3. Circulation Element

This page intentionally left blank.

Chapter 3. Circulation

INTRODUCTION

Purpose and Function

As development continues in the City of Highland, traffic on its roadway systems will increase. To protect the City's unique character and ensure the safe and efficient movement of people and goods, careful planning of the roadway network is essential. As the City's road system nears its capacity for handling traffic in a safe and efficient manner, the potential for delays and the risk of traffic accidents increase. The Circulation Element addresses current transportation-related issues and future challenges associated with the growth posed by the General Plan. In addition, the Circulation Element analyzes future traffic impacts to the City due to the planned growth of Highland's Land Use Plan and the inevitable growth region-wide. The purpose of the Circulation Element is to develop an efficient, cost effective and comprehensive transportation management strategy, consistent with regional plans and local needs to maintain and improve mobility, and in a manner consistent with the goals and character of the community.

The Circulation Element provides specific implementation programs, which address the existing traffic conditions in the General Plan study area, and are designed to prevent future deterioration of roadway capacity in the community. California Government Code describes conditions and data to be researched, analyzed and included within a General Plan Circulation Element. Government Code Section 65302(b) states that the General Plan shall include the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals and other local public utilities and facilities.

Related Plans and Programs

Other Elements

The Circulation Element is an outgrowth of City and regional land use planning. It also affects and is affected by a variety of community and environmental factors. The element has a direct relationship with the

Land Use, Public Services and Facilities, Open Space and Conservation, Noise, Economic Development, and Community Design Elements.

- The circulation system is a primary determinant in shaping land use patterns specified in the Land Use Element and, conversely, its capacity is designed to accommodate the Land Use Element's land use distributions and intensities.
- The various community facilities and services addressed in the Public Services and Facilities Element, including fire and police services, public and private utilities and educational facilities, are all affected and served by the circulation system.
- Traffic impacts on air quality are well known. Strategies to address this issue are discussed in the Open Space and Conservation Element.
- The roadway network and travel patterns define noise contours along roadways and, as such, shape the goals and policies of the Noise Element.
- An efficient, safe and effective circulation system is an essential component to the economic health of any city. Its ability to move employees, visitors and goods has a direct correlation to the goals and policies of the Economic Development Element.
- While mobility is an important overarching goal of the Circulation Element, preservation of City character and pedestrian safety must be maintained. The design of local streets and places where people congregate must ensure public safety. As such, the Circulation and Community Design Elements are inextricably linked.

Regional Planning

The Circulation Element is also the result of coordination with the Regional Transportation Plan (RTP) and state and regional agencies, including the California Department of Transportation (Caltrans), the San Bernardino Association of Governments (SANBAG), and the Southern California Association of Governments (SCAG). It is also influenced through close coordination with neighboring local jurisdictions, such as the Cities of San Bernardino and Redlands, the San Bernardino International Airport Authority, and San Manuel Band of Mission Indians.

In addition, federal and state transportation planning must be coordinated with local planning pursuant to Section 134, Title 23 of the U.S. Code and California Government Code Section 65080(a), respectively.

Protection of air quality is also associated with growing traffic volumes and infrastructure demand, and requires careful analysis and planning to protect the community from unnecessarily high levels of locally generated pollutants. Vehicular emissions will increase with expanding population, miles traveled and less efficient travel conditions. However, the maintenance of adequate traffic flows, the prevention of traffic congestion caused by inadequate and/or failing roadways, and enhanced vehicle efficiencies will help preserve the air quality in the community.

SCAG Regional Transportation Plan

DESITINATION 2030 is the 2004 Regional Transportation Plan (RTP) for the six-county Region in southern California, including Los Angeles, Orange, San Bernardino, Riverside, Ventura and Imperial Counties—home to 17 million people. The Regional Transportation Plan (RTP) is the culmination of a three-year effort with a focus on improving the balance between land use and the current, as well as future, transportation systems. SCAG is required to develop, maintain and update the RTP on a three-year cycle.

DESTINATION 2030 is a multimodal plan representing the regional vision for a better transportation system, integrated with the growth pattern for the region over the Plan horizon of 2030. The Plan provides the basic policy and program framework for long-term investment in the vast regional transportation system in a coordinated, cooperative and continuous manner. Transportation investments in the SCAG region that receive state or federal transportation funds must be consistent with the RTP and must be included in the Regional Transportation Improvement Program (RTIP) when ready for funding.

The Highland General Plan has been developed with SCAG Regional Transportation Plan in mind. The implementation of the General Plan's goals and policies are designed to incorporate policy to achieve the City's role in regional transportation planning.

CIRCULATION PLAN

The Circulation Plan describes the approach to be used in implementing the Circulation Element's goals and policies, as well as the location and extent of circulation facilities and services.

As a comprehensive transportation management strategy, the Circulation Element has been developed based upon an analysis of existing conditions within the City, and future development as set forth by the General Plan Land Use Plan and growth projections. Growth in traffic has been projected based upon the East Valley Traffic Model (EVTM), administrated by City of San Bernardino and especially updated for the City of Highland.

Roadway Classifications

Based upon existing and projected traffic demands generated by buildout of the General Plan, each major roadway has been assigned a specific design classification. The need for and appropriateness of each classification has been based upon modeled future traffic volumes and overall community design goals set forth in the General Plan. Each of the classifications corresponds with the typical street cross-sections illustrated in Figure 3.1, Roadway Cross-Sections. While the cross-sections represent typical street widths, refinements may be required at intersections or entrances to development projects, which could include the need for additional travel or turn lanes, as well as provisions for transit improvements.

There are seven categories in the City roadway hierarchy, ranging from higher capacity primary arterials to lower capacity collector streets. These categories are described below:

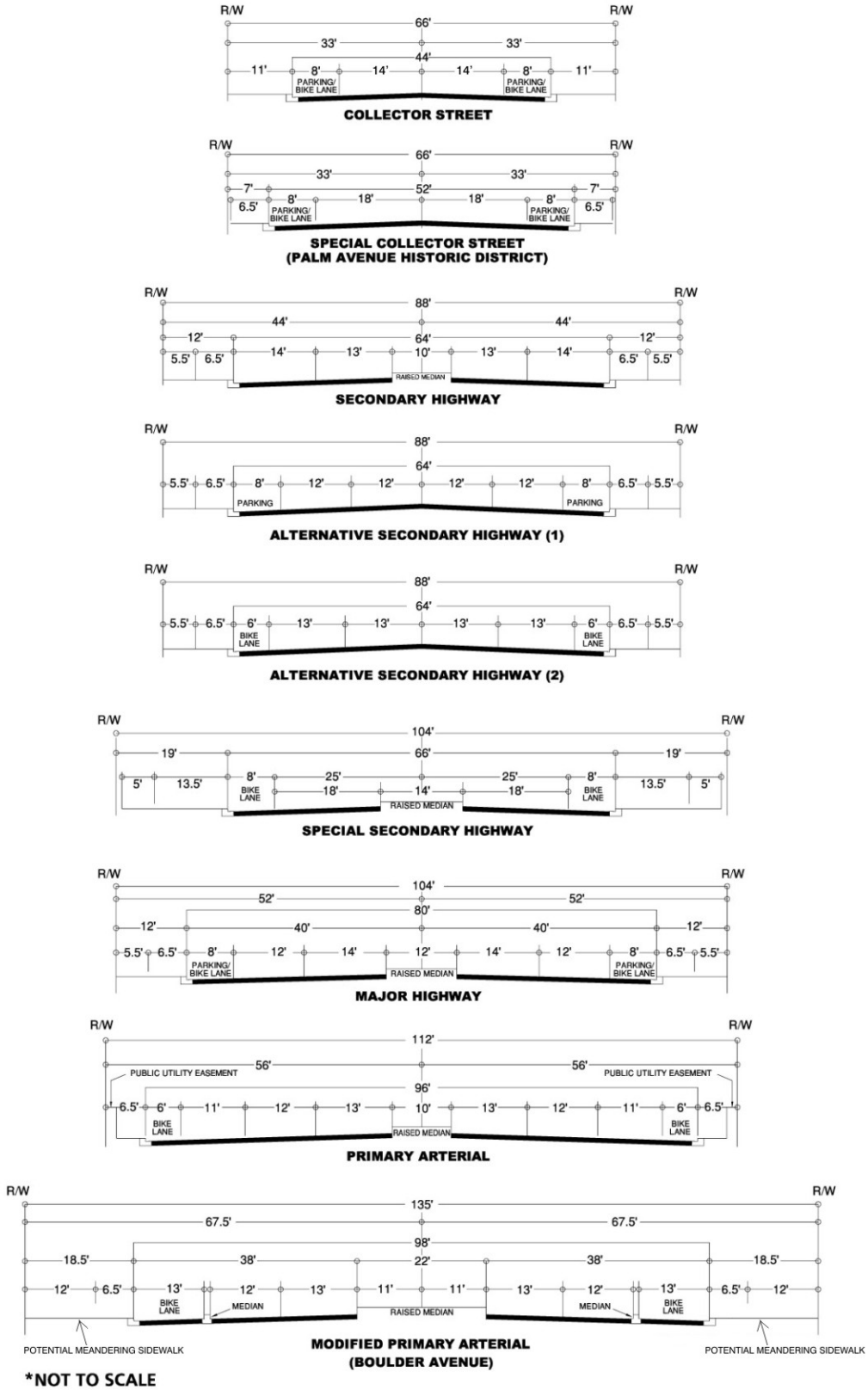
- **Collector Street.** This category of roadway is intended to carry traffic between residential neighborhoods and the larger street network. They are, generally, two-lane roadways which have a mixture of residential and commercial land uses along them. Collector streets are 44 feet, curb-to-curb, within 66-foot rights-of-way. Examples of collector streets are Church Avenue and Weaver Street. Cunningham Street is wider (more than 50 feet) than the typical cross-section for most of its segments.

Looking north on Palm Avenue, a Special Collector Street, in Highland's Historic Village District.

- **Special Collector Street.** Palm Avenue is designated as a special collector street in the area between the Base Line and Pacific Street. This section of Palm Avenue serves as the primary connection between the Town Center and Historic Village District and, in some areas, is constrained by existing historic structures in the area. This is a two-lane roadway with a 52-foot roadway, curb-to-curb, within a 66-foot right-of-way. Restrictions on the amount and design of on-street parking within the Historic Village Area are anticipated. It is also expected that the increase in pedestrian movement in the area may necessitate the installation of pedestrian crossings or signals, which will reduce the efficiency in this section of the roadway system.

  If on-street parking is eliminated, a narrower curb-to-curb cross-section could be utilized, allowing the available right-of-way to be used to augment pedestrian amenities (e.g., wider sidewalks with room available for street furniture and other enhancements).

Figure 3-1 Roadway Cross-Sections



*NOT TO SCALE

Source: Urban Crossroads

NOT TO SCALE

This page intentionally left blank.

Because of the location of the intersection of Palm Avenue and Pacific Street and right-of-way constraints within the Historic Village District, consideration may be given to alternatives to traffic signals as a method to achieve acceptable levels of service (LOS). Alternatively, the City may accept a reduced LOS to retain the historic character of the District.

- **Special Secondary Highway.** The portion of Base Line between Church Street and Greenspot Road is identified as requiring special secondary highway status. This section of roadway is designated as containing a 66-foot roadway, curb-to-curb, within a 104-foot right-of-way. This section provides more space for pedestrian and landscape improvements.

- **Secondary Highway.** Secondary highways provide more local access than major arterials, but also provide some nonlocal through-traffic service. This classification includes a four-lane roadway with a raised median and has a typical right-of-way width of 88 feet and a curb-to-curb pavement width of approximately 64 feet. Del Rosa Drive, Tippecanoe Avenue, Pacific Street, 9th Street and Church Street are examples of secondary highways.

  The alternative secondary highway cross-section does not include a raised median but enhances the opportunity to provide bike paths and/or parking lanes. Table 3.1 summarizes the different cross-section configurations for all secondary highways in the City of Highland.

Looking east on Base Line, identified as a Special Secondary Highway, at its intersection with Church Street.

Table 3.1: Secondary Highway Configuration

Roadway	Median	Bike Path	Parking Lane
Pacific Street	No	Class II	No
9th Street	No	Class III	Yes
Tippecanoe Avenue	No	Class II	No
Del Rosa Drive	Yes	No	No
Highland Avenue	Yes	Class II	No
Church Street	No	Class II	No
Orange Street	No	Class II	No

Looking east on Base Line at Central Avenue. This portion of Base Line is identified as a major highway.

- **Major Highway.** Major highways provide service to nonlocal through trips, as well as providing limited local access. Ideally, curb cuts are minimized on major arterials, although historically such access control has been difficult to achieve. Major highways are designated as four-lane, 80-foot roadways (including a 12-foot median) curb-to-curb, within 104-foot rights-of-way.

Base Line (west of Church Avenue and between Boulder Avenue and Church Street) and most of Greenspot Road are examples of major highways. Base Line, from the western City limit to Palm Avenue, will retain a 72-foot curb-to-curb cross-section. The median on Base Line from Browning Road to Church Street will have a reduced width due to local topography.

This portion of 5th Street is identified as a Primary Arterial.

- **Primary Arterial.** Primary arterials are limited access facilities which provide service to nonlocal through trips with a minimal level of direct access to adjacent land uses. They are designated as 96-foot roadways, curb-to-curb, within a minimum of 112-foot rights-of-way, and carry up to three lanes of through traffic in each direction. An example of a primary arterial is 5th Street between Palm Avenue and Boulder Avenue.

- **Modified Primary Arterial.** Boulder Avenue north of Greenspot Road is designated as a modified primary arterial. The modified primary arterial is designated as a four-lane divided roadway plus a Class I bike lane, with a typical right-of-way width of 135 feet and a curb-to-curb pavement width of approximately 98 feet with a raised median.

Typical cross-sections for roadway classifications are provided in Figure 3.1, Roadway Cross-Sections. Actual cross-sections may vary somewhat from the indicated measurement standards, but in order to provide maximum capacity, as well as right-of-way protection for landscaping, bike lanes and future roadway improvements, the typical roadway cross-sections are recommended as future minimums.

Regional Roadways

State Route 30 (SR-30) represents the backbone of Highland's circulation system and must be considered in any significant changes to land use or design.

The process to add SR-30 to Interstate 210 (I-210) began in 1998, when the designation of SR-30 was legislatively changed to California 210 (AB 2388, 1998). In 1999, the state of California submitted California 210 for inclusion in the Interstate Highway System. The American Association of State Highway and Transportation Officials (AASHTO) rejected this proposal because the freeway segments were not complete; however, the freeway will be resubmitted for approval once it is complete. The City of Highland and surrounding jurisdictions may also seek funding and approval for the freeway's expansion from four to six or more lanes to accommodate the expected increase in future traffic.

The connection of I-210 with SR-30 construction will be completed by the end of 2007. The regional long-range projections indicate that SR-30 through Highland will need to be widened to six lanes. Measure I, the

local funding source for building new freeways and widening existing routes, includes a widening project for SR-30 from I-215 to I-10. The SR-30 widening will include an additional general use lane in each direction.

Levels of Service

The available and utilized capacity of a roadway is typically characterized as "Level of Service." Level of Service (LOS) is a qualitative measure describing the efficiency of the flow of traffic. LOS includes the range of alphabetical connotations "A" through "F," used to characterize roadway operating conditions. LOS A represents the best (free flow) conditions and LOS F indicates the worst (system failure). Level of Service can also be represented as volume to capacity (V/C) ratios, or vehicle demand divided by roadway capacity. Therefore, as the ratio approaches 1.00, the roadway approaches LOS F.

The V/C ratio is the ratio of existing or projected traffic volumes to an intersection's design capacity.

Peak hours include those times of day where the traffic volumes are the highest; typically they are in the morning and evening hours when most people are traveling to and from their places of employment.

Table 3.2 describes the quality of traffic flow associated with each level of service.

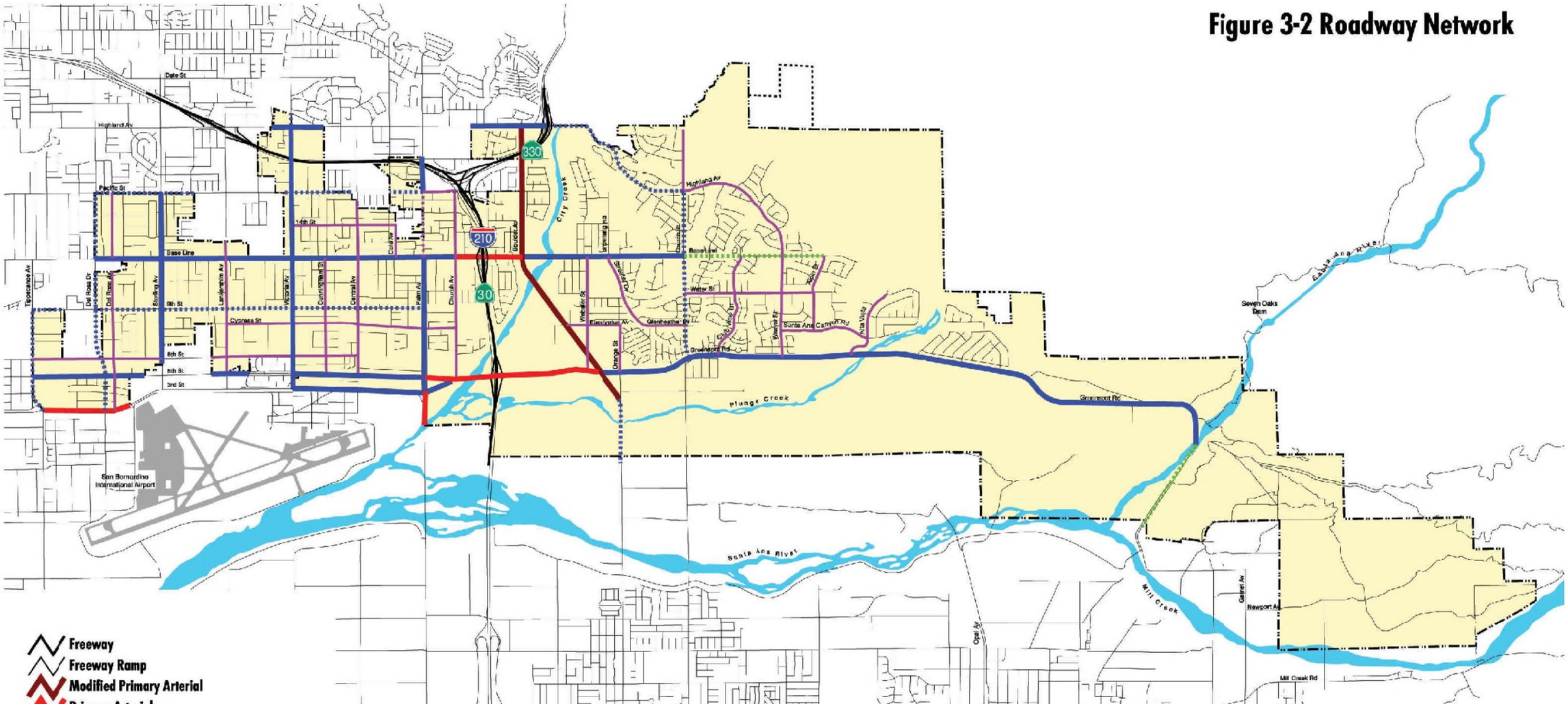
Table 3.2: Level of Service Description

Level of Service	Quality of Traffic Flow	Average Total Delay Per Vehicle (Seconds)		V/C Ratio
		Signalized	Unsignalized	
A	Represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.	0.00–10.00	0.00–10.00	0.00–0.60
B	In the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.	10.01–20.00	10.01–15.00	0.61–0.70
C	In the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.	20.01–35.00	15.01–25.00	0.71–0.80
D	Represents high-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.	35.01–55.00	25.01–35.00	0.81–0.90
E	Represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.	55.01–80.00	35.01–50.00	0.91–1.00
F	Used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount that can traverse the point. Queues form behind such locations.	80.01 and up	50.01 and up	Above 1.00

Note: The criteria used to evaluate LOS conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

This Circulation Element establishes that the LOS should be LOS D or better for major intersections in the City. For peak operating periods, LOS D is considered acceptable. Therefore, any City of Highland intersection operating at LOS "E" or "F" is considered deficient.

Figure 3-2 Roadway Network



This page intentionally left blank.

GOALS AND POLICIES

The following section identifies critical transportation issues and circulation components, maps various circulation network components, and provides goals and policies that support the City's vision of an efficient transportation system that serves all of Highland's residents, businesses and visitors.

Roadway Mobility/Transportation Demand Management

As the San Bernardino Valley and the community continue to grow, transportation demand and systems management is necessary to preserve and increase available roadway capacity. Highland must provide and maintain a roadway system with adequate capacity and acceptable levels of service to accommodate projected travel demands associated with the buildout of the Land Use Element. This can be accomplished by establishing minimum service levels for the designated roadway system and implementing Transportation Demand Management (TDM) strategies.

TDM involves the development and implementation of policies, plans and programs designed to encourage the use of a wider range of transportation alternatives, including public transit and bicycles. In addition to an emphasis on alternative travel modes such as carpooling, van pooling and mass transit, TDM can also include employee flex time as an important component that reduces peak hour travel and associated traffic congestion.

In response to state mandates, SANBAG prepared a regional Congestion Management Plan (CMP), which required City of Highland and other cities to prepare TDM ordinances or risk the loss of federal transportation funds. The City adopted its TDM ordinance in April, 1992.

GOAL 3.1

Provide a comprehensive transportation system that facilitates current and long-term circulation in and through the City.

Policies

1) Require new development proposals to ensure that all mid-block street segments operate at LOS "D" or better during the peak hours of traffic. (Note: Because of the location of the Palm Avenue/Pacific Street intersection within the Historic District, consideration will be given to alternatives to traffic signal mitigation. Alternatively, the City may elect to accept a lower LOS to retain the historic character of the District.)

2) Ensure that all intersections operate at LOS "D" or better during the peak hours of traffic.

3) Ensure that the City's street system be designed and constructed to accommodate the traffic generated by buildout of the General Plan land use designations.

4) Maintain flexibility in the cross-sections and configuration of streets within topographically rugged or environmentally sensitive areas as long as mid-block street segments and intersections operate at LOS "D" or better.

5) Design and employ traffic control measures (e.g., install traffic signals, provide access restrictions, etc.) to ensure city streets and roads function as intended.

6) Periodically update the General Plan master traffic study to maintain its relevance and correspondence to the General Plan land use designations and the design and construction of new and existing City streets.

7) Monitor the intensity of land use to keep traffic on any arterial in balance with roadway capacity.

8) Require development proposals with the potential to generate traffic volumes or other impacts not adequately evaluated in the Circulation Element and the General Plan Program EIR to prepare a traffic analysis consistent and compatible with the City's Master General Plan Traffic Model.

9) Restrict the number of access points and intersections along arterials to preserve mid block and intersection capacities and to maintain public safety.

10) Encourage major employers to reduce vehicular trips by offering incentive concepts discussed in the General Plan Circulation Element, including but not limited to reduced transit passes and preferential parking for ridesharing.

Roadway System Maintenance

A carefully planned, designed, constructed, maintained and operated street and highway system facilitates the movement of vehicles and provides safe and convenient access to various areas of the City. Roadways also need to be built with sufficient capacity to accommodate long-term growth. Maintenance of mobility, safety, convenience and efficiency are all issues that must be considered when operating a roadway system.

GOAL 3.2

Provide a well-maintained roadway system.

Policies

1) Maintain and rehabilitate all components of the circulation system, including roadways, sidewalks, bicycle facilities, pedestrian facilities and traffic signals.

2) Establish and maintain a roadways pavement management program (PMP) that sets forth budgeting, timelines and schedules for maintenance of existing roadways in the community.

3) Continue to study the need and feasibility of providing additional all-weather crossings along critical roadways, and develop an implementation plan and schedule, if appropriate.

4) Coordinate maintenance or enhancement of transportation facilities with related infrastructure improvements.

5) Develop and implement programs and policies that require additional improvements or mitigation from industries or entities that generate heavy truck traffic and pavement impacts.

Scenic Roadways

The existing roadway system is primarily designed to be an efficient circulation system to move people and goods. Enhancement and viewing of aesthetic and scenic resources were not factors which contributed to the design of the existing roadways.

Both the Santa Ana River and Seven Oaks Dam are prominent visual features along Greenspot Road in east Highland.

Scenic resources within the City and its planning area include unique visual features that provide attractive views within or from the study area. Major visual resources include topographic features, local flora, and historic buildings. In general, views of local topographic features, such as the San Bernardino Mountains or the Santa Ana River area, should be considered in any roadway design. Roadway development in the north/central part of the City must be sensitive to existing, and potentially significant, historical resources included in the Historic Village District.

Because of their importance as community resources, scenic opportunities should be improved along Boulder Avenue, Base Line and Palm Avenue. In addition to these proposed scenic routes, the following local roadways also should be considered as potential scenic routes, due to the significance of resources which can be viewed from Greenspot Road and Base Line (from Boulder Avenue to Weaver Street).

In addition, raised medians at least 10 feet wide are planned for Secondary Highways, Special Secondary Highways, Major Highways, Primary Arterials and Modified Primary Arterials. The proposed landscaped medians for the majority of the arterials are expected to beautify the City's highway system.

GOAL 3.3

Preserve and enhance uniquely scenic or special visual resource areas along appropriate routes for the enjoyment of all travelers.

Policies

1) Designate the following roadways as Scenic Highways and establish guidelines that protect visual resources in the community and allow for the development of additional recreational opportunities:

   - Boulder Avenue
   - Base Line (east of City Creek)
   - Palm Avenue
   - Greenspot Road
   - Church Street
   - Highland Avenue (east of City Creek)

2) Attractively landscape and maintain Highland's Secondary Highways, Special Secondary Highways, Major Highways, Primary Arterials, and Modified Primary Arterials and prepare/ implement distinctive streetscape improvement plans.

3) Take such actions as may be necessary to protect scenic routes, including but not limited to:

   - regulation of land use and intensity of development;
   - detailed land and site planning;
   - control of outdoor advertising;
   - careful attention to and control of grading and landscaping; and
   - careful design and maintained appearance of structures and equipment.

Pedestrian Safety

Pedestrian facilities include sidewalks, trails, walkways, bridges, crosswalks, signals, illumination and benches. In addition, the City provides crossing guard services to ensure safe routes to school for Highland's young students. These facilities and services are an important part of Highland's nonmotorized transportation network. Pedestrian facilities provide a vital link between many other modes of travel. Where such facilities exist, people will be much more likely to make shorter trips by walking rather than by automobile, and these can make up a considerable portion of short-range trips in the community. Pedestrian facilities also provide a vital link for commuters who use other transportation facilities such as buses and park and ride lots as well as those who utilize the City's recreational facilities and attend City schools.

Parkway trees and landscaping provide a pleasant, safe experience for pedestrians.

GOAL 3.4

Provide a safe circulation system.

Policies

1) Establish the local street system within developing neighborhoods through a cooperative public/private planning process.

2) Require new development to install and maintain streets within planned residential areas as private streets and in accordance with development standards set forth in the Development Code and other applicable standards and guidelines.

3) Promote the principle that streets have multiple uses and users, and protect the safety of all users.

4) Require new development to provide pedestrian paths and linkages through projects, locating linkages to avoid conflicts with motorized traffic.

5) Discourage high-speed, through traffic on local streets with appropriate traffic-calming measures (e.g., traffic enforcement, bulb-outs, lane striping, chokers, etc).

6) Design access onto major arterial streets in an orderly and controlled manner.

7) Utilize shared driveways in common areas to minimize disruptions to traffic and pedestrian/bicycle flow.

A crossing guard provides a safe street crossing at Arroyo Verde Elementary School.

8) Implement street design features such as the use of medians, bus turnouts and consolidated driveways to minimize mid-block traffic congestion.

9) Support freeway improvements that remove through traffic from local streets.

10) Provide adequate sight distances for safe vehicular movement on roadways and at intersections.

11) Encourage and improve pedestrian connections from residential neighborhoods to retail activity centers, employment centers, schools, parks, open space areas and community centers.

12) Encourage barrier-free accessibility for all handicapped residents, employees and visitors throughout the City's circulation system.

13) Support the planning of sidewalks of appropriate width to allow the provision of buffers to shield nonmotorized traffic from vehicles.

14) Add raised, landscaped medians and bulb-outs, where appropriate, to reduce exposure to cross traffic at street crossings.

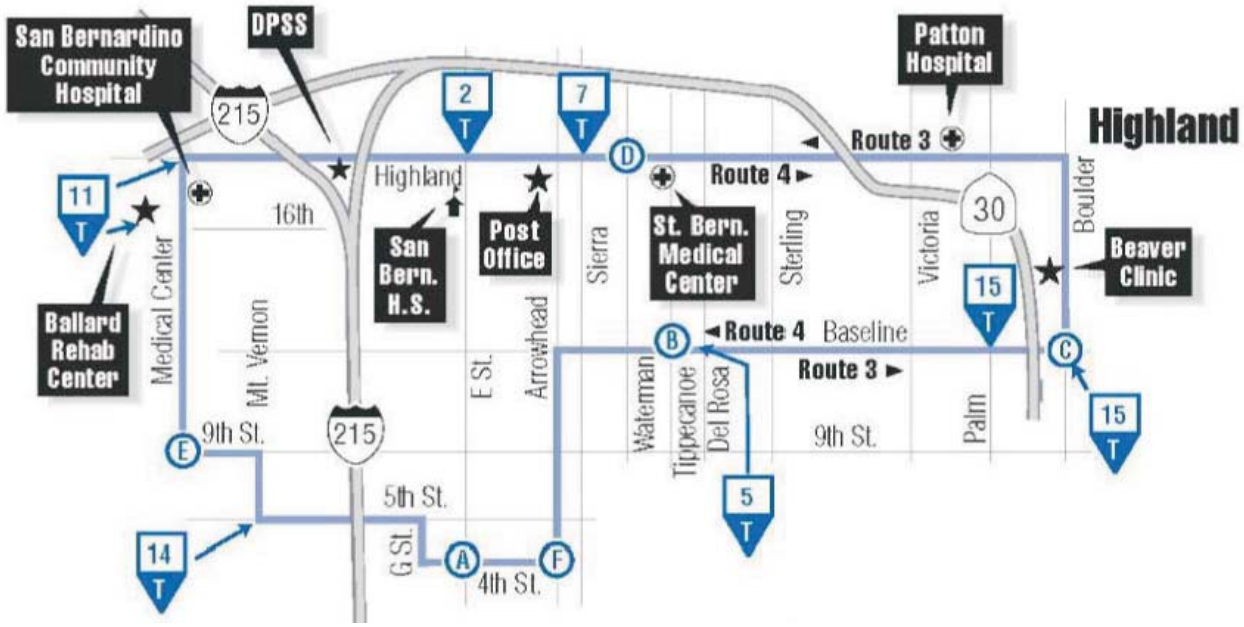
15) When feasible, walkways should include pedestrian amenities such as shade trees and/or plantings, trash bins, benches and shelters.

This OMNITRANS bus shelter on Highland Avenue provides a safe area for waiting riders.

Transit Service

Omnitrans is the public transit agency serving the San Bernardino Valley. Founded in 1976 through a joint powers agreement, Omnitrans carries over 15 million passengers each year throughout its 480-square-mile service area. The City of Highland has several OMNITRANS routes which run through the City. Existing routes are illustrated on Figure 3.3, Bus Routes. Generally, bus routes are dictated by need, which in turn is generated by land use patterns. As the City develops, it is expected that the transit system will be developed to meet the need.

Figure 3-3 Bus Routes



Source: Omnitrans.org

NOT TO SCALE

This page intentionally left blank.

GOAL 3.5

Promote bus service and paratransit improvements.

Policies

1) Continue to support the regional bus system to provide intracity service, intercity service to major employment centers, and connection to regional transportation transfer points.

2) Plan for the provision of areas within the City to be used as park-and-ride regional bus and car pool facilities.

3) Work with Omnitrans to ensure that transit services are extended to serve residents in the eastern portion of the study area.

4) Coordinate with Omnitrans to provide safe, clean and attractive bus shelters at bus stops and transfer stations.

5) Ensure accessibility of disabled persons to public transportation.

6) Investigate new opportunities to finance further transit service for the elderly, handicapped and recreational purposes.

7) Support privately funded local transit systems for commuter residents and maintain local transit systems for seniors and youth.

8) Design transit improvements to minimize impacts on other modes of travel.

Truck Routes

The City of Highland has designated a system of truck routes linking industrial areas with major roadways and freeway connections throughout the City. The east-west truck routes are Base Line and 5th Street, while the major north-south truck routes are Del Rosa Drive, Sterling Avenue, Victoria Avenue, Palm Avenue and Boulder Avenue. These truck routes accommodate commercial, industrial and mineral extraction uses and can create significant impacts on roadway deterioration, neighborhood safety, congestion and air quality. Highland's truck route system should be periodically reviewed for appropriateness and capacity in the context of continuing mineral extraction operations, expanded activity at the San Bernardino International Airport, and potential business growth along the Base Line and 5th Street Corridors.

Fifth Street is a major route for truck traffic through the City of Highland.

Implementation of the proposed Land Use Plan contained in the Land Use Element will ultimately separate industrial and heavy commercial uses from residential areas. However, the projected future development of industries and employment opportunities, and increased traffic volumes will create the need for designated truck routes for specified alignments to ensure that congestion created by trucks will be controlled to the greatest extent feasible.

Figure 3.4, Truck Routes, indicates the proposed alignments for truck route designations. Each of these alignments traverses through and provides links between designated industrial and commercial. For example, Victoria Avenue and 5th Street provide access to activities that are planned for San Bernardino International Airport. Third Street, 5th Street, Base Line and Palm Avenue provide circulation into industrial areas and provide connections to the freeway. Further improvements to or in the vicinity of the freeway interchanges (e.g., truck climbing lanes on uphill on-ramps) should also be considered.

Pavement Impact Related to Industry and Heavy Trucks

New commercial and industrial developments within the City of Highland will produce pavement impacts that are related to the heavy trucks generated by these facilities. Certain roadways with potential for heightened impacts include roads serving mining type uses (5th Street) as well as roadways likely to be impacted by the airport (5th Street, 3rd Street, Victoria Avenue and Sterling Avenue). The freeway interchange ramps will also be affected.

GOAL 3.6

Provide a circulation system that reduces conflicts between commercial trucking, private/public transportation and land use.

Policies

1) Maintain designated truck routes for use by commercial trucking that link industrial and commercial activity areas with major roadways and regional transportation routes and minimize impacts on local traffic neighborhoods.

2) Provide appropriately designed roadways for the designated truck routes that can safely accommodate truck travel.

3) Develop berms and barriers where feasible along truck routes to minimize noise impacts to sensitive land uses.

4) Provide sufficient loading areas to minimize interference with efficient traffic circulation.

5) Regulate on-street parking of trucks where necessary to discourage truck parking on primarily residential streets or where they are incompatible with adjacent land uses.

6) Conduct a study examining the interface between proposed truck routes, the complete roadway network, and adjacent land uses.

7) Evaluate truck route alternatives based on Caltrans Traffic Study guidelines.

8) Require as a part of the development review process for all new or expanding mineral extraction and all other heavy industry activities within the City, that the following information be provided:

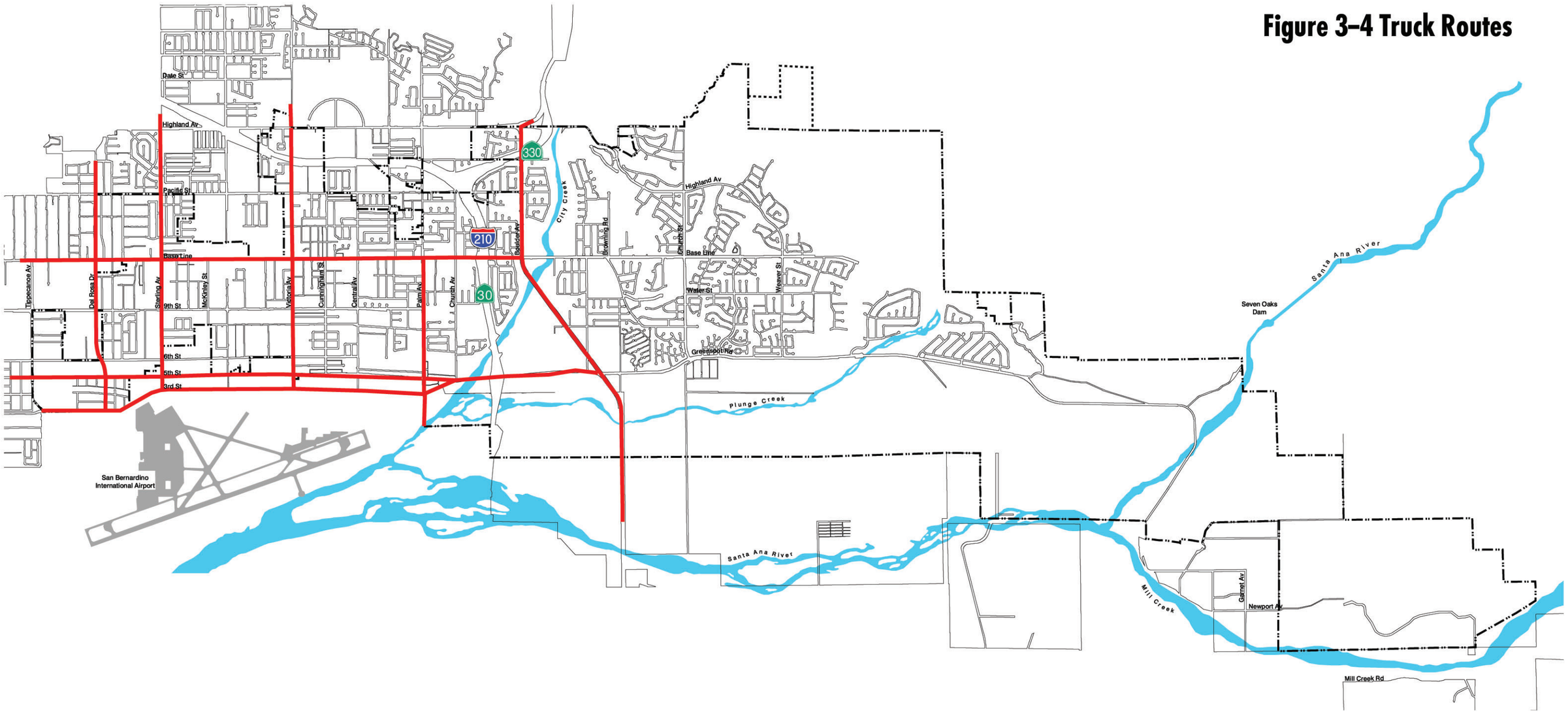
   - A detailed plan of haul roads, indicating measures that will be taken to minimize aesthetic, noise, traffic, and particulate emission impacts to the surrounding land uses;
   - A traffic analysis that indicates both the number of projected trucks and their associated potential impact to city streets;
   - A "fair-share" mitigation analysis indicating the impacts and associated maintenance costs caused by the potential generation of future truck traffic; and
   - A comprehensive mitigation program, designed to run the life of the mineral extraction activity (including reclamation) that will:
     - Cover the fair-share portion of surrounding roadway maintenance costs due to the increase in local truck activity, or
     - Provide new or appropriate improvements to existing roadway facilities which in the opinion of the City would mitigate the impacts caused by the increase in local truck traffic.

9) Work with private mining operators to establish specialized truck routes that:

   - Allow for the transport of raw and finished materials from quarries within the Santa Ana River Wash area to the Foothill Freeway on paved private haul roads;
   - Reduce, to the extent feasible, the movement of mining transport trucks on City streets; and
   - Mitigate, to the extent feasible, the noise, dust and vibration effects of such transport activities on surrounding land uses.

This page intentionally left blank.

Figure 3–4 Truck Routes



Truck Routes

City Boundary

Sphere of Influence

Source: Urban Crossroads

0' 4000'

This page intentionally left blank.

Bikeways

The City of Highland has three classifications of Bikeways: Class I Bike Paths, Class II Bike Lanes, and Class III Bike Routes. These classifications are defined below and mapped on Figure 3.5, Bikeways.

- **Class I Bike Path**. A Class I Bike Path serves corridors that are not served by streets and highways or where wide rights-of-way exist, permitting a separation from roadway traffic. These routes may serve a variety of users and provide recreational opportunities for bicycle, equestrian and pedestrian users. Class I facilities are planned on Boulder Avenue from City Creek to Plunge Creek. Class I Bike Paths should also be considered on "Old" and "New" Greenspot Road south and east of the Santa Ana River Trail System.

- **Class II Bike Lane**. Class II Bike Lanes are intended to delineate the rights-of-way assigned to bicyclists and motorists, and to provide for more predictable movements of each. Bike lanes of this class may also help accommodate bicyclists through corridors where insufficient room exists for safe bicycling on existing streets. This can be accomplished by reducing the number of lanes, prohibiting parking on bike lane streets, or striping (see Figure 3.1, Roadway Cross-Sections, for bike lane street standards). This class of bikeway links the bike paths to provide a designated system for bicycle commuting to major destination points (e.g., the Town Center, the Golden Triangle, etc.) and the regional trails system.

- **Class III Bike Route**. Class III Bike Routes are considered shared facilities serving either to provide continuity to other bicycle facilities or to designate preferred routes through high-demand corridors. Such bikeways are designated using signage along the roadway without special street striping.

This portion of Palm Avenue contains a designated Class II bicycle lane.

As opportunities for acquiring lands for bikeways and recreational resources in Highland are limited, the City will continue to look for new ways to provide more links from surrounding development to existing bikeways. Areas such as utility easements and public rights-of-way along flood control channels and rail lines provide alternatives to streets new bikeways are planned.

GOAL 3.7

Protect and encourage bicycle travel.

Policies

1) Develop a system of continuous and convenient bicycle routes to places of employment, shopping centers, schools, and other high activity areas with potential for increased bicycle use.

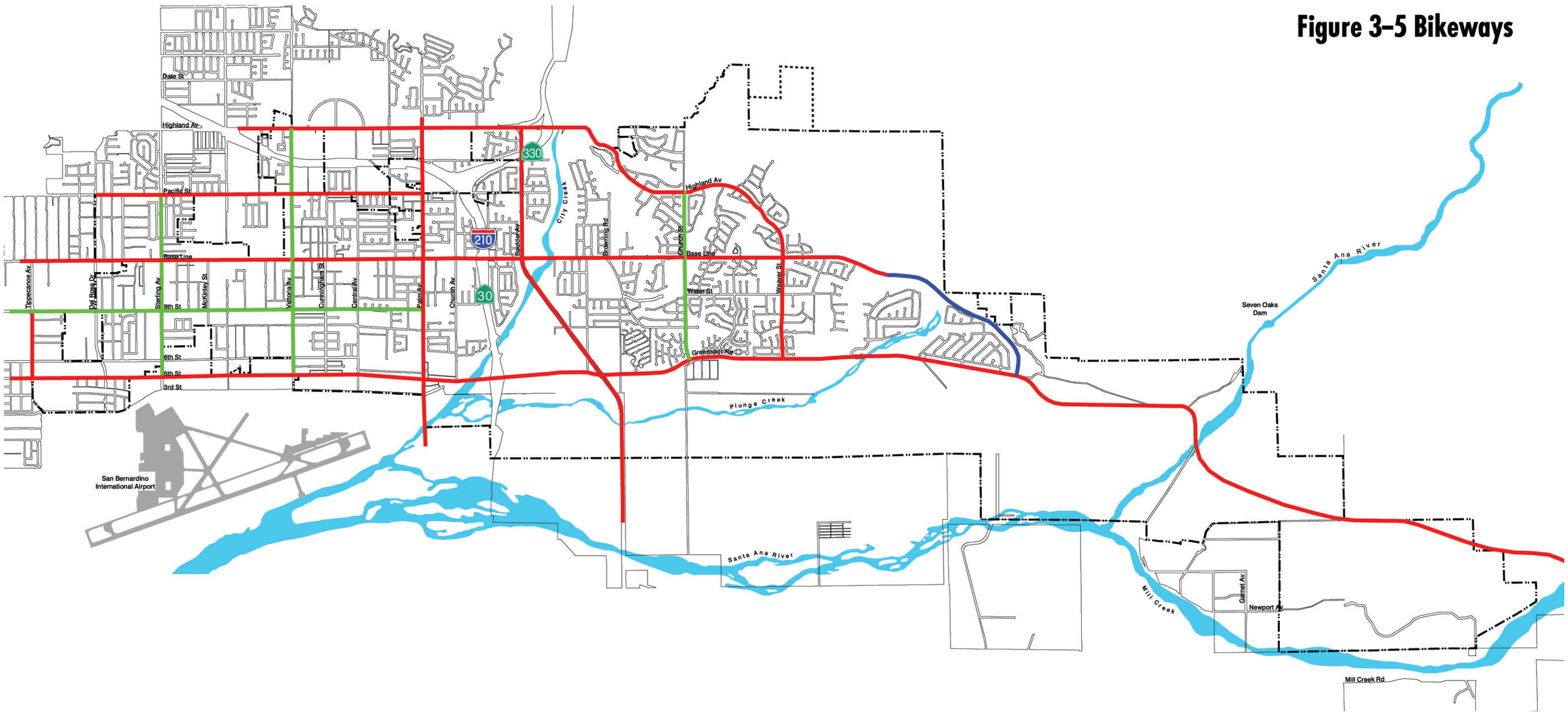
2) Encourage new development to provide reasonable and secure space for bicycle storage.

3) Provide bicycle racks at all public facilities and along major public streets.

4) Assure that local bicycle routes will complement regional systems and be compatible with routes of neighboring municipalities.

5) Provide linkages between bicycle routes and other trails, such as the Santa Ana River Trail, within the City as appropriate.

Figure 3–5 Bikeways



Class I Bike Path

Class II Bike Lane (On Street)

Class III Bike Route (Signage)

City Boundary

Sphere of Influence

Source: Urban Crossroads

0' 4000'

This page intentionally left blank.

Intergovernmental Coordination

With a freeway and an adjacent international airport, Highland plays a significant role in the regional circulation network. As such, the City must actively coordinate with a variety of regional and subregional plans and state, regional and local agencies as described in the Introduction section of this element. Some of the key issues facing Highland that will require continuing coordination include the following.

Roadway Classification Consistency with Other Agencies

San Bernardino County, the City of San Bernardino and the City of Redlands have different functional classifications for some of the roadway segments illustrated on the City of Highland proposed General Plan. The roadway segments with different functional classifications include:

- Del Rosa Drive between 3rd Street and Base Line;
- Del Rosa Avenue between 3rd Street and Pacific Street;
- Palm Avenue between Base Line and Pacific Street;
- 5th Street between Shirley Avenue and Palm Avenue;
- Base Line between Church Avenue and Boulder Avenue;
- 3rd Street between Sterling Avenue and Church Avenue; and
- Boulder Avenue between Highland Avenue and Orange Street;

Table 3.3 shows the roadway segments with different functional classifications among different jurisdictions.

Completion of I-210/SR-30

The construction connecting I-210 with SR-30 will be completed by the end of 2007. The regional long-range projections indicate that SR-30 through Highland will need to be widened to six lanes. Measure I, which has been reauthorized for 30 additional years, includes a widening project for SR-30 from I-215 to I-10. The SR-30 widening will include an additional general use lane in each direction. Further coordination with SANBAG and Caltrans will be needed in ensure the timely implementation of the I-210 and SR-30 project.

Table 3.3: General Plan Circulation Element Comparison

Street	From	To	City of Highland General Plan Designation	City of SB General Plan Designation	City of Redlands General Plan Designation	County of SB General Plan Designation
Del Rosa Drive	3rd Street	Base Line	Secondary Highway (4D)	Major Arterial (6D)	N/A	Major Highway (4D)
Del Rosa Avenue	3rd Street	Pacific Street	Collector Street (2U)	Not Shown	N/A	Secondary Highway 4U)
Palm Avenue	Base Line	Pacific Street.	Special Collector Street (2U)	Major Arterial (6D)	N/A	Major Highway (4D)
5th Street	Shirley Avenue	Palm Avenue	Major Highway (4D)	Major Arterial (6D)	N/A	Major Highway (4D)
Base Line	Church Avenue	Boulder Avenue	Primary Arterial (6D)	Major Arterial (6D)	N/A	Major Highway (4D)
3rd Street	Sterling Avenue	Church Avenue	Major Highway (4D)	Major Arterial (6D)	N/A	Not Proposed
Boulder Avenue	Highland Avenue	Orange Street	Modified Primary Arterial (6D)	Major Arterial (6D)	Minor Arterial (4D)	Major Highway (4D)

Numbers of lanes per designation are identified in parentheses, e.g., (4D); "D" or "U" indicates whether the roadway is divided or undivided.

N/A – Not Applicable

Victoria Avenue and the Potential Interchange

Identified as the major entryway into the San Bernardino International Airport and serving as the linkage between the Airport and San Manuel Indian Casino and Bingo facility, Victoria Avenue serves as a potential new interchange for I-210. Additional study is necessary to determine the feasibility of the interchange, its potential configuration and right-of-way requirements, the possible deletion of the existing ramps along Arden Avenue, and the impact to the nearby arterial roadway systems. To preserve adequate rights-of-way for the Airport entry and accommodate future traffic, Victoria Avenue is planned as a Major Highway on the Circulation Map. Future study will require coordination with Caltrans, SANBAG, the City of San Bernardino, the San Bernardino International Airport Authority, the San Manuel Band of Mission Indians, and the County of San Bernardino.

Freeway Bridges and Ramps

The Base Line bridge decks over SR-30, 5th Street under SR-30 and the ramp intersections need to be widened to accommodate additional turn lane requirements and to eliminate queuing (stacking) deficiencies at the intersection locations. Detailed evaluation of future traffic volumes and the resulting vehicle queues will necessitate widening to provide three through-lanes in each direction. These efforts will need to be coordinated with Caltrans.

The basic freeway ramp configurations ("diamond interchanges") should continue to provide acceptable operations with the recommended improvements.

GOAL 3.8

Incorporate consideration of regional transportation implications into decisions made by the City of Highland and, conversely, incorporate consideration of the local transportation implications on the City of Highland into decisions made by other local agencies, as well as into decisions made by state and federal agencies.

Policies

1) Participate in a wide range of regional transportation planning and programs to improve the capacity, efficiency and safety of the shared circulation system.

2) Participate in all regional transportation committees and regularly coordinate with other local agencies regarding their plans, programs and services that affect the quality and safety of the Highland roadway system.

3) Coordinate street system improvements and traffic signal coordination with regional transportation efforts.

4) Coordinate signal construction and timing with Caltrans improvements in and around SR-30/I-210 off- and on-ramps.

5) Coordinate transit planning with the Southern California Association of Governments, SANBAG, Omnitrans and adjacent communities.

6) Work with the Southern California Commuter Rail Council and the San Bernardino Association of Governments and Omnitrans to establish a transit connection with the Metrolink Commuter Rail System.

7) Coordinate with Caltrans, the City of San Bernardino, the County of San Bernardino, the San Bernardino International Airport Authority and the San Manuel Band of Mission Indians to study the feasibility of a new freeway interchange at Victoria Avenue and to facilitate applicable roadway improvements.

8) Coordinate with human services agencies and public schools to reduce duplicate transportation where feasible.

9) Prior to permitting connection of roadways from adjacent jurisdictions into the City of Highland, ensure that regional benefits are not achieved at the expense of Highland residents and businesses. Where a potential for negative impacts to Highland residents and business exists, ensure that the agency proposing the connection provides sufficient mitigation such that the connection is not only of regional benefit, but also of benefit to the City of Highland.

Parking

Most uses within the Highland General Plan study area provide sufficient parking facilities either on-site or on adjacent street frontages. Although the parking opportunities in the low density residential portions of the community are ample, older strip commercial and industrial uses along Base Line, 5th Street and 3rd Street often are deficient.

The Highland historic district has also been identified as being a parking-deficient area. Because of the need to create through traffic lanes on Palm Avenue, right-of-way which has traditionally been used for parking in this historic downtown area is lacking.

GOAL 3.9

Ensure adequate parking is made available to City residents, visitors, and businesses.

Policies

1) Locate new development and their access points in such a way that traffic is not encouraged to utilize local residential streets and alleys for access to the development and its parking.

2) Investigate the implementation of Variable Parking District Overlays along Base Line, Highland Historic District and other areas where appropriate, to encourage the enhancement of existing parking-deficient development.

3) Assess the adequacy of existing or proposed on- and off-street parking as needed, especially in urban and commercial areas, to ensure that an adequate supply is provided.

4) Explore strategies for the management of parking supply, which can include parking fees, metered on-street parking and staggered work schedules.

5) Develop strategies for the control of parking demand such as improved transit service, amenities for bicyclists and rideshare vehicles.

6) Develop strategies for shared parking opportunities in mixed-use and multiple-use development.

7) Encourage the use of well-designed, aesthetically enhanced parking structures as an alternative to large, expansive surface parking lots in retail and employment centers.

This page intentionally left blank.