

5.0 CIRCULATION ELEMENT
REDLANDS GENERAL PLAN



5.0 CIRCULATION ELEMENT

5.10 Traffic

The Trafficway Network (GP Figure 5.1) and Roadway Widths (GP Figure 5.2) are designed to serve the future land use pattern and intensities of the General Plan. The East Valley Corridor Specific Plan and Downtown Specific Plan have adopted their own unique roadway widths for specific streets that vary from the widths depicted in GP Figure 5.2; however, they are also designed to meet the needs of the General Plan. The Circulation Element also includes policies and programs to enhance the efficiency of the transportation system and to promote use of alternative modes. It recognizes that the automobile will continue to be the most frequently used mode of transportation in the foreseeable future, but it emphasizes transit, neighborhood quality, and bicycle/pedestrian safety.

State law requires that a Circulation Element include "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 of the Plan" (Gov. Code, Sec. 65302[b]). Public utilities and facilities are addressed in the Health and Safety Element.

Generally, traffic conditions in Redlands are good in comparison to communities nearer the center of the Southern California metropolis. Residents can travel across town in ten minutes or less, and there are few locations (other than on Interstate 10 (I-10) freeway) where the traffic volume exceeds 15,000 vehicles per day. Isolated delays occur along some corridors where traffic converges (notably the Alabama Street/Redlands Boulevard intersection) and localized congestion can occur for short periods (typically 15 minutes or less) within the peak hour. However, traffic volumes on some residential streets are at or near the limits of acceptability from the residents' viewpoint.

To project future traffic demand, a computerized model of future traffic was prepared using trips generated from land use at buildout within the Planning Area (GP Figure 1.3). The model integrates these trips with trips to, from and through the Planning Area as projected by the Riverside-San Bernardino Area Comprehensive Transportation Plan Model (CTP Model) prepared by the Southern California Association of Governments (SCAG). For an explanation of the process see the Technical Report in the Master Environmental Assessment Appendix.

The major potential source of new traffic in the Redlands Planning Area would be the East Valley Corridor Specific Plan (EVCSP) where 90,000 jobs are expected to be created. Redlands is projected to be a significant "importer" of commuters and retail customers whereas today it is a net "exporter." The regional growth projections also assume substantial residential and job growth by 2010 from development in communities on each side of Redlands in San Bernardino and Riverside Counties.

A variety of transportation improvements are ongoing, programmed or planned to accommodate future growth, and these are incorporated into the Circulation Element. The new I-10/State Route 30 (SR 30) interchange ramps, help to keep regional traffic off City streets. Extensive roadway improvements are included in the *East Valley Corridor Specific Plan* and these are included in the Circulation Element. San Bernardino County is studying realignment of San Timoteo Canyon Road. Commuter rail service could be extended to Redlands sometime after 1995. The Caltrans Route Concept Report for Interstate 10 plans for a future requirement of 10 lanes west of SR 30 and 8 lanes to the east (with the added lanes potentially being HOV lanes).

There are few opportunities for economically feasible and environmentally acceptable new routes in partially developed portions of the Planning Area, so the Plan focuses on expanding the capacity and efficiency of the existing circulation system. Traffic capacity is a potential limiting factor to land use intensity in the East Valley Corridor, because there is no space for new freeway interchanges and little potential for internalizing travel within the area.





0 2000 4000 FEET

2 MILES

Planning Area Boundary

Planning Area Boundary and City Limit

Planning Area Boundary

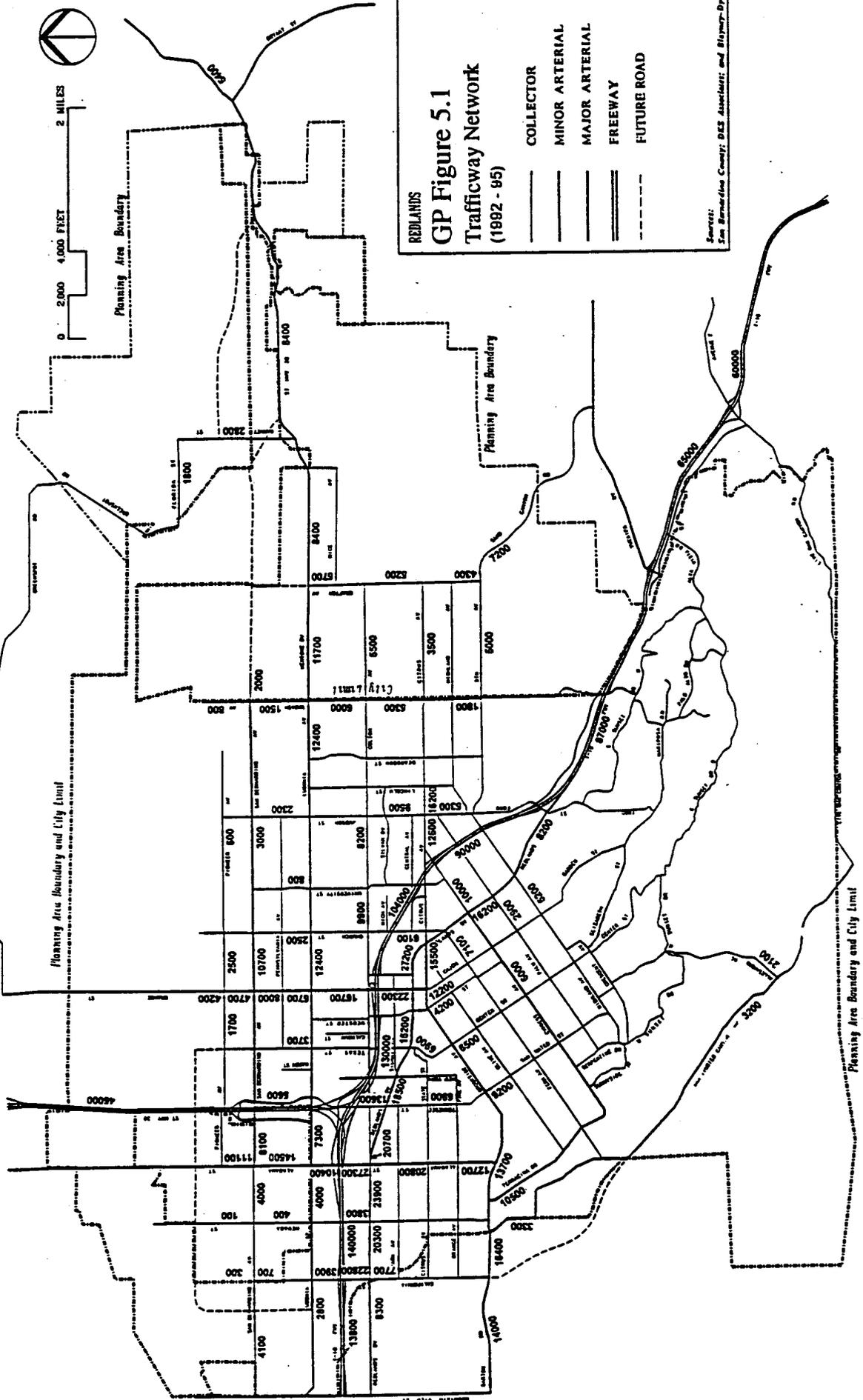
Planning Area Boundary and City Limit

REDLANDS

GP Figure 5.1 Trafficway Network (1992 - 95)

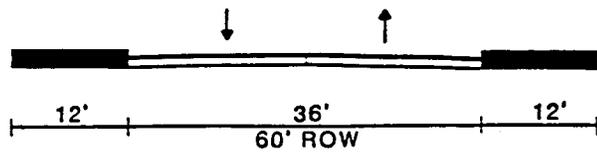
- COLLECTOR
- MINOR ARTERIAL
- MAJOR ARTERIAL
- FREEWAY
- FUTURE ROAD

Source: San Bernardino County; DES Associates; and Highway Dept.

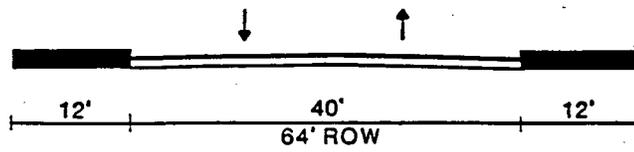




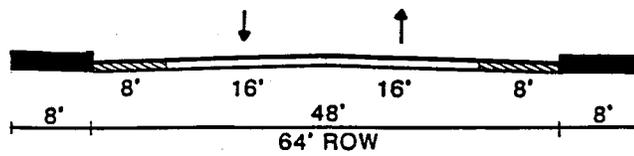
LOCAL



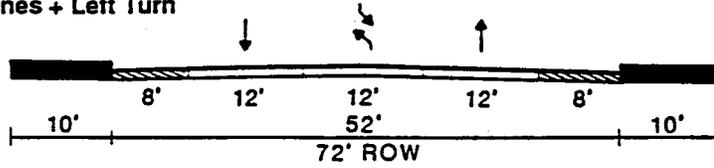
COLLECTOR - Residential



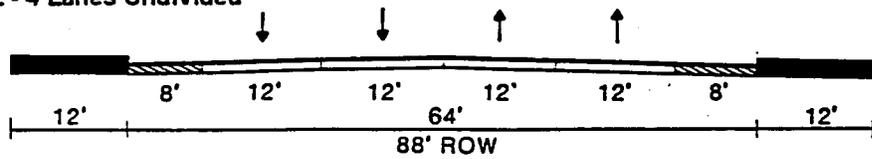
COLLECTOR - Industrial



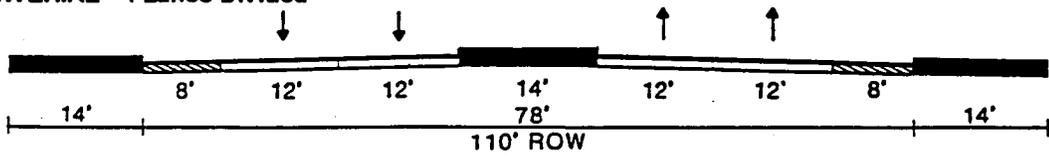
MINOR ARTERIAL - 2 Lanes + Left Turn



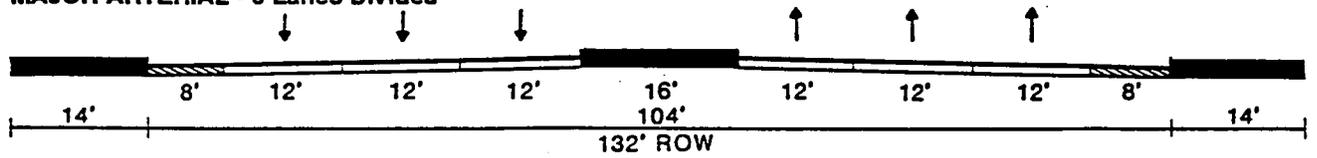
MINOR ARTERIAL - 4 Lanes Undivided



MAJOR ARTERIAL - 4 Lanes Divided



MAJOR ARTERIAL - 6 Lanes Divided



GP Figure 5.2
Roadway Widths



The Plan's circulation system has therefore been designed to:

- permit traffic to choose reasonably direct paths to destinations throughout the Planning Area
- minimize intrusion of through-traffic on local streets
- avoid over-reliance on the I-10 freeway for intracity travel
- provide efficient routes for transit service, emergency and other service vehicles.

The traffic projections upon which the Circulation Element is based assume continuation of current auto-oriented travel habits. However, even with the roadway improvements included in the Circulation Element, greater use of alternative modes such as transit, ridesharing and bicycling will be necessary to maintain acceptable peak period traffic service on routes such as Alabama Street, San Bernardino Avenue and Lugonia Avenue. Accordingly, the Circulation Element also contains policies and targets alternative modes to reduce peak period traffic.

5.20 Standards for Traffic Service

In a developed area the primary traffic issues are the feasibility of improvements and an acceptable level of service. Much of the General Plan design effort involved balancing land use and transportation by increasing traffic capacity and, where possible, limiting land use intensity to maintain acceptable levels of service. The definition of "acceptable," established by the City's standard for traffic level of service (Policies 5.20a, 5.20b, and 5.20c, below), allows a check on how well the Land Use and Circulation elements fit together.

Level of service (LOS) is a qualitative measure of traffic service along a roadway or at an intersection. As described in Table 5.1, it ranges from A to F, with LOS A being best and LOS F being worst. LOS A, B and C indicate conditions where traffic can move relatively freely. LOS D describes conditions where delay is more noticeable and average travel speeds are as low as 40 percent of the free flow speed. LOS E indicates significant delays and average travel speeds of one-third the free flow speed or lower; traffic volumes are generally at or close to capacity. Finally, LOS F characterizes flow at very slow speeds (stop-and-go), and large delays (over a minute) with queuing at signalized intersections; in effect, the traffic demand on the roadway exceeds the roadway's capacity.

Future levels of service for the Redlands circulation routes were determined by comparing projected roadway volumes to typical capacities. The resulting volume/capacity (V/C) ratio then establishes the LOS rating based on ranges given in Table 5.1. Although the traffic projections are for total daily traffic, the LOS estimates are for peak hours (typically a.m. and p.m. commute hours) since these dictate the need for roadway improvements. During other hours of the day higher levels of service would prevail.

Guiding Policies: Standards for Traffic Service

- 5.20a** Maintain LOS C or better as the standard at all intersections presently at LOS C or better.
- 5.20b** Within the area identified in GP Figure 5.3, including that unincorporated County area identified on GP Figure 5.3 as the donut hole, maintain LOS C or better; however, accept a reduced LOS on a case by case basis upon approval by a four-fifths (4/5ths) vote of the total authorized membership of the City Council.
- 5.20c** Where the current level of service at a location within the City of Redlands is below the Level of Service (LOS) C standard, no development project shall be approved that cannot be mitigated so that it does not reduce the existing level of service at that location except as provided in Section 5.20b.

Table 5.1

Level of Service Definitions		Freeway Segments	Street Segments
Level of Service A	Conditions of free flow; speed is controlled by driver's desires, speed limits, or physical roadway conditions.	0 to 0.30	0 to 0.60
Level of Service B	Conditions of stable flow; operating speeds beginning to be restricted; little or no restrictions on maneuverability from other vehicles.	0.31 to 0.49	0.61 to 0.70
Level of Service C	Conditions of stable flow; speeds and maneuverability more closely restricted; occasional backups behind left-turning vehicles at intersections.	0.50 to 0.71	0.71 to 0.80
Level of Service D	Conditions approach unstable flow; 0.75 to 0.89 tolerable speeds can be maintained but temporary restrictions may cause extensive delays; little freedom to maneuver; comfort and convenience low; at intersection, some motorists, especially those making left turns, may wait through one or more signal changes.	0.72 to 0.88	0.81 to 0.90
Level of Service E	Conditions approach capacity; unstable flow with stoppages of momentary duration; maneuverability severely limited.	0.89 to 1.00	0.91 to 1.00
Level of Service F	Forced flow conditions; stoppages for long periods; low operating speeds.	> 1.00	> 1.00

Sources: Transportation Research Board, *Highway Capacity Manual*, 1994.
DKS Associates.

Implementing Policies: Standards for Traffic Service

5.20d Design roadway improvements and evaluate development proposals based on the LOS standard prescribed in Policies 5.20a, b, and c.

5.20e Monitor traffic service levels and implement Circulation Element improvements prior to deterioration in levels of service below the stated standard.

Development approvals should require demonstration that traffic improvements necessary to serve the development without violating the standard will be in place in time to accommodate trips generated by the project.

5.20f If monitoring of conditions at intersections within the *East Valley Corridor Specific Plan* area and intersections affected by EVC development indicates that peak hour LOS will drop below the standards set by Policies 5.20a, 5.20b, 5.20c revise the EVC Specific Plan. Revisions necessary may include additional roadway improvements, mandated higher TDM (Travel Demand Management, See Section 5.40) reductions in single-occupant vehicle trip share, reduction of intensity of development, or changes in use of undeveloped sites.

Projected buildout for the EVC is 2028 vs. 2010 for the rest of the Planning Area. Travel habits may change significantly during this period, but project reviews for compliance with the General Plan must not assume changes that may be beyond the ability of the City to implement.

5.30 Circulation Network and Classification

Maintenance of the service level standards established in Section 5.20 will require a hierarchy of adequately sized streets. The Circulation Network in GP Figure 5.1 identifies the functional classification and size of key routes. The functional classification refers to the role played by a particular route. Function, as well as projected traffic level, determines the appropriate design and number of lanes for the route.

The Circulation Network is composed of five classifications:

- **Freeways.** Freeways are high speed, high capacity limited access facilities serving intercity and regional travel. In Redlands, both Interstate 10 and State Route 30 are freeways.
- **Arterials.** Arterials provide circulation between major activity centers and residential areas, and also provide access to freeways. They are further subdivided into two categories: major and minor arterials.

Major arterials usually carry the highest volumes and/or longest trips and are moderately high speed routes, typically four to six lanes wide. For high capacity they should have medians between intersections and additional lanes at intersections. Service to abutting properties may be provided but should be subordinate to through-travel needs. Redlands Boulevard, Brookside Avenue, and Alabama Avenue are examples of major arterials that must permit access to abutting property. Access points should be consolidated where possible.

Minor arterials typically interconnect with and augment the major arterial system, and serve trips of moderate length. Minor arterials may permit access to abutting properties, although traffic capacity needs are equally important. Minor arterials are typically no more than four lanes wide and, to minimize roadway width and right-of-way, may be undivided (no median). Lower volume minor arterials may be two lanes wide, although left-turn lanes at intersections and/or a continuous two-way left turn lane should be provided to improve traffic flow. Orange Street and Colton Avenue are examples of minor arterials.

- **Collectors.** Collectors have the important function of collecting traffic from residential and commercial areas and channeling it to arterials. They are typically fronted by residences, commercial or public activities. Collectors are usually two-lane streets, and maximum acceptable volumes are dictated by resident concerns about intrusion rather than traffic capacity considerations. The Circulation Network includes only existing or known future collectors. Examples are Pioneer Avenue, Dearborn Street, and Alessandro Road. Additional collectors should be provided as necessary in future development areas.
- **Local Streets.** Local streets have the sole function of providing access to adjoining land uses. All streets not depicted on the circulation plan are local streets.
- **Scenic Drives.** Scenic drive is the designation of the route along the Santa Ana Wash blufftop between Texas Street and Judson Street. When completed it will serve as a neighborhood connector as well as a recreational route for drivers and bike riders. In addition, the City Council has designated a number of streets within the City as scenic highways, drives, and historic streets. Special development standards have been adopted by Resolution for these streets. The streets are:
 - Brookside Avenue, from Lakeside Avenue to Eureka Street
 - Olive Avenue, from Lakeside Avenue to Cajon Street
 - Center Street, from Brookside Avenue to Crescent Avenue

- Highland Avenue, from Serpentine Drive to Cajon Street
- Sunset Drive, from Serpentine Drive to Edgemont Drive
- Cajon Street
- Mariposa Drive, between Halsey Street and Sunset Drive
- Dwight Street, between Pepper Street and Mariposa Drive

Guiding Policies: Circulation Network and Classification

- 5.30a** Use the Circulation Network to identify, schedule and implement roadway improvements as development occurs in the future, and as a standard against which to evaluate future development and roadway improvement plans.
- 5.30b** Review the Circulation Network with neighboring jurisdictions and seek agreement on actions needing coordination.
- 5.30c** Review and coordinate circulation requirements with Caltrans as it pertains to the freeways and state highways.

Implementing Policies: Circulation Network and Classification

- 5.30d** Adopt design standards for each functional roadway classification.

Roadway standards illustrated in the Technical Report in the Master Environmental Assessment Appendix are for typical midblock applications when constructing new roadways or improving existing roadways where sufficient right-of-way is available. Additional right-of-way may be needed for turn lanes at some intersection approaches. Exceptions to the standards should be kept to a minimum and should be evaluated on a case-by-case basis. Different standards may govern in Specific Plan areas.

- 5.30e** Levy appropriate fees on new residential and non-residential development to be used for roadway improvements in compliance with the law.
- 5.30f** Explore alternative means of financing for road improvements as long as in compliance with the law.
- 5.30g** Establish the alignment of San Timoteo Canyon Road in the vicinity of Barton Road at the common boundary between Redlands and Loma Linda so that San Timoteo Canyon Road connects to California Street at Barton Road.
- 5.30h** Coordinate with the City of Yucaipa to align the proposed Crafton Hills Drive between Wabash Avenue and Sand Canyon Road.
- 5.30i** Establish and maintain traffic circulation patterns that protect the character of residential neighborhoods.
- 5.30j** Design major infrastructure improvements to accommodate regional traffic needs in a manner which discourages increased traffic flows through residential neighborhoods, encourages traffic flows to existing freeway systems and assures prudent use of federal and local taxpayer dollars.

- 5.30k** In order to assure the circulation policies established by the Redlands General Plan as set forth in Table 5.2 are implemented, including without limitation establishment of California Street as a major arterial, the City Council shall coordinate with SANBAG, the IVDA and the City of San Bernardino with regard to all Santa Ana river crossings, except the Orange Street crossing, to assure the development of California Street/Mountain View Avenue as a major arterial providing access to the San Bernardino International Airport.

5.31 Arterials

Table 5.2 summarizes characteristics of the existing and proposed arterial system. Maintenance of acceptable levels of service will require major improvements. The note following the table specifies the assumptions that result in projected levels of service below LOS D on a quarter of the arterial segments.

Guiding Policies: Arterials

- 5.31a** Provide adequate capacity on arterials to meet LOS standards and to avoid traffic diversion to local streets or freeways.
- 5.31b** Locate high traffic-generating uses so that they have direct access or immediate secondary access to arterials.
- 5.31c** Establish a funding system that will enable completion of arterial roadway improvements before the projects that require them are occupied.

Implementing Policies: Arterials

- 5.31d** Maximize the carrying capacity of arterials by controlling the number of intersections and driveways, limiting residential access where applicable, and requiring sufficient on-site parking to meet the needs of the project.

Additional guidelines for arterial access include providing smooth ingress/egress to fronting development. This includes designing parking areas so that traffic does not stack up on the arterial roadway, combining driveways to serve small parcels, and maintaining adequate distance between driveways and intersections to permit efficient traffic merges. Implementation of these guidelines is especially important along Alabama Street and San Bernardino Avenue.

5.32 Collector and Local Streets

Collectors funnel traffic from local streets to the arterial network. Local streets are not indicated on the Circulation Network map (GP Figure 5.1) but are the subject of Plan policies. Standards for maximum traffic volumes are established for residential collectors and local streets because they normally have the capacity to carry far more traffic than is acceptable to people living along them.

Guiding Policies: Collector and Local Streets

- 5.32a** Design residential collector streets and implement traffic control measures to keep traffic on collectors at 3,000 vehicles per day or less, where possible.
- 5.32b** Design local residential streets and implement traffic control measures to keep traffic below 500 vehicles per day.

5.32c Discourage through-traffic on local streets.

5.32d Encourage special design standards for local streets in hillside and rural areas.

Table 5.2
Arterial System Volumes and Levels of Service

Location	Existing 1994			Buildout		
	Lanes	ADT	LOS	Lanes	ADT	LOS
<i>Palmetto</i>						
California - Alabama	2	<1,000	A	4	19,000	A
<i>San Bernardino Ave.</i>						
Mtn View - Alabama	2	4,000	A	6	28-33,000	A-B
Alabama - Orange	2	8,000	A	6	40-51,000	C-E
Orange - Church	2	11,000	C	4	25,000	D
Church - Wabash	2	3,000	A	4	15-24,000	A-C
Wabash - Mill Creek	2	2,000	A	4	11-12,000	A
<i>Lugonia Ave./Mentone Blvd.</i>						
Mtn View - Alabama	2	3,000	A	4	22-30,000	B-D
Alabama - Orange	2	7,000	A	4	32-36,000	E
Orange - Wabash	4	12,000	A	4	13-22,000	A-C
Wabash - Garnet	4	8,000	A	4	10-19,000	A-B
<i>Redlands Blvd.</i>						
California - Alabama	4	20,000	A	6	34-39,000	B-C
Alabama - Colton	4	21,000	A	6	53,000	E
Colton - Texas	4	14-19,000	A	6	33,000	B
Texas - Citrus	4	13-27,000	A	4	28-30,000	C-D
Citrus - Highland	4	8-16,000	A	4	28-32,000	C-D
Highland - I-10 Fwy	4	8,000	A	4	22,000	B
<i>Colton Ave.</i>						
Redlands - Sixth	2	--	--	4	17-23,000	A-C
Sixth - University	2	10,000	B	2	10-12,000	B-D
University - Dearborn	2	8,000	A	2	9-11,000	B-C
Dearborn - Crafton	2	2-6,000	A	2	5-9,000	A
<i>Barton/Brookside/Citrus</i>						
California - Terracina	4	16,000	A	6	25-33,000	A-B
Terracina - Orange	4	14,000	A	4	18-27,000	A-C
Orange - Judson	4	13,000	A	4	16-24,000	A-C
Judson - Wabash	4	16,000	A	4	8-14,000	A
Wabash - Crafton	2	4,000	A	2	4-10,000	A-B
<i>Cypress Ave.</i>						
Terracina - Citrus	4	6-9,000	A	4	8-12,000	A
<i>California St.</i>						
Palmetto - Lugonia	2	<1,000	A	6	31-40,000	A-C
Lugonia - Redlands	2	4,000	A	6	33-58,000	B-F
Redlands - Barton	2	7,000	A	6	22-23,000	A
<i>Nevada</i>						
S. Bernardino - Lugonia	2	<1,000	A	4	18-22,000	B-C
Lugonia - Redlands	2	4,000	A	4	26,000	D
Redlands - Barton	2	1,000	A	4	11-18,000	A-B

Continued

Table 5.2 (Continued)

Location	Existing 1994			Buildout		
	Lanes	ADT	LOS	Lanes	ADT	LOS
<i>Alabama Street/Palm</i>						
North of S. Bernardino	4	11,000	A	6	20-38,000	A-C
S. Bernardino - I-10 Fwy	4	10-15,000	A	6	45-58,000	D-F
1-10 Fwy - Redlands	4	27,000	D	6	47,000	D
Redlands - Barton	4	13-21,000	A-B	6	16-37,000	A-B
<i>Tennessee/San Mateo</i>						
Lugonia - Brookside	4	14,000	A	4	13-29,000	A-E
Brookside - Highland	4	9,000	A	4	11-20,000	A-B
<i>Texas/Center</i>						
Pioneer - Colton	2	4,000	A	4	20-28,000	B-E
Colton - Brookside	4	11,000	A	4	14-18,000	A
Brookside - Highland	2	--	--	2	10-13,000	C-E
<i>Eureka Street</i>						
Pearl - Citrus	2	4,000	A	4	10,000	A
<i>Orange St./Cajon/Garden</i>						
North of Pioneer	2	4,000	A	4	22,000	A
Pioneer - Lugonia	2	7,000	A	4	19-21,000	B-C
Lugonia - I-10 Fwy	4	17,000	B	4	25-27,000	D
I-10 Fwy - Citrus	4	22,000	C	4	21,000	B
Citrus - Highland	2	12,000	C	2	9-14,000	B-E
Highland - Elizabeth	2	--	--	2	9,000	B
<i>Judson St./Ford St.</i>						
Pioneer - Colton	2	2,000	A	2	5-8,000	A
Colton - I-10 Fwy	2	5,000	A	2	7-10,000	A-B
<i>Wabash Ave.</i>						
Pioneer - Lugonia	2	2,000	A	2	3-7,000	A
Lugonia - Citrus	2	6,000	A	2	7-9,000	A-B
Citrus - I-10 Fwy	2	2,000	A	2	7-13,000	A-D
<i>Crafton</i>						
San Bernardino - 5th	2	4-6,000	A	2	3-9,000	A
<i>Sand Canyon</i>						
East of Crafton	4	7,000	A	4	12,000	A
<i>San Timoteo Canyon Road</i>						
Brookside - Alessandro	2	3,000	A	2	11-18,000	B-C
Alessandro - Live Oaks	2	--	--	2	20,000	C

ADT = Average daily traffic volume; ranges indicate lowest and highest volumes in the segment.

LOS = Peak hour Level of Service; ranges indicate highest and lowest LOS in the segment.

Projected volumes assume buildout at General Plan density and intensity and continuation of present travel habits, and thus represent a "worst case" scenario. Where projected LOS is inconsistent with Policies 5.20a, b, or c, Policy 5.20f is designed to provide mitigation.

Implementing Policies: Collector and Local Streets

- 5.32e Avoid adding traffic to streets carrying volumes above the standards in Policies 5.20a, b, and c and consider traffic control measures where volumes exceed the standards and perceived nuisance is severe.

Traffic above the standards may cause residents to become concerned about noise, speeding, child safety and loss of privacy. Typically, residents will become concerned when traffic reaches 3,000 vehicles per day.

Project design should orient residential units away from collector and local streets that are at or near the traffic acceptability thresholds. Where needed, possible control measures include stop signs, signals, channelization and barriers.

- 5.32f Design short, discontinuous local streets to discourage use by through-traffic.

Implementation of proposed arterial and collector improvements will also reduce diversion to local streets.

- 5.32g Provide for a network of collectors in the northwest and northeast areas to minimize traffic levels on San Bernardino Avenue, Lugonia Avenue, Orange and Texas Streets.

Much of the developed area north of Lugonia Avenue lacks collectors within the original half mile square agricultural road grid.

- 5.32h Adopt design standards for hillside and rural areas.

5.33 Freeway Improvements

Although the Plan circulation system focuses on arterial and collector roadways, conditions on Interstate 10 and State Route 30 will affect and be affected by development in the Planning Area. Volumes projected for the I-10 freeway will exceed the capacity of the existing freeway, necessitating widening or major increases in the use of transit and other Travel Demand Management (TDM) techniques. (See Section 5.40.)

Guiding Policies: Freeway Improvements

- 5.33a Work with California Department of Transportation (Caltrans) to achieve timely construction of freeway and interchange improvements.

Implementing Policies: Freeway Improvements

- 5.33b Develop improvement plans for the SR 30 interchange at San Bernardino Avenue and for the I-10 freeway interchanges at Alabama Street, California Street and Mountain View Avenue to ensure adequate capacity to meet future needs associated with the *East Valley Corridor Specific Plan*.

Considerable traffic growth is projected at all freeway interchanges serving the East Valley Corridor. More detailed studies are necessary to determine the level and nature of possible interchange improvements needed.

5.33c Provide a SR 30 freeway crossing (no ramps) at Palmetto Avenue and widen I-10 crossings at Nevada Street to reduce overdependence on other freeway crossings such as San Bernardino Avenue, Alabama Street and California Street.

5.33d Seek funding for interchange improvements as needed to accommodate traffic growth in the East Valley Corridor.

Caltrans does not currently fund local interchange improvements to accommodate planned traffic growth. Alternative sources such as traffic impact fees must be considered. See also Policy 5.30e.

5.33e Seek funding for I-10/Wabash Avenue interchange improvements.

5.40 Travel Demand Management (TDM)

The term "Travel Demand Management" (TDM) refers to measures designed to reduce peak-period auto traffic. These include public transit, flexible working hours, carpooling and vanpooling, and incentives to increase the use of these alternatives. TDM has become increasingly important in maintaining acceptable levels of service on existing routes in the region.

In developing the network for the General Plan, transportation studies assumed that peak hour trip rates at major employment centers would be typical of current conditions. Based on this, LOS deficiencies were identified on freeway access routes into and out of the East Valley Corridor area at buildout. To achieve acceptable LOS, a 10 to 15 percent reduction in peak period trips would be needed relative to the number of trips that would be generated from the same building area without active promotion of trip reduction. Therefore, the TDM program is a necessary component of the Circulation Element. Current experience elsewhere indicates that peak period trip reduction exceeding 15 percent is not likely to be sustained over time. Because work trips are only a portion of peak period trips and small employers are less able to implement TDM measures, an overall reduction in peak period vehicle trips on the order of five percent is a realistic target.

Congestion Management Program

In accord with Proposition 111, passed in June 1990, the San Bernardino Associated Governments (SANBAG) adopted a countywide Congestion Management Program (CMP) on November 4, 1992. A key component of the CMP is a "trip reduction and travel demand" element to promote use of alternative modes and reduce peak period travel. Under provisions of the legislation, each local jurisdiction is required to adopt and implement a trip reduction and travel demand ordinance. These provisions are to be coordinated with the local air districts Southern California Air Quality Management District (SCAQMD) and San Bernardino County Air Pollution Control District (SBCAPCD). Table 5.3 lists some examples of travel demand strategies.

Transit

Redlands has four Omnitrans bus routes, but transit serves mainly persons who do not have access to a car and presently accounts for under one percent of overall travel in Redlands. When higher employment and residential densities are reached at full development, public transit should play a larger role in transportation in the area, particularly for commute trips that could be attracted to the East Valley Corridor and for trips by local residents to and from other employment centers in the region. Commuter rail service on the Santa Fe line has been extended from downtown Los Angeles as far east as San Bernardino; convenient feeder transit service from Redlands and park-and-ride facilities could make this attractive to some Redlands commuters. In the longer range (post-1995) commuter rail service may be extended from San Bernardino to Redlands, making the service more attractive for Redlands residents commuting to the west.

GP Table 5.3 Travel Demand Strategies		
TDM ORDINANCE PROVISION OPTIONS	STRATEGIES WHICH EMPHASIZE AIR QUALITY	STRATEGIES WHICH HELP CONGESTION MANAGEMENT
Transportation Allowance Instead of Subsidized Parking	X	X
Ridesharing Ridesharing Transportation Allowance	X	X
Ridesharing Subsidy, Tax Credits or Fees for Solo Commuters	X	X
Ridesharing Parking Cost Subsidy	X	X
Ridematching	X	X
Guaranteed Ride Home	X	X
Flex-Time		X
Compressed Work Week	X	X
Telecommuting from Home	X	X
Telecommuting from Satellite Work Center	X	X
Transit Subsidies	X	X
Commuter Stores		
Marketing Programs	X	X
Expanded On-Site Amenities	X	X
Walking Showers and Lockers	X	X
Safe Walking Routes	X	X
Bicycling Showers and Lockers	X	X
Bicycling Information (Maps)	X	X
Regulate Medium & Large Employers	X	X

GP Table 5.3 TRAVEL DEMAND STRATEGIES		
TDM ORDINANCE PROVISION OPTIONS	STRATEGIES WHICH EMPHASIZE AIR QUALITY	STRATEGIES WHICH HELP CONGESTION MANAGEMENT
Regulate Multi-Tenant Bldg Owners	X	X
Regulate Developers Require Mixed Use	X X	X X
Require Amenities that Reduce Need for Trips	X	X
Design Guidelines for Transit, Vanpools, Walking, & Bicycling	X	X
Increase Residential Densities at Transit Stations		X
Fee Credits for Bldg Designs Which Promote TDM Measures	X	X
Fee Credits for Building Remote Park & Ride Facilities		X
Parking Preferential Parking for Ridesharers	X	X
Subsidized Parking for Ridesharers	X	X
Remote Park & Ride Lots with Amenities		X
Support Zoning Code Variances for Commercial Uses Within Park & Ride Facilities		X
Provide Bicycle Parking	X	X
Lower Development Sq/Ft Ratios and Maximum Limits		X
Source: San Bernardino County CMP, 11/4/92 (Table prepared by Commuter Transportation Services)		

A coordinated system of regional as well as local transit routes appears necessary to maintain acceptable levels of service. Projections indicate the potential for traffic congestion in the I-10 and SR 30 corridors in the future, even with widening of portions of I-10 to 10 lanes and SR 30 to 6 lanes, as assumed for the General Plan analysis. This is a result of anticipated growth in all the communities within the corridor rather than just in the Planning Area.

Guiding Policies: TDM

- 5.40a Ensure that employers implement TDM programs to reduce peak period trip generation.
- 5.40b Cooperate with public agencies and other jurisdictions to promote local and regional public transit serving Redlands.
- 5.40c Support the Congestion Management Program for San Bernardino County.

Implementing Policies: TDM

- 5.40d In accordance with the CMP, develop and implement a comprehensive trip reduction and TDM ordinance for all employers in Redlands. The goal should be to reduce peak period trip generation by 15 percent from the vehicle trip generation currently observed at similar sites without a TDM program.

The TDM ordinance should incorporate a regular monitoring program to assess compliance and success. Future employment will be concentrated in the *East Valley Corridor Specific Plan* area, where congestion will make TDM most necessary and most effective.

- 5.40e Favor TDM measures that limit vehicle use over those that extend the commute hour.

Programs such as ridesharing and public transit reduce overall vehicle travel while flex time and staggered work hours simply shift traffic to less congested times of day.

- 5.40f Support local feeder bus service to and from current and future regional transit lines.

- 5.40g Preserve options for future transit use when designing improvements to roadways.

Currently, segments of Barton Road/Brookside Avenue, Cypress Street, Cajon Street, Fern Avenue, Orange Street, Lugonia Avenue, San Bernardino Avenue and Brockton Avenue are used by Omnitrans bus lines. Other streets, particularly in the East Valley Corridor, will be likely candidates for bus service as growth occurs.

- 5.40h Work with Omnitrans to plan for local bus routes that are better able to penetrate neighborhoods to improve service for potential riders. Designate local bus routes in Specific Plan areas.

- 5.40i Future commuter rail services are planned within the Santa Fe rail corridor, with stops at California Street, Orange Street and Mentone Blvd. Improvements to these streets should be planned for feeder transit services, and park-and-ride provisions should be made at these locations. Another logical stop would be at University Street to serve the campus at the University of Redlands. Other potential stops could be at Judson Street and at Crafton Avenue. Residents in these areas might use short, trip commuter rail to downtown Redlands, either to work or shop.

- 5.40j Work with Omnitrans to plan for bus shelters and turnouts.

- 5.40k Incorporate bus shelters and turnouts into design and approvals of new developments as necessary.

5.50 Bikeways

The relatively flat valley portion of Redlands, with about two-thirds of the Planning Area's potential residents and almost all of its jobs, is attractive for both bicycle commuters and recreational riders. The bicycle routes are adopted by resolution and consolidate previous City staff recommendations and designations of the *East Valley Corridor Specific Plan*.

"Bikeway" means all facilities that primarily provide for bicycle travel. Three categories of bikeways are defined:

Class I Bikeway (Bike Path or Bike Trail) Provides a completely separated right of way designated for the exclusive use of bicycles and pedestrians with cross flows by motorists minimized.

Class II Bikeway (Bike Lane) Provides a restrictive right of way designated for the exclusive or semi exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and crossflows by pedestrians and motorists permitted.

Class III Bikeways (Bike Route) Provides right of way designated by signs or permanent markings and shared with pedestrians and motorists.

Guiding Policies: Bikeways

- 5.50a** Establish a comprehensive network of on- and off-roadway bike routes to encourage the use of bikes for both commute and recreational trips.
- 5.50b** Seek assistance from major employers in providing support facilities to encourage use of bikes for commuter purposes.
- 5.50c** Develop bike routes that provide access to schools and parks.

Implementing Policies: Bikeways

- 5.50e** Designate a Class I route (bike path) along San Timoteo Canyon Road and/or along San Timoteo Canyon Creek.
- 5.50f** Designate the Zanja corridor from downtown west as a Class I route (bike path).

This route could be used for access to jobs in the East Valley Corridor as well as a recreational route to the Santa Ana Wash.

- 5.50g** Designate a Class I route adjacent to but outside the Santa Fe railroad right-of-way from New York Street in downtown Redlands to east of Wabash Avenue.

In conjunction with a north-south bike route on Opal Avenue, this bike route would provide convenient bicycle access to downtown as well as to the Santa Ana Wash.

- 5.50h** Designate a Class I Route (bike path) along portions of California Street and Palmetto Avenue within the East Valley Corridor.

This route would serve major commute destinations within the East Valley Corridor.

- 5.50i** Designate a Class I Route (bike path) along the Santa Ana River and extend the length of the City of Redlands.

- 5.50j** Designate Class II routes (bike lanes) along portions of Cypress Avenue, Fern Avenue, Terracina Drive, Barton Road/Brookside Avenue, California Street, State Street, San Bernardino Avenue and Dearborn Street.

These routes, in combination with the Class I routes above, will provide good bike access between residential areas of Redlands and the East Valley Corridor.

- 5.50k** Establish Class III routes (shared route) along collectors (Highland Avenue, Sunset Drive, Alessandro Road, Alta Vista Drive, Opal Street) and along minor arterials (San Mateo Street, 5th Avenue, Sand Canyon Road, Texas Street, Church Street and Orange Street).

- 5.50l** Incorporate bike storage and other support facilities into TDM plans at employment sites and public facilities, when feasible based upon distance from bikeways.

Studies have indicated the importance of providing well-located, secure bike storage facilities at employment sites, shopping and recreational areas and schools in order to facilitate bike use. Employers often provide shower and changing facilities where sizable numbers of employees use bikes.

- 5.50m** Prepare a bikeways implementation program that includes priorities and a schedule.

- 5.50n** Publish and distribute a map showing existing and proposed bikeways in the Redlands Planning Area.

- 5.50o** Plan and design bikeways with special consideration given to the safety of bicyclists and pedestrians.

5.60 Pedestrianways

Walking is discouraged by many city development practices intended to save money, facilitate traffic flow, or enhance security. Sidewalks often adjoin fast traffic lanes, parking lots lack pedestrian paths, and residential street systems make pedestrians walk much further than necessary. Finally, walking along arterial streets that do not provide access to adjoining properties is boring. The General Plan seeks to increase walking to school, to shop or work, and for pleasure.

Guiding Policies: Pedestrianways

- 5.60a** Treat pedestrians as if they are more important than cars.

Except on freeways and a few hillside residential streets, pedestrians should have direct, safe routes to the same destinations.

- 5.60b** Make walking interesting.

Avoiding long, uniform frontages and creating pedestrian paths that do not follow streets give people a reason to want to walk.

- 5.60c** Provide direct pedestrian routes.

Owners' desires to live on cul-de-sacs, builders' desires to build less street, and the City's desire to minimize intersections combine to make pedestrian access circuitous in many neighborhoods. Direct paths to arterial street bus stops can increase transit patronage.

5.60d Provide a safe and healthful pedestrian environment.

This means providing separate pedestrianways in parking lots, avoiding excessive driveway widths, and providing planting strips between sidewalks and streets where feasible.

5.60e Develop a program to remove all barriers to disabled persons on arterial and collector streets.

5.70 Redlands Airport

The Redlands Municipal Airport, on the bluff adjoining the Santa Ana Wash between Judson Street and Wabash Avenue, is a City-owned, general aviation facility. Scheduled passenger service is not envisioned. The 1993 Airport Master Plan projects an increase in average daily aircraft operations from 230 in 1991 to 260 in 1995 to 326 in 2005 and 391 in 2015. Increases in demand for general aviation facilities have been lower than expected, but *East Valley Corridor Specific Plan* development may cause faster growth.

The projected area of noise impact, as defined by the Community Noise Equivalent Level (CNEL) 65 dB contour, within which single-family residential development is generally considered unacceptable, extends west to 750 feet west of Judson Street and east to a point 250 feet east of Opal Avenue in the year 2015. No homes exist within this area. The City has required dedication of an aviation easement as a condition of development approval for projects within one mile of the projected CNEL 65 dB contour.

Guiding Policies: Redlands Airport

5.70a Develop Redlands Airport to meet the general aviation needs of the Planning Area based on capabilities of the existing runway.

5.70b Maintain compatibility of airport operations with development in the surrounding area.

The 1993 Redlands Municipal Airport Master Plan found no adverse noise impact from current operations and no future impact if residential development is prohibited within the projected CNEL 60 dB contour. No significant current or future safety impact was identified.

Implementing Policies: Redlands Airport

5.70c Utilize the 1993 Redlands Municipal Airport Master Plan in planning for the growth and expansion of the airport and facilities.

5.70d Require use of aircraft noise abatement procedures for departures of aircraft.

5.70e Limit land use within the projected CNEL 60 dB contour to agriculture, open space, golf course, and light industry.

The General Plan Diagram reflects this policy.

5.70f Require dedication of an aviation easement as a condition of development approval for projects within one mile of the CNEL 65 dB contour.

Continuation of this policy alerts buyers to the proximity of the airport and protects the City from possible attempts to limit airport use.

5.70g Review the Comprehensive Airport Land Use Plan (CALUP) being prepared for Redlands Municipal Airport to ensure conformity between the CALUP and the General Plan.

- 5.70h Evaluate the compatibility of surrounding development with airport operations by using the Comprehensive Airport Land Use Plan during discretionary project reviews.

5.71 Southeast Area Circulation Issues and Policies

This section of the Circulation Element provides a discussion of circulation issues and policies specific to the Southeast Area of Redlands, in San Timoteo and Live Oak canyons. For a detailed discussion of land use and other policies for the Southeast Area, refer to Section 4.42 of the Land Use Element of this General Plan.

General Circulation Issues in the Southeast Area - Traffic has been one of the major issues related to the development of the Southeast Area. This issue has generally focused on congestion and, in particular, congestion in the surrounding community (for the most part congestion in the Sunset Drive area).

The issue of traffic congestion also applies to Alessandro Road, San Timoteo Canyon Road, Live Oak Canyon Road, and to the character of the traffic within the proposed development areas inside the Planning Sectors in the Southeast Area. (See Section 4.42 of the Land Use Element for a discussion of Planning Sectors in this area.)

The issue of traffic congestion in the Southeast Area is a system capacity issue which is far more complex than just one street section. For example, the Sunset Drive area has been developed with and is now committed to a very low capacity road system. Sunset Drive and its 11 side streets possess great character and charm, but have the capacity to carry only small amounts of traffic. Thus, additional traffic loading from any source will overload portions of the system almost immediately. Because the problem and therefore the solution is one involving a system, it cannot be substantially understood without a system analysis. Such an analysis can be done, but the cost will be substantial. The planning study for the Southeast Area Plan allocated only limited funds for traffic analysis; therefore, only a limited traffic analysis was completed.

Certain basic terms and concepts were used to analyze the traffic issues.

First, simplistically stated, traffic volumes are related to the surrounding development. The density of residential development selected for a given Planning Sector will have a direct effect on the number of vehicle trips generated within the Sector.

Second, traffic volumes are broken commonly into two categories for calculation purposes: **Average Daily Trips (ADT)** and **Peak Hour Trips (AM Peak and PM Peak)**. In most cases, roadways are designed to accommodate traffic at the peak time period (in most cases, approximately 7 to 9 a.m. and 4 to 6 p.m., the typical rush hours).

Third, roadways are evaluated by calculations of their "capacity," the volume of traffic that can pass along a given segment in a given time frame while maintaining adequate speeds and with an acceptable level of congestion. Because traffic must slow to execute turn movements, the capacity of the intersections along a roadway very often constraints capacity.

Fourth, the capacity of a segment of roadway to handle a given amount of peak traffic, the heaviest loading, becomes one common "measure of capacity" or capability of that segment of roadway. Another measure of capacity is the total average number of daily trips (ADT) which can be accommodated on the roadway.

Finally, the amount of congestion, or lack of same, is expressed in Levels of Service (LOS). Generally, LOS A (the best level of traffic flow) represents free flow; at LOS F (the worst level of congestion), traffic flow slows almost to a halt. LOS C is viewed by most traffic engineers and communities as "acceptable" and includes some congestion.

Using Level of Service C is the design standard in the Southeast Area, the following constraints currently exist:

Sunset Drive from Alessandro Road to approximately Alta Vista along much of its length currently operates Level of Service B. Traffic studies prepared for the Southeast Area Plan indicated that if Sunset Drive possessed a 40 mph design speed (that is, the speed at which vehicles could safely travel) which it does not it is at LOS B over most of its Alessandro to Alta Vista length. Factors not considered in the model are:

- The very narrow roadway cross section in many places along Sunset Drive.
- The numerous intersections and driveway entries.
- The tight turns, combined with the undulating roadbed.

The 40 mph design assumption was used because this is the slowest design speed available in the computer model used to prepare the traffic analysis. Because the actual design speed is less than 40 mph, the estimate of LOS B overstates the ability of traffic to flow on Sunset Drive; the actual LOS is probably lower (that is, more congestion is present than the computer model predicted).

If Level of Service C is acceptable and anything lower is not, then additional loading of Sunset Drive should be controlled to keep the level of service from going below LOS C. POLICY 5.71a provides specific guidance for future traffic analysis of Sunset Drive is accomplished.

Alessandro Road from San Timoteo Canyon Road up to Sunset Drive forms the western perimeter of the Southeast Area, and is the only link between the area and Redlands proper. Because of this, it appears Alessandro will be a major link from the study site to downtown Redlands unless there is specific design otherwise.

Beginning on Alessandro Road at San Timoteo Canyon Road and working north toward town, the first section of concern is the section centered on the San Timoteo crossing. The bridge and its northern approach currently appear marginal and require major revision. Research conducted for the Southeast Area Plan indicated that the bridge width is inadequate to accommodate even the lowest projected traffic volumes and needs to be widened, and that the curve to the north of the bridge needs to be straightened out. This may require an entire new bridge in a new location (probably to the west of the current location).

The section of Alessandro Road from the bridge to Sunset Drive appears to be basically adequate to accommodate projected development in the Southeast Area with some widening and minor realignment of a couple of curves.

The intersection at Alessandro Road/Sunset Drive appears to need restructuring whether or not the Southeast Area is developed. Once restructured, it appears this intersection could accommodate projected traffic volumes of the magnitude contemplated by the Southeast Area Plan. Depending on the density of development in the area, various intersection flow regulators (stop signs, signals, turn pockets, etc.) would be required, but it appears the intersection could accommodate the projected volumes if improved.

Alessandro Road north of Sunset Drive appears adequate to projected future demand, but its "T" intersection into Crescent and the indirect routing from there on into downtown Redlands results in limited additional capacity being available for through traffic.

Policy 5.71b addresses the need for a comprehensive study of Alessandro Road.

San Timoteo Canyon Road forms the southwestern boundary of the Southeast Area, and is the historical route linking Redlands to the Banning-Beaumont Pass area. When the I-10 freeway was constructed, the "through traffic" moved onto the freeway and San Timoteo Canyon Road began carrying mostly local traffic.

The fertile San Timoteo Canyon, with the San Timoteo Creek watercourse on one side, the mainline railroad down the center, and the roadway on the other side makes a major character statement in the Southeast Area. This statement consists of at least three ingredients:

First, the fertility of the valley has been historically stated by the presence of the citrus groves. Second, the important rail line and historic roadway linkage have stamped the canyon as a transportation corridor over the years. Third, and perhaps of unrealized impact to the area, the sounds of the large freight trains working their way through the canyon can be heard throughout the Southeast Area, and are a unique characteristic of the canyon specifically and the area in general.

Policy 4.42z, in the Land Use Element of this General Plan, addresses future planning along the San Timoteo Canyon Road corridor.

To accommodate regional growth, San Timoteo Canyon Road is projected on both the San Bernardino County and Riverside County master plans as a 4-lane divided highway with a carrying capacity in the range of 20,000 to 25,000 vehicles per day. In order to accommodate this expansion, the existing roadbed must be widened and realigned. It appears this upgrading of San Timoteo is a certainty in the near future. If this is the case, the question becomes: What should the alignment design of this new roadway be, since its capacity is basically predestined?

Policy 4.42bb, in the Land Use Element of this General Plan, expresses the City's position toward future development along San Timoteo Canyon Road.

Live Oak Canyon Road forms the southeastern boundary of the Southeast Area, and has historically provided a connection to Yucaipa, as well as local access. The perception of Live Oak Canyon is of a ribbon of fertile land astride a gorged canyon lined with Oak trees, the fertile narrow valley among the dry, brown hills. It is this perception this feel which appears to be the important characteristic of the canyon which should be preserved and enhanced.

This *perception* as a canyon consisting of a shallow gorge type watercourse lined with trees, however, is somewhat inaccurate. Close inspection reveals that this is only partially true since there are significant trees in certain locations, but not really continuous and with only a few oak trees in the mix. As development adjacent to this watercourse occurs, the watercourse itself will most likely become obscured from public view and its perception will fade unless steps are taken to prevent this from occurring. Also, unless steps are otherwise taken, it is likely the watercourse itself will be denaturalized by channelization, eliminating the trees and the existing gorge character. Thus, it appears that there needs to be a positive program initiated to ensure the continuance of the public perception of the gorged watercourse, the trees and the fertile ribbon so as to preserve this characteristic.

Policy 4.42y, in the Land Use Element, provides policy for retaining the character of Live Oak Canyon.

As is the case in San Timoteo Canyon, Live Oak Canyon Road is planned on both the San Bernardino County and Riverside County master plans as a 4 lane, divided highway with a design capability in the range of 20,000 to 25,000 trips per day in order to accommodate regional development. In order to accommodate this the existing roadbed is going to have to be widened and realigned in several locations and one or more major bridge structures built.

At this time, it appears the question is not whether, but when will this upgrading occur and what form will it take. The issue to be addressed in the Southeast Area, therefore, is where should the realignment be located and what should be the ultimate character of this arterial so that the ultimate result will possess the existing "fertile valley astride the gorged watercourse" feel identified above.

Policy 4.42aa addresses the City's position toward future development in Live Oak Canyon.

On-Site Roads: Because there are no local roadways of note in the Southeast Area, there is no historic character for roadways. There is, however, an overall perceived character for the area which logically dictates a roadway and traffic character. This overall perceived character is one of a low density, natural, rural feel and also leaves one mindful of certain natural constraints, such as hills, watercourses, rock outcroppings, and the like. Translated to roadway design terms, this indicates a design which will accommodate the volumes generated in a casual manner which is sensitive to the existing natural environment. This is to say that the system will not be perceived as being able to overcome all of the obstacles of nature by enough cutting and filling. As an example, roadways should be directed around stands of large trees rather than cutting through them, or should cross a watercourse on a bridge rather than bury the watercourse in an underground pipe.

This suggests a roadway system designed for relatively low speeds due to the necessity to follow the natural contours and avoid the inherent obstacles of nature. This in turn requires that adjacent land use densities be low to ensure that this slow speed system is not overloaded.

Policy 5.71c addresses the design of future roadways in the Southeast Area.

Planned Circulation in the Southeast Area - The following are plans and policies for future roadway improvements in the Southeast Area.

Alessandro Road: The Southeast Area Plan proposes to upgrade Alessandro Road from San Timoteo Canyon Road to Crescent Avenue. This will allow Alessandro Road to fulfill its western perimeter function in the circulation system with the minimum impact on adjacent land uses.

The Southeast Area Plan also attempts to absolutely minimize additional traffic demands on Alessandro Road by upgrading San Timoteo Canyon Road and Live Oak Canyon Road to route regional traffic around Alessandro Road.

Alessandro Road will require realignment and improvements to accommodate even a very low density of development in the Southeast Area. This intersection should be restructured, even though this will require a significant amount of grading.

The alignment of Alessandro from Sunset to the canyon mouth just before the river crossing should be improved in some places, but appears to be basically adequate as it currently exists.

The Alessandro bridge over the watercourse is inadequate in width to handle the projected traffic of even the lowest density scenarios developed for the Southeast Area. Consideration should be given to realignment of the roadway, widening of the bridge, and possibly the need for a relocated bridge.

Policy 5.71d addresses a future realignment and upgrading of Alessandro Road.

Sunset Drive: The Southeast Area Plan recognizes the severe capacity limitations present on Sunset Drive. The traffic study referred to above the most comprehensive conducted to date for the Southeast Area concluded that the current level of service on Sunset Drive from Alessandro Road to Alta Vista is at "B" at best, and is probably lower. Because service lower than level of service "C" is considered, almost universally, unacceptable, the Southeast Area Plan does not provide or require significant traffic connections directly to Sunset Drive. Except for Planning Sector 2, all access within the plan area is routed internally within the plan area and connects to the "outside" via Alessandro Road, San Timoteo Canyon Road, or Live Oak Canyon Road.

Planning Sector 2 is a plateau with existing access to Sunset Drive. Providing access to Live Oak Canyon Road would require extensive grading. Because of this, access from Sector 2 to Sunset Drive is anticipated, but must be carefully evaluated on a case-by-case basis.

Other similar situations involving small acreage of undeveloped property along Sunset Drive or feeder streets to Sunset Drive exist which would not be practical to access from Live Oak Canyon Road. Again, this is recognized in the Southeast Area Plan, but requires careful case by case analysis.

Several emergency only connections to Sunset Drive are proposed which are "not open-to-the-public" traffic ways.

San Timoteo Canyon Road: The existing and future regional arterial highway function of San Timoteo Canyon Road requires that the existing roadbed be significantly upgraded. San Timoteo Canyon Road is shown on both the San Bernardino County and Riverside County master plans as a 4-lane divided highway. The Southeast Area Plan proposes that this be accomplished in a timely manner to encourage regional trip users to pass around Redlands rather than attempting to pass through town via Alessandro Road, Crescent Avenue, and other local streets. Additionally, the plan proposes that the City of Redlands take a lead role in connecting the upgraded San Timoteo to the I-10 Freeway in the vicinity of I-10/California Street interchange. Again, the purpose of this proposal is to encourage regional users to drive around (rather than through) Redlands proper.

Live Oak Canyon Road: The Southeast Area Plan recognizes the need in the near future to upgrade Live Oak Canyon Road consistent with the San Bernardino and Riverside County master plans (as a 4-lane arterial highway). The Plan supports the proposition that this upgrading should be done in a timely manner consistent with the regional demand. The Plan strongly recommends that the City of Redlands take a strong active role to realign Live Oak Canyon Road next to the existing watercourse in such a manner as to form a scenic parkway with the watercourse as the backbone. This will not only accommodate the future traffic demands but will also result in a scenic highway which will preserve the gorged canyon signature characteristic of Live Oak Canyon and simultaneously provide Redlands with a distinctive southern boundary consistent with the City's historic image.

Internal Street System: The Southeast Area Plan proposes that the local street system within the area be designed in a manner subservient to the significant natural features present. The plan proposes that there be a perimeter road system around each major canyon bottom in the area. This perimeter road system is proposed as a combination scenic road and fire access/fuel modification facility (discussed in detail under Fire Prevention, below). This perimeter road should be, in turn, connected to one or more entry roads leading out of the natural mouth of the respective canyon and connecting to Alessandro, San Timoteo, or Live Oak as appropriate. Further, the cross sections of these perimeter roadways and the internal connectors thereto are proposed as rural standard two lane roads as depicted in GP Figure 4.4, Roadway Cross Sections.

Guiding Policies: Southeast Area

- 5.71a** Sunset Drive is at or near capacity. Therefore, significant additional traffic loads should not be placed on this roadway until a comprehensive traffic model, to include all the connector streets into the downtown area and freeway interchanges, shows that the additional load(s) can be accommodated with no section of the model performing below Level of Service C.
- 5.71b** A comprehensive design study of Alessandro Road from Crescent to San Timoteo Canyon Road shall be undertaken to redesign Alessandro Road to accommodate the traffic projected by the development of the Southeast Area Plan and to specifically address the currently inadequate narrow bridge, the curve approach to the bridge, the intersection with Sunset Drive, and the intersection with Crescent Avenue.
- 5.71c** Local roadways within the Southeast Area shall be designed for relatively low speeds, shall follow the natural contours and shall avoid rather than cut through the inherent obstacles of nature. It is recognized that this may require that adjacent land use densities be low to ensure that this slow speed/low volume system is not overloaded.
- 5.71d** Alessandro Road shall be realigned and upgraded, with specific attention to the Sunset Drive intersection and the San Timoteo Creek bridge crossing.