,000	120,600	142,800	158,800
10 Lane Freeway	68,000	112,000	152,200	180,200	200,200
2 Lane Expressway	-	-	16,800	23,200	24,400
4 Lane Expressway	-	3,000	27,800	36,000	37,800
6 Lane Expressway	-	5,900	38,900	48,900	51,300
8 Lane Expressway	-	9,600	60,600	73500	77,100
2 Lane Highway	2,300	7,600	14,200	20,000	27,400
4 Lane Highway	20,500	33,200	48,000	62,200	70,600
2 Lane County Road	-	-	7,700	15,000	16,100
4 Lane County Road	-	-	18,000	32,200	34,000
2 Lane Arterial	-	-	11,600	16,000	16,800
4 Lane Arterial	-	4,100	26,800	33,700	35,400
6 Lane Arterial	-	6,600	41,800	50,700	53,200
2 Lane Collector	-	-	4,800	10,300	13,200
4 Lane Collector	-	-	11,300	22,200	26,400

Source: *City of Merced, Fehr & Peers, Florida Department of Transportation Quality/Level of Service Handbook, 2002*

For use in determining LOS, traffic conditions are evaluated by numerous factors, including vehicle speed, travel time (how long it takes a vehicle to get a specified distance), volume and capacity (how many vehicles are on the road compared to how many vehicles the road can carry before efficient traffic flow begins to suffer), freedom to maneuver, traffic interruptions, and safety. Level of Service "A" represents free-flow conditions. Level of Service "F" reflects traffic jams -- that is, more traffic than the street has room for. These conditions are described in ***Figures 4.10a*** and ***4.10b***.

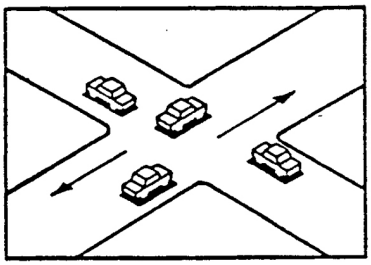
Level of Service standards can be used to help analyze the potential impacts of prospective land use changes and growth to routes and intersections. When service drops below a particular level, a road segment or intersection can be considered deficient and in need of capacity improvements.

Level of Service is influenced by a number of factors. These include existence of on-street (curbside) parking, frequency and spacing of traffic signals, number and frequency of intersecting side streets and curb cuts, level of pedestrian activity, and existence of left-turn pockets and right-turn lanes.

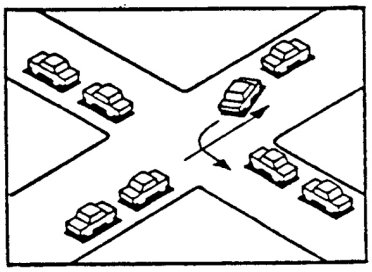
Level of Service Descriptions

Service Level Category	Descriptions of Traffic Conditions Signalized Intersections (Average Length of Wait [1])
Free Flowing (LOS A)	Most vehicles do not have to stop. On the average, each driver waits less than 5 seconds to get through intersection.
Minimal Delays (LOS B)	Some vehicles have to stop, although waits are not bothersome. Average wait at intersections is 5 to 15 seconds.
Acceptable Delays (LOS C)	Significant number of vehicles have to stop because of steady, high traffic volume. Still, many pass through without stopping. On the average, vehicles have to wait 15 to 25 seconds to get through intersection. *Typical LOS at major intersections during mid-day.*
Tolerable Delays (LOS D)	Many vehicles have to stop. Drivers are aware of heavier traffic. Cars may have to wait through more than one red light. Queues begin to form, often on more than one approach. On the average, vehicle wait is 25 to 40 seconds. *Common afternoon peak hour LOS at many intersections.*
Significant Delays (LOS E)	Cars may have to wait through more than one red light. Long queues form, sometimes on several approaches. Average waits of 40 to 60 seconds. *Apparent at major arterial intersections at peak hour.*
Excessive Delays (LOS F)	*Intersection is jammed.* Many cars have to wait through more than one red light, or more than 60 seconds. Traffic may back up into "up-stream" intersections. Generally caused by obstruction or irregular occurrence (*e.g.*, signal preemption for a train). This condition often viewed as "gridlock."

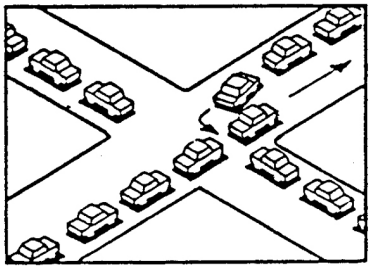
[1] "Average wait" is a measure of traffic conditions at intersections. It is an estimate of the average delay for all vehicles entering the intersection in a defined period of time, for example, the evening peak hour. It is expressed as a range rather than a single value. Some drivers will actually wait more or less time than indicated by the range.



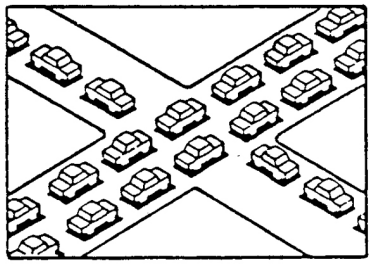
LOS 'A'



LOS 'C'



LOS 'D'



LOS 'F'

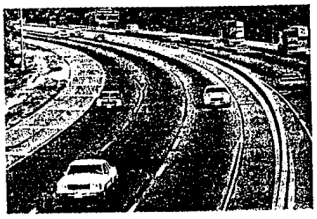
LEVEL OF SERVICE – INTERSECTIONS CORRIDOR

Figure 4.10a

Level of Service Descriptions

Service Level Category	Descriptions of Traffic Conditions Arterials (Average Speed [2])
Free Flowing (LOS A)	Vehicles can maneuver completely unimpeded and without restrictions on speed caused by other cars and delays at intersections.
Minimal Delays (LOS B)	Drivers feel somewhat restricted within traffic stream and slightly delayed at intersections. Average speed is about 70 percent of free flow.
Acceptable Delays (LOS C)	Traffic still stable, but drivers may feel restricted in their ability to change lanes. They begin to feel the tension of traffic. Delays at intersections contribute to lower average speeds—about 50 percent of free flow.
Tolerable Delays (LOS D)	High traffic volumes and delays at intersections reduce average travel speeds to 40 percent of free flow. Drivers aware of slower pace of traffic.
Significant Delays (LOS E)	High traffic volume and many signalized intersections with long queues reduce average travel speed to one-third of free flow
Excessive Delays (LOS F)	Travel is "stop and go"—one-third or one-fourth of free flow. Usually caused by a "down-stream" obstruction, such as lanes reduced from 4 to 3, or a stalled car, or signal preemption for a train.

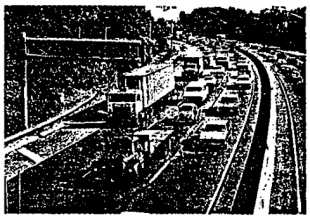
[2] "Average speed" is a measure of traffic conditions on arterials. "Average speed" is based on the total time it takes to travel a certain distance, including the time spent waiting at intersections. It is determined more by traffic volume and conditions at intersections, than by the legal speed limit.


LOS A


LOS B


LOS C


LOS D


LOS E


LOS F

LEVEL OF SERVICE – ARTERIALS
INTERSECTIONS CORRIDOR

Figure 4.10b

Ironically LOS "A," or the "best" condition in terms of freedom for an individual vehicle to move on a particular road segment, may not be best from other perspectives. LOS A indicates that a road has very little traffic on it in relation to how much traffic it could carry. Such a situation is appealing for a local neighborhood street. It could be very inefficient for a major street, though, indicating that the public is not getting full value from that roadway.

At the other extreme, Level "F" means that the cost per vehicle using the roadway has been reduced. However, other costs to the drivers, such as large time delays, number of accidents, maintenance problems, air pollution levels, etc., all continue to increase.

The preferred LOS levels are typically "C" and "D," particularly for larger roads and major intersections. With LOS "C" the road provides stable operation but is still underutilized to some degree. LOS "D" represents a balance between the relatively large number of vehicles served and the generally acceptable level of service provided.

It is the intent of the City's standards and policies for new and upgraded inter-sections and road segments to be designed and built to function at LOS D ("tolerable delay"), at least, during peak traffic periods.

Maintaining a Level of Service D at existing intersections is not always feasible, appropriate, or necessary, however. People may expect and tolerate varying levels of congestion depending on location (e.g. central Merced) and time of day. Heavier traffic can also be a reason to encourage greater pedestrian activity and heavier transit use in such areas. Other factors may make higher levels of service infeasible. In central Merced, for example, widening existing streets could create great disruption to stable, older neighborhoods. In these areas, "significant delays" (LOS E) or even LOS F may have to be acceptable at peak hours.

Transportation System Management (TSM) strategies discussed in Section 4.5 can be used to alleviate some of this congestion.

The projected LOS levels for Merced's major streets can be found in Section 4.8.4.

4.4.2 Parsons Avenue

The issue of the completion of Parsons Avenue as a major roadway within the City's north-south grid system reflects many of the difficulties of planning over time. Parsons has been shown as a major road on the City's General Plan maps since 1959. In the City's one-mile grid of major north-south streets, Parsons is the next eastward link (Highway 59 to the west; "R" Street one mile east of 59; "G" Street one mile east of R Street; Parsons Avenue one mile east of "G" Street).

Much of the City's growth over the past several decades has taken place to the north, above Bear Creek.

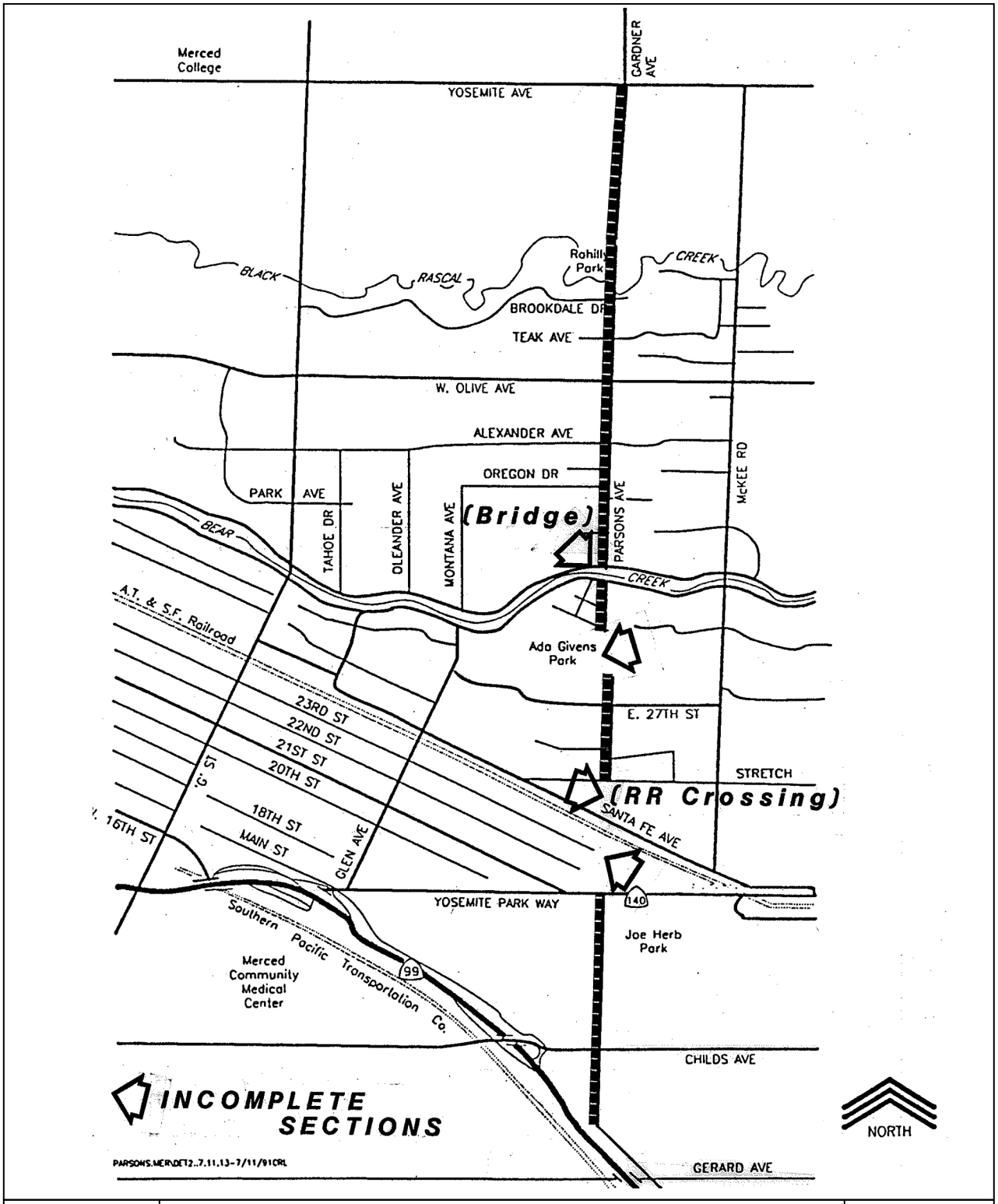
Because no major north-south routes are completed east of "G" Street, however, the City's north-south circulation system has become increasingly unbalanced. Expanding traffic from Merced's newer, northern growth areas increasingly impacts the existing north-south grid system. Much of this traffic travels south towards downtown, other older parts of the community like McKee Road, or to the region's highway network (Highways 99, 140 and 59) during morning peak hour

At the same time, traffic from East Merced traveling towards the same destinations has limited options. Constraints funnel much of this traffic to a limited number of east-west routes such as East 26th Street, North Bear Creek Drive, East Alexander and East Olive Avenue, then westward to already heavily burdened north-south routes at "G" Street or beyond.

Impacts on all of these existing roadways will continue to intensify as growth continues. A completed Parsons Avenue would be a major step in distributing traffic impacts more fairly throughout the community, and it remains a significant link in the City's overall circulation plan.

Figure 4.11 illustrates segments of Parsons Avenue that remain unconstructed. The two facilities that remain the largest impediments to completion of Parsons, due to cost, are a bridge across Bear Creek and a crossing of the Santa Fe Railroad tracks. [An at-grade crossing would be significantly less costly, but a separated-grade (underpass or overpass) crossing is a much more likely California Public Utilities Commission (PUC) requirement.] It is anticipated that the Ada Givens Park segment of the Parsons Avenue Improvement Project will be completed within the next three years.

The community has periodically evaluated possible options to the prospective Parsons Avenue project over past decades and funds are being accumulated to build the project through the City's Public Facilities Impact Fee program. A workable alternative(s) to Parsons that would serve the community with reasonably equitable circulation capability within realistic costs has not been identified. Therefore, completion of this corridor remains a high priority.



PARSONS AVENUE CORRIDOR PROJECT

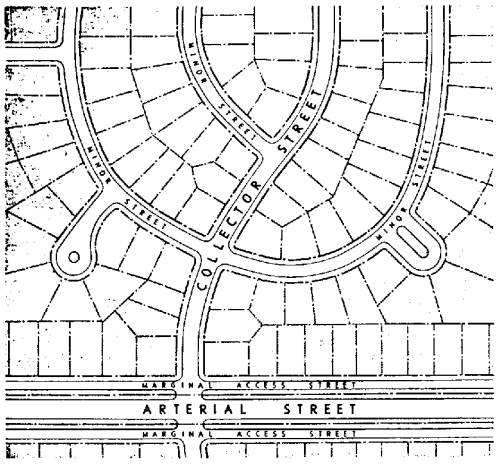
Figure 4.11

4.4.3 Collectors

"Collector" is a term describing, typically, a residential street that collects traffic from, and distributes traffic to the local streets of a neighborhood. On a map, a simple collector system might look like a group of smaller twigs connecting into a larger tree limb (the collector) -- ***Figure 4.12***.

Figure 4.12

Collector Example



Ideally a residential collector serves as a simple conduit for local traffic. The collector carries such traffic to nearby attractors such as a shopping center, school, or community facility, or to a major roadway (minor arterial, or larger street) for a longer trip within the City or beyond.

There are two major, and often conflicting, functions for residential collectors. This conflict creates a delicate balance. On the one hand, it is a residential street and as such is expected to fit into the quiet, safe setting of the surrounding neighborhood. On the other hand, a collector designed to efficiently fulfill its function of carrying traffic through and out of the area has potential for factors such as noise and speed which negatively impact the residential setting.

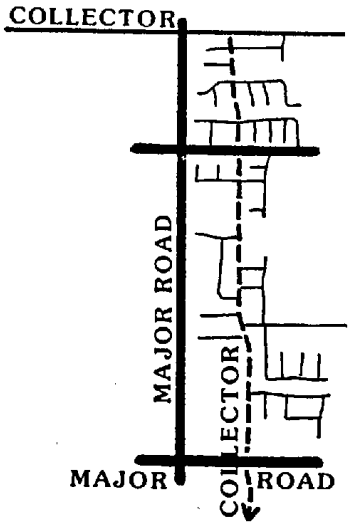
When neighborhoods become concerned about the impacts of a collector, they can create a strong lobby for imposing measures that will affect traffic flow, such as installation of stop signs. In some cases these may be generally effective within the larger street system. In other instances, such measures may simply force some traffic to find another route, which merely moves undesirable impacts to another neighborhood.

Growth and change can increase the role of existing collectors beyond their expected level of operation. These factors may also force the role of collector onto local streets not really designed as collectors. There are numerous examples of streets in existing residential areas of Merced (21st Street, Donna Drive, Loughborough Drive, etc.) that have been called upon to serve such expanded roles.

Such streets often share similar characteristics, including substantial length, significant traffic destinations such as a major land use(s) or major roadway (often at both ends), and unimpeded access to such major destinations (a "straight-shot" traffic corridor with no real inconveniences to the motorists involved). These circumstances ***(Figure 4.13)*** tend to make it convenient for traffic from beyond the adjoining residential areas to use these streets as 'through-ways" to get from one major destination to another, without the need of using an arterial or other major traffic carrier.

Figure 4.13

Collector Acting as a "Through-way" for Arterial Traffic



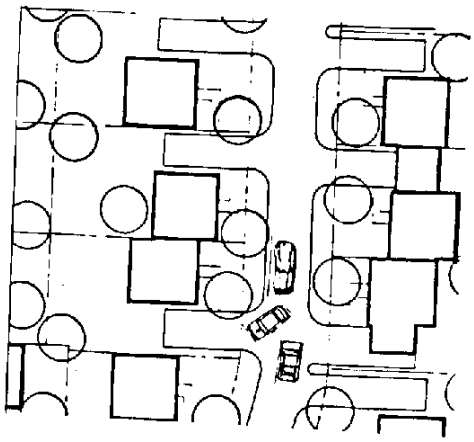
The "one-mile grid of arterials" that has been designed to border Villages in the City's new growth areas also contains a network of Village or Neighborhood Collectors internal to these grids (***Figure 4.25*** in Section 4.8.1). These Collector sub-systems illustrate several basic concepts designed to reduce past concerns relating to collectors:

1) Collector access points onto the arterials bordering the individual neighborhoods are located at very specific distances from each other and from nearby arterials (in order to allow the arterials to function as effectively as possible while allowing collector traffic to exit from the neighborhood as efficiently as possible);
2) Collectors are not intended to offer "straight-shot" corridors through the neighborhood (a common way to reduce through traffic from outside the area is the use of road "off-sets" and/or traffic calming measures). Neighborhood residents could be expected to continue to use this internal system as the most convenient way of getting to local destinations, while outsiders simply driving through the area could be expected to find them more difficult to use.

Other factors also contribute to neighborhood conflict with collectors. One involves subdivision design that forces local residents to back their automobiles out of residential driveways onto a collector ***(Figure 4.14)***. This disrupts traffic flow and increases the opportunity for accidents. Another factor is the conflict with parked cars. Parked vehicles have a natural tendency to slow collector traffic but also decrease visibility. Each creates an impact upon local residents and over time can create increasing tensions regarding collectors.

Figure 4.14

Conflicts with Backing onto Collectors



While there are residential driveway design options to avoid automobiles backing into traffic (circular driveways, hammerhead driveways, etc.), smaller lot sizes generally do not have sufficient room for such alternatives. A workable option, is to

provide vehicular access for such lots by way of an alley.

An acceptable compromise is to avoid fronting residential lots on streets deemed "Major" Residential Collectors (defined in Section 4.8.1). This would eliminate driveway and parked car conflicts with collector traffic on the most significant residential collectors.

Experience indicates that an important factor in neighborhood security can be the ability of neighbors to maintain surveillance on local activities. Design features, such as open-end cul-de-sacs which have openings in the walls to allow visual and pedestrian access to the Major Collectors, allow residents to observe local activities on these streets.

Other residential streets, although not major collectors, still collect/distribute traffic in a more limited fashion. A likely point of conflict on such streets is at its intersection with an arterial. A requirement preventing fronting lots in the vicinity of these main access points could reduce traffic conflicts for the entire neighborhood.

Neighborhood Traffic Calming

In 2008, the City adopted Neighborhood Traffic Calming (NTC) Guidelines. These NTC guidelines were created to assist existing neighborhoods concerned about the traffic passing through their neighborhood, the developer looking for guidelines to reduce the impact of a new project to existing and newly established areas, and lastly to help reduce potentially problematic speeds on the streets of the City of Merced. The guidelines seek to balance the desires of neighborhood residents with the needs of overall City circulation and public safety access.

4.4.4 Bear Creek Bridges

Currently there are five bridges for local traffic over Bear Creek in the Merced urban area: 16th, R, M, and G Streets, and McKee Road. All but 16th Street serve north-south bound traffic and are critical circulation points in a community that is planning for extended north-south growth. As traffic increases substantially with future growth, the bridge locations will become increasing bottlenecks. Because of significant size and cost constraints, expansion of these bridges could be difficult.

Completion of the Parsons corridor, which includes an additional crossing at Bear Creek, would assist in distributing cross-town traffic more evenly across Bear Creek and reduce congestion throughout the urban area (see Section 4.4.2).

As Merced grows northward, bridges over Cottonwood Creek and Fahrens Creek also become barriers to circulation.

4.4.5 At-Grade Railroad Crossings

Railroads as a Barrier

Nearly all road crossings of both of Merced's rail lines are currently at-grade in the Merced urban area. The only exceptions involve State Route 140 (Bradley Overpass) for the Atchison Topeka & Santa Fe tracks through mid-town Merced and Highway 99 (at both the north and south ends of the community) for the Southern Pacific tracks that run in proximity to that highway.

Long freight trains can create significant traffic congestion and delays for vehicles waiting for them to pass, especially during peak hour traffic along the City's major north-south routes (G, M and R Streets). This problem is sometimes magnified because both railroads have provision for special switching operations on portions of

their respective tracks within central Merced.

During a switching operation, trains pass each other at reduced speeds. At such times, significant traffic back-up occurs (particularly during peak hours), which creates extended delays for waiting motorists. Emergency vehicles are also subject to crossing delays. This is a particular concern for ambulances, since Mercy Hospital is located on the north side of both railroad corridors.

The City has shown one additional rail crossing (Parsons Avenue/Santa Fe Railroad) on plans for many years. The State Public Utilities Commission (PUC) must approve any new railroad crossings for the City.

Such approvals are rarely granted by the PUC, especially at-grade crossings, and the crossing remains only on plans. As Merced continues to grow, the constraints imposed by a restricted number of railroad crossings will also increase.

It would be desirable to convert existing at-grade crossings on major streets to grade-separated facilities to improve traffic flow and facilitate emergency service provision. Grade-separated railroad crossings (either a bridge over or tunnel under the tracks) are expensive, however. Because of the high costs involved, only one existing at-grade crossing could likely be converted to a grade-separated facility within a 20-year period.

In 1998, the City determined that a grade-separated crossing at G Street and the BNSF railroad should be the highest priority since it would provide a crossing at a central location to assist with emergency access. In 2008, the City began working on the design and funding of this facility and construction began in 2010 and was completed in 2011.

Caltrans was granted the approval to reconstruct the Bradley Overhead Bridge, a two-lane grade-separated crossing, with a new five lane structure. This improvement would be constructed as part of the planned widening of SR 140.

Additionally, with construction of the proposed high-speed rail line, all street crossings with that rail system would likely be grade separated since the tracks will likely be elevated through urban areas such as Merced.

4.4.6 Interchange Upgrades

Various upgrades to the City's interchanges with Highway 99 are anticipated in the future and are discussed in detail below.

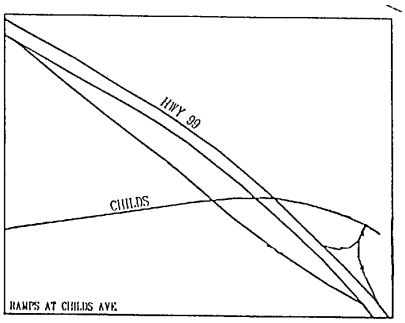
Highway 99/Childs Avenue

Both the City and County of Merced continue to grow in the southeastern portion of the urban area, south of Highway 140 and

east of Highway 99. Access to this area is relatively constricted. Upgrading the existing Childs Avenue interchange with Highway 99 ***(Figure 4.15)*** would provide improved access to and from the area.

Figure 4.15

Childs Ave Interchange



A series of frontage roads which connect the G Street Interchange and the Childs Interchange with the new Mission Interchange (see below) was adopted as part of the South Merced Community Plan in 2008. In 2001, the southward expansion of Parsons Avenue as a frontage road and designated "Collector" (Childs Avenue to Coffee Street) was adopted as part of the Mission Interchange project.

As part of the South Merced Community Plan, a new frontage road between 15th St. and Brantley Rd. was evaluated and made part of that plan. Similarly, a frontage road between Brantley and Henry is also planned in the area west of Hwy 99.

New Interchanges

In addition to upgrades to existing interchanges described above, the relatively recently constructed Mission/ Highway 99 Interchange will connect the Mission Avenue circulation corridor and the expanded Santa Fe Industrial Park, and will ultimately connect with Campus Parkway.

4.4.7 Transitways

Continued successful preservation of identified public transit corridors along M Street, Mandeville Lane, and Bellevue Road will retain as much as possible future flexibility for prospective public transit options. Preservation should include acquisition and retention of larger right-of-ways (ROW's), where already designated, as well as careful evaluation of portions of these corridors that presently do not have extended ROW's, to determine if these areas need expansion.

M Street

Preservation should also involve careful processing of land uses in proximity to transit corridors, to avoid serious access conflicts between private vehicles and public transit. Finally, preservation needs to include a regional public transit perspective for agencies involved with land use planning in the region. This perspective should result in continuation of current growth patterns that have kept most major transit destinations within reasonable proximity to the two designated transit corridors (or close to other major roadways that radiate directly from these transit corridors and can conveniently serve as secondary transit routes).

Transit corridors that are effectively preserved could become the location of a light rail system. Related future transit options, such as a light-rail or even alternatives not currently visualized, if they

become economically viable, might utilize established corridors.

Bellevue Road and Mandeville Lane

Bellevue Road is shown as an east-west arterial on the City's Circulation Plan. It is also shown as one of three transit corridors on that plan. Mandeville Lane is an east-west collector between planned transit hubs on M Street and at UC Merced.

Bellevue Road is a key east-west circulation corridor because it is the most prominent near-term east-west route serving the University of California (UC) campus. As the Bellevue Community Plan develops, Mandeville Lane will provide better transit access to the UC campus. Its tie-in to the future M Street Transit Corridor also provides the prospect of a highly convenient public transit route from the City to the UC campus. A possible transit corridor to the west on Bellevue Road could become a tie-in to the City of Atwater and the designated regional job center at Castle Airport.

Bellevue Road has the potential to be a much more significant regional route in the foreseeable future than other east-west arterials shown on the City's Circulation Plan. This makes it imperative that necessary rights-of-way (ROW's) be obtained throughout its corridor, in order to ensure its future viability. Bellevue Road will also connect to the Merced-Atwater Expressway project west of Highway 59, which will ultimately connect Bellevue to Highway 99.

4.5 TRANSPORTATION SYSTEM MANAGEMENT

With ever increasing traffic volumes and limited resources to expand the capacity of some of the existing streets, Transportation System Management (TSM) will play an important role in the future. The goal of transportation system management is to improve the movement of people and goods.

This can be done by expanding the carrying capacity of streets and transit systems, primarily through the implementation of short-run, low cost strategies. The strategies are to be used to prolong or avoid costly expansions of the facility or service.

Traffic signal timing or coordination, additional lanes at intersections, transit service enhancements, parking management and traffic management are all examples of transportation system management strategies which can be expected to be used in the future. Ridesharing programs, preferential treatment for High Occupancy Vehicles (HOV's), Park-and-Ride lots, one-way streets, the provision of bicycle facilities, and the promotion of variable work hours and telecommuting are also strategies which will be promoted by the City of Merced.

Coupled with air quality and congestion management, these strategies may result in near-term improvement of the operating characteristics of existing facilities and services.

4.6 TRANSPORTATION AND CIRCULATION GOALS, POLICIES, & ACTIONS

Goal Area T-1: Streets and Roads

GOALS

- **An Integrated Road System that is Safe and Efficient for Motorized and Non-motorized Uses**
- **A Circulation System that is Accessible, Convenient and Flexible**
- **A Circulation System that Minimizes Adverse Impacts upon the Community**
- **A Comprehensive System of "Complete Streets" Which Address All Modes of Transportation**

POLICIES

T-1.1 Design streets consistent with circulation function, affected land uses, and all modes of transportation.

T-1.2 Coordinate circulation and transportation planning with pertinent regional, State and Federal agencies.

T-1.3 Design major roads to maximize efficiency and accessibility.

T-1.4 Promote traffic safety for all modes of transportation.

T-1.5 Minimize unnecessary travel demand on major streets and promote energy conservation.

T-1.6 Minimize adverse impacts on the environment from existing and proposed road systems.

T-1.7 Minimize street system impacts on residential neighborhoods and other sensitive land uses.

T-1.8 Use a minimum peak hour Level of Service (LOS) "D" as a design objective for all new streets in new growth areas and for most existing City streets except under special circumstances.

Policy T-1.1
Design Streets Consistent with Circulation Function, Affected Land Uses, and All Modes of Transportation.

It is extremely important to coordinate circulation and land use planning. Street systems are intended to move motor vehicles but streets also are expected to provide access to nearby land uses. Smaller streets called upon to carry heavy traffic to major activity centers can create large circulation problems. Large streets carrying heavy traffic through residential or other sensitive land use areas can create significant conflicts.

Implementing Actions:

1.1.a Implement the General Plan Circulation Plan (Figure 4.1) as development occurs.

The City will implement the General Plan Circulation Plan as development occurs in new growth areas and in developed areas, as feasible. This may be accomplished through the dedication of needed right-of-way or transportation easements, the construction of roadway improvements, and/or the collection of fees, consistent with the impacts of new development.

1.1.b Whenever feasible, implement a system of arterials and higher order streets in new growth areas based upon the adopted concept of arterials/expressways and ensuring the development of "complete streets" which address all modes of transportation.

The adopted concept of arterials/expressways is designed to carefully separate streets by circulation function, and locate land uses consistent with these functions (Figure 4.1). Arterials and higher order streets will carry the higher-speed traffic to adjacent commercial, industrial and other major destinations.

Collectors and local streets will be designed for local, neighborhood traffic that is either traveling towards a neighborhood destination or is exiting the area. It is important to try to apply these same principles to the extent possible in planning partially developed areas that have incomplete road networks. All streets should be designed as "Complete Streets" which address all modes of motorized and non-motorized transportation, including vehicles, transit, pedestrians, and bicycles.

1.1.c Evaluate existing streets in older portions of the City, and identify means of upgrading the system where necessary.

As in-fill development and redevelopment occurs, existing street systems should be evaluated to determine if there are ways that circulation efficiency and accessibility can be improved without causing undue impacts on the neighborhoods.

1.1.d Design and build residential collector streets that balance as effectively as possible competing needs to be safe and efficient.

The community needs to continue to seek and evaluate design options and other ways that might help to reconcile the competing functions of residential collector streets (to be safe for local neighborhood residents while being reasonably efficient traffic carriers). The City also needs to distinguish collector streets ("Major Collectors") that, because of certain characteristics, are likely as time passes to experience increasing traffic pressures and impacts on adjacent residential settings.

[NOTE: A "Major Residential Collector" is defined as 1) being of one-half mile or more in uninterrupted length; 2) having a current or projected ADT (Average Daily Trips) of 1,500 or higher; and 3) having outlets to at least one higher order street at an intersection which is either signalized or projected for future signalization. A Major Collector by its location a) is a central element of its neighborhood circulation system with connection to additional neighborhoods; and b) will receive, or is projected to receive, significant through traffic increases from outside its primary service area to major destinations to which the major collector has convenient access. Major Collectors would be the same width as other Collectors, but should have no residential driveways accessing directly upon them. See Appendix 4.8.1.]

1.1.e Study projected future areas of City expansion prior to development to identify the most effective circulation pattern(s).

Conceptual circulation planning should identify potential points of concern as early as possible in the planning process in order to obtain the most effective land use and circulation decisions. Circulation patterns should be based upon such factors as current patterns of land ownership, existing land use activities, present circulation patterns, and adopted land use plans.

Policy T-1.2
Coordinate Circulation and Transportation Planning with Pertinent Regional, State and Federal Agencies.

Traffic-related problems including significant concerns over air quality in the Great Central Valley have helped to forge requirements for more and more inter-governmental cooperation and planning, often tied to prospective State and Federal funding. The City needs to remain active in these efforts, while also periodically reviewing its position within these procedures.

Implementing Actions:

1.2.a Work with Caltrans, the County, and MCAG to implement the current Regional Transportation Plan (RTP) and subsequent updates.

The Regional Transportation Plan addresses necessary improvements to the regional transportation system and is updated every 2 years.

1.2.b Coordinate local circulation/transportation plans, the financing and construction of improvements, and right-of-way preservation programs with interested area and regional agencies.

The City works with numerous other bodies, including Merced County, Merced Association of Governments (MCAG), and Caltrans (the California Department of Transportation), concerning transportation and circulation matters. This will become even more important in the future as traffic volumes increase and funding sources decrease.

1.2.c Identify a hierarchy pattern of major streets within the City's General Plan and Sphere of Influence areas, and work with the County of Merced and Caltrans to retain unimpeded future rights-of-way to accommodate the current general plan period and projected future growth.

It is extremely important that prospective right-of-ways (ROW's) be protected from permanent development whenever feasible, not only within the City and in its immediate growth areas but also in areas projected for longer term growth. This will benefit both City and County, in terms of reduced costs as well as potential efficiencies to be gained from sufficient roadways. This will involve working with the County on developing an appropriate fee structure that would be used for specific identified road improvements on a priority basis. Maintenance issues relating to roadways built to City standards in areas not yet annexed can also be addressed through this process.

The City shall also work with Caltrans and MCAG to insure the preservation of adequate rights-of-way for State highways and interchanges as outlined in the Regional Transportation Plan, and other regional plans.

1.2.d Continue to work with the County and Caltrans to implement the Campus Parkway and the Merced-Atwater Expressway projects as high priorities to serve the northern growth area.

Planning for the Campus Parkway corridor began in the late 1990's when the concept of an "Eastern Beltway" to serve the City's northern growth area was conceived. With the location of the UC Merced campus in the Lake Yosemite area, the concept evolved into the Campus Parkway. Planning for the Campus Parkway corridor was completed in 2005 with the selection of a final route, and construction of the first segment from the Mission/Highway 99 Interchange to Childs Avenue is due to be completed in 2010. The Campus Parkway corridor will ultimately be extended north to the UC Merced Campus and Campus Community. Completion of this corridor is a high priority for the City, the County, and UC Merced. The City will continue to work with the County on obtaining funding to complete the corridor.

In 2005, the City began working with the Merced County Association of Governments (MCAG), Caltrans, and the City of Atwater on an alternative to the proposed Highway 59 Bypass west of Merced and the proposed Castle Parkway east of Atwater. In order to avoid the duplication of major expressways that would require two interchanges with Highway 99, it was decided to explore the development of a Merced-Atwater Expressway that would be located somewhere in between the two cities and would serve traffic from both cities, but only require one interchange with Highway 99. In 2006, a Project Study Report and EIR process began to define the corridor for such an expressway. In March 2009, MCAG selected Modified Alternative 1B and certified the EIR for the Merced-Atwater Expressway.

The proposed Expressway will entail providing a seven mile long 4-lane divided expressway connecting SR-140 to the south with Bellevue Road to the north. The new expressway will provide a more cost-effective access to SR-99 and provide additional north-south roadway capacity within the Atwater and Merced, unincorporated portions of Merced County, and to the new University of California at Merced. It will also improve access to the Castle Airport Development Center and the United States Penitentiary located in unincorporated portions of northern Merced County.

1.2.e Continue to work with Caltrans and the Merced County Association of Governments (MCAG) on upgrades to the Highway 99 Corridor and its connectivity to the City's street system.

Highway 99, as Merced's primary highway link to the rest of the State, is critically important to the City. The City will continue to work with Caltrans and MCAG on highway upgrades, including modifications to interchanges, the possible expansion of the one-way couplet system on 13th and 14th street corridors, upgrades to the Highway 99 bridge and overhead structures, and other projects that would increase connectivity with the City's street system.

1.2.e Reduce congestion and improve accessibility by constructing new and improved road connections in South Merced.

A major component of the South Merced Community Plan was its traffic analysis and resulting circulation plan and related policies. Although the circulation system within the community plan area was shown to function without deficient levels of service, the traffic study concluded that significant impacts would occur to several streets north and east of Childs Avenue and State Highway 59 (South) respectively, as well as State Highway 59 in the plan area itself.

The South Merced Community Plan includes many policies, which are included in this General Plan by reference, that guide actions of the City to minimize impacts and to take appropriate steps to develop a street system in these areas that will function at acceptable service levels. The key aspects of these policies are noted in the following list, but one should refer to the South Merced Community Plan for a full discussion of the issues and applicable solutions.

1. Utilize "R" Street, "M" Street, "G" Street, "D" Street, "B" Street, DeLong Street, and Brantley Street as important north-south oriented road connections;
2. Explore the use of a rear-access local road at the rear of the commercial properties that front SR 59;
3. Create a design and financing plan for the Childs Avenue/SR 99 interchange that will define the location, magnitude, and funding for improvements; and,
4. Prior to further development that will utilize SR 59, work with Caltrans to construct signals at Childs Avenue, Gerard Avenue and Mission Avenue.

1.2.f Continue to work with federal, state, and regional agencies and stakeholders to expand opportunities for multi-modal transportation.

The City shall continue to seek funding for projects which complete transportation networks, utilize multiple modes of transportation, and provide, enhance, or sustain amenities for non-motorized transportation, such as tree shading for trails and bikeways. Examples of available funding include, but would not be limited to, Measure C funds for Transit-Oriented Development, Caltrans grants for "walkable, livable, and sustainable communities," and other incentives found to be appropriate. As part of this overall strategy, the City shall support high-speed rail and shall guide siting of a station in Downtown Merced to be integrated into a multi-modal transportation network.

Policy T-1.3
Design Major Roads to Maximize Efficiency and Accessibility.

Based upon the physical characteristics of a particular roadway, it is possible to calculate the maximum "peak-hour carrying capacity" for that road. Carrying capacity refers to the maximum number of motor vehicles the road can carry past a given point within a specific period of time, at a pre-determined realistic or reasonable speed. If the number of vehicles were to exceed this maximum capacity, the vehicles will begin to slow down, which in turn reduces the number of vehicles the road can safely carry. Every intersecting street, as well as every curb cut, that allows vehicles to interrupt the traffic flow, either by slowing down to exit or by entering the road, affects both the speed and number of peak-hour vehicles the roadway can accommodate.

Implementing Actions:

1.3.a Adhere, to the greatest possible extent, to the standards adopted for spacing streets that intersect arterials and higher order roadways as outlined in Table 4.2.

The locations at which streets intersect a major roadway, and the spacing or distance between such intersecting streets, are important factors affecting how well the major road fulfills its traffic carrying responsibility. The growth of traffic over time, along with accompanying disruptions such as increasing numbers of vehicle accidents, can significantly affect the efficiency of intersections.

Spacing is a critical element in any subsequent need for installing traffic signals. Effectively spaced traffic signals can be efficiently synchronized. This allows greater peak hour efficiency, with more vehicles traveling farther, and faster, during these problem periods. As spacing becomes less consistent, traffic signals can themselves cause disruption and be less effective for moving traffic.

Poor locations and/or spacing create problems that even signals will not be able to overcome. Proper distances involve one-eighth and/or one-quarter mile spacing for streets intersecting with divided and higher order arterials, and one-half to one-mile distances for streets intersecting with expressways (refer to Appendix).

1.3.b Improve traffic flow of arterials and other major roadways whenever possible by avoiding or eliminating on-street parking.

On-street parking affects traffic speed and movement, and can increase safety problems along major roadways. Provision of off-street parking is required of all land uses in the City per the zoning code, so on-street parking along major roadways is generally not necessary and reduces the efficiency and safety of the major roadway.

1.3.c Work to insure that land uses fronting major streets have shared access across adjacent properties and provide sufficient on-site parking to avoid depending upon on-street parking.

Shared access across adjacent properties helps to improve the efficiency of major streets by allowing traffic movements between adjacent properties to take place on-site and off the public street. This is particularly important for adjacent commercial properties. This shared-access should be formalized with mutual access easements as much as feasible.

On-street curb-side parking can create a negative impact on adjacent land uses and its residents/customers if they have grown to depend upon it. Occasionally site plans may orient a land use activity in a way that makes on-street (curb-side) parking more convenient to an entrance than on-site parking. Such designs should be discouraged. On the other hand, care should be taken to consider the location of public transit stops (which are unlikely to change) and the provision of convenient access to these stops.

1.3.d Continue to require the provision of on-site visitor parking in multi-family projects.

It is important to consider the provision of on-site visitor parking in multi-family complexes so that on-street parking (which could be restricted in the future along major roadways) is not solely relied upon. The City's current parking standard of 1.75 spaces per multi family unit up to 30 units and 1.5 spaces thereafter allows for at least 8 visitor parking spaces.

1.3.e Improve traffic flow of all new arterial streets to the greatest possible extent by the use of median strips of sufficient width to facilitate vehicle movement.

Medians of sufficient width provide the necessary space for turning lanes that help to keep traffic moving efficiently. They also allow a safe haven for cross-traffic vehicles where there are median openings for such traffic. In addition, they may act as a safety island for pedestrians who may be crossing, and add a measure of safety for separating traffic traveling in different directions.

1.3.f Whenever feasible avoid, or eliminate, unnecessary or poorly placed median openings and consider limiting left turns at uncontrolled intersections during peak hours on arterials.

Median breaks can cause interruptions in the free flow of traffic on a major street. Effective

placement of these openings helps to minimize traffic disruptions and works to maximize major street efficiency. In order to relieve congestion, the City might want to analyze the impacts of a policy to prohibit left turns at uncontrolled intersections, especially those where no turn lanes are in place, on arterial streets, such as "G,", "M," and "R" Streets, during peak hours to ease the flow of traffic.

1.3.g Avoid residential "fronting lots" on Major Collectors and higher order streets.

Residential traffic entering or leaving private driveways that front upon major collectors and other higher order streets (that are intended to efficiently carry traffic) create safety conflicts with traffic and affect traffic movement, particularly during peak traffic periods and if vehicles are backing onto the street. When the front of the house faces directly onto the street, residents also tend to be concerned about high speed traffic passing by their front yards where children may play and where noise impacts are greater.

1.3.h Obtain whenever feasible necessary rights-of-way in proximity to major intersections for needed turn lanes and to accommodate American with Disabilities Act (ADA) routes of accessibility and safe crossings.

Intersections can become bottlenecks to efficient traffic movement. A key to maintaining smooth flowing traffic is to avoid as much as possible the disruption of through traffic by turning vehicles. Turn lanes of sufficient length are effective for removing traffic that is slowing to turn, with a minimum of impact upon through traffic. This can be especially important in older areas of the City where widening the entire street may not be possible, but where expanded intersections can reduce congestion. Intersections and traffic signals also need to be designed and upgraded to comply with the Americans with Disabilities Act (ADA) requirements regarding accessibility and safe crossings.

1.3.i In new growth areas, obtain expanded arterial intersection rights-of-way (ROW) requirements

As development projects are proposed in new growth areas, the expanded arterial intersection ROW's generally described in the Appendix (Section 4.8) should be dedicated, so that turn lanes can be established in these intersections when traffic conditions warrant

1.3.j Maintain the land use and access restrictions identified for major collector and higher order street intersections.

Streets have functions that are often at odds with each other. Major roads are expected to carry large amounts of traffic at reasonable speeds, but also provide access to adjacent land uses.. Each intersection, driveway access, or median break that allows other traffic to enter or otherwise disrupt the traffic flow of a major street reduces efficiency (traffic carrying ability) from that major street. An intersection of two major streets becomes a point where each disruptive movement within proximity to the intersection has heightened potential to affect traffic flows on each street. Major traffic entering and leaving large commercial complexes or other major vehicle destinations create a variety of traffic movements that can magnify disruptions on traffic flow. Avoiding driveway access movements in the vicinity of major intersections promises to help maximize traffic flows, thereby maintaining efficiency while reducing air quality impacts at those intersections.

1.3.k Approve driveway access locations only if consistent with approved minimum acceptable distances from major intersections, except in unusual circumstances.

Driveways can help disrupt major street traffic flows. Over time a driveway can be expanded, land uses can intensify, and other changes can take place that can significantly increase the impacts of a driveway on major street traffic. It is important to maintain adopted driveway location standards as outlined in Table 4.2, and to avoid driveway locations that can conflict with major street intersections. It is also important to consider the ultimate build-out of the area when determining needs at the time of initial construction.

1.3.l Ensure street and intersection designs provide for accessibility accommodations.

The City will continue to design streets and intersections to meet the requirements of the Americans With Disabilities Act (ADA), including the street crossings and signals.

(Notes: Chapter 5, Public Services and Facilities, contains policies relating to the timing of infrastructure improvements, including circulation improvements.)

Policy T-1.4
Promote Traffic Safety for All Modes of Transportation.

As traffic levels on a street approach the street's effective capacity, and as various factors affect how a roadway functions, safety is also affected. This interrelationship lends itself to some repetition among implementing actions relating to safety.

Implementing Actions:

1.4.a If fronting driveways cannot be avoided on a Major Collector or higher order street (see Action 1.3.g), seek design solutions that will allow automobiles to avoid backing out.

There are driveway designs that allow residential vehicles to avoid backing out into street traffic. Examples are circular driveways or the provision of "hammerhead turn-arounds" on site. Typically, however, such designs are more workable with larger residential lots, and the most effective solution remains the avoidance of direct residential driveway access if at all possible where backing traffic will create particular disruptions (refer to previous Implementing Action 1.3.g). Where viable, provision of alley loaded homes to minimize vehicle conflicts on the major roadways and allowance of on-street parking to act as a buffer between residential uses and travel lanes and to serve as a traffic calming measure should be considered as well as more flexibility in subdivision layouts.

1.4.b Allow only adopted spacing of streets intersecting and traffic signals on any Arterial or higher order street, unless prior actions or unusual circumstances make this infeasible.

Effective intersection spacing contributes to more efficient traffic flow and helps reduce unnecessary stop and go traffic.

1.4.c Promote increased traffic safety with special attention to hazards which could cause personal injury.

Continue to maintain existing practices related to safety such as: maintain adopted sight-line requirements for signs, fences, etc. (line of uninterrupted vision along which a vehicle operator can see traffic, bicycles or pedestrians approaching from an intersecting street) at designated street intersections and driveways; continue to monitor street intersections to identify unusual levels of traffic accidents; etc. Evaluate ways to increase the effectiveness of traffic safety efforts.

1.4.d Reserve adequate road and intersection right-of-way to provide for the needs of traffic safety.

Sufficient right-of-way for facilities such as right and left turn lanes help to improve traffic movements in the vicinity of intersections.

1.4.e Continue as feasible to mitigate or reduce safety hazards, and program improvements to congested intersections before they become significant problems.

It is important to implement improvements as feasible. It is also important to recognize that it is often more cost effective to avoid creating significant traffic conflicts than it is to attempt to reduce or mitigate them once they have become problems. The City should continue to review development applications to mitigate prospective concerns as they are identified.

1.4.f Seek to improve or correct the specific problem locations identified as "Circulation System Improvement Issues" in the City's Circulation Element (Section 4.4).

Pursue all available inter-governmental assistance and other sources, as feasible, for help to mitigate problem intersections and other identified site specific problems within the City's circulation system.

Policy T-1.5
Minimize Unnecessary Travel Demand on Major Streets and Promote Energy Conservation.

Traditional circulation patterns often tend to make it inconvenient for a driver to make a neighborhood or other local trip without getting onto a major street. It is important to have a circulation system that provides the flexibility to allow neighborhood and other trips on local roads, while encouraging nonlocal trips to use the major road system.

Implementing Actions:

1.5.a Encourage design of local and collector streets within Villages/Neighborhoods to provide multiple, reasonably direct routes to local neighborhood destinations.

It is important to build flexibility into neighborhood circulation for reaching local destinations. At the same time, it is important to provide the opportunity for a local driver to reach the nearest major (arterial) road directly and quickly, if the destination is more distant. These needs must be carefully balanced with the need to discourage outside traffic from taking shortcuts through residential neighborhoods as described in Implementing Action 1.7.b. In other words, routes may need to be less direct in order to discourage such shortcuts but not so indirect as to make it difficult for neighborhood residents to reach their destinations.

1.5.b Avoid whenever feasible neighborhood street system designs that make it more convenient for a local resident to use an arterial street to reach an in-neighborhood destination than to remain on the local street system.

Often local street circulation patterns, whether intended or not, include barriers to the local driver who seeks to go to certain nearby destinations. The result is often that the driver is forced to go onto the major street system in order to reach a destination adjacent to the local neighborhood. This usually means that a bicycle rider or pedestrian would have been forced into the same inconvenient, out-of-the way trip, which is often the reason such trips are only made by automobile. Where cul-de-sacs are proposed, consideration should be given to providing walk-through (or "open-end") cul-de-sacs to minimize walking distances to nearby destinations.

Policy T-1.6
Minimize Adverse Impacts on the Environment from Existing and Proposed Road Systems.

The more efficient traffic movement is, the less fuel is consumed and the less air pollution is created. As traffic movements become less efficient (more stops, more slowing down and speeding up, etc.) with growth, the more traffic- related impacts are created on the environment.

Implementing Actions:

1.6.a Continue working to minimize environmental impacts associated with heavily traveled traffic corridors, such as high noise levels and stop and go traffic situations (which contribute heavily to air pollution problems).

Noise impacts can be reduced by such methods as solid walls, and heavy landscape barriers such as trees or heavy foliage. In the case of new roads, it may be relatively easy to find the opportunity to use these design methods. In older residential areas, however, with houses facing directly onto roadways that are becoming more heavily traveled, options to use noise barriers are typically more constrained. The use of some types of barriers on medians (if space is available) may reduce some noise but, perhaps as importantly, reduces visual impacts.

1.6.b Make a strong commitment to increase the number of people per vehicle so that the existing street system is utilized to its fullest.

Continue to support MCAG and City efforts to encourage and promote carpooling and other alternatives to single occupancy vehicles. Consider the use of HOV lanes if and when they become feasible to use in Merced.

1.6.c Consider ways to encourage employers to reduce impacts upon the existing street system.

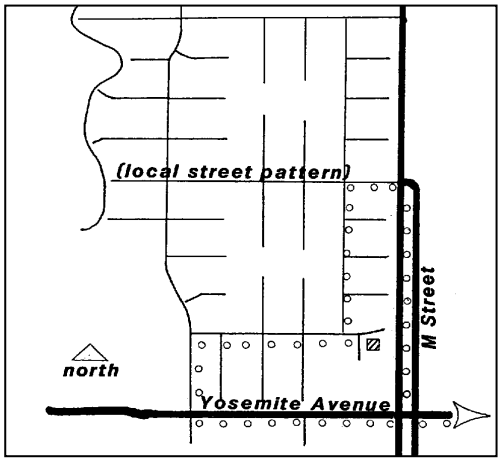
Examples could include encouraging large employers to promote carpooling and other transportation alternatives within their work force, as well as encouraging, if feasible, staggered working hours.

1.6.d Avoid neighborhood street system designs whenever possible that require a local resident to travel away from a local destination in order to reach it.

Street systems at time force inefficiency by requiring vehicles and pedestrians to double-back or double the distance they travel in order to reach a nearby destination. Such situations should be avoided if at all possible.

For example, in ***Figure 4.16***, the nearest retail center is one-half mile (along the directional arrow) from the indicated residential site. With the given road pattern, however, the shortest automobile distance is nearly one-mile.

Figure 4.16



1.6.e Install traffic control devices only where warranted except in unusual circumstances.

Caltrans has established a rating system for determining where traffic control devices, such as stop signs and traffic signals, should be installed. This "warrant" system considers such factors as the numbers of accidents, traffic volume, numbers of pedestrians, and the presence of schools. Traffic control devices should only be installed where they meet the minimum requirements of this warrant system. "Unwarranted" signals and signs may cause excessive delay, disobedience of traffic regulations, circuitous travel of alternative routes to avoid the devices, and increased accident frequency. These conditions negatively impact air quality and the efficiency and safety of the circulation system.

1.6.f Ensure to the extent feasible that pedestrian, bicycle, and automobile connections are maintained in existing neighborhoods affected by transportation and other development projects.

When new transportation or development projects, such as a highway interchange or separated-grade crossing, are proposed, some times it is necessary to minimize access from adjacent streets or land uses. To the extent feasible, existing connections for all modes of transportation should be maintained unless safety issues take precedence.

Policy T-1.7
Minimize Street System Impacts on Residential Neighborhoods and Other Sensitive Land Uses.

The City has for many years fostered an inter-departmental, inter-agency development review process which evaluates matters such as street design and street improvements, and their possible impacts upon affected land uses and the environment.

Implementing Actions:

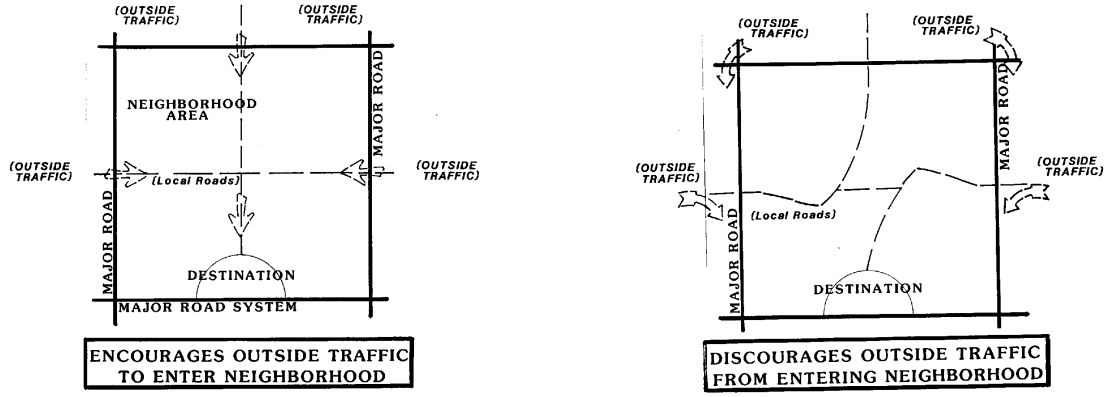
1.7.a To the greatest extent feasible, maintain a distinct hierarchy of streets that will provide for major roadways between neighborhoods rather than through neighborhood areas.

Major streets on the perimeter of neighborhoods or villages promise to cause the least amount of disruption to those areas. In new growth areas, arterials and higher order streets should be located to form the boundaries of neighborhoods, by placing them parallel to each other at one mile intervals, perpendicular to similarly spaced major street patterns to form approximate one-mile square neighborhoods or village areas. These villages are intended to be oriented around local activities such as parks and schools, as well as some level of commercial activity that would be located at the village edge with the intent to also avoid unnecessary intrusion through the neighborhood.

1.7.b Whenever feasible, approve street circulation patterns that discourage exterior traffic from driving through neighborhoods.

The intent is to make local trips, within the neighborhood or shortly beyond, convenient for the local resident (Action 1.5.a) while at the same time, making it inconvenient for the driver from outside that neighborhood to use the same road system as a short-cut during a longer trip (see ***Figure 4.17***). This is a critical distinction. If a street system is designed to be "perfectly convenient" for the local driver, it will almost surely be as convenient for outside drivers who speed through that neighborhood on their way to somewhere else.

Figure 4.17



1.7.c Continue to implement the City's Neighborhood Traffic Calming Guidelines to address traffic impacts on residential streets.

In 2008, the City adopted Neighborhood Traffic Calming (NTC) Guidelines. These NTC guidelines were created to assist existing neighborhoods concerned about the traffic passing through their neighborhood, to assist the developer looking for guidelines to reduce the impact of a new project to existing and newly established areas, and lastly to help reduce potentially problematic speeds on the streets of the City of Merced. The guidelines seek to balance the desires of neighborhood residents with the needs of overall City circulation and public safety access.

Goals of the NTC include: 1) Promote safe and pleasant conditions for residents, motorists, pedestrians, and bicyclists on neighborhood streets; 2) Enable social interaction among neighborhood residents; 3) Control the amount of traffic that uses neighborhood streets and limit vehicle speeds to levels stipulated by the General Plan Circulation Element; 4) Preserve and enhance pedestrian and bicycle access to neighborhoods; 5) Provide a process that will equitably address request for action by neighborhood residents with needs of all users of City Streets; 6) An integrated road system that is safe and efficient; and, 7) A comprehensive system of safe and convenient pedestrian ways.

Policies in the NTC include: 1) To the extent feasible, through traffic should be routed to Arterial Streets, Regional Routes and Highways and away from neighborhood streets; 2) Access for emergency vehicles should be preserved at levels that meet City response standards; 3) The City will cooperatively work with its citizens to employ a variety of measures that achieve the traffic speed and volume standards set forth in these guidelines, the Circulation Element of the City's General Plan and the State Vehicle Code; 4) Permanent NTC facilities will be designed in conformance with sound engineering and planning practices and should complement the residential character of the neighborhood; 5) NTC activities employed along particular street corridors should not create sub-standard traffic conditions on other streets; 6) Residents and property owners within an area where NTC facilities are installed should be prepared to share in the cost of their installation; and, 7) Maintain and improve planning for a pedestrian-friendly environment.

Policy T-1.8

Use A Minimum Peak Hour Level of Service (LOS) "D" As a Design Objective for All New Streets in New Growth Areas and for Most Existing City Streets Except Under Special Circumstances and Use Vehicle Miles Traveled (VMT) for the Purposes of California Environmental Quality Act (CEQA) Analysis.

In order to remain in compliance with State regulations pursuant to Senate Bill 743 and CEQA Guidelines Section 15064.3, the City can no longer use LOS as a metric by which to evaluate the transportation impacts of development projects under CEQA. MCAG has adopted VMT Thresholds and Implementation Guidelines, which the City should use for its transportation analysis methodology for the impacts of development projects under CEQA.

The change in CEQA policy does not invalidate the use of LOS for other purposes, specifically design, traffic operations, and safety. As the City grows, traffic volumes will increase significantly. In designing the City's future circulation system, the City has required sufficient rights-of-way be preserved to maintain an adequate level-of-service, a minimum of LOS "D" but typically LOS "C" or better. On some existing roadways, such a standard will most likely not be able to be maintained without widening these roadways and causing great disruption to adjacent properties. The City will strive to maintain the minimum LOS throughout the system, but some exceptions may need to be made.

Implementing Actions:

1.8.a Implement the Merced County Association of Governments (MCAG) Vehicle Miles Traveled (VMT) Thresholds and Implementation Guidelines for California Environmental Quality Act (CEQA) purposes. Traffic studies will be conducted as needed to determine the traffic impacts and to apply appropriate mitigation measures for new development projects.

The California Environmental Quality Act (CEQA) requires cities to assess the environmental effects, including traffic impacts, of new development. *The City will adopt by reference and follow the recommendations as outlined in the MCAG VMT Thresholds and Implementation Guidelines, as amended from time to time.*

In summary, the City will require VMT analysis of projects that are not screened out. Using the County of Merced as the region for analysis purposes, the MCAG Travel Demand Model is the recommended for evaluating project VMT.

For all non-retail projects, the City will use a significance threshold of 86% of the existing regional average of the respective VMT metric. For retail projects, the City will use a significance threshold of no net increase in VMT. For mixed use projects, the City will use VMT thresholds

based on the respective thresholds for the various land use components. For transportation projects, the City will use net increase in induced VMT as the significance threshold. Finally, for land use plans, the City will use the existing regional average VMT per capita, VMT per employee, and/or VMT per service population as the threshold of significance. Certain projects may be screened out from the need for a VMT analysis.

Several options for VMT mitigation measures for development projects which may not meet the recommended significance thresholds are provided in the MCAG VMT Thresholds and Implementation Guidelines. Additionally, implementation of a future VMT mitigation bank, VMT mitigation exchange, and/or VMT impact fee are potential future regional VMT mitigation mechanisms. The City should continue exploring these and other options with its regional partners.

When the traffic analysis shows that the development will cause an intersection or roadway segment to drop below desired LOS standards, the City can require the new development to alleviate its share of the congestion as a condition of project approval, but not CEQA mitigation measures.

1.8.b Use peak-hour Level of Service "D" ("Tolerable Delays") as the design standard for new streets and intersections in new growth areas.

The preferred LOS levels are typically "C" and "D," particularly for larger roads and major intersections. With LOS C, the road provides stable operation but is still underutilized to some degree. LOS D represents a fine balance between the relatively large number of vehicles served and the generally acceptable level of service provided. It is the intent of the City's standards and policies for new and most upgraded intersections and road segments to be designed and built so as not to drop below LOS D ("tolerable delay") during peak traffic periods.

1.8.c Establish minimum Level of Service standards for existing roadways and intersections that reflect the special circumstances of the surrounding area. For example, in the downtown area or adjacent to interchanges in build-out areas, LOS E or F would be acceptable if roadway widening conflicts with other General Plan policies or significant right-of-way acquisition, which would be severely disruptive to adjacent development, is required.

Maintaining a LOS D on existing roadways and intersections is not always feasible, appropriate, or necessary. People may expect and tolerate varying levels of congestion depending on location (e.g. central Merced) and time of day. Heavier traffic can also be a reason to encourage greater pedestrian activity and heavier transit use in such areas. Other factors may make higher levels of service infeasible. In Central Merced, for example, widening existing streets could create great disruption to stable, older neighborhoods. In these areas, "significant delays" (LOS E) or even LOS F may have to be acceptable at peak hours. Special studies may be necessary to determine the appropriate LOS standards in such areas.

1.8.d Promote Transportation System Management (TSM) strategies in areas where LOS standards fall below the minimum.

Traffic signal timing or coordination, additional lanes at intersections, transit service enhancements, parking management and traffic management are all examples of transportation system management strategies which can be expected to be used in the future. Ridesharing programs, preferential treatment for High Occupancy Vehicles (HOV's), Park-and-Ride lots, one-way streets, the provision of bicycle facilities, and the promotion of variable work hours and telecommuting are also strategies which will be promoted by the City of Merced.

Goal Area T-2: Bicycles, Pedestrians, and Public Transit

GOALS

- **An Efficient and Comprehensive Public Transit System**
- **A Comprehensive System of Safe and Convenient Bicycle Routes (Within the Community and Throughout the Urban Area)**
- **A Comprehensive System of Safe and Convenient Pedestrian Facilities**
- **A Comprehensive System of "Complete Streets" Addressing All Modes of Transportation**

POLICIES

T-2.1 Provide for and maintain a major transitway along "M" Street and possibly along the Bellevue Road/Merced-Atwater Expressway and Campus Parkway corridors.

T-2.2 Support and enhance the use of public transit.

T-2.3 Support a safe and effective public transit system.

T-2.4 Encourage the use of bicycles.

T-2.5 Provide convenient bicycle support facilities to encourage bicycle use.

T-2.6 Maintain and expand the community's existing bicycle circulation system.

T-2.7 Maintain a pedestrian-friendly environment.

T-2.8 Improve planning for pedestrians.

T-2.9 Ensure that new development provides the facilities and programs that improve the effectiveness of Transportation Control Measures and Congestion Management Programs.

Policy T-2.1
Provide for and Maintain a Major Transitway Along "M" Street and Possibly Along the Bellevue Road/Merced-Atwater Expressway and Campus Parkway corridors.

The City is fortunate to have a central corridor, containing many of the major land use destinations within the urban area, aligned in general proximity to the length of "M" Street. These destinations would be convenient to a primary transit route on this roadway, and additional urban area destinations would be convenient to secondary or connecting routes on roads perpendicular to "M." In addition, Bellevue Road/the Merced-Atwater Expressway and the Campus Parkway could provide connections to the "M" Street transitway, as well as a potential for future connections to regional facilities.

Implementing Actions:

2.1.a Continue to review land use decisions in the vicinity of the entire length of "M" Street to avoid creating or increasing conflicts with the intent of a major transitway.

Major land use project proposals in proximity to the "M" Street area should be evaluated for possible long term consequences, such as orienting primary vehicle access for such projects directly onto "M" Street, if another option(s) exists.

2.1.b Cooperate with Merced County and other interested agencies outside the City to maintain long-term flexibility to achieve an "M" Street Transitway.

"M" Street is designated a "Transitway" within the City's General Plan growth areas on the Circulation Plan Map. This corridor should be shown on regional circulation plans, illustrating a broad-based planning effort to maintain future public transit options to accommodate City expansion as well as University of California (UC Merced) growth in the region.

2.1.c Continue to review land use decisions in the vicinity of "M" Street and Bellevue Road to avoid creating or increasing conflicts with the proposed future major commercial and office park sites at the major transfer point between designated transitway corridors.

The prospective intersection of Bellevue Road and the future "M" Street (extended) is also the intersection of two transitway corridors designated on the Circulation Plan. The "M" Street Transitway is projected to run the entire north-south length of the City, while the prospective Bellevue Road/Merced-Atwater Expressway Transitway would tie the "M" Street Transitway eastward towards the University of California (UC) campus (and possibly westward to the potential regional job center at Castle Airport). It is important that land use decisions, relating to major commercial activities proposed for the immediate area, are carefully considered to avoid conflicts with the major public transit function also proposed in the location.

2.1.d Cooperate with Merced County and other interested agencies outside the City to maintain a viable option for a Bellevue Road Transitway to provide regional public transit access to the University of California (UC) campus.

The Bellevue Road Transitway Corridor concept needs to be considered as part of any cooperative planning process for the future University of California (UC) campus and its environs. This may also include further evaluation to confirm viability of this concept for providing public transit access to the UC. The Bellevue Corridor and other important corridors should be designed using the "Complete Streets" concept, which emphasizes use of all forms of transportation on streets, including automobiles, pedestrians, bicycles, and public transit.

2.1.e Cooperate with Merced County and other interested agencies outside the City to evaluate the need to extend westward the Bellevue Road Transitway Corridor Concept.

The General Plan's Circulation Map identifies a Bellevue Road Transitway, extending eastward from the "M" Street Transitway corridor, providing regional public transit access to the UC campus. In connection with this prospective transitway to the east, it may also be advantageous to have the Bellevue Transit corridor extend westward, as part of the Merced-Atwater Expressway, in order to provide regional public transit access to the regional job centers.

2.1.f Work cooperatively with Merced County and other interested agencies to review and evaluate development proposals in the vicinity of Bellevue Road that might conflict with the prospective Bellevue Transitway.

Bellevue Road is designated as both an "Arterial" and a "Transitway" on this General Plan's Circulation Map. It will be important to obtain full regional cooperation to protect the future right-of-way (ROW) for this corridor, and to mitigate prospective impacts from any development projects upon these potential functions of this major roadway. The City/County Revenue Sharing Agreement could be one method of coordinating bicycle facility planning between the City, the County, and UC Merced.

Policy T-2.2
Support and Enhance the Use of Public Transit.

Continue to cooperate with MCAG and other interested administrations and agencies to develop ways and seek methods for making public transit more successful in the Merced area.

Implementing Actions:

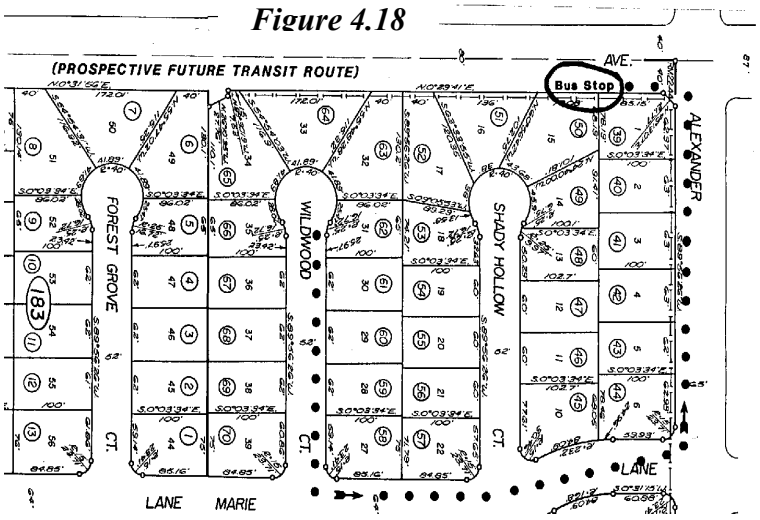
2.2.a Promote land development patterns and site design criteria that support and enhance the use of public transit.

While public transit ridership has not been particularly significant in the past in Merced, it has provided an important service to focused groups within the community. As Merced grows and as other factors change, it is more than likely that the use of public transit will increase in this area. It is important for the City, with Merced County Transit, to carefully evaluate how it can most effectively plan for this expanded demand before it happens. In this way, the City can seek to maintain flexibility to facilitate expected future public transit demands.

2.2.b Whenever feasible, avoid residential subdivision designs that require pedestrians to duplicate walking distance (double-back) to reach public transit routes.

A key to public transit is to make the system readily available. Land planning that actually builds barriers into the system for prospective transit users, as illustrated below, does not encourage transit use. Where cul-de-sacs are proposed, consideration should be given to providing walk-through cul-de-sacs to minimize walking distances to nearby destinations.

Figure 4.18



● ● ● A walk of over 1,300 feet (nearly 1/4 mile) to reach a destination just 500 feet away.

2.2.c Whenever feasible, avoid creating barriers that prevent convenient access to current or prospective public transit routes.

Considerable care needs to be taken to insure that development and redevelopment designs provide as much flexibility as feasible for non-vehicle circulation. Long, unbroken walls, misplaced cul-de-sacs, ill-conceived residential subdivision road patterns, etc., all can create limitations on how conveniently pedestrians can circulate through a neighborhood. It is important for residents to be able to reach the closest public transit route as directly and easily as possible. The more difficult it is for riders to reach a transit route, because of unnecessary or ill-conceived barriers, the more difficult it will be for public transit to serve the population effectively.

2.2.d Work with Merced County Transit ("The Bus") to seek Federal, State, and other funding sources which provide major funding for transit equipment, maintenance, and operation. Support legislation which will provide additional funding.

The City should work with the Merced County Transit system to seek outside funding sources to supplement expenditures for transit equipment, maintenance and operation.

2.2.e Support and participate in regional public transit planning.

Through MCAG and the Merced County Consolidated Transit Agency, the City of Merced should continue to participate in planning efforts which promote improvements to the regional and local public transit systems.

2.2.f Plan for multi-modal transfer sites that incorporate auto parking areas, bike parking, transit, pedestrian and bicycle paths, and park and ride pick-up points.

Identify locations where transportation systems converge and designate such areas as potential multimodal transfer sites. One such location could be the future Downtown High Speed Rail Station, where bike-friendly routes to the station and short/long term bike parking facilities could be incorporated into the station design to assist bicycle commuting.

2.2.g Encourage park and ride lots at suitable locations serving long distance and local commuters.

There are many ways for providing such facilities The City should evaluate possible alternatives, including:

1) Working with Caltrans and the Air District to identify suitable sites, which could be designated on the General Plan land use and circulation plans;
2) Consideration of funding of park and ride lots as mitigation during CEQA review of residential development projects;
3) Coordinating with appropriate transportation agencies and major employers to establish express buses and vanpools to increase the patronage of park and ride lots; and,
4) Allowing developers to reach agreements with auto-oriented shopping center owners to use commercial parking lots as park and ride lots and multi-modal transfer sites.
5) Work with Caltrans and transit providers to identify park and ride sites with convenient access to public transit.

2.2.h The City will work with Merced County Transit to pursue potential funding sources for operating and expanding the public transit system to increase frequency of service, routes and areas served, and to improve on-time performance.

The City will work with "The Bus" to seek funding for improvements to the transit system.

Policy T-2.3
Support a Safe and Effective Public Transit System.

Cost effective, efficient public transportation is important in any effort to provide a level of service necessary to attract increasing public ridership. The City will continue to work with Merced County Transit on the following actions:

Implementing Actions:

2.3.a Include public transportation access in the review process for major public and private development projects, as well as all significant land use design proposals considered by the City.

In view of the urban area's growth potential, including future additions to the University of California (UC) which will no doubt add to the demand for public transit, it is important for public transportation management to take a long range view of how land and site planning can possibly affect future public transit options. The City will work with Merced County Transit on this endeavor.

2.3.b Provide transit stops on major streets and other transit improvements at sites deemed appropriate by the City and transit provider consistent with long-range transit plans.

The City should discover where future bus routes are likely to go and help obtain facilities for such service, as feasible in cooperation with Merced County Transit.

2.3.c Avoid whenever possible public transportation transfer points that force passengers to cross major vehicle routes on foot.

If feasible, public transit route transfer points should be located at one point, such as in conjunction with a major commercial area, so that passengers can go from one route to another with minimum inconvenience.

2.3.d Provide off-street passenger loading/unloading at major public transportation destinations (shopping centers, etc.) whenever possible.

This is more convenient for a higher percentage of passengers and also facilitates transfers, easing passenger problems in inclement weather, etc.

Policy T-2.4
Encourage the Use of Bicycles.

Studies have indicated that bicycles are the most efficient form of transportation ever devised, from the standpoint of energy expended versus distance/speed attained. Given Merced's attractive climate and flat terrain, bicycle transportation can be very effective.

Implementing Actions:

2.4.a Encourage area employers to promote bicycle use through incentive programs or other means.

For example, a number of governmental agencies are concentrated in the central portion of the City, which could lend itself to the use by the City and other large employers of successful methods for increasing bicycle ridership.

2.4.b Continue to support whenever feasible local efforts to promote cycling.

In recent years, private promotion has brought a series of special cycling races/events to the Merced area. The City should also pursue partnerships with local cycling advocacy groups, such as the Merced Bike Coalition and the UC Cycling Alliance, and local bike shops in efforts to promote cycling in Merced. These events have been worthwhile public relations for both the Merced area and for cycling, and have helped to promote public awareness of the potential for bicycle riding in this area.

2.4.c Seek to involve a cross-section of actual bicycle users in bicycle planning efforts and transportation-related bicycle activities through the City's Bicycle Advisory Commission.

In 2009, the City formed a new Bicycle Advisory Commission to serve as an advisory body to the City Council advising the City on matters relating to improving conditions for bicyclists, promoting bicycling as a means of transportation with the associated benefits of improved air quality, and improving safety conditions for bicyclists. The Commission reviews capital improvement projects relating to bicycles, reviews changes and updates to the City's Bicycle Master Plan, General Plan, and the Municipal Code as they relate to bicycling, and promotes bicycling and assist in bicycle awareness and education. The Commission is made up of 7 voting members who must be City residents and 2 non-voting members who may be County residents and the Commission meets every even numbered month. Bicycle users are a valuable resource for bicycle-related planning efforts. It is important to remember that there are very different bicycle populations. There are recreational bicycle users, those who commute to work, and also the "semi-professional riders" who are intense cyclists. There may be large differences of opinion between these groups regarding various bicycle topics, and therefore, the Bicycle Advisory Commission should be made up of citizens representing all types of cyclists in order to obtain a reasonable array of information and usable advice.

Policy T-2.5
Provide Convenient Bicycle Support Facilities to Encourage Bicycle Use.

Because bicycles are light and mobile, it is extremely important that facilities be provided to secure them. Support facilities that help to make bicycle use convenient are important to encouraging a greater level of bicycle usage.

Implementing Actions:

2.5.a Develop guidelines for public and private development relating to the design and location of bicycle parking facilities for both residential and non-residential uses and consider a bike parking ordinance.

It is not good enough to provide parking facilities merely for automobiles. If a bicycle rider is forced to park a bicycle in an inconvenient area, subject to bad weather, or walk just as far in inclement weather as someone using a car, the incentive is greatly reduced for the average rider. Bicycle parking needs to be protected, needs to be more convenient than that provided for cars, etc. There have to be special advantages granted to those willing to ride, to make bicycling a realistic option. The City should consider the adoption of a bike parking ordinance. Bicycle parking guidelines from the Association of Pedestrian and Bicycle Professionals (APBP) should be considered as a resource for developing such a bike parking ordinance. The City should also encourage employers to provide end-of-trip facilities, such as bike lockers, bike rooms, and shower facilities, to encourage bicycle commuting.

2.5.b Design criteria in the construction of all bicycle trails, lanes and routes (Class I, II, and III bikeways) should conform to the State of California "Planning and Design Criteria for Bikeways in California;" Class I bikeways should have grade separation with all major streets where possible.

The off-road bicycle/pedestrian trail system in the Merced region, financed in part by State and Federal funding, meets the construction standards required in order to obtain this assistance. Experience over many years with the existing standards has indicated a high level of public acceptance and satisfaction as well.

2.5.c Encourage The Bus system to continue to provide bicycle racks on buses.

Although the City does not operate the Bus system so it cannot mandate such, the City should encourage the transit provider to continue to provide bicycle racks on buses, which has proven to be an effective tool for promoting bicycle and transit use."

Policy T-2.6
Maintain and Expand the Community's Existing Bicycle Circulation System.

The City of Merced and Merced County have cooperated to develop an impressive regional bicycle system in the Merced/Lake Yosemite area. This has helped to place this area in a position to attract major cycling events. The bicycle system is also an important community and regional recreational asset. In addition, location of the University of California (UC) in proximity to Lake Yosemite will make an attractive and usable regional system much more useful and valuable.

Implementing Actions:

2.6.a Continue to coordinate implementation and planning of the Merced Bicycle Master Plan with the County of Merced and the University of California.

The City and County have a tradition of working together on off-road bicycle/pedestrian trails, as evidenced by the existing regional trail system tying together Merced and a significant portion of the greater urban area, including Lake Yosemite. Given Merced's flat terrain, there is potential for bicycle commuting to be a significant travel mode for the UC campus. A UC study suggested that bicycle usage is significant at all UC campuses for student commutes up to 5 miles, about the distance from Merced to the campus. Coordinating bicycle planning with the University is, therefore, critical, and should be incorporated into the development of the University's Long Range Development Plan, the University Community Plan, the Regional Bike Plan, and Merced Bicycle Plan. The City should update the Bicycle Master Plan, an implementing action of the General Plan, every four years to remain eligible for state funding." "The South Merced Community Plan, as an implementing action of the General Plan, also includes various bicycle-related improvements, which should be incorporated into the Bicycle Master Plan for implementation. Through the South Merced Community Plan and the Bicycle Master Plan, the City will focus on adding and improving bicycle facilities in South Merced for recreation and commuting.

2.6.b Pursue all available revenue sources for implementing the City's Bicycle Master Plan.

The City has been very successful over many years in obtaining monies that have helped to put the existing bicycle/pedestrian trail system in place. These efforts should continue.

2.6.c Vigorously pursue and use state and federal funds earmarked for bicycle and transit improvements.

The City will work with Merced County Transit and others to seek funding for transit improvements and the City will seek grants to fund needed bicycle improvements throughout the City.

Policy T-2.7
Maintain a Pedestrian-Friendly Environment.

It is extremely important for the City to work to insure its ability to obtain whenever feasible the most efficient, most flexible, pedestrian access to important community destinations.

Implementing Actions:

2.7.a Retain parkstrip and street tree planting requirements.

Park strips offer distance from a street and thus a degree of security to a pedestrian. This is particularly important for younger children, especially those who may be actively engaged in an activity such as bicycle riding, roller skating or skateboarding. Street trees increase the feeling of security, help air quality, and the overhead canopies they form across residential streets are a strong aesthetic encouragement to pedestrians. Park strips are particularly important along major streets where vehicle speeds are higher.

2.7.b Locate streetlights, street signs, fire hydrants, and other obstacles so they do not obstruct sidewalks and other pedestrianways.

It is important to keep pedestrianways/sidewalks clear of any intruding City or utility equipment. (The American with Disabilities Act requires a minimum of four feet of unobstructed width.) This is another reason for making sure that sufficient rights-of-way are obtained to match not only current but prospective traffic demands, in order to avoid future street expansions that leave too little room for sidewalks.

2.7.c Continue to require new corner curb cuts and upgrade existing curb cuts to meet the American with Disabilities Act requirements.

This is a Federal and State requirement. The City of Merced has also incorporated these provisions into City design standards.

2.7.d Work to maintain safe and convenient streetscapes for pedestrians.

This is especially important in the Downtown and other urban areas that attract significant amounts of pedestrian traffic. The City has been involved with activities that serve as examples of what can be done, such as increased non-motor-vehicle police presence and the use of citizen volunteers.

2.7.e Continue to require sidewalks and pedestrianways for subdivisions and other development projects.

The City requires the provision of sidewalks in all new residential and commercial developments. This requirement should be maintained and sidewalks should be encouraged in industrial areas to assist in employee access to public transit.

2.7.f Continue to encourage safe and convenient pedestrian environments in the Downtown and other areas that attract a great deal of pedestrian traffic.

The City has been involved with activities that serve as examples of what can be done, such as increased non-motor vehicle police presence and the use of citizen volunteers.

2.7.g Continue to encourage the provision of plazas, malls, arcades, and walk-throughs.

These can be important pedestrian links in high-traffic areas.

2.7.h Encourage the planting of shade trees and, as a minimum, plan for the prospective establishment of rest areas with seating facilities along major pedestrianways.

These facilities can be important for making an inviting pedestrian environment. If such facilities are not feasible at the time of initial planning of such areas, flexible designs should be created that would facilitate later re-design/reconstruction at minimum cost in the future.

2.7.i Continue to review and evaluate possible options for dealing with the issue of incomplete pedestrian access to development projects that will be major pedestrian destinations.

State of California provisions require access for the elderly and disabled to public use facilities (such as government buildings) and privately funded facilities intended for public use (commercial establishments, etc.). City design standards require on-site sidewalks for individual development projects. In recent years, development of some major projects in growth areas that are not fully built out have resulted in the problem of large segments of missing sidewalk. These missing segments, while not located on project property, have invariably been on the most direct pedestrian/bicycle route to or from the major pedestrian destination and efforts should be made to close those gaps.

Policy T-2.8
Improve Planning for Pedestrians.

Providing a pleasant pedestrian environment can often be achieved with very little cost or effort, but it is often overlooked when overall circulation needs are evaluated. By making planning for pedestrian access an integral part of the circulation planning process, significant enhancements to pedestrian access within and around Merced's neighborhoods can be accomplished. Significant air quality benefits can be derived from promoting pedestrian-friendly environments.

Implementing Actions:

2.8.a Seek to provide more flexible, more usable pedestrian access opportunities to land uses and land use combinations that are prospective pedestrian destinations (sports club facilities, schools, government facilities, parks, public open space areas, etc.).

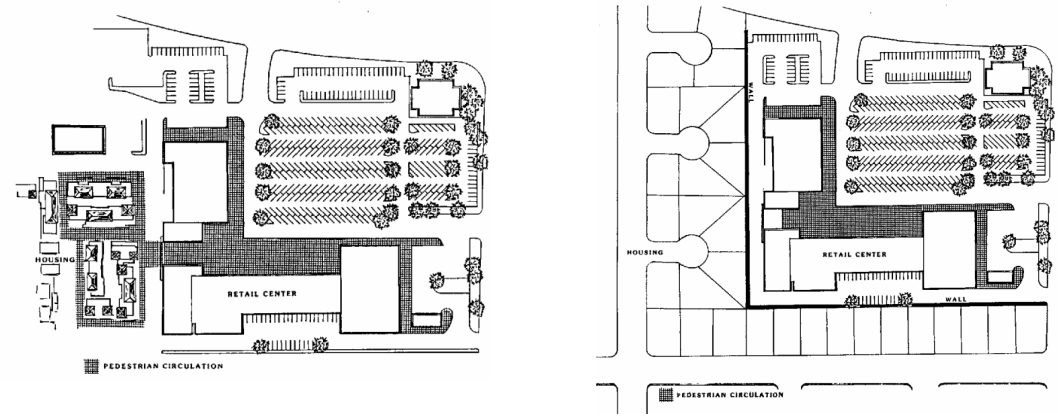
Examples include both public and private facilities. Schools, parks, trail systems and government centers are all activity areas that could be greatly enhanced by having one or more connecting pedestrian links to a nearby street(s), trail system, etc. A special case commercial example might be an athletic or sports club that could experience greater foot or bicycle traffic if made more accessible to other than motor vehicle traffic. Obvious prospective destinations such as commercial centers are often walled off from all direct access except motor vehicles using major streets and should not be.

2.8.b Evaluate the future need for sidewalks in business parks and industrially-zoned areas.

Increasing regional air quality problems are leading to requirements that make major job centers such as industrial areas more logical destinations for public or other forms of collective transit. This is turn may lead to a greater need for pedestrian distribution and sidewalks within these areas. An evaluation should consider any efficient and potentially cost-effective options.

2.8.c Continue to review land use and project proposals with the intent to avoid pedestrian barriers that prevent or create unnecessarily circuitous access to community and commercial areas.

It is important to continue to seek enhanced pedestrian access to major destinations such as shopping centers, schools, recreational areas, etc. ***Figure 4.19*** shows how the College Green Shopping Center as built on the left with good pedestrian circulation and how it could have been built on the right with little pedestrian access.



Preferred ***Discouraged***

Figure 4.19

Policy T-2.9
Ensure That New Development Provides the Facilities and Programs that Improve the Effectiveness of Transportation Control Measures and Congestion Management Programs.

State and federal legislation requires local government to include strategies to increase the efficiency of transportation infrastructure and to reduce vehicle trips in their transportation plans. Transportation control measures are most effective when infrastructure is in place that supports all transportation modes. This would include community-wide transportation improvements and on-site improvements at individual worksites and businesses. The City of Merced can support these strategies by encouraging developers to construct infrastructure that reduces congestion and/or trips.

Implementing Actions:

2.9.a Consider measures to increase the capacity of the existing road network prior to constructing more capacity (additional lanes, new roadways, etc.).

Measures that may be included in local and regional transportation plans and capital improvement plans that may increase the capacity and reduce congestion on existing roads include the following:

- Establish an integrated and synchronized traffic signal network for major thoroughfares to assure smooth-flowing traffic through intersections and to minimize congestion through maintenance of stable traffic flow at intersections.
- Convert congested streets to one-way couplets where it would improve traffic flow and congestion.
- Modify intersections using turn restrictions, channelization, etc. where necessary and feasible.

2.9.b Work with employers and developers to provide employees and residents with attractive, affordable transportation alternatives.

Encourage new development to provide on-site facilities that encourage employees to use alternative transportation modes as air quality and transportation mitigation measures. Some examples include:

- Showers and lockers provided in office buildings
- Safe and secure bicycle parking areas
- On-site employee cafeterias and eating areas
- Convenient access to transit waiting areas from offices

The City may provide reduced parking requirements as an incentive for projects to incorporate measures proven to reduce employee commute trips or customer trips. Some methods developers/employers may use to encourage trip reduction and increased Average Vehicle Ridership include:

- Rideshare matching, transit subsidies, vanpool subsidies, flexible work schedules, compressed work weeks, telecommuting, shuttle services, parking management, and guaranteed rides home.

- Encouraging employers to provide preferential or subsidized parking for ride-sharing vehicles and low emission vehicles.
- Providing land use patterns and site designs that increase commuters' ability to walk, bicycle, or use transit to get to work.

2.9.c Expand programs to reduce vehicle miles traveled, stop and go traffic, and traffic congestion in order to improve traffic flow.

Particular effort should be placed on further improvement of traffic signalization to reduce stop-and-go traffic, which causes excess vehicle emissions from excessive idling. This program requires various strategies and equipment, including optimized signal timing, interconnected signals, traffic-actuated signals, computer-based controls, channelized intersections, and additional turn lanes. Signalization changes should be done in consultation with Caltrans when effects will occur within the operational limits of a state highway ramp or when it will significantly change traffic volumes in and near ramps.

2.9.d Complete the City's network of bicycle and pedestrian transportation routes and allow for new forms of non-motorized transportation.

The City should complete its network of on-street (bicycle lanes) and off-street bicycle routes and add sidewalks in areas where they do not currently exist. Example of non-motorized transportation include "neighborhood electric vehicles" and others.

Goal Area T-3: Air and Rail Services

GOALS

- **Air and Rail Systems that Provide Safe and Convenient Service to the Community**

POLICIES

AIR

T-3.1 Preserve the Merced Regional Airport and its protective zones from incompatible encroachment and incompatible development within the Airport Industrial Park.

T-3.2 Promote and encourage the orderly and timely development of commercial and general aviation facilities.

T-3.3 Provide adequate ground transportation systems that complement air transportation facilities.

RAIL

T-3.4 Reduce rail system impacts on circulation within the urban area.

T-3.5 Support enhanced railroad passenger service and high speed rail service for Merced.

T-3.6 Retain and expand as needed rail facilities serving industrial development.

Policy T-3.1 AIR
Preserve the Merced Regional Airport and its Land Use Compatibility Zones from Incompatible Encroachment and Incompatible Development Within the Airport Industrial Park.

The City has worked for many years to provide protection of its airport. As the urban area expands, it is likely that growth pressures may increase in the general area of this facility. In addition to growth itself, the continuing development of the University of California offer possibilities that may change the future of the airport in ways completely unforeseen. It is important to retain an unencumbered facility in order to maintain necessary options for the future.

Implementing Actions:

3.1.a Continue to protect the viability of approach areas and land use compatibility zones for both existing and future runway systems at the Merced Regional Airport through land use restrictions and property acquisition where necessary.

Merced County adopts and updates from time to time a Land Use Compatibility Plan for all Merced County Airports. The last plan was adopted in 1995, but is being updated. The City will continue to follow the guidelines in the Plan to protect the viability of the Merced Regional Airport.

3.1.b Carefully review any zone changes or development proposals within the general area with special regard to identifying and evaluating possible long-term consequences upon the Merced Regional Airport.

The City should apply the comprehensive planning process to any proposed development in the general area, including within the Airport Industrial Park itself, taking care to look at any development proposals in terms of both present and future impacts on airport operations.

3.1.c Continue to work with Merced County to retain low-intensity, compatible County zoning in the vicinity of the Airport Clear Zone, to avoid an increase in land use pressures.

This appears to be the most effective way to continue long-term protection of the facility.

3.1.d Work with the County of Merced on land use and master planning issues in the vicinity of Castle Airport and its Land Use Compatibility Zones.

The City of Merced recognizes that Castle Airport is a County asset with the potential to generate job growth within the County of Merced. Merced County is currently in the process of developing a new Castle Airport Master Plan, which would outline Castle's proposed development over the next 20 years. Merced County has expressed an interest in expanding Castle's current role as mostly a general aviation airport (the County's website in 2011 indicates that general aviation uses are 99% of current operations) to include air cargo, military exercises, and commercial air service. If such a Master Plan was approved, the Land Use Compatibility Zones for Castle Airport would need to be modified to reflect those changes. If modified, Castle Airport's Land Use Compatibility Zones could affect development within the existing City and the proposed SUDP/SOI. (Long time residents will remember the significant noise impacts of Castle's military operations until Castle Air Force Base closed in 1995.) Therefore, the City wants to continue to work with the County on ensuring that any adopted Castle Airport Master Plan contains realistic aircraft operation projections that do not hinder both existing and future development within the City.

(Notes: Additional policies regarding the airport clear zones can be found in the Safety Element, Chapter 11.)

Policy T-3.2 AIR
Promote and Encourage the Orderly and Timely Development of Commercial and General Aviation Facilities

This needs to be carefully reviewed on a periodic basis, as urban growth continues.

Implementing Action:

3.2.a Implement the Merced Regional Airport Master Plan and update as necessary.

The Master Plan, adopted in 2007, outlines the course for long-term development of the Merced Regional Airport. It concluded that the existing airfield would meet the needs of the community for the next 20 years, and thus focused on refinements to existing facilities and the preservation of options for future development.

Policy T-3.3 AIR
Provide Adequate Ground Transportation Systems that Complement Air Transportation Facilities.

Circulation planning in the general area needs to keep transportation needs of the airport and its adjacent industrial area firmly in mind.

Implementing Action:

3.3.a As development in the area around the Merced Regional Airport takes place, consideration should be given to providing transit and truck access to airport facilities.

Good transit and truck access to the Merced Regional Airport and its surrounding industrial areas is necessary to maintaining an economically-viable facility. Enhanced access from State Highways 99, 59, and 140 to the Airport area should be a high priority in this regard.

Policy T-3.4 RAIL
Reduce Rail System Impacts on Circulation within the Urban Area.

The City needs to continue to review and evaluate possible ways to reduce impacts of the rail system on the City's circulation efficiency. The two sets of railroad tracks, Union Pacific (UP) and Burlington Northern & Santa Fe (BNSF), which bisect the community make cross-town trips more difficult given the limited number of crossings.

Implementing Actions:

3.4.a Review land use decisions in the vicinity of major at-grade railroad crossings to avoid the creation of unnecessary land use and circulation conflicts within areas that already experience special problems.

When feasible, any land use decisions in these areas should be evaluated in an effort to see if any prospective future conflicts, such as traffic signal and driveway locations, can be reduced or mitigated.

3.4.b Continue to seek approval of additional at-grade and separated-grade railroad crossings in the urban area.

Public Utility Commission (PUC) regulations are very stringent and it is quite difficult to obtain approval for new at-grade rail crossings. This creates a real handicap to urban areas, and especially to those areas that are experiencing significant growth like Merced. It is important to continue to pursue PUC approval of additional rail crossings for the Merced urban area.

3.4.c Continue efforts to develop separated-grade railroad crossings as needed in the future.

Construction of the G Street/BNSF Railroad Underpass will provide the City with a centrally-located separated-grade railroad crossing which would provide uninterrupted emergency access across Merced from north to south. Construction of this crossing began in 2010 and is due for completion by 2012. In the future, the City should consider if other at-grade crossings could be upgraded to separated-grade crossing if funding exists. New separated-grade crossings at the BNSF tracks would be necessary to complete the Parsons Avenue Corridor and Campus Parkway projects, and Caltrans has plans to upgrade the Bradley Overhead on Highway 140.

3.4.d Continue to communicate with railroad companies relating to traffic stoppage situations.

Attempt to work with the rail companies to reduce as much as feasible conflicts that currently develop between trains and waiting vehicles at the City's existing at-grade railroad crossings, particularly during peak-hour traffic times.

Policy T-3.5 RAIL
Support Enhanced Railroad Passenger Service and High Speed Rail for Merced.

The City should work to keep all options available to Merced for future passenger service improvements in the Central Valley.

Implementing Actions:

3.5.a Support efforts to extend existing rail passenger service directly to both Los Angeles and Sacramento.

This would make rail service more convenient for passengers using the service from Merced and other Central Valley communities.

3.5.b Support efforts to provide high speed rail passenger service to the Central Valley including a stop in Merced. Work with the High Speed Rail Authority to determine the appropriate location for the Merced Station.

Such service would offer enhanced rail opportunities for Central Valley communities. A stop in Merced has been planned. As further details become available, the City will work with involved agencies regarding preservation of right-of-way and station locations. Refer to the Land Use Element (Policy L-3.5) for further information regarding the development of a Transit-Oriented Development Overlay Zone around a future High Speed Rail Station in Downtown Merced.

3.5.c Plan the area around new commuter, passenger, and mainline rail stations to provide convenient and safe pedestrian and bicycle access and connections to the transit system.

Just as the City's Downtown Transpo Center is a primary transfer station for public transit and private bus services, the area around any high speed rail station or other commuter rail system should accommodate all modes of public and private transit. The City will continue to work with the High Speed Rail Authority and Amtrak to create and expand such facilities.

Policy T-3.6 RAIL
Retain and Expand as Needed Rail Facilities Serving Industrial Development.

Two industrial areas (the Western Industrial Park and Santa Fe Industrial Park) currently offer access to rail connections, and it is important for these facilities to remain available as long as this is a viable industrial service.

Implementing Action:

3.6.a When feasible seek to retain the availability of industrially-designated land in proximity to railroad tracks for industrial activities that actually require rail service.

Underdeveloped industrial land adjacent to the Western Industrial Park and Santa Fe Industrial Park is designated on the Land Use Diagram. Other uses, such as rail transfer facilities, should be considered that would take advantage of the proximity of rail to many Merced industrial areas.

4.7 ISSUES REQUIRING FURTHER STUDY

As Merced grows, it is not surprising that circulation/transportation issues and concerns, and the planning related to these matters, becomes more complicated. Because of increasing constraints (financing is a good example) the time-frames within which issues are projected to be addressed are also expanding in many cases. Under these circumstances some important issues may be identified during the General Plan process that require evaluation beyond that available within the constraints of the plan preparation. Some of those issues have already been identified and are described below.

4.7.1 Station Area Planning for High Speed Rail

As part of the California High Speed Rail system which is planned to extend from Los Angeles to San Francisco, a high speed rail station is planned to be developed in Merced in the Downtown Area. The high speed rail station offers an unprecedented opportunity to connect Merced to the remainder of the state and a station area plan should be developed that maximizes the potential of the rail stop and promotes growth in the region. The rail station should be integrated with a regional transit station to maximize the access to region via transit. [Refer to the Land Use Element (Section 3.4.4) for further discussion regarding the development of a Transit-Oriented Development Overlay Zone around the High Speed Rail Station.]

4.7.2 Transit Oriented Development

Merced, Atwater, and Merced County should work with Merced County Transit ("The Bus"), the public transit provider in Merced County, to develop a long range transit plan that identifies nodes to transit oriented development (TOD) to occur in new growth and established areas. The potential to ultimately provide bus rapid transit between major TOD centers should be explored to provide travel alternatives to the automobile as the region develops. Expansion of the transit network would also help to reduce vehicle miles of travel in the City of Merced and throughout the region.

4.7.3 Non-Motorized Transportation Plan

Merced, Atwater, and the County have developed an extensive off-road pedestrian/bicycle trail system (***Figure 4.9*** in Section 4.3.8). Much of this system has been planned and constructed along several creeks flowing through portions of the Merced region.

Because the creeks are located primarily in the City's northern portion, off-street trails are concentrated here. To create an attractive and usable extension to this system into other community areas will be a particular challenge because of the lack of natural waterways. Rights-of-ways for irrigation canals provide one opportunity.

Special care needs to be taken to obtain workable segments for such a system from any major future projects. Neighborhood garden sites could offer a way to involve the public in creating an attractive setting. A key to this will be developing a plan that, as a minimum, identifies what resources might be available for such an off-street system throughout the community. When this plan is updated, a pedestrian component should be added to create a non-motorized transportation plan.

The financing plan for circulation improvements should also include a funding mechanism for non-motorized transportation improvements.

4.7.4 Develop a Climate Action Plan

In accordance with Policy SD-1.3, Implementation Action 1.3.f of the *Merced Vision 2030 General Plan*, the City of Merced should to prepare a Climate Action Plan to help mitigate the amount of greenhouse gas (GHG) emissions within the City. The Climate Action Plan would allow the City to comply with Assembly Bill 32 and Senate Bill 375.

AB 32 Enacts the Global Warming Solutions Act of 2006, which creates a statewide greenhouse gas emission limit such that by 2020 California reduces its GHG emissions to the level they were in 1990 (25% reduction from 2006 levels). The State's GHG reduction strategies focus on some specific areas to reach the 2020 emissions level goal of 427 million metric tons of CO2.

SB 375 serves the following purposes:

1) Require the Air Resources Board to provide each region with greenhouse gas emission reduction targets for the automobile and light truck sector; (by September 30, 2010);
2) Require a regional transportation plan to include a Sustainable Communities Strategy designed to achieve the targets for greenhouse gas emission reduction;
3) Require the California Transportation Commission to maintain guidelines for travel demand models;
4) Require cities and counties, in general, to revise their housing elements every eight years in conjunction with the regional transportation plan and complete any necessary rezonings within a specific time period; and,
5) Relax CEQA requirements for housing developments that are consistent with a Sustainable Communities Strategy. 4.7.5.

4.7.5 Financing Circulation Improvements

A major part of the overall Public Facilities Financing Plan (discussed in Section 5.5.1 of the Public Facilities Chapter) is the timing and financing of needed circulation improvements. Various strategies for financing the construction of the major roadway projects are under consideration. (These projects are in ***Table 4.1*** in Section 4.1.1.) These strategies may include use of gas tax money, state and federal grants, a transportation sales tax, assessment districts, construction of needed improvements by developers, and developer impact fees. This plan is reviewed annually to make sure that the infrastructure priorities of the community are being met as Merced grows.

4.8 APPENDIX

4.8.1 Functional Road Classifications and Design Standards

Functional Classification

Functional road classification categorizes each existing street or proposed street according to its primary function. This creates a hierarchical system as the basis for establishing standards, designing streets, selecting necessary traffic control measures, establishing a priority for construction, and measuring the quality of movement. In many cases, this system will also define appropriate land uses, the intensity of development, and the location of public facilities. The City's classification system is based on functional categories used by County, Regional, State, and Federal agencies.

The functional classification of streets and highways rests on the following concepts:

- Streets and highways are classified into separate and distinct systems in accordance with their intended primary circulation purpose. Each system serves the movement of traffic and the access to property to a different degree.
- Street classification governs design standards and construction and improvement priorities.
- The City's circulation system must be coordinated with the networks of the State and County.
- All major streets and highways have continuity, logical termini, and adequate capacity to allow and provide a high quality of flow.

The functional classification system used in the Circulation Element and Map ***(Figure 4.1)*** divides all streets and highways into categories. ***Table 4.2*** found in Section 4.3.3 of the Circulation Element and the cross-sections shown in ***Figure 4.20*** through ***Figure 4.27e*** below summarize the characteristics of each roadway category. These are illustrative characteristics only. Official design requirements are found in the City of Merced's Standard Designs of Common Engineering Structures.

Bikeways

Class I Bikeways (Off-Street Bike Paths) are designed to serve corridors not served by streets and highways, to provide recreational opportunities, or to provide high-speed commute routes for bicycles. In Merced, such bikepaths are found along Bear, Black Rascal, Cottonwood, and Fahrens Creeks, and will be expanded along powerline easements, canals, and abandoned railroad corridors in the future. All bikeways are designed to meet Caltrans minimum standards. Class II Bikeways (Bike Lanes), which provide striped lanes for bicycles along streets, are included in the street cross-sections on the following pages.

Freeways/Highways

Freeways are major routes designed to carry large traffic volumes over long distances. Access is controlled, and grade separations and median strips are used to separate lanes of traffic moving in different directions. Through Merced, Route 99 is a four-lane freeway, elevated from about the crossing of Bear Creek on the west, through the central part of the City, to the intersection of Childs Avenue in the southeast area of the City. Its capacity for average daily traffic (ADT) is approximately 55,000 to 60,000 vehicles. Portions of SR 99 through the City currently accommodate more than 60,000 vehicles per day. Route 99's role is interregional in character,

carrying both the traveling public and serving as a vital commercial link carrying goods and produce to and from the community. State Routes 140 and 59, which are highways, function more like major arterials in the City of Merced.

Expressways

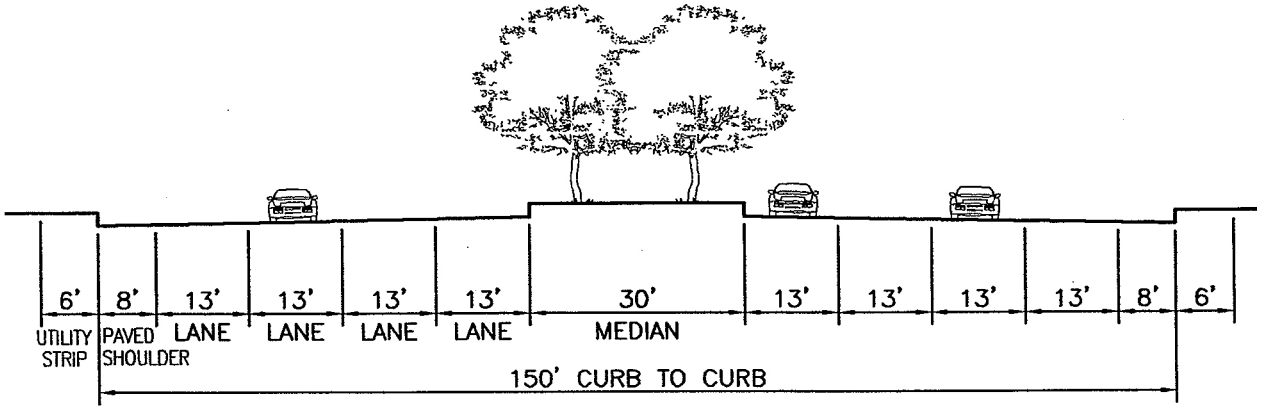
Expressways are roads designed to carry traffic volumes intermediate between freeways and major arterials. Opposing traffic is separated by wide medians, but speeds are usually somewhat lower than freeways. Access is fully controlled. Expressways should be designed to include separated Class I bike paths if feasible to provide a safe avenue for bike commuters.

Expressways are designed to have cross-traffic only at signalized intersections with Arterials or higher order streets, located at approximately one-half to one-mile or greater intervals. Intersections may be separated or at-grade.

Currently, there are no roadways within the City built to expressway standards. Campus Parkway is ultimately envisioned to connect SR 99 to Yosemite Avenue. The expressway would be constructed between the Mission Avenue interchange at State Route 99, with intersections proposed at Mission Avenue, Gerard Avenue, Childs Avenue, Olive Avenue, and Yosemite Avenue. An overpass will cross over the Burlington Northern Santa Fe (BNSF) Railway and the adjacent State Route 140. The Campus Parkway north of Yosemite Avenue has not yet been designed in detail and may require modified access spacing, right-of-way, and/or alignment. Standards for the design of Campus Parkway north of Yosemite Avenue will need to be defined in the University Community Plan and any subsequent modifications.

Figure 4.20

Expressway Cross-Section



8-Lane Expressway

Major Arterials

Major arterials are roads typically designed for new growth areas. They are intended to carry moderately heavy traffic volumes at moderate speeds on longer intra-city and cross-town trips, to regional destinations, and to State/Interstate routes for continuing longer trips. The extensions of State Route 59, "R," and "G" Streets (north of Yosemite Avenue in the North Merced growth area) are classified as "major arterials." Access is controlled, crossings are at-grade.

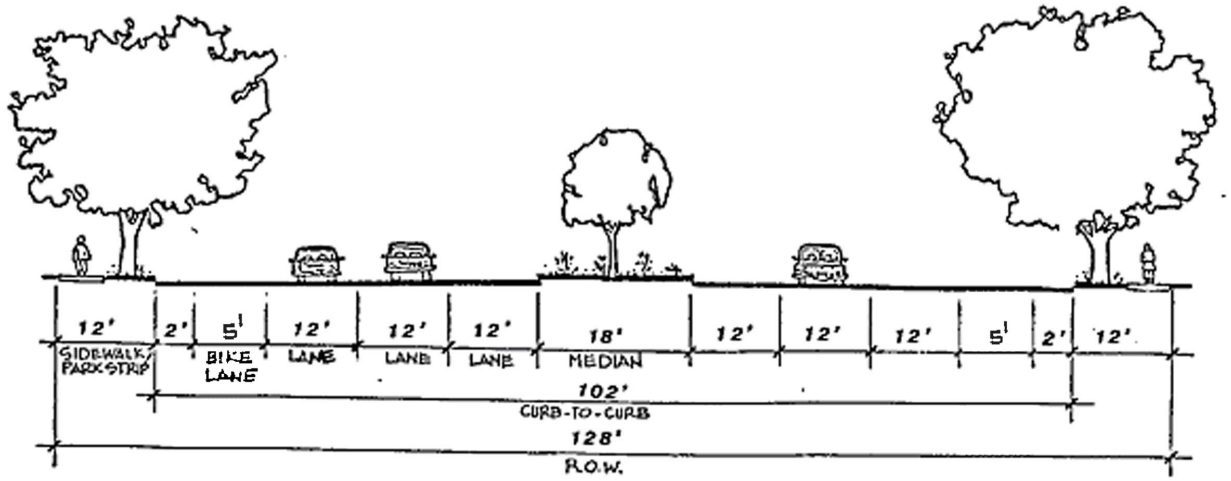
There are medians between traffic traveling in opposite directions. Expanded arterial intersections are generally at every mile, where they intersect a divided arterial or higher order

street (beginning with and north of Cardella Road in the North Merced growth area). Intervening intersections with collector streets may be permitted every one-quarter mile (right-turn-in, right-turn out movements only) and one-half mile (signalized four-way intersections with appropriate median break).

The basic right-of-way for major arterials is typically 128 feet. At 970 feet from standard arterials intersections, the basic right-of-way for the major arterial will typically begin expanding; the maximum curb-to-curb width of 150 feet will be reached for the final 400 feet approaching the major intersection, or as designed in those standards to be established in the City of Merced Standard Designs of Common Engineering Structures. Access to abutting properties is restricted to internal streets or frontage roads. Parking is prohibited. Capacity varies depending upon lane width, lateral clearance, and distance between intersections. Major arterials should provide bike lanes and be heavily landscaped to give them a parkway-type character and to identify their function to the driver.

Figure 4.21

Major Arterial/Arterial Cross-Sections



Divided Arterials and Minor Arterials

Divided Arterial streets are designed to carry moderate traffic volumes at lower speeds than Arterials and Major Arterials. Divided Arterials, like higher order roadways, have medians to control cross-traffic. Presently, parts of Olive Avenue, "M" Street, "G" Street, and "R" Street (south of Yosemite Avenue) are designed and function as divided arterials. The main function of divided arterials is to accommodate trips within the City, providing the basic transportation links between various land uses and major destinations, and other medium-distance movements. Separate turning lanes are usually provided and signals control major intersections. Expanded Arterial intersections are presently required on, and north of, Cardella Road for major street intersections such as expressways, major arterials, divided arterials, and other arterials.

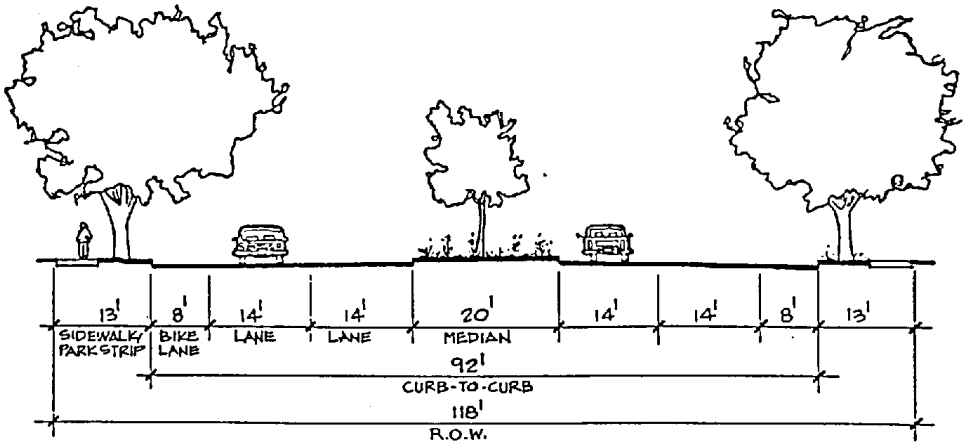
The basic right-of-way (ROW) for Divided Arterials is typically 118 feet, and each leg of the standard Divided Arterial intersection forms a curb-to-curb ROW of 138 feet for a length of 400 feet, and narrows to the basic ROW at 780 feet from the intersection, or is designed as found in those standards to be established in the City of Merced Standard Designs of Common

Engineering Structures. Curb cuts for driveways are located away from intersections and limited to only essential access points. Restrictions may be placed on entering and exiting. Curbside parking is not allowed in most cases. Turnouts for transit stops should be considered.

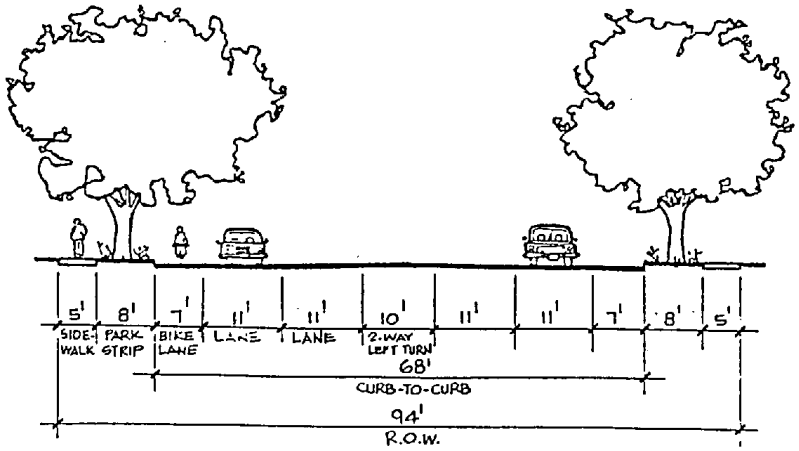
Undivided arterials (Minor Arterials) should have a right-of-way of at least 94 feet wide. Minor Arterials are often designated in older portions of the City, particularly in areas where trends such as changing land uses and increasing traffic require larger streets but existing development limits the amount of land available for street right-of-way. Landscaping and lighting should be designed to emphasize and identify the importance of the street. Parsons Avenue/Gardner Road is an example of a Minor Arterial.

Figure 4.22

Divided/Minor Arterial Cross-Sections



Divided Arterial



Minor Arterial

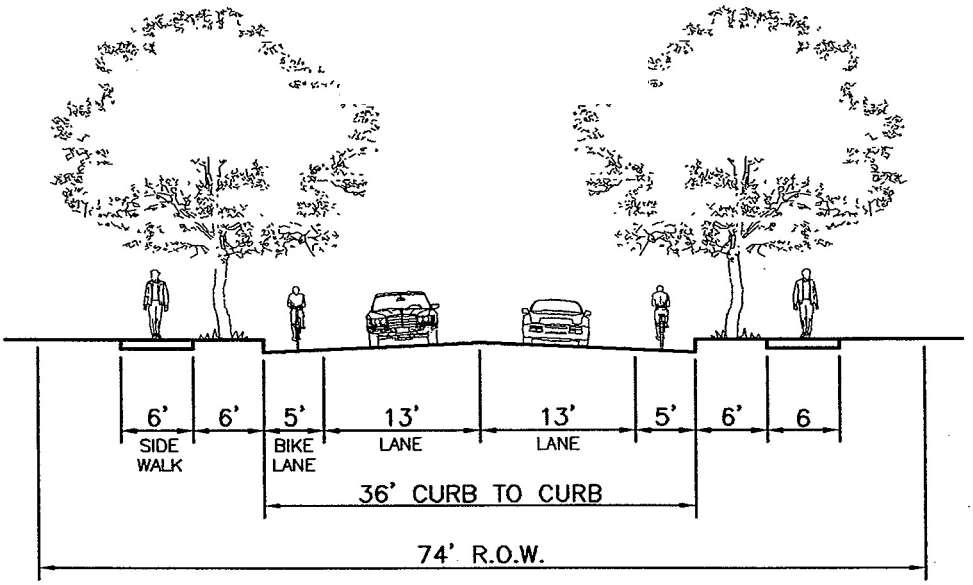
Transitways

A transitway is a special category of Arterial Street that is designed to accommodate a higher level of transit service than provided on standard arterial streets. They may be exclusive (for transit only) or may permit a mix of auto and transit vehicles. For those that also function as

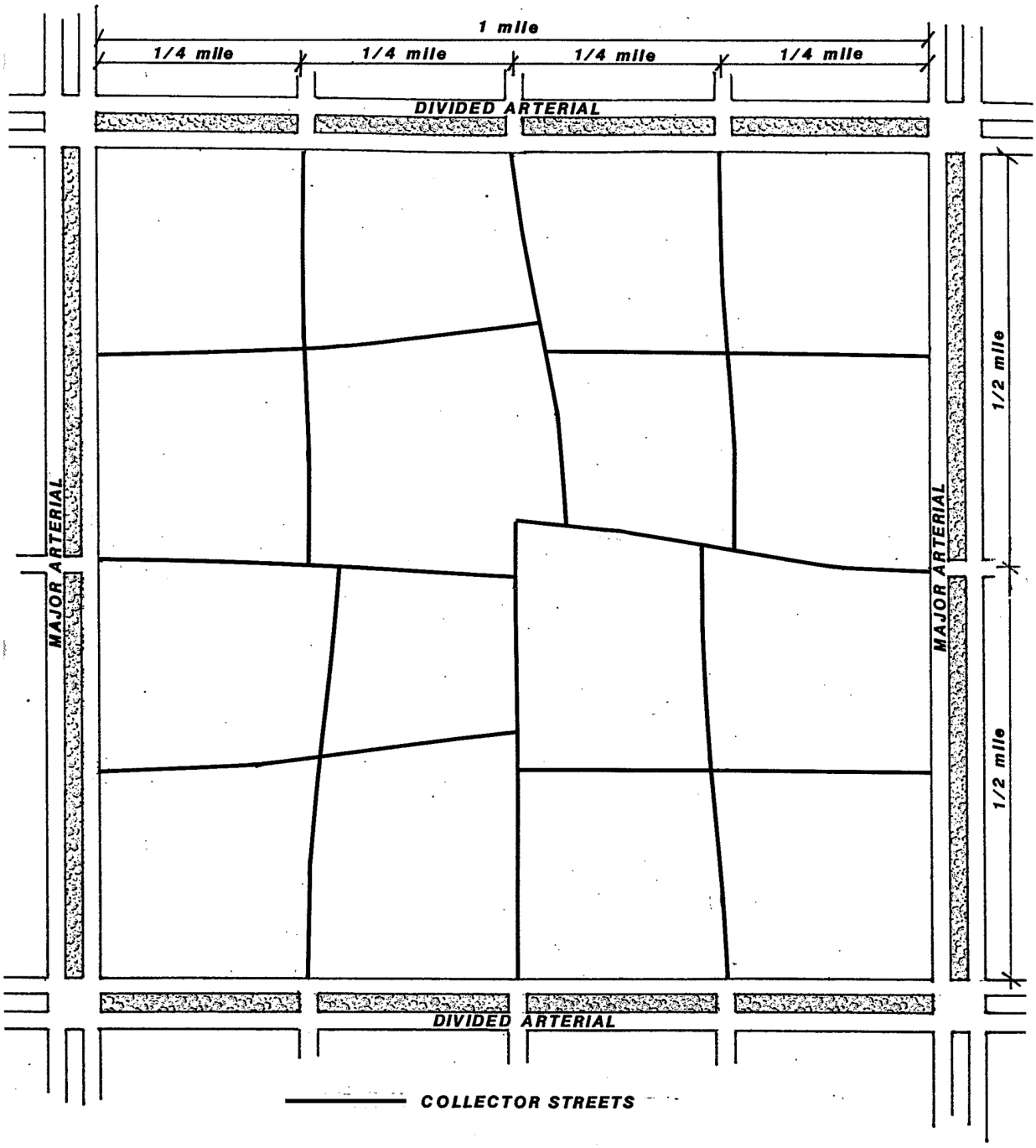
major arterials or arterials, such as M Street south of Cardella and Bellevue Road, the right-of-way requirements will be the same as for a major arterial or arterials, but the cross section may change to provide HOV lanes. In newly developing areas, transitway segments that accommodate only local traffic ***(Figure 4.23)*** can be alternated with exclusive "transit-only" segments.

Mixed transitways will accommodate two high-occupancy vehicle (HOV) lanes for express buses, two travel lanes for other vehicles, bicycle routes, and special landscaping within the cross-section for a divided arterial or major arterial/arterial (118 or 128 feet). New transitways should be designed to facilitate future conversion to a trolley or light rail system when volumes warrant it. In already-developed areas, transitways are usually mixed, with exclusive bus or HOV lanes designated for the curb lane within the existing rights-of-way.

Figure 4.23
Transitway Cross-Section



"Transit Only" Segment



CONCEPTUAL VILLAGE COLLECTOR CIRCULATION SYSTEM

Figure 4.25

Collector Streets

Collector streets are designed to channel traffic from local streets into the major street system and to handle short trips within neighborhoods. They distribute and collect traffic which is generated in the area circumscribed by major streets. They provide for movement within industrial, commercial, and residential areas, or for connecting adjacent land uses. Speeds are generally low due to pedestrian activity and the frequent access to abutting land uses.

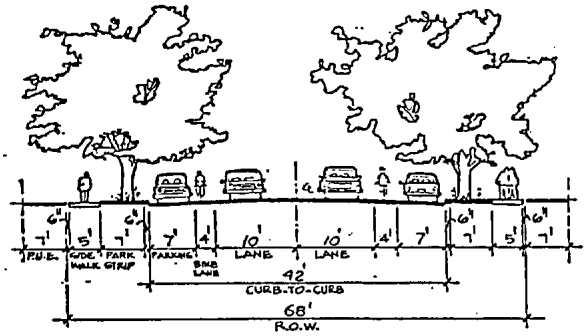
Collectors normally have just two lanes of traffic with right-of-ways up to 74 feet (except larger where a median strip is included). Parking may be prohibited in selected areas where the pavement width is needed for traffic capacity (or when certain design factors have been incorporated into the street design).

Examples of streets that originally were intended to fulfill the function of a residential collector in built-up areas of the community include Loughborough Drive, East Alexander Avenue, or East 21st Street. Often such examples illustrate the difficult functional balance expected of collectors -- to serve as a safe residential street within a neighborhood(s) while also acting as an efficient traffic conduit carrying an increasing number of vehicles to important destinations.

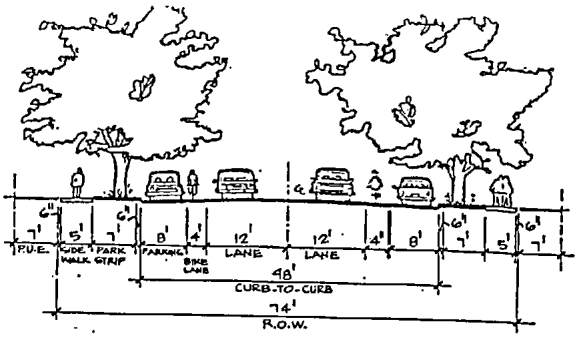
Residential Collector

A residential collector that does not meet Major Residential Collector status but does end in a signalized terminus at a major street (or whose terminus is intended for future signalization--***Figure 4.24***). If feasible, they should have no lots accessing them within 300 feet of the existing/future signalized intersection.

Figure 4.24
Collector Street Cross-Sections



Collector Street Alternate



Collector

NOTES FOR ALTERNATE COLLECTOR:

1) 68 feet of right-of-way may be permitted where supported by a traffic analysis to assure that the narrower street would not be overloaded. Analysis would include trip generation and distribution based on existing and future land use and circulation system. Additional width may be necessary at intersection where analysis shows need for turn lane(s).
2) Fronting lots would be permitted on collectors where a traffic analysis shows daily traffic volumes will not exceed 1,500 vehicles under ultimate conditions.
3) On-street parking may be deleted if adequate, convenient off-street parking is provided in a subdivision design.
4) A subdivision design with deletion of on-street bike lanes may be permitted if adequate, convenient Class I bikepath is available.

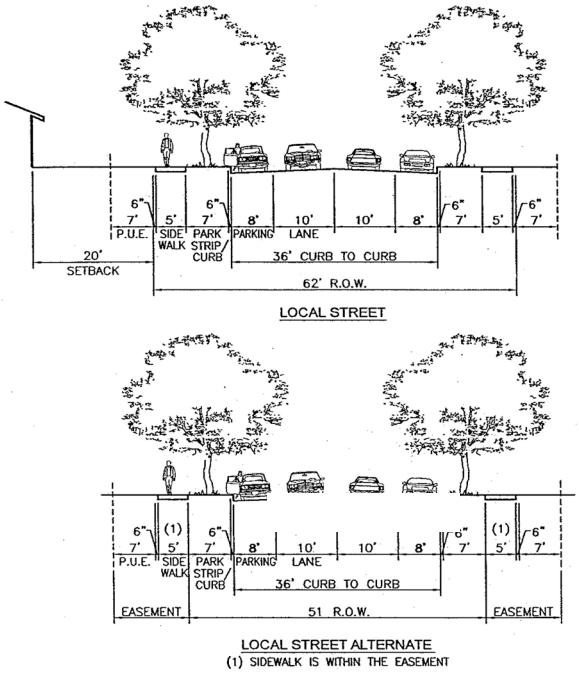
Major Residential Collector

As feasible in new growth areas (and where possible within the existing street systems in built-up areas) the prospective Village Circulation concept (***Figure 4.25***) will identify and define a Major Residential Collector as a collector street 1) with 1,500 ADT or higher; 2) that is one-half mile or longer in uninterrupted length; 3) whose terminus is at an existing signalized intersection or at a higher order street whose intersection is identified for future signalization; 4) which is connected to other neighborhoods; and 5) is expected to be the recipient of traffic from outside its primary service area to access major destinations. (Uninterrupted length means no offset or similar interruption that would result in traffic being distributed to any significant degree to another route.) These streets where feasible shall not have lots either fronting upon them or accessing from them. There is no difference in ROW between a major collector and a residential collector.

Local Streets

Local streets primarily provide access to destinations within residential neighborhoods or business districts. Local streets include local through-streets, local cul-de-sacs, and alleys. In residential areas, these are the streets upon which houses front and/or access. Therefore, it is important to minimize through-traffic to a maximum degree by using curvilinear alignments, looped streets, and T-intersections. They should be designed to carry no more traffic than is required to serve the abutting land uses at low travel speed, and usually permit parking on at least one side.

Figure 4.26
Local Street Cross-Sections



NOTES:

1. THE LOCAL STREET ALTERNATE PLACES THE SIDEWALK IN AN EASEMENT.
2. ON-STREET PARKING MAY BE DELETED ON LOCAL AND CUL-DE-SAC STREETS IF ADEQUATE CONVENIENT OFF-STREET PARKING IS PROVIDED IN A SUBDIVISION DESIGN.
3. 41 FOOT RIGHT-OF-WAY (28 FOOT CURB TO CURB) IS PERMITTED FOR A CUL-DE-SAC UP TO 150 FEET IN LENGTH MEASURED FROM CENTER OF BULB TO RIGHT-OF-WAY LINE OF INTERSECTING STREET.

Rural Roads

Rural roads may be arterials or major or minor collector streets, depending upon their traffic-carrying requirements, adjacent land uses, or special circumstances. Separate turning lanes, passing lanes, curbs, gutters, and sidewalks are provided only where necessary or when the area is planned for future urbanization. Design details may vary, but this type of road should reflect consideration of an existing environment and the future development of the area. In unincorporated areas that are within or adjacent to the City's Sphere of Influence or Specific Urban Development Plan (SUDP)/growth boundary, adequate right-of-way should be reserved, and direct access to a roadway should be restricted. At a minimum, adequate building setbacks should be required so that it is easier to widen roads when the area eventually develops to urban densities.

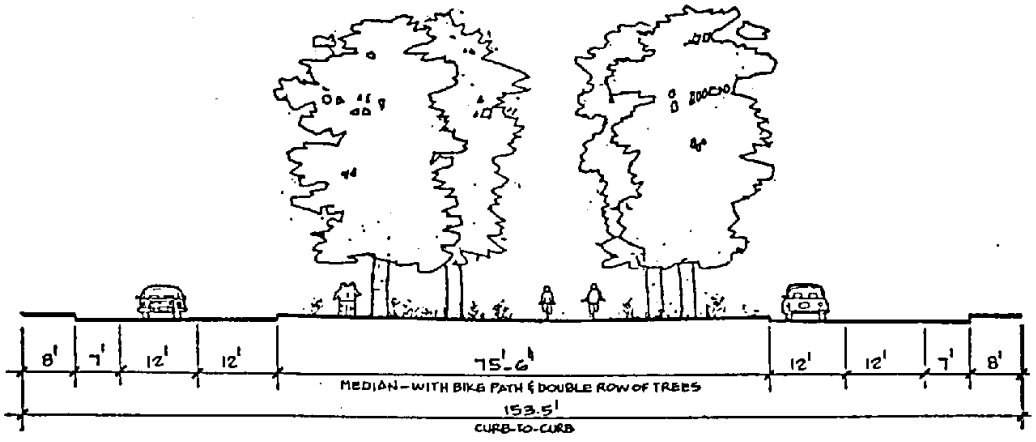
Special Arterial, Collector, or Local Streets

These are special streets which do not use normal design sections. These streets are designated where conditions warrant special designs, such as absence of curb and gutter adjacent to permanent agricultural areas, insufficient right-of-way, State highway needs, physical boundaries, or older existing neighborhoods. Variations in right-of-way width, curb-to-curb width, requirement of improvements, etc., may be permitted for these special streets. Several special street sections are discussed on the following pages.

"M" Street

M Street needs a greater right-of-way to accommodate the preservation of existing trees in the center median area ***(Figure 4.27a***). "M" Street normally has 94-foot right-of-way because of its "arterial" status. However, a special street section from Black Rascal Creek to approximately University Avenue requires a width of approximately 153.5 feet to accommodate a larger center median area. This section of "M" Street is also designated as a scenic corridor.

Figure 4.27a
Special Cross-Sections



MAJOR DIVIDED ARTERIAL-SPECIAL SECTION

Note: Applies only to "M" street between Black Rascal Creek and the northern boundary of Merced College.

North Bear Creek Drive

North Bear Creek Drive is designated as a "special street" in order to maintain its status as a "Scenic Corridor." This designation should apply from a point approximately 400 feet east of 16th Street, in the vicinity of Highway 59 (the point at which West North Bear Creek Drive turns northward away from Bear Creek), to McKee Road. North Bear Creek Drive is a roadway immediately adjacent to the Bear Creek open space corridor for the entire length of this designated area and, as such, is party to visual and acoustic opportunities rarely available to urban area dwellers except in special open space areas. This special atmosphere has, historically, been augmented by the proximity of large trees, forming a heavy canopy, and lush natural and maintained growth along North Bear Creek Drive.

This semi-natural state has been possible because a number of typical urban roadside improvements (curb, gutter, sidewalks, streetlights, etc.) were not required along this corridor because nearly all of the development was constructed when this area was outside the City. An irrigation canal is present along with side berms on both sides, which are often heavily planted and in close proximity to the roadway. This would be not likely if traditional roadside infrastructure were constructed. Therefore, this section of North Bear Creek Drive should continue to be exempt from installing such improvements unless they become necessary for safety reasons in the future.

Other Special Streets

The following streets also require special sections because of non-standard rights-of-way or curb-to-curb widths and other special circumstances:

- Childs Avenue between West Avenue and Martin Luther King Jr. Way ***(Figure 4.27b)***
- Highway 140 from V Street to 207 feet west of "X" Street ***(Figure 4.27c)***
- Yosemite Park Way from 21st Street to Bradley Overpass ***(Figure 4.27d)***
- "R" Street between Highway 99 and Childs Avenue (***Figure 4.27e)***
- Yosemite Avenue, East of Parsons/Gardner ***(Figure 4.27f)***

Bellevue Community Plan Streets

The unique street cross-sections and design features of roads and rights-of-way within the *Bellevue Community Plan* as described in that plan take precedence over comparable language of the *Merced Vision 2030 General Plan*.

Figure 4.27b
Childs Avenue Special Section

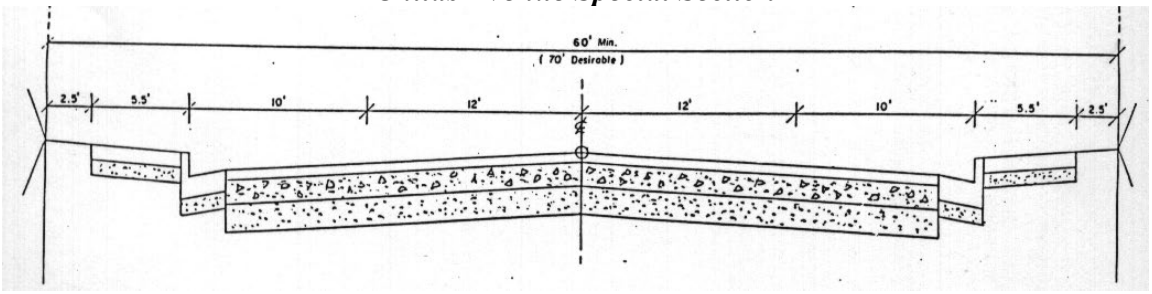


Figure 4.27c
Highway 140 Special Section

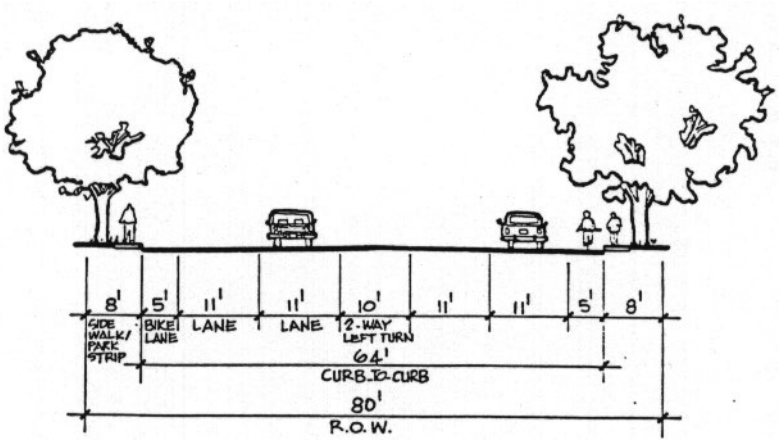


Figure 4.27d
Yosemite Park Way Special Section

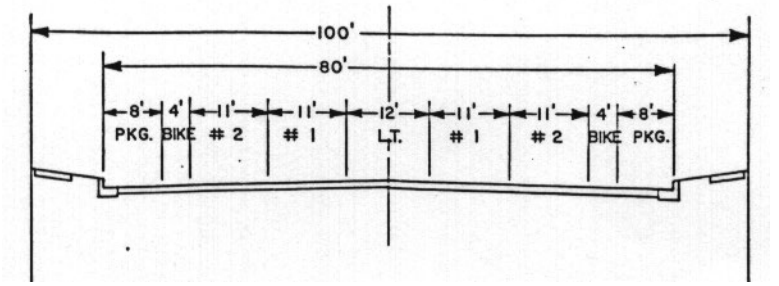


Figure 4.27e
R Street Special Section

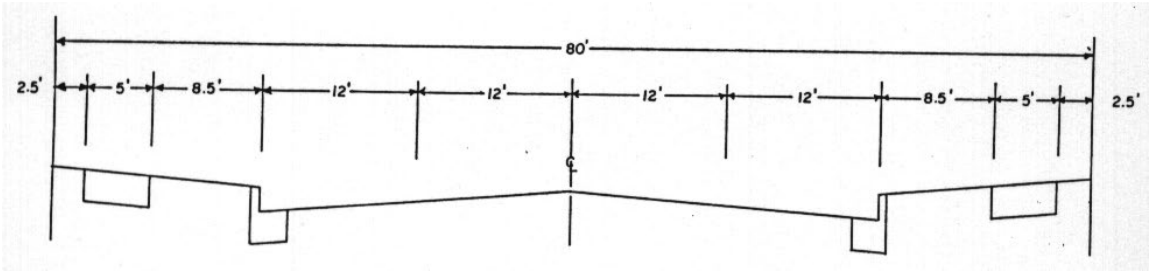
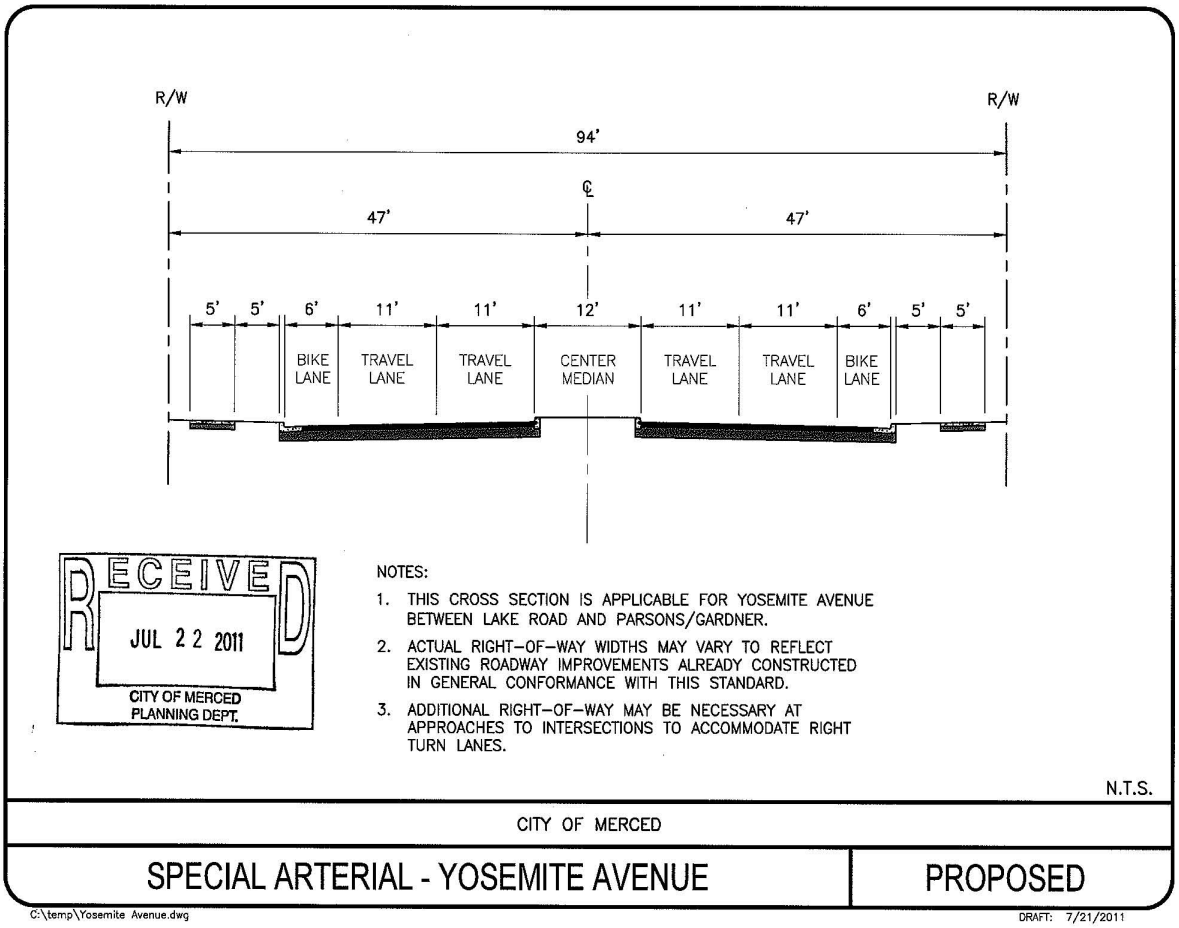


Figure 4.27f

Yosemite Avenue (East of Parsons/Gardner) Special Section



4.8.2 Intersection Spacing and Design Standards

In order to provide for maximum traffic volumes on Arterial streets, access must be controlled, intersections must be carefully spaced, and adequate capacity must be built into each intersection.

The design and spacing standards listed below apply to those areas within the City's Specific Urban Development Plan (SUDP) and Sphere of Influence. They are generalized standards and apply to the most common conditions. Detailed traffic studies for specific development projects may indicate that higher level of improvements may be required, or that lesser standards may be permitted.

Intersection Spacing Standards for Major Arterial Streets

- Major four-way intersections (intersections of future major arterial, arterial and divided arterials with expressways and other divided arterials and higher order streets) should be no closer than (approximate) one-mile intervals.
- Intervening four-way signalized intersections of future Major Arterials with (major) collector streets should be no closer than ±1/2-mile. Intervening four-way signalized intersections of future Arterials with (major) collector streets should be no closer than ±1/4-mile. These distances should be proportionately adjusted if the distance between adjacent parallel arterial streets is more or less than the base one-mile distance.
- Right-turn intersections (right-turn-in/right-turn-out) of future Major Arterials with collector streets may be permitted at ±1/4-mile intervals. Free right-turn intersections of future Arterials with local streets may be permitted at ±1/8-mile intervals at the City's discretion. These standards are illustrated graphically for North Merced in ***Figure 4.3***.

Intersection Design Standards

Intersections are critical components of a circulation system. They frequently overload before the rest of the system and adversely affect adjacent arterial streets. In order to serve the high traffic volumes projected for future arterial streets, adequate capacity must be built into the intersection or enough right-of-way must be preserved for future expansion. Curb cuts adjacent to and within the intersection tapers must be restricted or prohibited.

Summarized below are general right-of-way and design standards for standard intersections. More detailed descriptions of requirements are established in the City of Merced Standard Designs of Common Engineering Structures.

Like intersection spacing standards, these are general standards for the most common situations. Detailed intersection design studies may demonstrate that a higher level of improvements may be required (like at the intersections of an expressway and an arterial), or a lesser design may be permitted.

Major Arterial/Arterial

Right-of-way width shall be 150 feet starting at the intersection and going back 400 feet, then the right-of-way tapers to 128 feet at a point 970 feet from intersection.

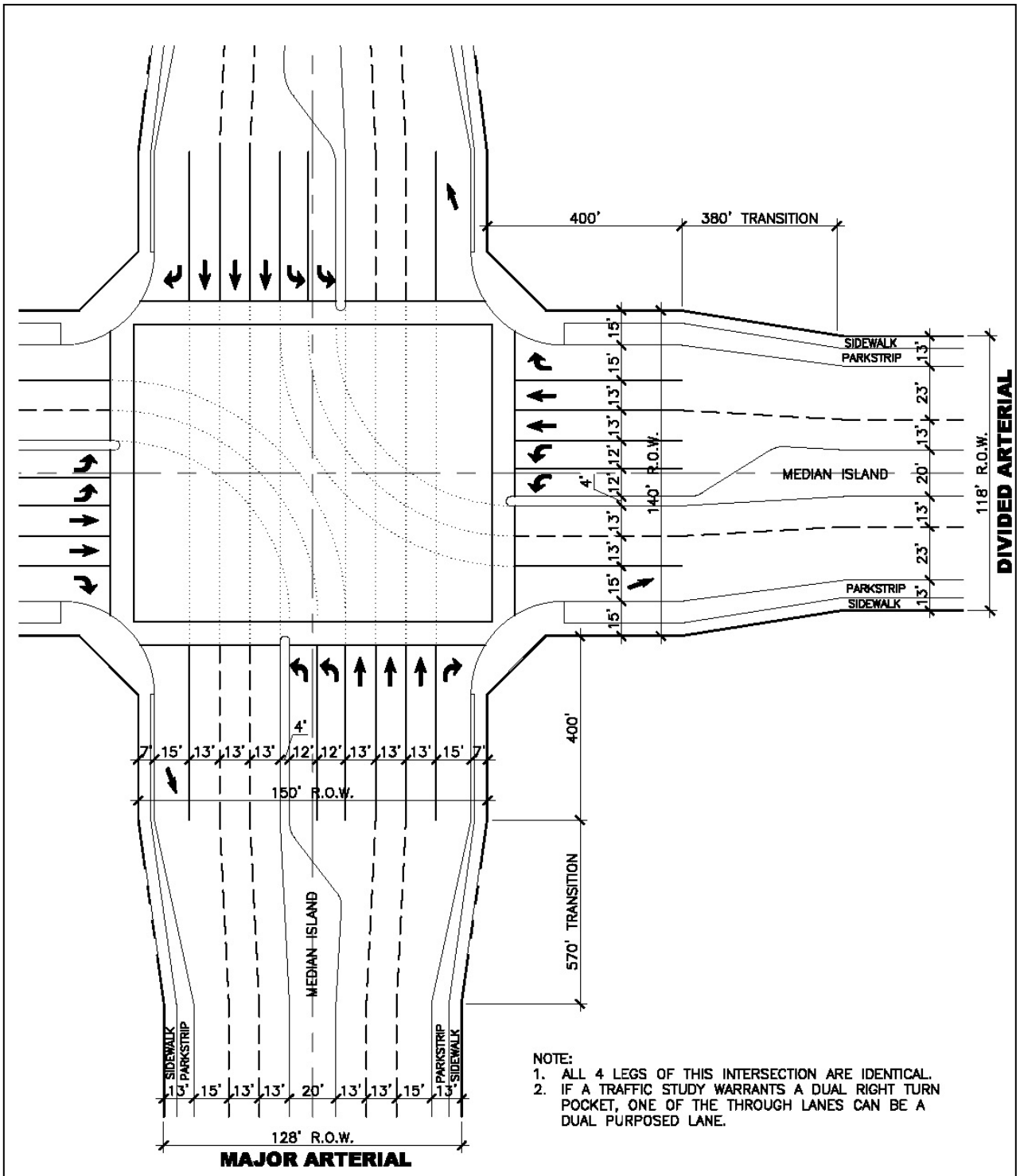
This configuration will permit three through-lanes in each direction, with double left- and single right-turn lanes. Bike lanes should be added to the extent safe and feasible within the proposed right-of-way.

Divided Arterial

Right-of-way width shall be 140 feet starting at the intersection and going back 400 feet. The right-of-way tapers to 118 feet at a point 780 feet from intersection.

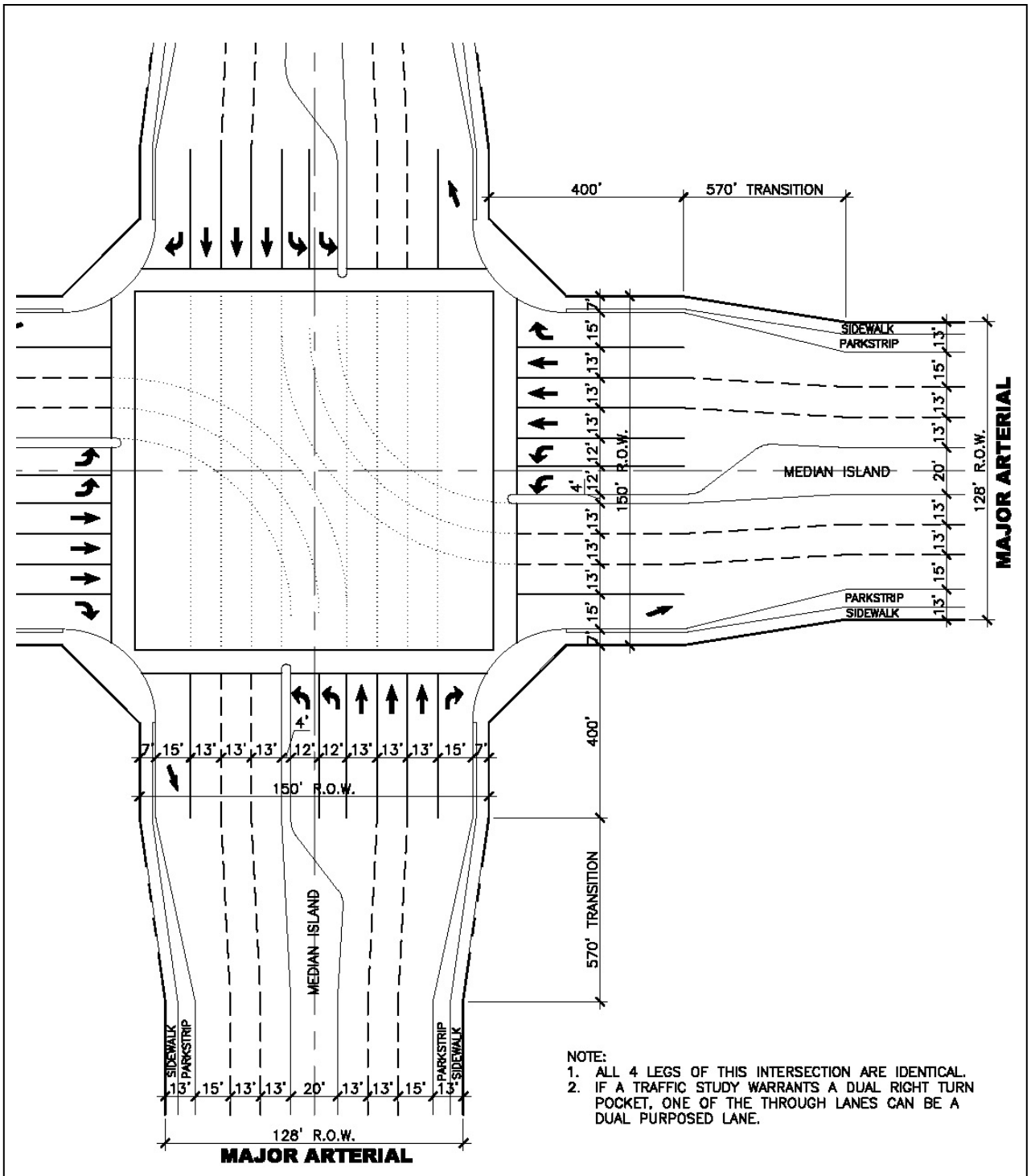
This configuration permits two through-lanes in each direction, with double left-turn lanes and a single right-turn lane. Bike lanes should be added to the extent safe and feasible within the proposed right-of-way.

Examples of designs for the intersections described above can be found in ***Figures 4.28*** and ***4.29*** on the following pages.



EXPANDED INTERSECTION OF A MAJOR ARTERIAL AND A DIVIDED ARTERIAL

Figure 4.28



EXPANDED INTERSECTION OF TWO MAJOR ARTERIALS

Figure 4.29

4.8.3 Needed Transportation Projects

Major street projects needed to support the planned land uses in the City are summarized in ***Table 4.1*** found in Section 4.1.1 of the Circulation Element.

4.8.4 Roadway Level of Service (LOS) Data

Table 4.4
Merced SUDP/SOI Arterial Street System
Traffic Volume & Level of Service
Existing (2010) and Buildout (2030) Conditions

Roadway/Segment	*Existing Conditions (2010)*			*General Plan Buildout (2030)*		
	Number of Lanes	*Traffic Volume[1]*	*LOS[2]*	*Planned Number of Lanes[3]*	*Traffic Volume[1]*	*LOS[2]*
NORTH/SOUTH ARTERIALS						
Thornton Avenue						
Mission to SR 140	2	3,800	C+	4	33,140	D
Belcher to Bellevue	2	--	C+	2	14,190	D
North SR 59						
16th to Olive	2	21,740	**F**	6	44,040	D
Olive to Yosemite	2	19,300	**F**	6	48,030	D
Yosemite to Cardella	2	8,100	C+	4	30,030	D
Cardella to Bellevue	2	6,000	C+	4	33,690	D
Bellevue to Old Lake	2	5,090	C+	6	40,790	C
Old Lake to Northern SOI	2	5,090	C+	6	44,990	D
Northern SOI to Oakdale Rd	2	5,090	C+	6	38,520	**C**
"R" Street						
Mission to Childs	2	500	C+	2	10,850	**E**
Childs to SR 99	2	10,750	**E**	2	17,260	**F**
SR 99 to Bear Creek	4	19,100	C+	4	25,800	C+
Bear Creek to Olive	4	23,370	C+	4	34,380	**E**
Olive to Yosemite	4	18,380	C+	4	43,480	**F**
Yosemite to Cardella	n/a	n/a	n/a	6	34,900	C+
Cardella to Bellevue	n/a	n/a	n/a	6	35,290	C+
Bellevue to Old Lake	n/a	n/a	n/a	6	34,740	C+
Old Lake to Area of Influence boundary	n/a	n/a	n/a	2	9,990	C+
"M" Street						
Mission to Childs	2	4,500	C+	2	12,890	**E**
Childs to SR 99	2	8,600	D	2	15,190	**F**
SR 99 to Bear Creek	4	20,440	C+	4	25,560	C+
Bear Creek to Olive	4	21,140	C+	4	30,250	D
Olive to Yosemite	4	20,710	C+	4	41,350	**F**
Yosemite to Cardella	4	9,600	C+	4	35,710	**E**
Cardella to Bellevue	n/a	n/a	n/a	4	12,920	C+
Bellevue to Old Lake	n/a	n/a	n/a	4	11,910	C+

Roadway/Segment	*Existing Conditions (2010)*			*General Plan Buildout (2030)*		
	Number of Lanes	*Traffic Volume[1]*	*LOS[2]*	*Planned Number of Lanes[3]*	*Traffic Volume[1]*	*LOS[2]*
Martin Luther King Jr. Way/ South Highway 59						
Roduner to Mission	2	8,900	C+	4	30,160	D
Mission to Gerard	2	9,800	C+	4	28,970	D
Gerard to Childs	2	15,430	D	4	38,100	**F**
Childs to SR 99	4	16,300	C+	4	29,260	D
SR 99 to 16th	4	17,200	C+	4	24,740	C+
"G" Street						
Mission to Childs	2	6,500	D	2	12,110	**E**
Childs to SR 99	2	21,300	**F**	2	33,890	**F**
SR 99 to Bear Creek	4	22,060	C+	4	32,520	D
Bear Creek to Olive	4	25,950	C+	4	33,990	**E**
Olive to Yosemite	4	22,182	C+	4	32,330	D
Yosemite to Cardella	2	6,650	C+	4	26,680	C+
Cardella to Bellevue	2	6,350	C+	4	30,380	D
Bellevue to Old Lake	2	3,020	C+	6	36,750	C+
Old Lake to North SOI	2	3,020	C+	4	26,020	C
Parsons Avenue/ Gardner Road/Golf Road						
Campus Parkway/Coffee to Gerard	2	620	C+	2	14,390	**F**
Gerard to Childs	2	6,240	D	2	16,760	**F**
Childs to SR 140	2	9,600	D	4	32,420	D
SR 140 to Bear Creek	2	11,300	**E**	4	35,320	**E**
Bear Creek to Olive	2	4,330	C+	4	29,380	D
Olive to Yosemite	2	5,600	D	6	34,590	C+
Yosemite to Cardella	2	1,580	C+	4	33,410	D
Cardella to Bellevue [4]	n/a	n/a	n/a	4	30,580	D
Bellevue to Old Lake [4]	n/a	n/a	n/a	4	17,350	C+
Old Lake to Golf Club	n/a	n/a	n/a	2	9,670	D
McKee Road (Collector)						
Hwy 140/Santa Fe to Bear Creek	2	5,700	D	2	13,840	**F**
Bear Creek to Olive	2	8,250	D	2	16,130	**F**
Olive to Yosemite	2	5,250	D	2	13,200	**E**
Campus Parkway						
SR 99/Mission to Childs	n/a	n/a	n/a	6	46,200	D
Childs to SR 140	n/a	n/a	n/a	4	35,110	D
SR 140 to Olive	n/a	n/a	n/a	4	32,060	D
Olive to Yosemite	n/a	n/a	n/a	4	33,950	D
Yosemite to Cardella	n/a	n/a	n/a	4	35,720	D
Cardella to Bellevue	n/a	n/a	n/a	4	34,350	D

Roadway/Segment	*Existing Conditions (2010)*			*General Plan Buildout (2030)*		
	Number of Lanes	*Traffic Volume[1]*	*LOS[2]*	*Planned Number of Lanes[3]*	*Traffic Volume[1]*	*LOS[2]*
Tyler Road						
Childs to Mission	n/a	n/a	n/a	2	9,830	D
EAST/WEST ARTERIALS						
Old Lake Road						
SR 59 to "R" St.	n/a	n/a	n/a	4	20,840	C+
"R" St. to "M" St.	n/a	n/a	n/a	4	17,890	C
"M" St. to "G" St.	n/a	n/a	n/a	4	17,040	C
"G" St. to Parsons/ Gardner	2	1,700	C+	2	8,630	D
Parsons/Gardner to Lake	2	340	C+	2	3,830	C+
Bellevue Road						
Atwater/Merced Expy to Thornton	2	3,800	C+	8	55,380	C+
Thornton to SR 59	2	3,800	C+	8	74,340	D
SR 59 to "R" St.	2	5,630	D	6	58,400	**F**
"R" St. to "M" St.	2	5,460	D	6	55,310	**F**
"M" St. to "G" St.	2	5,460	D	6	57,470	**F**
"G" St. to Parsons/ Gardner[4]	2	6,620	D	6	52,950	**E**
Parsons/Gardner to Campus Pkwy[4]	2	3,700	C+	6	50,120	D
Cardella Road						
SR 59 to "R" St.	n/a	n/a	n/a	4	31,840	D
"R" St. to "M" St.	2	5,000	C+	6	35,340	C+
"M" St. to "G" St.	2	6,800	C+	4	33,520	D
"G" St. to Parsons/Gardner	n/a	n/a	n/a	4	33,430	D
Parsons/Gardner to Campus Pkwy	n/a	n/a	n/a	4	32,590	D
Yosemite Avenue						
SR 59 to "R" St.	4	12,160	C+	4	26,130	C+
"R" St. to "M" St.	4	15,940	C+	4	38,430	**F**
"M" St. to "G" St.	4	19,720	C+	4	38,770	**F**
"G" St. to Parsons/ Gardner	2	15,100	D	4	38,990	**F**
Parsons/Gardner to Campus Pkwy	2	7,550	D	4	29,600	D
Olive Avenue						
West of Hwy 59 (Santa Fe Ave)	4	22,800	C+	6	33,880	C
SR 59 to "R" St.	6	32,250	C+	6	45,830	D
"R" St. to "M" St.	6	30,560	C+	6	41,060	C+
"M" St. to "G" St.	6	28,210	C+	6	45,030	D
"G" St. to Parsons/Gardner	4	18,500	C+	4	34,970	**E**
Parsons/Gardner to Lake	2	7,460	C+	2	16,770	**E**

Roadway/Segment	*Existing Conditions (2010)*			*General Plan Buildout (2030)*		
	Number of Lanes	*Traffic Volume[1]*	*LOS[2]*	*Planned Number of Lanes[3]*	*Traffic Volume[1]*	*LOS[2]*
North Bear Creek Drive						
SR 59 to "R" St.	2	4,490	C+	2	14,620	**F**
"R" St. to "M" St.	2	6,480	D	2	14,530	**F**
"M" St. to "G" St.	2	8,360	D	2	14,840	**F**
"G" St. to Parsons/ Gardner	2	8,780	D	2	15,510	**F**
Parsons/Gardner to Lake	2	2,400	C+	2	6,400	D
Highway 140						
Tina to Thornton	2	10,900	C+	2	19,240	D
Thornton to "V" St.	2	10,200	C+	4	18,020	C+
"G" St. to Parsons	4	10,400	C+	4	34,720	**E**
Parsons to Campus Pkwy	2	7,550	C+	2	13,330	D
16th Street						
SR 99 to "V" St.	4	20,210	C+	4	28,590	D
"V" St. to "R" St.	4	23,200	C+	4	28,830	D
"R" St. to "M" St.	4	19,140	C+	4	24,340	C+
"M" St. to "G" St.	4	11,950	C+	4	26,250	C+
"G" St. to SR 99	4	8,630	C+	4	22,840	C+
Highway 99						
Atwater/Merced Expy to Franklin	4	66,000	D	6	96,210	D
Franklin to 16th	4	66,000	D	6	97,920	D
16th to "V" St.	4	53,000	C+	6	87,770	C+
"V" St. to "R" St.	4	53,000	C+	6	93,930	D
"R" St. to Martin Luther King	4	42,500	C+	6	66,820	C+
Martin Luther King to "G" St.	4	55,000	C+	6	83,050	C+
"G" St. to SR 140	4	55,000	C+	6	89,060	C+
SR 140 to Childs	4	42,500	C+	6	76,980	C+
Childs to Gerard	4	42,500	C+	6	66,820	C+
Gerard to Mission	4	66,000	D	6	97,920	D
Mission to Mariposa	4	55,000	C+	6	84,680	C+
14th Street						
"V" St. to "R" St.	3	6,550	C+	3	10,600	C+
"R" St. to "M" St.	2	4,900	D	2	14,490	D
"M" St. to Martin Luther King	2	700	C+	2	15,220	D
13th Street						
"V" St. to "R" St.	3	6,680	C+	3	11,930	C+
"R" St. to "M" St.	2	4,070	C+	2	9,360	C+
"M" to Martin Luther King	2	6,900	D	2	15,400	D
Martin Luther King to "G"	2	7,400	D	2	9,100	D
"G" St. to "B" St.	2	5,000	D	2	13,150	**E**

Roadway/Segment	*Existing Conditions (2010)*			*General Plan Buildout (2030)*		
	Number of Lanes	*Traffic Volume(1)*	*LOS(2)*	*Planned Number of Lanes(3)*	*Traffic Volume(1)*	*LOS(2)*
Childs Avenue						
West Ave to SR 59	2	6,260	D	2	10,090	D
SR 59 to Tyler	2	4,700	C+	4	27,520	D
Tyler to SR 99	2	6,610	C+	4	46,600	**F**
SR 99 to Parsons/Gardner	2	11,770	**E**	4	41,870	**F**
Parsons/Gardner to Coffee	2	6,600	D	4	24,590	C+
Coffee to Campus Pkwy	2	4,420	D	4	32,120	D
Campus Pkwy to Tower	2	3,300	D	4	19,390	C+
Gerard Avenue						
M to SR 59	2	1,400	C+	2	12,580	**E**
SR 59 to Tyler	2	1,300	C+	2	8,810	D
Tyler to Henry	2	850	C+	2	4,600	C+
Parsons/Gardner to Coffee	2	2,720	C+	2	18,650	**F**
Coffee to Campus Pkwy	2	2,480	C+	2	35,230	**F**
Campus Pkwy to Tower	2	1,000	C+	2	7,640	D
Dickenson Ferry Rd/ Mission Avenue						
Gove to Thornton	2	1,900	C+	2	13,200	D
Thornton to West Ave	2	1,900	C+	4	29,980	D
West Ave to SR 59	2	1,900	C+	6	35,950	C+
SR 59 to Tyler	2	1,800	C+	6	34,870	C+
Tyler to Henry	2	1,250	C+	6	33,800	C+
Henry to SR 99	4	2,020	C+	6	63,350	**F**
SR 99 to Coffee (Future Campus Parkway)	2	890	C+	6	46,200	**D**
Coffee to Tower	2	600	C+	4	1,890	C+

NOTES: (1) Traffic Volume is measured in ADT's (Average Daily Trips).
(2) "C+" indicates Level-of-Service (LOS) "C+" or better, including LOS A and B.
(3) The number of lanes shown is the number of lanes planned in the circulation element; additional travel lanes, or provision of additional turn lanes at intersections may be needed to provide acceptable roadway operations with the planned level of development.
(4) The Traffic Assessment performed as part of the Bellevue Community Plan (BCP) adopted in 2015 concluded that traffic amounts in the BCP area are 20% lower than the General Plan conclusions and, therefore, recommends that further traffic studies occur to determine whether fewer travel lanes could be supported.