

3 MOBILITY

3.1 INTRODUCTION

The purpose of this section is to identify current transportation conditions within the City of Citrus Heights. This information will be used to assess existing needs for all transportation system modes and to provide a context for potential mobility goals and policies, especially those related to new issues such as complete streets and climate change.

3.2 REGULATORY SETTING

STATE

The California Department of Transportation (Caltrans) provides for the mobility of people, goods, services, and information. Its mission is to work in partnership with others to provide the people of California with a safe, efficient, and effective intermodal transportation system by planning, developing, maintaining, and managing the interregional transportation system and assisting and guiding delivery of local and regional transportation services. Caltrans provides administrative support for transportation programming decisions made by the California Transportation Commission and Caltrans for state funding programs. The State Transportation Improvement Program (STIP) is a multi-year capital improvement program that sets priorities and funds transportation projects envisioned in long-range transportation plans.

REGIONAL/LOCAL

SACRAMENTO AREA COUNCIL OF GOVERNMENTS

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the six-county Sacramento region. Its members include the counties of Sacramento, El Dorado, Placer, Sutter, Yolo and Yuba as well as 22 cities. SACOG provides transportation planning and funding for the region, and serves as a forum for the study and resolution of regional issues. In addition to preparing the region's long-range transportation plan, SACOG assists in planning for transit, bicycle networks, clean air, and airport land uses. SACOG also maintains a regional model that is used for developing long-range travel forecasts.

METROPOLITAN TRANSPORTATION PLAN FOR 2035

The Metropolitan Transportation Plan (MTP) for 2035 (SACOG 2008) is a federally mandated, long-range, fiscally constrained transportation plan for the six-county area that includes El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties. Most of this area is designated a federal non-attainment area for ozone, indicating that the transportation system is required to meet stringent air quality emissions budgets to reduce

pollutant levels that contribute to ozone formation. To receive federal funding, transportation projects nominated by cities, counties, and agencies must be consistent with the MTP. Consistency is measured based on whether the project was contained in the plan and its associated computer modeling of transportation and air quality impacts. In addition, any regionally significant transportation project planned for a city or county must be included in the MTP because of its potential effects on travel demand and air pollution.

SACRAMENTO REGIONAL BLUEPRINT

The Sacramento Regional Blueprint, also known as the Blueprint Preferred Scenario, is part of SACOG's MTP for 2035. The Blueprint Preferred Scenario serves as a framework to guide local government in growth and transportation planning through 2050. It outlines a way for the region to grow through the year 2050 in a manner that promotes compact, mixed-use development and more transit choices as an alternative to low-density development.

2009/12 METROPOLITAN TRANSPORTATION IMPROVEMENT PROGRAM

The 2009/12 Metropolitan Transportation Improvement Program (SACOG 2008) is a list of transportation projects and programs that receive federal funds to be paid for and implemented over the next 3 years. The list of transportation projects that receive federal funds is subject to a federally required action, or is regionally significant. SACOG submits this document to Caltrans and amends the program on a quarterly cycle. The Metropolitan Transportation Improvement Program (MTIP) and its amendments are subject to air quality conformity analysis under federal regulations, which limit the use of federal funds for regionally significant, capacity-increasing roadway projects.

CAPITAL IMPROVEMENT PROGRAM

The Citrus Heights Capital Improvement Program (CIP) is a five-year plan which identifies capital projects and equipment purchases, provides a planning schedule and identifies financing options. The CIP allocates existing funds and anticipated revenues to rehabilitate, restore, improve and add to the City's infrastructure, including transportation, drainage, facilities, grant-funded projects, the innovation fund program and general purpose expenditures. The document, prepared by the City Manager's Office and the General Services Department based on submissions from City departments, is reviewed by the Planning Commission, and then is submitted to the City Council for adoption, along with the City's annual budget. The five-year plan does not appropriate funds, but rather functions as a budgeting and planning tool, supporting the actual appropriations that are made through adoption of the budget.

CITY OF CITRUS HEIGHTS BIKEWAY MASTER PLAN

The City's 2009 Bikeway Master Plan provides recommendations for implementing a comprehensive and coordinated bikeway system in the City to improve the quality of life for all residents and visitors.

3.3 Existing Roadway System

MAJOR ROADWAYS

The City of Citrus Heights is served by a series of east-west and north-south arterials and collector streets. Major east-west arterials include Madison Avenue, Greenback Lane, and Antelope Road. Major north-south arterials include Sunrise Boulevard, Fair Oaks Boulevard, Auburn Boulevard, San Juan Avenue, Dewey Drive, and Sylvan Road. Major collector streets include Old Auburn Road, Oak Avenue, Van Maren Lane, Mariposa Avenue, and Twin Oaks Avenue. Figure 3-1 displays the location of these roadways.

Table 3-1 summarizes the existing characteristics of each roadway within the entire right-of way including number of travel lanes, shoulder widths, and the presence of bicycle and/or pedestrian facilities. Access control for each roadway is also listed, which is defined as high, moderate, or low depending on the number of driveways, frequency of stops (traffic signals), and prevailing travel speeds. High access control facilities typically have no driveways and speeds of 45–55 miles per hour (mph). Moderate access control facilities typically have limited driveways and speeds of 35–45 mph. Low access control facilities typically have frequent driveways and speeds of 35–45 mph.

As shown, most roadways within the planning area are classified as moderate access control facilities. High access control facilities include segments of Greenback Lane and Madison Avenue, while low access control facilities include segments of Auburn Boulevard, Sunrise Boulevard, Old Auburn Road, and San Juan Avenue. Most of the two-lane collector streets, such as Oak Avenue, Van Maren Lane, Twin Oaks Avenue, and Mariposa Avenue, are also low access control facilities.

DAILY TRAFFIC VOLUMES AND OPERATIONS

Figure 3-1 displays average weekday daily traffic volumes on 29 major roadway segments within the planning area. Traffic counts were conducted at each study roadway segment location in October 2009, except the segment of Sunrise Boulevard between Old Auburn Road and Oak Avenue, which was conducted during the first week of December 2009. Segments of Greenback Lane, Madison Avenue, Antelope Road, and Sunrise Boulevard currently carry the greatest levels of traffic (over 40,000 vehicles per day). Auburn Boulevard, San Juan Avenue, Sylvan Road, Fair Oaks Boulevard, and Old Auburn Road carry between 15,000 and 30,000 vehicles per day. Existing traffic volumes on the study roadway segments are generally lower than those collected for the General Plan in 1998 (an overall average of approximately 8% lower Citywide). The greatest reductions in traffic volume

**Table 3-1:
Existing Roadway Characteristics**

Roadway	From	To	Travel Lanes	Access Control ¹	Shoulder Widths	Speed Limit	Sidewalk Coverage ²	Bicycle Facilities ²
Auburn Boulevard	Greenback Lane	Van Maren Lane	4	Moderate	4 ft.	40 mph	Sidewalks on both sides of street	Existing Class II lanes
	Van Maren Lane	Sylvan Road	4	Moderate	4 ft.			None
	Old Auburn Road	Antelope Road	4	Low	4 ft.			
	Antelope Road	Twin Oaks Avenue	4	Low	4 ft.			
Sunrise Boulevard	Madison Avenue	Greenback Lane	6	Moderate	2–4 ft.	40 mph	Sidewalks on both sides of street but scattered missing segments on east and west side of street north of Greenback Lane	None
	Greenback Lane	Woodmore Oaks Drive	4	Moderate	6 ft.			Existing Class II lanes
	Woodmore Oaks Drive	Oak Avenue	4	Moderate	6 ft.			
	Oak Avenue	Old Auburn Road	4	Moderate	8 ft.			
	Old Auburn Road	Antelope Road	4	Low	6 ft.			
	Antelope Road	Twin Oaks Avenue	4	Moderate	6 ft.			
Fair Oaks Boulevard	Madison Avenue	Greenback Lane	4	Moderate	6 ft.	45 mph	Scattered missing sidewalk segments on east and west side of street north of Greenback Lane	None
	Greenback Lane	Woodmore Oaks Drive	2–4	Moderate	6 ft.			Class II lanes
	Woodmore Oaks Drive	Old Auburn Road	2	Moderate	6 ft.			None
San Juan Avenue	South City Limits	Greenback Lane	4	Low	3–6 ft.	40 mph	Scattered missing segments on east side	Existing Class II lanes
Sylvan Road	Greenback Lane	Auburn Boulevard	4	Moderate	6–8 ft.	40 mph	Scattered missing segments on east side	Existing Class II lanes
Van Maren Lane	Greenback Lane	Auburn Boulevard	4	Moderate	3–6 ft.	35 mph	Scattered missing sidewalk segments on east and west side of street	Class II lanes for portion of roadway
	Auburn Boulevard	Antelope Road	2	Low	6–10 ft.			

**Table 3-1:
Existing Roadway Characteristics**

Roadway	From	To	Travel Lanes	Access Control ¹	Shoulder Widths	Speed Limit	Sidewalk Coverage ²	Bicycle Facilities ²
Greenback Lane	West City Limits	Auburn Boulevard	6	High	4–6 ft.	40 mph east of Indian River Drive	Sidewalks on both sides of street	Class II lanes from West City limits to Mariposa Avenue
	Auburn Boulevard	Dewey Drive	6	Moderate	4 ft.			
	Dewey Drive	San Juan Avenue	6	Moderate	2–4 ft.			
	San Juan Avenue	Sunrise Boulevard	6	Moderate	2–4 ft.			
	Sunrise Boulevard	Fair Oaks Boulevard	6	Moderate	2–4 ft.			
Antelope Road	West City Limits	Interstate 80	6	Moderate	6–8 ft.	40 mph	Scattered missing sidewalk segments on north and south side of street east of Van Maren Lane	Existing Class II lanes on various segments
	Interstate 80	Van Maren Lane	4	Moderate	3–6 ft.			
	Van Maren Lane	Auburn Boulevard	4	Moderate	3–6 ft.			
	Auburn Boulevard	Sunrise Boulevard	4	Moderate	3–6 ft.			
Old Auburn Road	Sylvan Road	Sunrise Boulevard	2	Low	4–8 ft.	35 mph	Scattered sidewalk segments missing on north and south side of roadway	Class II lanes Sunrise Blvd. to Fair Oaks Blvd.
	Sunrise Boulevard	Antelope Road	2	Moderate	2–4 ft.			
	Antelope Road	Fair Oaks Boulevard	4	Moderate	2–4 ft.			
	Fair Oaks Boulevard	North City limits	2	Moderate	2–4 ft.			
Madison Avenue	West City Limits	Sunrise Boulevard	6	High	6–8 ft.	45 mph	Sidewalks on both sides of street	None
	Sunrise Boulevard	East City Limits	5	High		50 mph		
Oak Avenue	Sunrise Boulevard	East City Limits	2	Low	6–10 ft.	40 mph	Scattered sidewalk segments missing on north and south side of roadway	Existing Class II lanes
Twin Oaks Ave.	Auburn Boulevard	Old Auburn Boulevard	2	Low	Varies	25 mph	Missing sidewalk on both sides of street west of Garry Oak Drive	Class II lanes east of Garry Oak Drive

Notes:

¹ Access control is defined as Low, Moderate, or High depending on the number of driveways, frequency of stops, and prevailing travel speeds (refer to previous page for more detailed definitions).

² More detailed descriptions of existing/proposed pedestrian and bicycle facility locations are provided in Section 3.4.

Source: Fehr & Peers Associates 2009

counts are on Sunrise Boulevard (approximately 30% lower between Greenback Lane and Old Auburn Road) and Greenback Lane (approximately 16% lower between the west City limits and Dewey Drive). The overall lower traffic volumes are likely a function of the current economic recession and related unemployment rate and are consistent with general traffic trends in the greater Sacramento area.

Figure 3-1 also illustrates the existing vehicle Level of Service (LOS) on each roadway based on daily traffic volume capacity thresholds. LOS is a term that describes the operating performance of a facility from a driver's perspective and is reported on a scale from A to F. LOS A represents driving conditions that are not impeded by other traffic and represents low levels of roadway capacity utilization. On the other end of the spectrum, LOS F represents heavy or full utilization of roadway capacity and can have operations where traffic speeds are substantially reduced from free-flow conditions. Daily volume thresholds are used to identify the potential need to expand roadways based on the City's LOS threshold. Once the threshold is exceeded, the City will determine whether roadway expansions should be considered. The decision to expand roadway capacity should also consider the perspective of other users such as bicyclists and pedestrians and objectives related to environmental protection. Policy 29.1 in the City's first General Plan established an LOS D threshold, which would not result in full utilization of roadway capacity and could result in adverse effects on bicyclists and pedestrians. Policy 29.1 in the proposed General Plan update establishes a Complete Streets policy with an LOS E threshold. Exceptions to the LOS E threshold are allowed for certain roadway segments. New trips added by proposed projects to exempt roadways must be mitigated, but exempt roadways or intersections cannot be widened to add capacity. Table 3-2 summarizes the capacity thresholds for each access control type.

Table 3-2: Roadway Segment Daily Volume Thresholds						
Roadway Type	Number of Lanes	Daily Volume Threshold				
		LOS A	LOS B	LOS C	LOS D	LOS E
Low Access Control	2	9,000	10,500	12,000	13,500	15,000
	4	18,000	21,000	24,000	27,000	30,000
	6	27,000	31,500	36,000	40,500	45,000
Moderate Access Control	2	10,800	12,600	14,400	16,200	18,000
	4	21,600	25,200	28,800	32,400	36,000
	6	32,400	37,800	43,200	48,600	54,000
High Access Control	2	12,000	14,000	16,000	18,000	20,000
	4	24,000	28,000	32,000	36,000	40,000
	6	36,000	42,000	48,000	54,000	60,000
Freeway	6	2,000	64,800	92,400	111,600	120,000
	8	56,000	86,400	123,200	148,800	160,000
Source: Sacramento County Traffic Impact Guidelines 2008						

As shown in Figure 3-1 and Table 3-3, the following roadway segments currently operate at LOS F on a daily volume basis:

- ▶ Antelope Road – Interstate 80 to Van Maren Lane
- ▶ Sunrise Boulevard – Greenback Lane to Woodmore Oaks Drive and Old Auburn Road to Antelope Road
- ▶ Old Auburn Road – Sylvan Road to Mariposa Avenue

The following roadway segments operate at LOS E on a daily basis:

- ▶ Van Maren Lane – Auburn Boulevard to Antelope Road
- ▶ Sunrise Boulevard – Antelope Road to Twin Oaks Avenue

The remainder of the studied roadway segments operate at LOS D or better.

MAJOR INTERSECTIONS

PEAK HOUR TRAFFIC VOLUMES AND OPERATIONS

The traffic analysis for intersection locations in the planning area is based on weekday peak hour conditions to account for the hour of the day that experiences the greatest levels of traffic. Generally, the PM peak hour (between 4:00 – 6:00 PM) has greater traffic volumes than the morning peak hour (between 7:00 – 9:00 AM), which was verified by reviewing the daily traffic counts conducted on roadway segments. Therefore, the PM peak hour was considered the governing peak period as a basis for the intersection analysis. Figures 3-2A and 3-2B display PM peak hour traffic volumes at 20 major intersections within the planning area, including the ramp terminal intersections at the I-80/Antelope Road interchange. Traffic counts were conducted at each study intersection in October 2009.

Figures 3-2A and 3-2B also display the existing lane configurations and traffic control devices at each intersection. Each intersection is currently signalized. Many other intersections in the City are also controlled by traffic signals as shown in Figure 3-2C. As of 2010, Citrus Heights has 62 traffic signals, including 2 fire station signals, 3 pedestrian signals, and 4 flasher/beacons. Four traffic signals are located along the City of Citrus Heights/Sacramento County border along Madison Avenue, but are maintained by Sacramento County (three of these County-maintained signals include remote Closed Captioned Television (CCTV) cameras. Figure 3-2C also shows select roadway segments where traffic signals are operated in a coordinated fashion. The coordinated operation is part of the City's intelligent transportation system (ITS) architecture, which is intended to help the City manage transportation network operations. Specific segments under coordinated signal control include segments of Madison Avenue, Sunrise Boulevard (from Madison Avenue to Arcadia Drive), and the entire

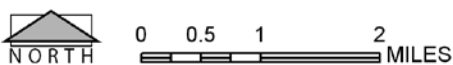
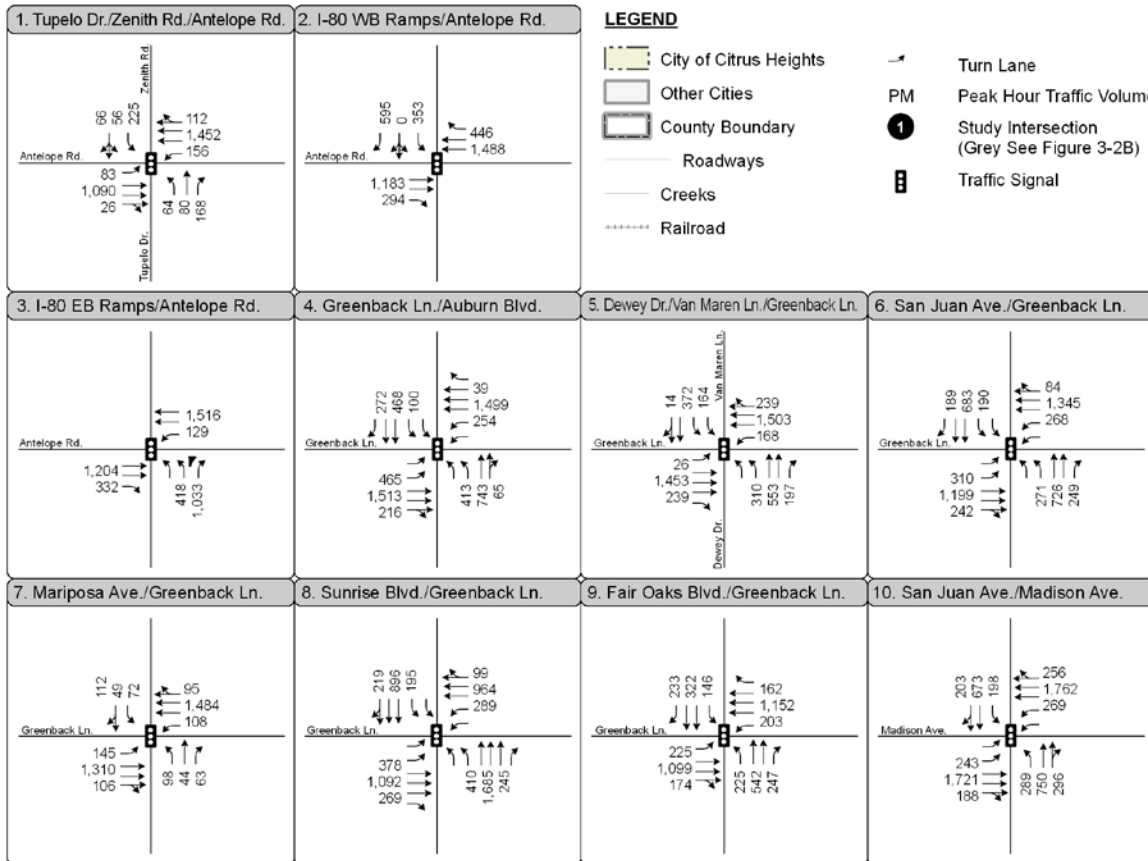
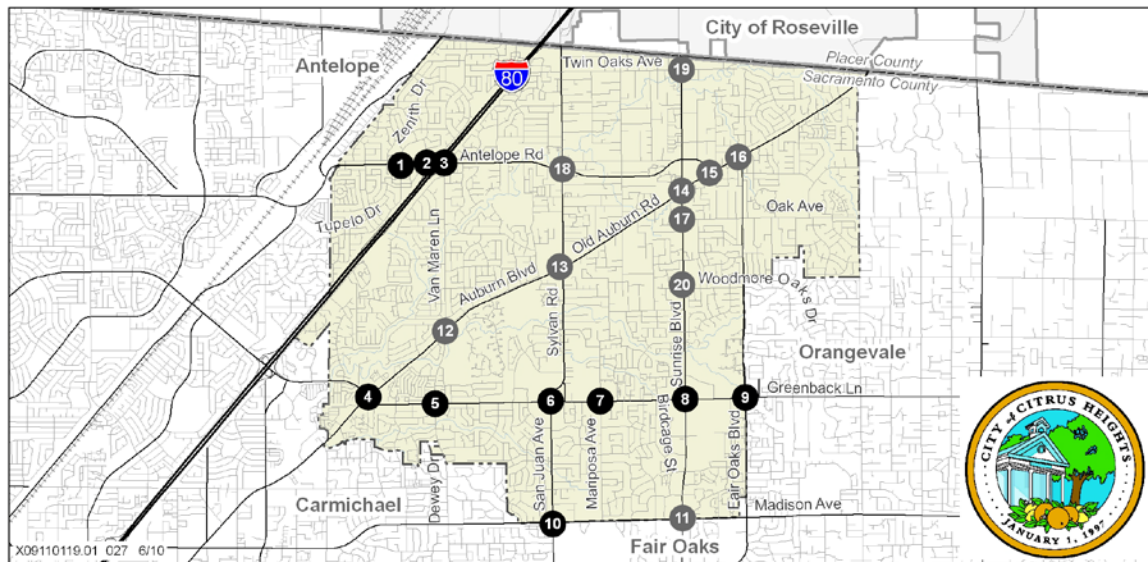


Average Daily Traffic Volumes and Level of Service

Figure 3-1

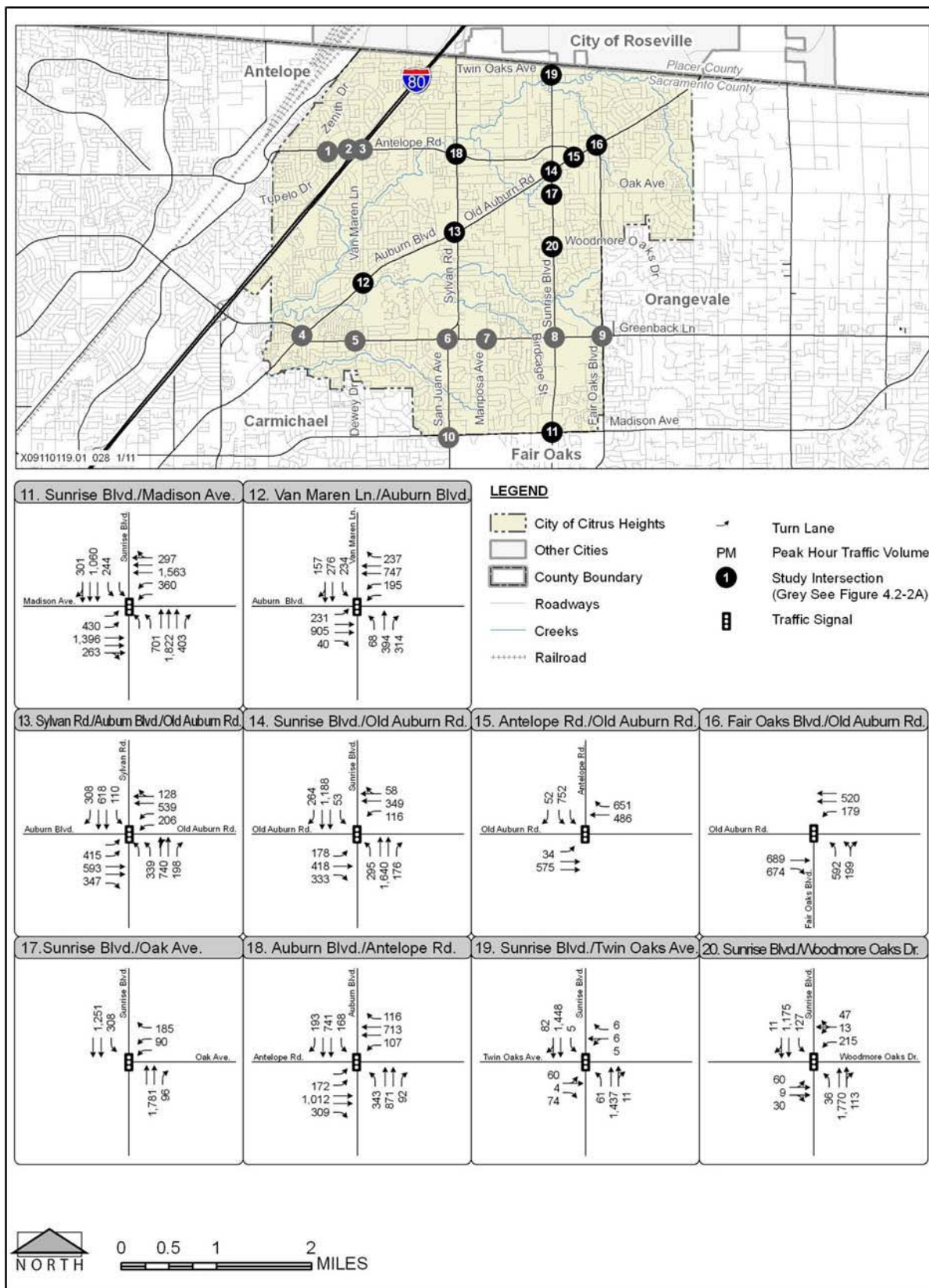
**Table 3-3.
Existing Roadway Level of Service (2009)**

Location	Average Volume	Classification	Existing LOS
1. Twin Oaks Avenue – between Mariposa Avenue and Sunrise Boulevard	3,200	2 Lane Low Access Control	A
2. Antelope Road – between City limits and Interstate 80	41,200	6 Lane Moderate Access Control	C
3. Antelope Road – between Interstate 80 and Van Maren Lane	43,200	4 Lane Moderate Access Control	F
4. Antelope Road – between Van Maren Lane and Auburn Boulevard	29,200	4 Lane Moderate Access Control	D
5. Antelope Road – between Mariposa Avenue and Sunrise Boulevard	22,400	4 Lane Moderate Access Control	B
6. Auburn Boulevard – between Greenback Lane and Van Maren Lane	23,900	4 Lane Moderate Access Control	B
7. Auburn Boulevard – between Van Maren Lane and Sylvan Road	25,800	4 Lane Moderate Access Control	C
8. Auburn Boulevard – between Old Auburn Road and Antelope Road	26,700	4 Lane Low Access Control	D
9. Auburn Boulevard – between Antelope Road and Twin Oaks Avenue	24,300	4 Lane Low Access Control	D
10. Auburn Boulevard – just north of Twin Oaks Avenue	27,000	4 Lane Low Access Control	D
11. Old Auburn Road – between Sylvan Road and Mariposa Avenue	18,200	2 Lane Low Access Control	F
12. Old Auburn Road – east of Fair Oaks Boulevard	14,300	2 Lane Moderate Access Control	C
13. Greenback Lane – between City limits and Auburn Boulevard	52,400	6 Lane High Access Control	D
14. Greenback Lane – between Auburn Boulevard and Dewey Drive	40,600	6 Lane Moderate Access Control	C
15. Greenback Lane – between Dewey Drive and San Juan Drive	43,600	6 Lane Moderate Access Control	D
16. Greenback Lane – between Mariposa Avenue and Sunrise Boulevard	43,500	6 Lane Moderate Access Control	D
17. Greenback Lane – between Sunrise Boulevard and Fair Oaks Boulevard	34,900	6 Lane Moderate Access Control	B
18. Madison Avenue – between San Juan Avenue and Mariposa Avenue	47,500	6 Lane High Access Control	C
19. Madison Avenue – between Sunrise Boulevard and Fair Oaks Boulevard	38,600	5 Lane High Access Control	C
20. San Juan Avenue – north of Madison Avenue	23,500	4 Lane Low Access Control	C
21. Sylvan Road - between Greenback Lane and Auburn Boulevard	28,400	4 Lane Moderate Access Control	C
22. Sunrise Boulevard – between Madison Avenue and Greenback Lane	44,800	6 Lane Moderate Access Control	D
23. Sunrise Boulevard – between Greenback Lane and Woodmore Oaks Drive	38,400	4 Lane Moderate Access Control	F
24. Sunrise Boulevard – between Oak Avenue and Old Auburn Road	31,000	4 Lane Moderate Access Control	D
25. Sunrise Boulevard – between Old Auburn Road and Antelope Road	37,300	4 Lane Low Access Control	F
26. Sunrise Boulevard – between Antelope Road and Twin Oaks Avenue	34,700	4 Lane Moderate Access Control	E
27. Fair Oaks Boulevard – between Greenback Lane and Woodmore Oaks Drive	16,800	3 Lane Moderate Access Control	B
28. Oak Avenue – between Sunrise Boulevard and Fair Oaks Boulevard	7,700	2 Lane Low Access Control	A
29. Van Maren Lane – between Auburn Boulevard and Interstate 80	13,600	2 Lane Low Access Control	E
Source: Fehr and Peers Associates, 2009			



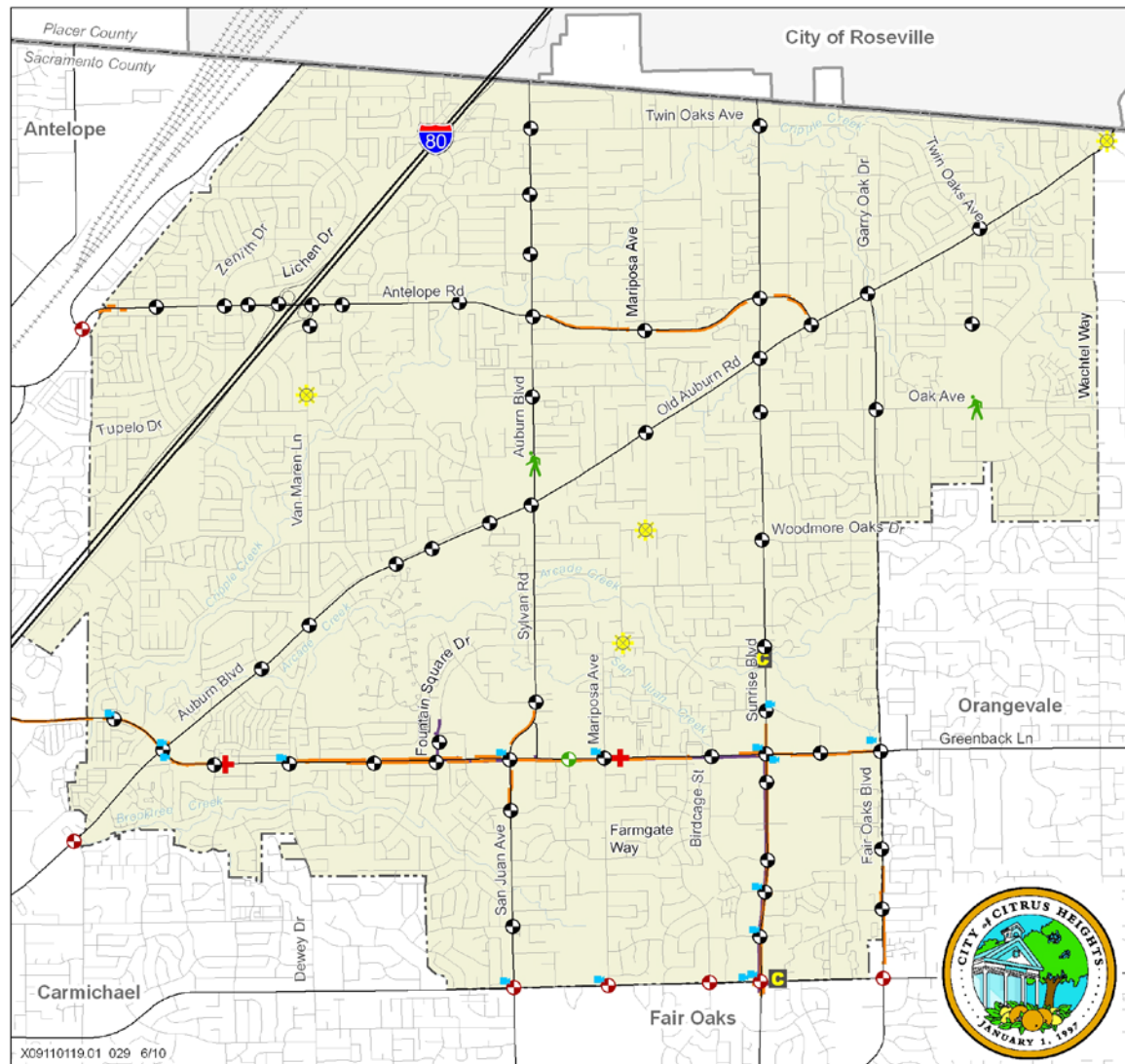
Peak Hour Traffic Volumes and Lane Configurations

Figure 3-2A



Peak Hour Traffic Volumes and Lane Configurations

Figure 3-2B



LEGEND

- Traffic Signal
- Traffic Signal (Maintained by Sacramento County)
- Traffic Signal (Mid-Block 2 Automobile Movements)
- Fire Station Signal
- CCTV
- Changeable Message Sign
- Traffic Control Center
- Flasher
- Pedestrian Signal
- Copper Cable Interconnect
- Fiber Optics Interconnect
- Fiber Optics (for Cameras Only)
- City of Citrus Heights
- County Boundary
- Creeks
- Railroad
- Other Cities

Other ITS Notes

- ITS system recently upgraded from Sacramento County VMS to ATMS system using NAZTEC software
- Signal coordination is "traffic responsive" along Greenback Lane and Sunrise Boulevard (Arcadia Drive to Uplands Way)

Existing ITS Deficiencies

- Traveler information and cabinet upgrades needed
- Bicycle detectors needed at specific locations



0 0.25 0.5 1 MILES

Existing Intersection Controls and ITS Elements

Figure 3-2C

segment of Greenback Lane. Other elements of the City’s ITS architecture shown on Figure 3-2C are listed below.

- ▶ A traffic operations center capable of monitoring and controlling traffic signals throughout the City
- ▶ Twelve remote CCTV cameras mounted on signal poles for operations observation and incident detection
- ▶ One permanent changeable message sign (CMS) with a central control center

Peak hour intersection operations were evaluated by computing the vehicle LOS at each study intersection. LOS at intersections is also based on a driver’s perspective and is measured based on the delay experienced at the intersection. The study intersections were analyzed using the methodology contained in the *Highway Capacity Manual* (Transportation Research Board 2000). This methodology computes the average control delay on an intersection-wide basis for signalized locations and compares the results to the thresholds shown in Table 3-4 to determine the LOS.

Table 3-4: Intersection Level of Service Thresholds		
Level of Service	Description	Average Control Delay ¹
		Traffic Signal
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	≤ 10
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10 to 20
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20 to 35
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35 to 55
E	Operations with high delay values indicating poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55 to 80
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80
Note: 1. Measured in seconds per vehicle Source: Highway Capacity Manual (Transportation Research Board 2000)		

Figure 3-3 displays the existing PM peak hour LOS and average control delay (in seconds per vehicle) at each intersection. The LOS is a function of many factors, including: traffic volumes, number of lanes, signal timing, heavy vehicle traffic, pedestrian activity, and lane widths.

As shown in Figure 3-3 and Table 3-5, the following intersection currently operates at LOS F during the PM peak hour:

- ▶ Madison Avenue/Sunrise Boulevard

The following five intersections operate at LOS E during the PM peak hour:

- ▶ Madison Avenue/San Juan Avenue
- ▶ Greenback Lane /Sunrise Boulevard
- ▶ Greenback Lane /Fair Oaks Boulevard
- ▶ Auburn Boulevard/Antelope Road
- ▶ Sunrise Boulevard/Old Auburn Road

The remaining studied intersections operate at LOS D or better during the PM peak hour.

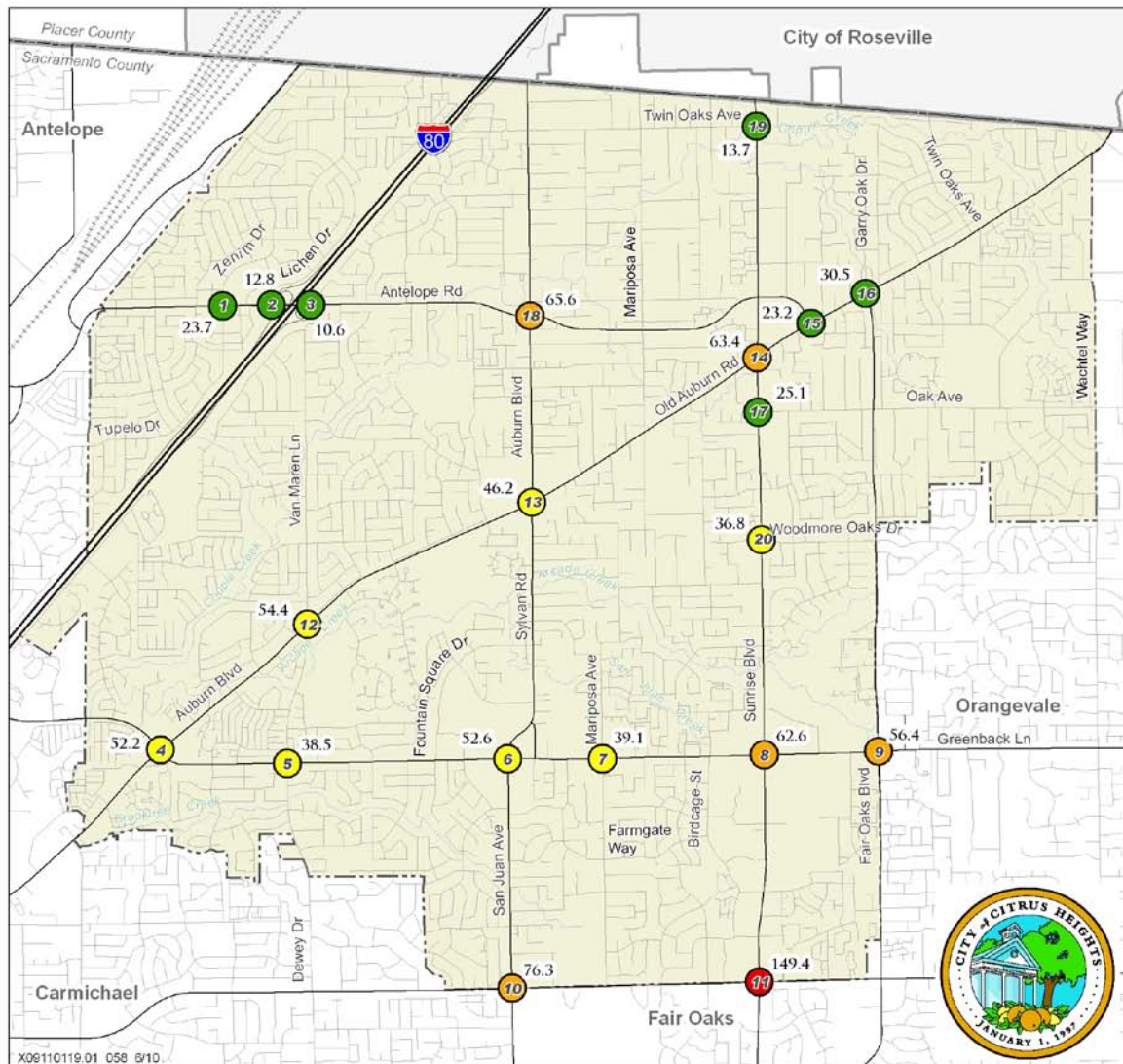
ACCIDENT HISTORY

The most recent 3-year accident history of the majority of study intersections was obtained from the City of Citrus Heights Police Department. Accident data for the I-80/Antelope Road eastbound and westbound ramp terminal intersections was obtained from the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS). Figure 3-4 and Table 3-6 identify the total number of accidents involving vehicles, bicyclists, and pedestrians at each study intersection during this 3-year period.¹

In addition, the average rate of accidents per million vehicles (per MV) entering each study intersection was calculated. According to *2008 Highway Safety Improvement Guidelines* (Caltrans 2008), signalized intersections located in California suburban areas have an average accident rate of 0.58 accidents per MV entering the intersection. Five study intersections have accident rates that are higher than the statewide average accident rate (at least 20 percent higher), which are:

- ▶ Greenback Lane/Auburn Boulevard (0.94 accidents per MV – approximately 21 accidents per year)
- ▶ Greenback Lane/San Juan Avenue/Sylvan Road (0.76 accidents per MV – approximately 16 accidents per year)
- ▶ Greenback Lane/Mariposa Avenue (0.72 accidents per MV – approximately 10 accidents per year)
- ▶ Greenback Lane/Sunrise Boulevard (0.73 accidents per MV – approximately 18 accidents per year)

¹ Accident data was collected at each intersection from October 2006 to October 2009. Accidents that occurred within 200 feet of the intersection were assumed to be intersection-related.



LEGEND

PM Peak Hour Level of Service

- A-C
- D
- E
- F

1 Intersection Number

1.0 PM Peak Hour Intersection Delay (sec/veh)

- City of Citrus Heights
- County Boundary
- Creeks
- Railroad
- Other Cities



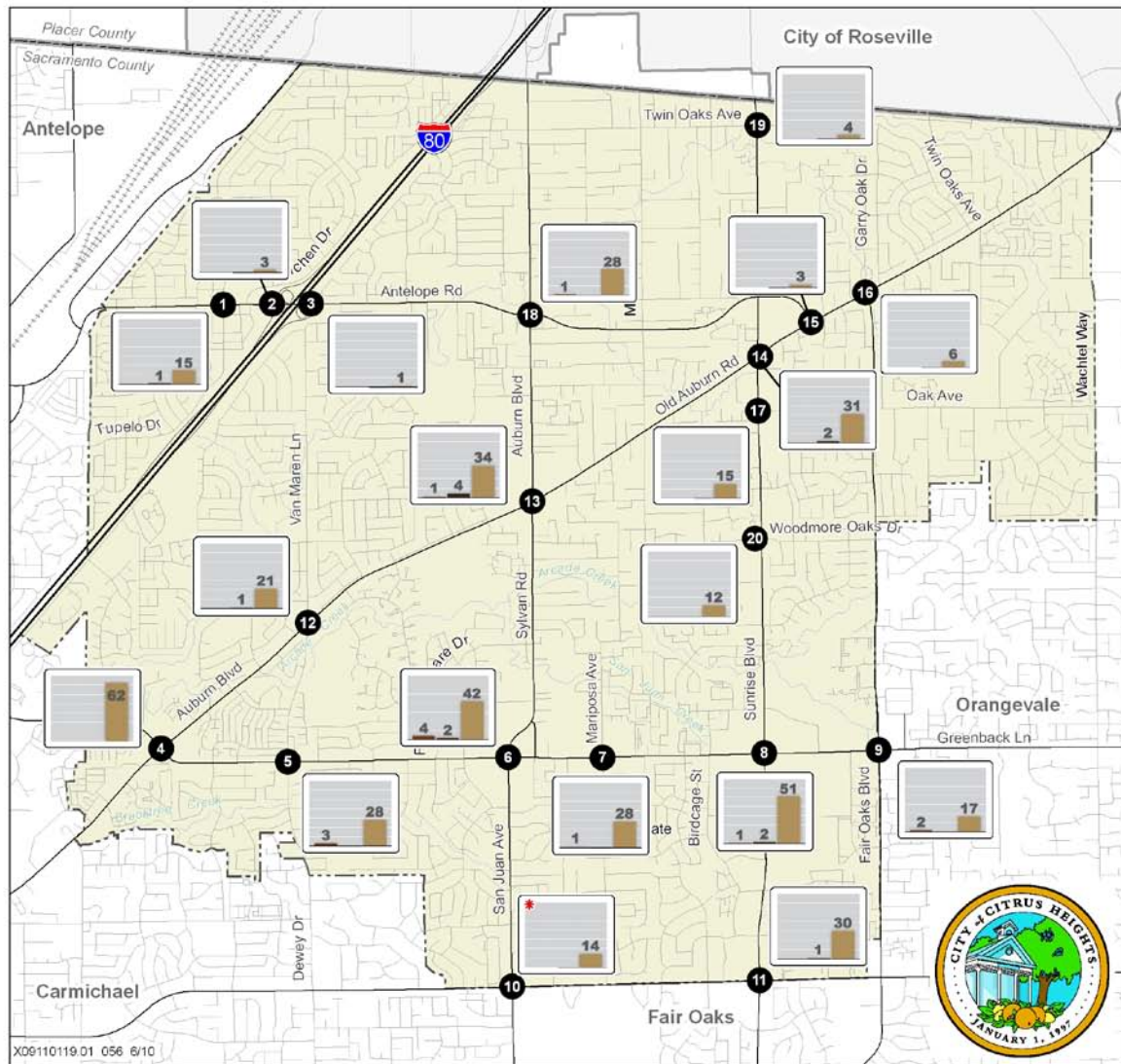
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Existing Peak Hour Delay and Level of Service

Figure 3-3

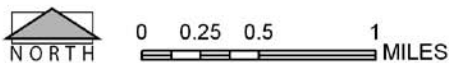
**Table 3-5:
Existing Intersection Operations (2009)**

Intersection	PM Peak Hour Control Delay	LOS
1. Tupelo Drive/Zenith Drive/Antelope Road	23.7	C
2. Interstate 80/Antelope Road Eastbound ramps	12.8	B
3. Interstate 80/Antelope Road Westbound ramps	10.6	B
4. Greenback Lane/Auburn Boulevard	52.2	D
5. Greenback Lane/Dewey Drive	38.5	D
6. Greenback Lane/San Juan Avenue	52.6	D
7. Greenback Lane/Mariposa Avenue	39.1	D
8. Greenback Lane/Sunrise Boulevard	62.6	E
9. Greenback Lane/Fair Oaks Boulevard	56.4	E
10. Madison Avenue/San Juan Avenue	76.3	E
11. Madison Avenue/Sunrise Boulevard	149.4	F
12. Auburn Boulevard/Van Maren Lane	54.4	D
13. Auburn Boulevard/Sylvan Road	46.2	D
14. Old Auburn Road/Sunrise Boulevard	63.4	E
15. Old Auburn Road/Antelope Road	23.2	C
16. Old Auburn Road/Fair Oaks Boulevard	30.5	C
17. Oak Avenue/Sunrise Boulevard	25.1	C
18. Antelope Road/Auburn Boulevard	65.6	E
19. Twin Oaks Avenue/Sunrise Boulevard	13.7	B
20. Woodmore Oaks Drive/Sunrise Boulevard	36.8	D
Source: Fehr & Peers Associates, 2009		



LEGEND

- ① Study Intersection
- 4 Number of Collisions
- Vehicle Vs. Pedestrian Collisions
- Vehicle Vs. Bicyclist Collisions
- Vehicle Vs. Vehicle Collisions
- * One Fatality
- City of Citrus Heights
- County Boundary
- Creeks
- Other Cities



Intersection Accident History

Figure 3-4

**Table 3-6:
Intersection Accident History (2006–2009)**

Intersection	Number of Vehicle- Pedestrian collisions	Number of Vehicle- Bicyclist collisions	Total Number of Collisions	Accidents/Year	Exposure (Accident per million vehicles entering intersection)
1. Tupelo Drive/Zenith Drive/Antelope Road	0	1	16	5.3	0.41
2. Interstate 80/Antelope Road Eastbound ramps	0	0	3	1	0.06
3. Interstate 80/Antelope Road Westbound ramps	0	0	1	0.3	0.02
4. Greenback Lane/Auburn Boulevard	0	0	62	20.7	0.94
5. Greenback Lane/Dewey Drive	3	0	31	10.3	0.54
6. Greenback Lane/San Juan Avenue	4	2	48	16	0.76
7. Greenback Lane/Mariposa Avenue	1	0	29	9.7	0.72
8. Greenback Lane/Sunrise Boulevard	1	2	54	18	0.73
9. Greenback Lane/Fair Oaks Boulevard	2	0	19	6.3	0.37
10. Madison Avenue/San Juan Avenue	0	0	14	4.7	0.19
11. Madison Avenue/Sunrise Boulevard	0	1	31	10.3	0.32
12. Auburn Boulevard/Van Maren Lane	0	1	22	7.3	0.53
13. Auburn Boulevard/Sylvan Road	1	4	39	13	0.78
14. Old Auburn Road/Sunrise Boulevard	0	2	33	11	0.59
15. Old Auburn Road/Antelope Road	0	0	3	1	0.11
16. Old Auburn Road/Fair Oaks Boulevard	0	0	6	2	0.19
17. Oak Avenue/Sunrise Boulevard	0	0	15	5	0.37
18. Antelope Road/Auburn Boulevard	1	0	29	9.7	0.55
19. Twin Oaks Avenue/Sunrise Boulevard	0	0	4	1.3	0.11
20. Woodmore Oaks Drive/Sunrise Boulevard	0	0	12	4	0.3
Source: Fehr and Peers Associates, City of Citrus Heights, and California Highway Patrol, 2009 Note: Based on accident data collected from October 2006 to October 2009					

- ▶ Auburn Boulevard/Sylvan Road/Old Auburn Road (0.78 accidents per MV – approximately 13 accidents per year)

A review of individual accident reports indicates that most accidents involved rear-end, sideswipe, or broadside collisions within the intersection or on the Greenback Lane approaches. Many of these accidents are attributable to stop-and-go traffic conditions on Greenback Lane, which may decline with the October 2009 installation of a new coordinated signal system on Greenback Lane that is intended to improve traffic flow stability.

OTHER TRANSPORTATION ISSUES

TRUCK ROUTES

There are no posted truck routes on any of the major roadways within the planning area. However, trucks most frequently use Sunrise Boulevard, Greenback Lane, Madison Avenue, Antelope Road, and Auburn Boulevard.

EMERGENCY SERVICE ROUTES

Fire stations are located within the City of Citrus Heights on Greenback Lane east of Auburn Boulevard, Greenback Lane east of Sylvan Road, Oak Avenue east of Fair Oaks Boulevard, and Auburn Boulevard north of Antelope Road. Mercy San Juan Hospital is located west of Dewey Drive between Greenback Lane and Madison Avenue. The police station is located at City Hall (Fountain Square Drive) between Greenback Lane and Stock Ranch Road. Given the locations of the police station, fire stations, and hospital, emergency service vehicles most frequently use Sunrise Boulevard, Greenback Lane, Madison Avenue, Dewey Drive, Oak Avenue, and Auburn Boulevard.

NEIGHBORHOOD TRAFFIC ISSUES

The City of Citrus Heights adopted a Neighborhood Traffic Management Program (NTMP) in 2001 to provide relief from traffic-related effects, such as speeding and other vehicle code violations, traffic volumes, noise, and pedestrian/bicycle conflicts. The program has since been expanded to recognize the importance of a *complete streets* philosophy and to implement a comprehensive neighborhood area-wide evaluation approach.

Neighborhoods are studied based on traffic safety, accessibility and walkability issues and opportunities.

The primary means of interactive communication with residents is through the local Neighborhood Associations, and residents are encouraged to participate in the Association representing their neighborhood area.

The City's comprehensive traffic safety, accessibility, and walkability program has two components: (1) ongoing traffic safety, accessibility and walkability, and Education, Enforcement, Education, Encouragement and Evaluation (5 Es); and (2) neighborhood-wide improvement planning, including engineering studies, improvement plans, construction, and program implementation. The ongoing program provides a process for

individual complaints/requests to be regularly addressed by the City's Traffic Committee, consisting of Engineering, Police, and Fire department staff. Neighborhood-wide improvement planning is longer-term and more formal, incorporating data from the City's service request system and the Traffic Committee into an interactive staff and community-based evaluation and planning process. This comprehensive study process is typically supported by consultant resources. Improvement plans generated from this process are programmed into the City's Capital Improvement Program (CIP) for implementation. The Neighborhood-wide process is conducted periodically (typically bi-annually or less frequently) to allow for plans to be developed and implemented in subsequent years.

3.4 EXISTING TRANSIT SYSTEM

TRANSIT ROUTES

Sacramento Regional Transit (RT) operates bus and light rail transit (LRT) service in Sacramento County. RT operates 11 transit routes in Citrus Heights. Routes 1, 21, 23, 24, 25, 93, 103, 106, and 107 are fixed transit service routes on segments of Auburn Boulevard, Antelope Road, Greenback Lane, Sunrise Boulevard, Fair Oaks Boulevard, Madison Avenue, San Juan Avenue, and Dewey Drive. Routes 94 and 95 are Neighborhood Ride routes which provide residential service from the areas near the Auburn Boulevard/Greenback Lane intersection and the Antelope Road/I-80 area to/from Sunrise Mall.

Transit centers are provided on Arcadia Drive at Greenback Lane (Sunrise Mall Transit Center) and on Orlando Avenue and Louis Lane (near the Auburn Boulevard/Whyte Avenue intersection) just beyond the north City limits. The Arcadia Drive transit center provides connections to other RT routes, while the Auburn Boulevard transit center connects with Roseville Transit and Placer County Transit.

Major roadways in the planning area are relatively well-served by transit. Consideration should be given for more enhanced bus stops on key routes such as Greenback Lane, Sunrise Boulevard, Sylvan Road, Auburn Boulevard, and Antelope Road. Enhanced bus stops would include bus turnouts, bus shelters, shade trees, route maps and appropriate signs to attract and promote both transit and pedestrian trips. Each route is described below and the existing transit system is illustrated on Figure 3-5.

Route 1 begins at the transit center on Arcadia Drive at Greenback Lane and continues west, along Greenback Lane and Auburn Boulevard to the Watt/I-80 LRT station and to Luce Avenue and Palm Street. Route 1 operates Monday through Friday on approximately 15-minute headways. For Saturday, Sunday, and holiday service, Route 1 operates at 1-hour and 30-minute headways.



Existing Transit Facilities

Figure 3-5

Route 21 begins at the Mather Field/Mills LRT station and continues east on Coloma Road and north on Sunrise Boulevard and Twin Oaks Avenue to the Orlando Avenue-Louis Lane transit center. Route 21 operates Monday through Friday on approximately 30-minute headways and on Saturdays, Sundays, and holidays on 1 hour headways.

Route 23 begins on Arcadia Drive at Greenback Lane (Sunrise Mall Transit Center) and continues west along Greenback Lane, San Juan Avenue, Fair Oaks Boulevard, El Camino Avenue, Ethan Way, and Arden Way to the Arden Fair transit center and to the Arden/Del Paso LRT station. Route 23 operates Monday through Friday on approximately 40-minute headways for first two buses and 30-minute headways for remaining buses. Service on Saturdays, Sundays, and holidays consists of 30-minute headways.

Route 24 begins on Arcadia Drive at Greenback Lane (Sunrise Mall Transit Center) and continues south along Sunrise Boulevard, east along Madison Avenue, west on Greenback Lane back to Arcadia Drive at Greenback Lane completing a loop route. Route 24 operates Monday through Saturday on approximately 1-hour headways. Route 24 does not operate on Sundays or holidays.

Route 25 begins on Arcadia Drive at Greenback Lane (Sunrise Mall Transit Center) and continues south along Sunrise Boulevard, west along Madison Avenue and Coyle Avenue to Mercy San Juan Hospital; then along Manzanita Avenue and Marconi Avenue to the Marconi/Arcade LRT station; then along Del Paso Boulevard and Arden Way to the Arden/Del Paso LRT station. Route 25 operates Monday through Saturday on approximately 1-hour headways. Route 25 does not operate on Sundays or holidays.

Route 93 begins at the Orlando Avenue-Louis Lane transit center and continues southwest on Auburn Boulevard, Greenback Lane, Elkhorn Boulevard, Hillsdale Boulevard, Air Base Drive, and Watt Avenue to the Watt/I-80 LRT station. Route 93 operates Monday through Friday on approximately 1-hour 5-minute headways, Saturdays on 1-hour headways, and Sundays and holidays on 1-hour 15-minute headways.

Route 94 begins on Arcadia Drive at Greenback Lane (Sunrise Mall Transit Center) and continues west on Greenback Lane, Sylvan Road, Auburn Boulevard, Van Maren Lane, and Coyle Drive to Mercy San Juan Hospital. Route 94 operates Monday through Friday on approximately 1-hour headways. Service is not provided on Saturdays, Sundays or holidays.

Route 95 begins on Arcadia Drive at Greenback Lane (Sunrise Mall Transit Center) and continues west on Greenback Lane, loops along Sunrise Boulevard, Macy Plaza Drive, Birdcage Street, Greenback Lane, Sylvan Road, Antelope Road, Zenith Drive, Brimstone Drive and Lichen Drive. Route 95 operates Monday through Friday on approximately 1-hour headways. Service is not provided on Saturdays, Sundays or holidays.

Route 103 begins at the Orlando Avenue-Louis Lane transit center and continues southwest on Auburn Boulevard, Greenback Lane, I-80 to the Watt/I80 LRT station. Route 103 operates Monday through Friday on 30-minute headways and during peak commute times only. This route does not operate during Saturdays, Sundays or holidays. In addition, certain trips do not operate on State holidays that fall on Monday through Friday.

Route 106 (Madison Express) begins on Greenback Lane at Hazel Avenue and continues east on Greenback Lane, Main Avenue, and west along Madison Avenue, Fair Oaks Boulevard, Greenback Lane, and I-80 to the Watt/I-80 LRT station. Route 106 is another express service which operates Monday through Friday on 30-minute headways during peak commute times only. This service does not operate on Saturdays, Sundays or holidays. In addition, certain trips do not operate on State holidays.

Route 107 (Greenback Express) begins on Madison Avenue at Hazel Avenue and continues east on Madison Avenue, Main Avenue, and west on Greenback Lane, I-80 to the Watt/I-80 LRT station. Route 106 is another express service which operates on 30-minute headways Monday through Friday during peak commute times only.

TRANSIT SCHEDULES AND FARES

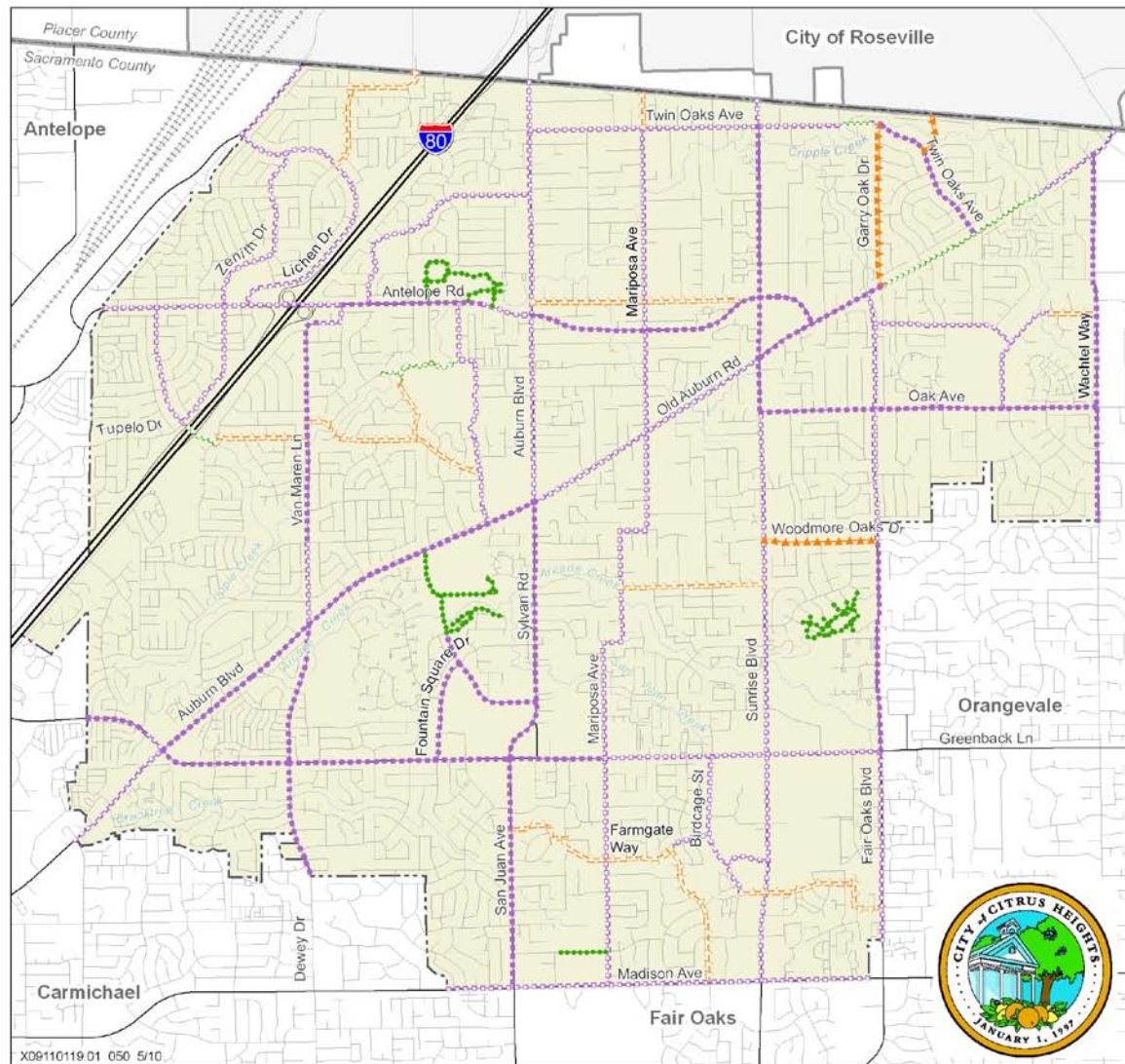
Daily passes are valid for unlimited rides on RT buses and light rail until 1:30 a.m. the day after purchase or validation. Basic single fare tickets are accepted on buses. As of September 1, 2009, a single transit pass (good for 90 minutes) costs \$2.50, while a daily pass costs \$6.00. Monthly passes are also available for \$100. Discounts are offered for seniors (age 62 and over), youth (age 5–12), and individuals with disabilities.

3.5 EXISTING BICYCLE/PEDESTRIAN SYSTEM

BICYCLE SYSTEM

The City provides both on-street and off-street bicycle facilities that are generally categorized as Class I, Class II, or Class III facilities, as illustrated below. Existing and proposed bicycle facilities within the City are illustrated on Figure 3-6.

Class I bike paths are provided in Rusch Park, Tempo Park and Van Maren Park (Stock Ranch). A few major roadways within the City contain Class II bicycle lanes (although some currently lack appropriate signage). Various gaps in continuous bicycle lanes have been identified on several major arterials within the City's Bicycle Master Plan completed in January 2009. Van Maren Lane and Old Auburn Road in particular have relatively short middle segments without Class II bike lanes that would connect to existing Class II facilities on each end. As shown in Figure 3-6, gaps in continuous Class II bicycle lanes exist on the following major roadways:



LEGEND

Existing Bicycle Facilities

- Class I Bike Path
- Class II Bike Lane
- Class III Bike Lane

1.0

- City of Citrus Heights
- County Boundary
- Creeks
- Railroad
- Other Cities

Proposed Bicycle Facilities

- Class I Bike Path
- Class II Bike Lane
- Class III Bike Route

Total Feet

8,055.6 ft.

285,195.8* ft.

67,325.8* ft.

* Totals include both sides of street

Total Miles

1.5 miles

54.0* miles

12.8* miles

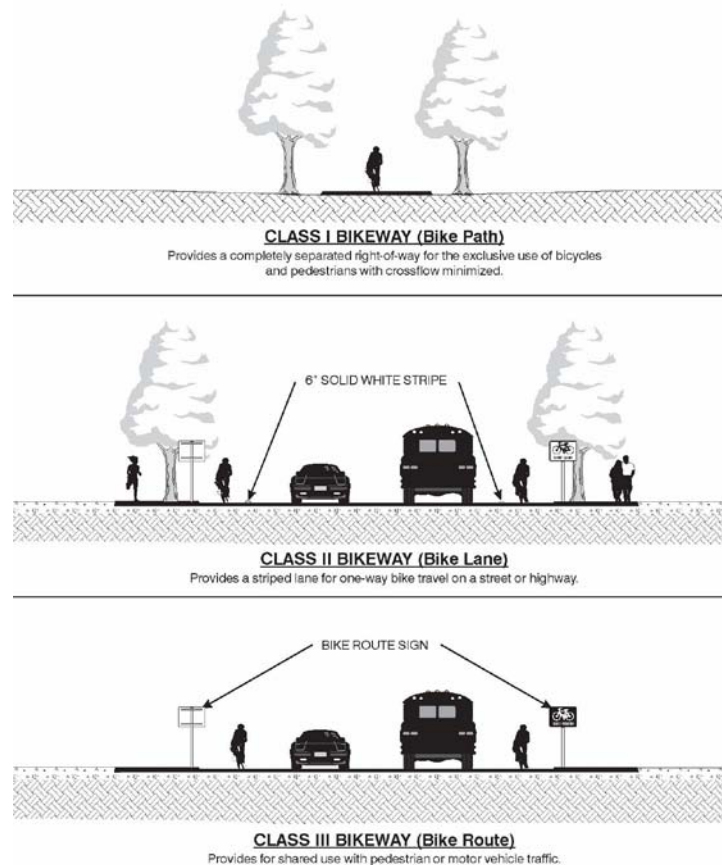


0 0.25 0.5 1 MILES

Existing Bicycle Facilities

Figure 3-6

- ▶ Sunrise Boulevard – between Oak Avenue and Greenback Lane
- ▶ Auburn Boulevard – between Old Auburn Road and North City limits
- ▶ Van Maren Lane – between Kittery Avenue and Auburn Boulevard
- ▶ Antelope Road – between West City limits and Auburn Boulevard
- ▶ Twin Oaks Avenue – between Auburn Boulevard and Garry Oaks Drive
- ▶ Fair Oaks Boulevard – between Old Auburn Road and Madison Avenue
- ▶ Old Auburn Boulevard – between Auburn Boulevard and Sunrise Boulevard



Some roadways, such as Mariposa Avenue and Birdcage Street, would provide logical bikeway connections but lack existing bicycle facilities along the length of the entire roadway, and are planned for future Class II bike lanes.

Figure 3-6 also illustrates the following:

- ▶ Lack of Class III Bike Routes on residential collector streets in various neighborhoods to provide connections to existing or proposed Class II facilities

- ▶ Limited connections between existing Class I and Class II facilities (both existing and proposed).

The City should also consider reviewing proposed Class II bike lanes on the 6-lane segments of Greenback Lane and Madison Avenue in consideration of a Complete Streets concept, since the speed differential between motorists and bicyclists is large on 6-lane arterials, indicating a need for separate, rather than shared rights-of-way.

Multi-modal connections in the City of Citrus Heights are especially important due to barriers to continuous bicycle travel such as the lack of existing continuous bikeway facilities and sidewalks. Transit centers on Arcadia Drive at Greenback Lane (Sunrise Mall Transit Center) and on Orlando Avenue and Louis Lane (next to Auburn Boulevard at Whyte Avenue) just beyond the north City limits provide connections to other RT routes and Roseville Transit and Placer County Transit services. Bicyclists often rely on transit service to transfer them to destinations when barriers to continuous travel are present. Bicycle racks are provided on RT buses to accommodate bicyclists.

PEDESTRIAN SYSTEM

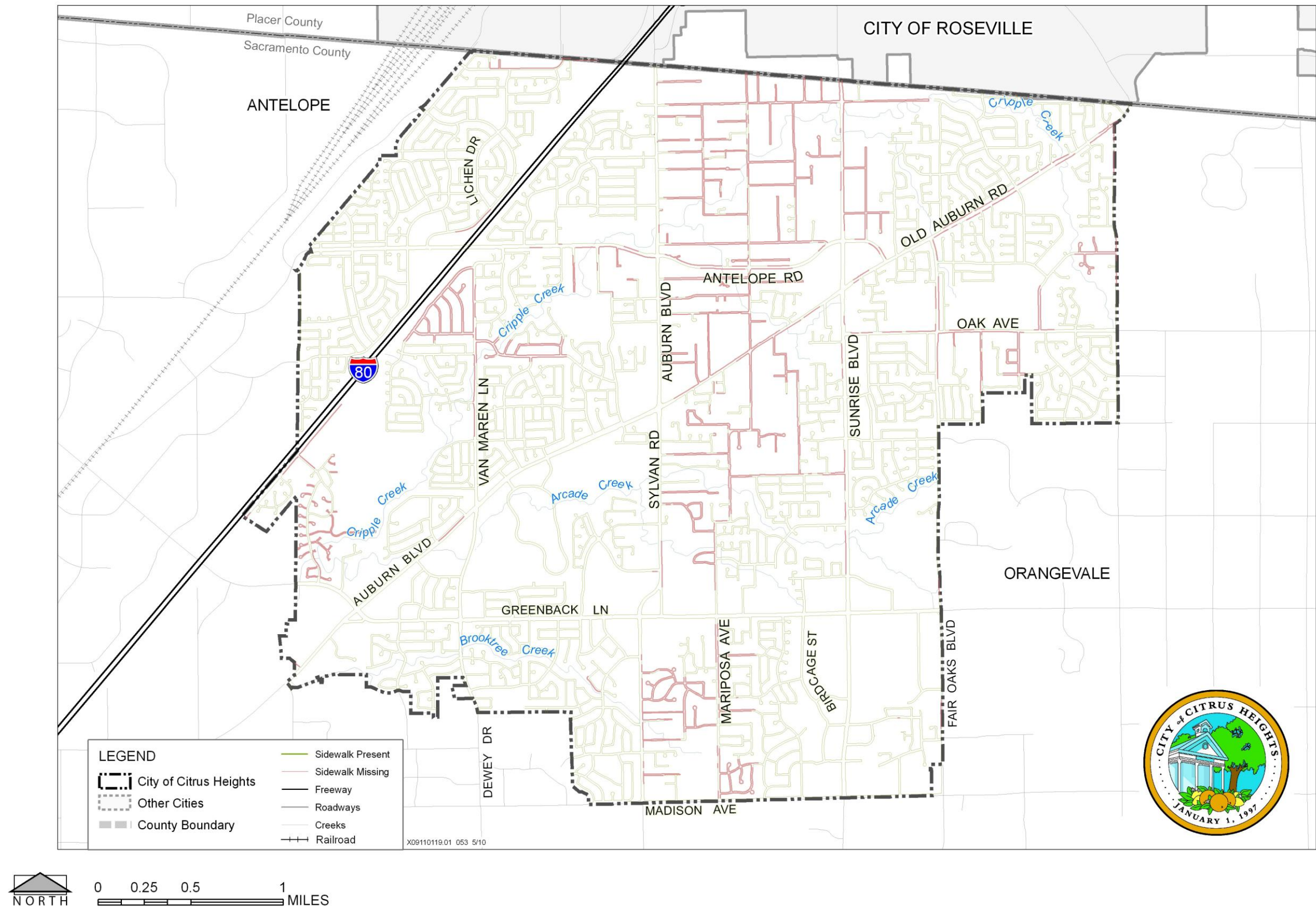
Pedestrian facilities in the planning area consist of paths, sidewalks, and pedestrian crossings. Existing sidewalks and gaps in the pedestrian system are illustrated on Figure 3-7. Key gaps are identified below.

- ▶ Sunrise Boulevard on the west side between Oak Avenue and Greenback Lane
- ▶ Fair Oaks Boulevard on the west side between Woodmore Oaks Drive and Greenback Lane
- ▶ Old Auburn Road on both sides between Auburn Boulevard and the east City limit
- ▶ Van Maren Lane on both sides between Kittery Avenue and Navion Drive
- ▶ Antelope Road on both sides between Poplar Avenue and Old Auburn Boulevard
- ▶ Twin Oaks Drive on both sides between Auburn Boulevard and Garry Oaks Drive

Full sidewalks (continuous on both sides of the street) exist on most major arterials such as Auburn Boulevard and segments of Sunrise Boulevard, Greenback Lane, Dewey Drive, Van Maren Lane, Fair Oaks Boulevard, and Madison Avenue. In other areas, many minor residential streets have been developed without sidewalks, primarily in older neighborhoods generally located within the central portion of Citrus Heights. Crosswalks are provided at most signalized intersections, at intersections on collector streets, and at intersections adjacent to schools.

3.6 EXISTING DEFICIENCIES

This section identifies existing deficiencies in the roadway, transit, and pedestrian/bicycle systems. Table 3-7 summarizes the existing deficiencies based, in part, on the peak hour level of service and rate of accidents at



Existing Pedestrian Facilities

Figure 3

**Table 3-7:
Existing Transportation System Deficiencies (2009)**

Facility	Description of Deficiency	Complete Streets Consideration
Roadway System		
Sunrise Boulevard from Antelope Road to Old Auburn Road	This four-lane segment has numerous full-access driveways and currently carries approximately 37,000 vehicles per day, which results in an unacceptable LOS F based on the current policy.	This segment currently provides sidewalks on both sides of the street and Class II bike lanes. The intersection at Old Auburn Road operates at LOS E. Any improvements to widen this intersection would result in adverse effects on other modes (i.e., longer pedestrian crossing distances) Transit must operate in mixed-traffic lanes.
Old Auburn Road from Sylvan Road to Sunrise Boulevard	This two-lane segment has numerous full-access driveways and currently carries approximately 18,000 vehicles per day, which results in an unacceptable LOS F based on the current policy. The lack of positive access control results in frequent vehicle conflicts in the center left-turn lane.	This segment currently lacks sidewalks and bike facilities. The intersection at Sunrise Boulevard operates at LOS E, but roadway enhancements to improve LOS may affect other modes (see above).
Greenback Lane/Auburn Boulevard Intersection Greenback Lane/San Juan Avenue Intersection Greenback Lane/Sunrise Boulevard Intersection Greenback Lane/Fair Oaks Boulevard Intersection Madison Avenue/Sunrise Boulevard Intersection	Heavy traffic volumes on Greenback Lane result in long delays and queuing during peak periods, which results in unacceptable LOS E at the Sunrise Boulevard and Fair Oaks Boulevard intersections based on the current policy. Heavy traffic on all approaches at the Madison Avenue/Sunrise Boulevard intersection result in LOS F operations. Stop-and-go traffic conditions on Greenback Lane contribute to the accidents as well as increased greenhouse gasses and criteria air pollutants.	Existing intersection sizes may discourage pedestrian and bicycle use. Signalized control may offer opportunities to manage traffic flow and speeds to reduce emissions and reduce collision severity. Transit must operate in mixed-traffic lanes.
Madison Avenue/San Juan Avenue Intersection Auburn Boulevard/Antelope Road Intersection Sunrise Boulevard/Old Auburn Road Intersection	These intersections are heavily utilized during morning and evening peak hours, which results in LOS E operations.	Existing intersection sizes may discourage pedestrian and bicycle use. Signalized control may offer opportunities to manage traffic flow and speeds to reduce emissions and reduce collision severity. Transit must operate in mixed-traffic lanes.

**Table 3-7:
Existing Transportation System Deficiencies (2009)**

Facility	Description of Deficiency	Complete Streets Consideration
Bicycle/Pedestrian System		
Citywide	Lack of a continuous on-street Class II bicycle lane system, especially on segments of Sunrise Boulevard, Auburn Boulevard and Fair Oaks Boulevard.	Consideration should be given as to proposed Class II bike lanes on 6-lane segments of Greenback Lane and Madison Avenue relative to Complete Streets objectives (i.e., speed differential between motorists and bicyclists is large on 6-lane arterials, indicating a need for separate rather than shared rights-of-way)
Citywide	Under-utilization of parks, greenbelts, and power line easements to accommodate bicycle travel.	
Citywide	Lack of a continuous sidewalk along key pedestrian corridors including Sunrise Boulevard, Fair Oaks Boulevard, Old Auburn Road, Van Maren Lane, Twin Oaks Avenue, and Antelope Road as shown on Figure 3-7.	
Transit System		
Greenback Lane, Sunrise Boulevard, Sylvan Road, Auburn Boulevard, Antelope Road and Madison Avenue		<p>Consideration for more enhanced bus stops on key routes including bus turnouts, bus shelters, trees for shade, route maps and appropriate signage to attract and promote both transit and pedestrian trips.</p> <p>Potential opportunities for enhanced transit lanes either on arterials or at intersections as well as demand-response shuttles to provide better residential connections from various neighborhoods to destinations or fixed-route transit centers/stops.</p>

intersections, daily volume-to-capacity ratios on roadways, and unmet pedestrian and bicycle needs. In addition, consideration of Complete Streets was included in the table and describes the tradeoffs between the current General Plan policies and alternative policies that consider all users/modes of the roadway. In general, maintaining the current LOS standards for roadways and intersections (which focus on serving vehicular traffic), may result in roadway improvements that have a negative effect on other modes. In particular, road widening to maximize automobile use will compete with right-of-way needs to provide bus turnouts, parking, sidewalks, and bike facilities.

Table of Contents

3	MOBILITY	3-1
3.1	Introduction	3-1
3.2	Regulatory Setting	3-1
3.3	Existing Roadway System.....	3-3
3.4	Existing Transit System.....	3-20
3.5	Existing Bicycle/Pedestrian System	3-23
3.6	Existing Deficiencies.....	3-26

Figures

AVERAGE DAILY TRAFFIC VOLUMES AND LEVEL OF SERVICE	FIGURE 3-1	3-8
PEAK HOUR TRAFFIC VOLUMES AND LANE CONFIGURATIONS	FIGURE 3-2A.....	3-10
PEAK HOUR TRAFFIC VOLUMES AND LANE CONFIGURATIONS	FIGURE 3-2B	3-11
EXISTING INTERSECTION CONTROLS AND ITS ELEMENTS	FIGURE 3-2C	3-12
INTERSECTION ACCIDENT HISTORY	FIGURE 3-4	3-17
EXISTING TRANSIT FACILITIES	FIGURE 3-5	3-21
EXISTING BICYCLE FACILITIES	FIGURE 3-6	3-24
EXISTING PEDESTRIAN FACILITIES	FIGURE 3-7	3-27

Tables

TABLE 3-1: EXISTING ROADWAY CHARACTERISTICS	3-4
TABLE 3-2: ROADWAY SEGMENT DAILY VOLUME THRESHOLDS	3-6
TABLE 3-3. EXISTING ROADWAY LEVEL OF SERVICE (2009)	3-9
TABLE 3-4: INTERSECTION LEVEL OF SERVICE THRESHOLDS.....	3-13
TABLE 3-5: EXISTING INTERSECTION OPERATIONS (2009)	3-16
TABLE 3-6: INTERSECTION ACCIDENT HISTORY (2006–2009)	3-18
TABLE 3-7: EXISTING TRANSPORTATION SYSTEM DEFICIENCIES (2009).....	3-29

Acronyms

California Department of Transportation (Caltrans)
State Transportation Improvement Program (STIP)
Capital Improvement Program (CIP)
Metropolitan Transportation Improvement Program (MTIP)
miles per hour (mph).
Metropolitan Transportation Plan (MTP)
miles per hour (mph)
light rail transit (LRT)
Level of Service (LOS)
Closed Captioned Television (CCTV)
intelligent transportation system (ITS)
changeable message sign (CMS)
Statewide Integrated Traffic Records System (SWITRS)
per million vehicles (per MV)
Neighborhood Traffic Management Program (NTMP)
Regional Transit (RT)
light rail transit (LRT)

Citations

Sections/Chapter

Appendices

Impacts

No table of contents entries found.

Mitigation Measures

No table of contents entries found.

Miscellaneous