

### 3.1.6 Traffic and Transportation/Pedestrian and Bicycle Facilities

#### **Regulatory Setting**

The Department, as assigned by the FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally-assisted programs is governed by the USDOT regulations (49 CFR part 27) implementing Section 504 of the Rehabilitation Act (29 U.S.C. 794). The FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to Federal-aid projects, including Transportation Enhancement Activities.

#### **Affected Environment**

The information presented here has been summarized from technical reports prepared for the proposed project. These reports, listed below, are available for review at the Department District 4 office and are hereby incorporated by reference.

- *I-80/I-680/SR 12 Interchange PR/ED: A.M. Peak Hour VISSIM Model Calibration/Validation Technical Memorandum* (October 8, 2003).
- *I-80/I-680/SR 12 Interchange PR/ED: P.M. Peak Hour VISSIM Model Calibration/Validation Technical Memorandum* (October 8, 2003).
- *I-80/I-680/SR 12 Interchange PR/ED: VISSIM Model Calibration/Validation for the Project Expansion Area Technical Memorandum* (February 14, 2005).
- *I-80/I-680/SR 12 Interchange PR/ED: Existing Weekday (Tuesday through Thursday) Traffic Operating Conditions for the Expanded Project Area—Technical Memorandum* (February 2005).
- *I-80/I-680/SR 12 Interchange PR/ED: Design Year 2035 Demand Forecasts at Project Gateways Technical Memorandum* (July 14, 2006).
- *I-80/I-680/SR 12 Interchange PR/ED: Updated Validation of the VISSIM Traffic Operations Model to 2007—2008 Conditions Technical Memorandum* (October 30, 2008).
- *I-80/I-680/SR 12 Interchange PR/ED: Final Traffic Operations Report* (June 2009) (referred to below as the Final Traffic Operations Report or FTOR).

The traffic study area includes components of the regional freeway system and ramp terminal intersections, as well as key parallel and connecting arterials within the I-80/I-680/SR 12 project area, as shown in Figure 2-1. Specifically, the analysis of potential project impacts focused on freeway auxiliary lanes, and connecting ramps and collector distributor roadways on Interstate 80 (I-80) between Red Top Road and Abernathy Road, Interstate 680 (I-680) between Gold Hill Road and I-80, State Route 12 West (SR 12) from Red Top Road and I-80, and State Route 12 East from I-80 and Pennsylvania Avenue.

The project study corridor exhibits a directional commute pattern from Solano County, Yolo County, and Sacramento County to the Bay Area employment centers of Contra Costa County, Alameda County, Santa Clara County, the City and County of San Francisco, and San Mateo County. This corridor also serves as a major gateway for goods movement, which accounts for a high percentage of truck traffic. In addition, truck scales are located in both the eastbound (EB) and westbound (WB) directions of I-80 between I-680 and SR 12E. Lastly, this corridor is a major recreational route for activities in the Sacramento Valley, Sierra Nevada, and Nevada.

The Solano Comprehensive Transportation Plan (Solano Transportation Authority 2005) calls for maintenance of level of service (LOS) E on roadways of regional significance, including freeways. LOS E represents at-capacity operation. When traffic volumes exceed capacity, stop-and-go conditions result, and operations are designated as LOS F.

For freeway mainline segments, weave segments, and ramp merge and diverge areas, the LOS is related to the vehicle density in vehicle miles per lane and is calculated for the a.m. and p.m. commute peak hours. For intersection operations, the LOS is related to the average control delay per vehicle during the a.m. and p.m. commute peak hours. Tables 3.1.6-1 and 3.1.6-2 provide the LOS thresholds for freeway and intersection analysis, respectively.

Other *measures of effectiveness* (MOEs) used in the traffic analysis include vehicle hours of travel (VHT), defined as the total number of vehicle hours traveled per hour within the study area; vehicle hours of delay (VHD), defined as the number of vehicle hours of delay per hour resulting from congestion within the study area; vehicle miles traveled (VMT), defined as the total number of vehicle miles traveled during the peak hours in the study area; and the average travel times for trips within the study area.

**Table 3.1.6-1. Freeway Mainline, Weaving, and Ramp Junction LOS Criteria**

Level of Service <sup>a</sup>	Maximum Density (passenger cars per mile per lane)	
	Basic Freeway Sections	Freeway Weaving Segments and Ramp Junctions
A	11	10
B	18	20
C	26	28
D	35	35
E	45	>35
F	45	Demand exceeds capacity

Source: Transportation Research Board 2000.

<sup>a</sup> Freeway mainline LOS based on a 65 mph free-flow speed.

**Table 3.1.6-2. Intersection LOS Definitions for Highway Capacity Manual Methodology**

Level of Service	Description of Traffic Conditions	Average Control Delay per Vehicle (seconds)
<b>Signalized (Signal-Controlled) Intersections</b>		
A	Insignificant delays: No approach phase is fully used, and no vehicle waits longer than one red indication	≤10
B	Minimal delays: An occasional approach phase is fully used, and drivers begin to feel restricted	>10–20
C	Acceptable delays: Major approach phase may become fully used, and most drivers feel somewhat restricted	>20–35
D	Tolerable delays: Drivers may wait through more than one red indication; queues may develop but dissipate rapidly, without excessive delays	>35–55
E	Significant delays: Volumes are approaching capacity, vehicles may wait through several signal cycles, and long vehicle queues form upstream	>55–80
F	Excessive delays: Conditions are at capacity, with extremely long delays; queues may block upstream intersections	>80
<b>Unsignalized Intersections</b>		
A	No delay for stop-controlled approaches	≤10
B	Operations with minor delay	>10–15
C	Operations with moderate delays	>15–25
D	Operations with some delays	>25–35
E	Operations with high delays and long queues	>35–50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers	>50

Source: Transportation Research Board 2000.

### Pedestrians and Bicyclists

The Department, as assigned by FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the USDOT issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally-assisted programs is governed by the USDOT regulations (49 CFR part 27) implementing Section 504 of the Rehabilitation Act (29 U.S.C. 794). The FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act, including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to Federal-aid projects, including Transportation Enhancement Activities.

The Department is committed to carrying out the ADA by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

### Economic and Societal Trends

The I-80/I-680/SR 12 interchange is a point at which two major interstate freeways and one state highway converge. When it was constructed in the 1960s, the interchange location was in a

relatively rural setting immediately surrounded by agricultural lands with mountains to the north and the vast Suisun Marsh to the south.

Since the 1960s the Bay Area and Northern California region experienced rapid population growth. The Bay Area's population has grown by more than 86% during this time and Solano County's population has more than tripled. This tremendous amount of growth has resulted in substantial increases in regional traffic passing through the interchange area as well as substantial changes in the land uses immediately surrounding the interchange.

Regional truck scales facilities are also located within the I-80/I-680/SR 12 interchange. The location of the truck scales is ideal for monitoring and enforcing truck weight and safety requirements because it provides one location that can monitor truck traffic on I-80, I-680, and SR 12. However, the volume of trucks that need to be weighed and inspected has increased dramatically since the 1960s. Trucks must exit, then re-enter the freeway within the I-80/I-680/SR 12 interchange area after inspection at the truck scales facility. The exiting and entering of a large volume of trucks creates a severe weaving problem, which is made worse by the size, limited maneuverability, and lower speeds of large trucks. Improvement of the EB truck scales have been addressed in a separate project.

The I-80/I-680/SR 12 interchange is vital to the mobility of both the local area and the entire northern California region because it serves a multitude of destinations. It is a critical corridor for local and regional commute travel. Over the past ten years, commute travel through the area has increased substantially in response to the growing Bay Area economy and expansion of employment centers, which has pushed commuters further east as they search for affordable housing. By 2030, commute traffic is projected to constitute between 40% and 75% of the total number of vehicles traveling through the project area.

#### *Existing (2004) Traffic Operations*

The extent of facilities studied in the traffic operations analyses are listed below:

- I-80 between Red Top Road and Air Base Parkway.
- I-680 between Gold Hill Road and I-80.
- SR 12W (Jameson Canyon Road) between Red Top Road and I-80.
- SR 12E between I-80 and Civic Center Drive.
- Arterial and local roadways including Abernathy Road, Beck Avenue, Business Center Drive, Central Way, Cordelia Road, Green Valley Road, Lopes Road, Mangels Boulevard, Pennsylvania Avenue, Red Top Road, Ramsey Road, Rockville Road, Suisun Valley Road, West Texas Street, and other connecting roadways.

The existing conditions analysis presents the physical and operational characteristics of the roadway system in the vicinity of the proposed project in fall 2004. This information provides context for the purpose and need to construct improvements. It should be noted that when the existing conditions traffic counts were taken a fifth auxiliary lane had opened to traffic on WB I-80 between the SR 12E connector and the I-680 southbound connector. However, the fifth EB lane had not yet opened and therefore is not included in the existing conditions analysis. Also not

included is the WB Jameson Canyon Road (SR 12W) truck climbing lane that had not yet been completed. Both improvements have improved traffic operations, and while they are not included in the 2004 existing conditions analysis, they are included in 2015 and 2035 No-Build analyses.

Note that while this report refers to existing conditions in the original 2004 baseline, updated 2007/2008 a.m. and p.m. peak hour volumes were collected from the Department PEMS system and were used to re-validate the existing conditions VISSIM traffic operations model to account for changes in traffic volumes and freeway design (i.e., the EB I-80 auxiliary lane and the opening of the new Benicia-Martinez Bridge south on I-680). A description of the re-validation effort is included in the FTOR.

### System-Wide Measures of Effectiveness

With a large, complex freeway improvement project such as this, system-wide MOEs—such as VMT, VHD, and average travel speed—are particularly useful for comparison of existing conditions with future no-build and project alternatives. The system-wide MOEs under existing conditions are summarized in Table 3.1.6-3 for the a.m. and p.m. peak hours.

The p.m. peak hour represents the heaviest congestion period within the project study area. For example, the p.m. peak hour has 10% higher VMT, 20% higher VHT, and 72% more VHD. These ratios are even higher when comparing the 3-hour peak periods with the p.m. MOEs exceeding the a.m. MOEs by 17%, 27%, and 73%, respectively. The average travel speed is 46 mph during the a.m. peak hour on WB I-80 (from Waterman/Air Base Parkway to Red Top Road), and 33 mph during the p.m. peak hour on EB I-80 (from Red Top Road to Waterman/Air Base Parkway).

**Table 3.1.6-3. Existing (Year 2004) System-Wide Measures of Effectiveness<sup>a</sup>**

MOE	A.M. Peak Hour	P.M. Peak Hour
Vehicle Miles of Travel (Vehicle Miles/Hour)	316,220	334,755
Vehicle Hours of Delay (Hours of Delay/Hour)	1,140	1,885
Estimated Duration of Congestion (Hours) <sup>b</sup>	1–2 hours	1.5–2.5 hours
Average Freeway Travel Speed	46 mph (WB Peak Direction)	33 mph (EB Peak Direction)

Source: Final Traffic Operations Report.

<sup>a</sup> The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.

<sup>b</sup> Duration of congestion is estimated based on field conditions.

### System Operations, Travel Speeds, and Bottlenecks

The existing operating conditions within the project study area were analyzed using 13 model runs of the calibrated peak period VISSIM models and existing a.m. and p.m. peak hour traffic volumes. The volumes are shown in Appendix A of the FTOR. The peak hours in the project study area are generally from 7:30 to 8:30 a.m. and 4:30 to 5:30 p.m.

The FTOR includes the existing (2004) travel speeds on the freeway system for the a.m. and p.m. peak hours, respectively. Travel times for key gateway-to-gateway pairs are also shown on the figures. Table 3-2 in the FTOR shows the service levels, based on vehicle density, for all freeway segments (mainline, weave, on-ramp merge, and off-ramp diverge areas).

#### ***A.M. Peak Hour Operations (2004)***

During the a.m. peak hour, a queue typically develops on WB I-80 at the SR 12W connector, primarily due to the grade on SR 12W as it traverses the hill toward Napa. The overall I-80 freeway section operates at LOS B at this location; however, the queue results in LOS F operations in the shoulder lane.

The bottleneck that used to exist at the WB I-80 to southbound (SB) I-680 connector ramp was eliminated with the completion of the two-lane connector (2004). On WB I-80 during the a.m. peak hour, the grade on SR 12W exiting I-80 and heading toward Napa causes a slowdown on WB I-80. Heavy trucks are not able to keep up speeds on SR 12W, causing queuing onto I-80. The slowdown is generally in lanes 4 and 5 (the outside lanes closest to the shoulder),<sup>1</sup> but the effect of this, plus the combined effect of trucks entering from the truck scales and weaving vehicles headed to the Suisun Valley Road off-ramp or southbound I-680 connector, results in slow-moving queues in lanes 4 and 5, while traffic operations are generally better in lanes 1, 2, and 3. The slow-moving queue in lanes 4 and 5 typically extends from the SR 12W WB off-ramp to SR 12E.

#### ***P.M. Peak Hour Operations (2004)***

During the p.m. peak hour, a bottleneck develops on EB I-80 at the truck scales on-ramp where slow-moving trucks attempt to accelerate to freeway travel speeds. Vehicle speeds generally begin to increase beyond the truck scales toward the I-80/SR 12E interchange. The bottleneck constrains the amount of traffic that can be delivered downstream, thereby resulting in improved LOS operations immediately downstream of the bottleneck. Vehicle queues resulting from the EB bottleneck at the truck scales on-ramp typically extends as far west as SR 12W and 800 feet south of the Central Way off-ramp on northbound (NB) I-680.

Another bottleneck that develops during the p.m. peak hour is EB I-80 between the Travis Boulevard on-ramp and the Air Base Parkway off-ramp. This bottleneck results in vehicle queues that extend back to the West Texas interchange, resulting in LOS F operations between the Beck Avenue EB on-ramp and the Travis Boulevard EB on-ramp.

The signalized intersections on SR 12E at Beck Avenue and Pennsylvania Avenue also cause some queuing on EB SR 12E, but the queues do not generally extend back onto EB I-80.

#### ***A.M. Peak Hour Operations (2007)***

As described above, the existing conditions baseline for this study is 2004, but the existing conditions traffic operations model was re-validated to 2007 conditions to supplement the 2004 information and provide assurance that the model still validated more recent conditions. This process is described in Appendix D of the FTOR. The re-validation process for the a.m. peak hour showed that gateway and internal traffic volumes had not changed significantly between 2004 and 2007; therefore, a complete revised simulation was not prepared. Accordingly, the 2004 a.m. peak hour conditions described above are similar to the a.m. conditions in 2007.

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<sup>1</sup> Lane numbering starts with the leftmost lane as lane 1.

### ***P.M. Peak Hour Operations (2007)***

Because volumes had changed significantly in the p.m. peak hour between 2004 and 2007, a new simulation was prepared as part of the re-validation effort for the p.m. peak hour. (Refer to Appendix D of the FTOR for more information). p.m. peak hour conditions in 2007 did not change significantly in the non-peak direction (westbound/southbound), and improved somewhat in the peak direction (northbound/eastbound) due to the provision of the fifth lane on EB I-80 between I-680 and SR 12E (which was not included in the 2004 analysis). Even with the opening of the new Benicia-Martinez Bridge to the south on I-680, which added about 500 vehicles at the southern gateway to the project limits on northbound I-680, conditions were better on the I-680/I-80 connector and downstream on I-80, due to the two-lane connector and the fifth lane between I-680 and SR 12E.

### ***Intersection Operations—A.M. Peak Hour***

The intersection lane configuration, control type, and peak hour volumes for existing conditions are described in Appendix B of the FTOR.

The operations of all study intersections are summarized in Table 3-3 of the FTOR. For all intersections, the average control delay and LOS for the entire intersection are reported. As shown in the table, 22 of the 24 ramp terminal study intersections operate at LOS E conditions or better during the a.m. peak hour. Only the Red Top Road/EB I-80 ramps (all-way stop-controlled) and Lopes Road/SB I-680 on-ramp/EB I-80 off-ramp (all-way stop-controlled) intersections operate at unacceptable LOS F conditions. All other study intersections operate at LOS D or better during the a.m. peak hour.

### ***Intersection Operations—P.M. Peak Hour***

During the p.m. peak hour, only the Lopes Road/SB I-680 on-ramp/EB I-80 off-ramp (all-way stop-controlled) ramp terminal intersection operates at unacceptable LOS F conditions. All other study intersections operate at LOS D or better during the p.m. peak hour, except the Ramsey Road/Bridgeport Avenue intersection, which operates at unacceptable LOS E. Due to the heavy congestion on the NB I-680 to EB I-80 ramp, it is estimated that approximately 75% of the Gold Hill Road off-ramp traffic volume is associated with vehicles diverting from I-680 and I-80 to Lopes Road/Ramsey Road/Cordelia Road to bypass the heavy congestion on the freeway mainline.

The intersection of Central Way/I-680 NB off-ramp operates at acceptable LOS C conditions, but the stop-controlled off-ramp operates at marginal LOS D/E. It is estimated that approximately 90% of the off-ramp traffic volume, like that on the Gold Hill Road off-ramp, is associated with vehicles diverting from NB I-680 to Central Way/Pittman Road. However, because the volumes on Central Way are fairly low, this intersection would not meet the Departments' peak hour volume signal warrant.

At the all-way stop-controlled intersection of Lopes Road/SB I-680 on-ramp/EB I-80 off-ramp, the heavy traffic volume on NB Lopes Road (more than 600 vehicles) and a total intersection volume exceeding 1,780 vehicles results in long delays and poor operating conditions for NB Lopes Road. As a result of the heavy traffic volumes on all three approaches, this intersection meets the Department's peak hour signal warrant criteria during both a.m. and p.m. peak hour

conditions. Subsequent to completion of the existing conditions analysis, a signal was installed at this location.

### *Traffic Safety*

The Department maintains statistics for all State highway facilities for three types of accident rates: the total accident rate, accidents involving fatalities and accidents involving fatalities or injuries. Within the project limits most freeway segments of I-80 experience a higher total accident rate and higher fatal or injury accident rate compared to the average statewide rate for similar types of facilities (Table 3.1.6.4). Half of the segments experience a higher than average fatal accident rate than the average statewide rate. Within the project limits of SR-12 East half of the sections experience higher than average total and fatal accident rates compared to the average statewide rate for similar types of facilities and most sections experience a higher than average accident rate for fatal plus injury accidents compared to the average statewide rate for similar facilities.

In reviewing the accident summary records 65% of the accidents occurred on I-80 during commute periods, with over 50% of the accidents being rear-end collisions. On SR 12 East over 50% of the accidents occurred during the commute periods, with over 60% of the accidents being rear-end collisions. On SR 12 West 70% of the accidents occurred during the commute periods, with 48% of the accidents being rear-end collisions. This combination of high accident rates during commute periods and a high percentage of rear-end type collisions is likely related to the congestion observed in these sections.

The effect of slow moving trucks decelerating into, or accelerating out of, the westbound truck scales combined with already congested lanes is described in the 2009 FTOR. Increased vehicle traffic, and in particular increased truck volumes, will exacerbate the accident rate based on the general correlation between increased volumes and congestion and increased accident rates.

**Table 3.1.6-4. Accident History, January 1, 2006 to December 31, 2008**

Location	Post Mile	Number of Accidents			Actual Accident Rate (Accidents per Million Vehicle Miles)			Average Accident Rate (Accidents per Million Vehicle Miles)		
		Total	Fatal	F+I	Total	Fatal	F+I	Total	Fatal	F+I
<b>Western Segment</b>										
I-80—westerly project limit to Red Top Road undercrossing	10.89 to 11.39	88	1	30	1.36	0.015	0.46	0.81	0.008	0.25
I-80—Red Top Road undercrossing to SR 12W/I-80 connector structure	11.39 to 11.98	69	0	22	0.90	0.000	0.29	0.81	0.008	0.25
I-80—SR 12W/I-80 undercrossing to Green Valley Road overcrossing	11.98 to 12.74	155	0	41	1.20	0.000	0.32	0.93	0.009	0.29
I-80—Green Valley Road overcrossing to I-680/I-80 connector structure	12.74 to 13.09	121	1	30	1.73	0.014	0.43	1.04	0.010	0.32
I-680—0.5 mile south of Gold Hill Road overcrossing to I-80/I-680 connector	9.5 to 13.1	94	0	29	0.48	0.000	0.15	0.97	0.010	0.31
SR 12W—0.5 mile west of Red Top Road to SR 12W/I-80 connector	1.75 to 2.76	42	0	16	1.19	0.000	0.45	1.28	0.030	0.58
I-80—I-680/I-80 connector structure to Suisun Valley Road overcrossing	13.09 to 13.49	141	1	31	1.65	0.012	0.36	1.08	0.011	0.33
<b>Central Segment</b>										
I-80—Suisun Valley Road overcrossing to SR 12E/I-80 connector structure	13.49 to 15.81	472	0	137	0.89	0.000	0.26	1.05	0.011	0.33
I-80—SR 12E/I-80 connector structure to Abernathy Road overcrossing	15.81 to 16.17	62	1	23	0.86	0.014	0.32	1.04	0.010	0.32
<b>Eastern Segment</b>										
I-80—Abernathy Road overcrossing to West Texas Street undercrossing	16.17 to 17.20	173	2	39	0.84	0.010	0.19	1.03	0.010	0.32
SR 12E—SR 12E/I-80 connector to Chadbourne Road undercrossing	1.85 to 2.22	8	0	1	0.55	0.000	0.07	0.71	0.007	0.23
SR 12E—Chadbourne Road undercrossing to Beck Avenue	2.22 to 3.20	63	1	31	1.23	0.019	0.60	1.13	0.011	0.42
SR 12E—Beck Avenue to Pennsylvania Avenue	3.20 to 4.07	64	1	32	1.51	0.024	0.75	1.55	0.018	0.63
SR 12E—Pennsylvania Avenue to Civic Center Boulevard	4.07 to 4.74	70	0	33	1.99	0.000	0.94	1.11	0.011	0.39

Source: California Department of Transportation 2006–2008.

Notes: Shading denotes locations that exceed the statewide average accident rate.

F+I = fatal plus injury.

Source: California Department of Transportation 2004–2006.

Notes: Shading denotes locations that exceed the statewide average accident rate.

F+I = fatal plus injury.

### Bicycle Circulation System

Existing and planned bicycle facilities are provided throughout the study area. Below is a description of the three types of bicycle facilities, based on the Fairfield General Plan.

- Class I Bikeway (Bicycle Path)—Separate off-street bike paths or trails for bicycles only. Multi-use trails are off-street paths that are shared by pedestrians.
- Class II Bikeway (Bicycle Lane)—Provides a restricted right-of-way and is designated for the use of bicycles with a striped lane on a street or highway. Vehicle parking and vehicle/pedestrian cross-flow is permitted.
- Class III (Bicycle Route)—Provides for a right-of-way designated by signs and/or pavement markings for shared use with motor vehicles.

The Fairfield General Plan (2004) contains a map of existing and planned bikeways throughout the City. In the interchange vicinity, the North Connector Corridor Transportation for Livable Communities Concept Plan (August 2007) provides a more recent and updated plan for bicycle and pedestrian connections within the North Connector Corridor, between Jameson Canyon Road at Red Top Road and Abernathy Road. Figure 3.1.6-1 illustrates the components of the Concept Plan.

Existing bicycle facilities within the project limits include:

- The Fairfield Linear Park Pathway (multi-use, no horses) adjacent to and immediately north of I-80 between immediately east of the WB I-80 truck scales and Travis Boulevard; also between West Texas Street and Travis Boulevard on the south side of I-80 (northeast/southwest orientation).
- Class II Bicycle Lanes on SR 12 West between Red Top Road and points west.
- Bicycle path from Green Valley Road to the vicinity of the SR 12 West/Red Top Road intersection.
- Class II Bicycle Lanes on Lopes Road between Cordelia Road and Red Top Road.
- Class I Multi-Use Path (no horses) along creek between Lopes Road and Watt Drive (north of Fermi Drive and south of Fulton Drive), and between Red Top and Gold Hill Road just west of the residential neighborhoods.
- Red Top Road—Planned Class II Bicycle Lanes.

### Pedestrian Circulation System

The pedestrian network in the study area consists primarily of sidewalks along streets as well as crosswalks at the major intersections. ADA-compliant sidewalks are generally not provided at the grade-separated crossings of the study freeways and highways (I-80, SR 12, and I-680) in the project study area. Pedestrian overpasses are also not provided in the project study area. At-grade intersections are provided along SR 12; these are discussed below.

### *SR 12W*

No crosswalk is provided at the unsignalized, side-street stop-controlled Red Top Road/SR 12W intersection. An existing multi-use trail terminates immediately east of this intersection north of SR 12W.

### *SR 12E*

Crosswalks are provided across SR 12E at the Beck Avenue and Pennsylvania Avenue signalized intersections. The SR 12E/Beck Avenue intersection does not provide a marked crosswalk or pedestrian signal across Beck Avenue, resulting in no marked crossing or pedestrian signal at the northwest or southwest corner. The SR 12E/Pennsylvania Avenue intersection does not provide a marked crosswalk or pedestrian signal from the northeast corner across either Pennsylvania Avenue or SR 12E.

### *Transit System*

A variety of transit services are provided in the project study area, including bus and passenger rail service.

Bus service to the project study area is provided by Fairfield and Suisun Transit, operated by the Cities of Fairfield and Suisun City; NorthBay Transit Group (unincorporated Solano County Paratransit service provider); the Rio Vista Delta Breeze operated by the City of Rio Vista; and BayLink, operated by the City of Vallejo. Figure 3.1.6-2 depicts the passenger bus services in the area.

#### *Fairfield and Suisun Transit*

Fairfield and Suisun Transit (FAST) is run by the Cities of Fairfield and Suisun City, which operate intra-city and inter-city fixed-route bus services Monday through Saturday. FAST provides service to Sacramento, Davis, Dixon, Vacaville, Benicia, Vallejo, and Bay Area Rapid Transit (BART). The fare system is based on the number of zones that are crossed, with a local fare of \$1.50 and a maximum fare of \$6.75 (\$0.75 to \$3.25 for seniors and the disabled). The existing FAST fixed transit route in the study area is summarized in Table 3.1.6-5, and illustrated in Figure 3.1.6-2. Besides fixed-route transit services, FAST also offers Flex buses, Paratransit, and a reduced-fare taxi program for seniors.

#### *NorthBay Transit Group (Solano Paratransit)*

The Solano Transportation Authority conducted a transit consolidation study, which resulted in the dissolution of the Solano Paratransit effective July 1, 2009. The agency had previously operated paratransit services within the unincorporated areas of Solano County. Paratransit services are now operated by the NorthBay Transit Group.

#### *Rio Vista Delta Breeze*

The Rio Vista Delta Breeze is run by the City of Rio Vista. The Delta Breeze operates inter-city service between Fairfield, Suisun City, the Suisun-Fairfield Amtrak Station, and Rio Vista on Route 50. Route 50 will deviate anywhere within the city limits of Fairfield and Suisun City. Inter-city fare is \$5.00, including seniors. Route deviations cost an extra \$0.50. Route 50 is summarized in Table 3.1.6-5.

**Table 3.1.6-5. Existing Bus Routes in Project Study Area**

Route	Service Area	Approximate Frequency		
		Peak Period	Off-Peak	Saturday
<b>Fairfield and Suisun Transit (FAST)—Local Routes</b>				
1A/1B	Central Fairfield Loop Route—North Texas St., Travis Blvd., Pennsylvania Ave, Fairfield Civic Center, Westfield Mall	45 min	45 min.	45 min.
2	Westfield Mall, Travis Blvd., Texas St., Tabor Ave., Sunset Ave., Pintail Dr.	30 min.	30 min.	30 min.
3A/3B	Outer Fairfield Loop—Westfield Mall, Travis Blvd., Oliver Rd., Waterman Blvd., Atlantic St., Texas St., Fairfield Transportation Center	60 min.	60 min.	60 min.
4	FLEX Bus Service—North Texas St., Dickson Hill Rd., Cement Hill Rd., Clay Bank Rd., Tabor Ave.	30 min.	60 min.	30 min. peak, 60 min. off-peak
5	Westfield Mall, Pennsylvania Ave., Suisun City Hall, Amtrak, Buena Vista Ave, SR 12E	30 min.	30 min.	60 min.
6	Westfield Mall, Travis Blvd., Sunset Ave., Pintail Dr., Walters Rd., Emperor Dr.	30 min.	30 min.	60 min.
7	Westfield Mall, Pennsylvania Ave., West Texas St., Beck Ave., Courage Dr., Chadbourne Rd., Rockville Rd., Suisun Valley Rd., Central Rd., Lopes Rd., Cordelia Villages	60 min.	60 min.	120 min.
<b>Fairfield and Suisun Transit (FAST)—Regional Routes</b>				
20	Fairfield Transportation Center, Westfield Mall, I-80, Vacaville Davis Street Park and Ride, Ulatis Cultural Center in Vacaville	60 min.	60 min.	60 min.
30	Fairfield Transportation Center, Westfield Mall, I-80, Vacaville Davis Street Park and Ride, Dixon Market Lane Park and Ride, UC Davis, Downtown Sacramento (Sacramento served Mon–Fri only).	3 a.m. peak, 1 midday, 3 p.m. peak buses		3 hrs. (3 buses total)
40	Vacaville Davis Street Park and Ride, I-80, Fairfield Transportation Center, I-680, Benicia, Pleasant Hill BART, Walnut Creek BART	4 a.m. peak, 5 p.m. peak buses		N/A
90	Amtrak, SR 12W, Fairfield Transportation Center, I-80, El Cerrito BART	15 min.	60 min.	N/A
<b>Rio Vista Delta Breeze</b>				
50	Fairfield Transportation Center, Westfield Mall, Amtrak, SR 12E, Rio Vista, Lodi	2 hrs. (6 total buses)		N/A
<b>BayLink</b>				
85	Westfield Mall, Solano Community College, Mangels Blvd, I-80, Vallejo, Vallejo Ferry Terminal	30 min. <sup>a</sup>	60 min.	2 hrs. <sup>b</sup>

Source: Based on information presented in operator's Web site.

<sup>a</sup> 30 minute headway only during the a.m. peak period, 60 minute headways during the p.m. peak period.

<sup>b</sup> Operates on Saturdays, Sundays, and holidays.

### **BayLink**

BayLink buses are operated by Vallejo Transit. Vallejo Transit operates inter-city service between Fairfield and Vallejo on Route 85. Inter-city fare is \$5.00 (\$2.50 for seniors and the disabled). Route 85 is summarized in Table 3.1.6-5. BayLink also provides ferry service between Vallejo and San Francisco.

### **Passenger Rail Service**

Amtrak provides passenger rail service and the Capitol Corridor provides commuter rail service in the study area. The rail line runs southeast-northwest in the study area.

Amtrak currently provides daily service along the California Zephyr route between Emeryville and Chicago, and daily service along the Coast Starlight route between Los Angeles and Seattle. The Capitol Corridor operates between San Jose, Oakland, Martinez, Fairfield/Suisun City, Davis, Sacramento, and Auburn. The Capitol Corridor serves the Suisun-Fairfield Station with 20 trains per weekday and 15 trains per day on weekends and holidays in each direction. The

Suisun-Fairfield Amtrak Station is located in Suisun City on Main Street under the SR 12E overcrossing. Transit access to and from the station is provided by FAST and the Rio Vista Delta Breeze.

### ***Environmental Consequences***

This section describes the impacts of the project on traffic operations, pedestrian and bicycle facilities, and transit service in the construction year (2015) and the design year (2035). The scenarios considered in this analysis are listed below.

- Alternative B (2035).
- Alternative C (2035).
- Alternative B, Phase 1 (2015, 2035).
- Alternative C, Phase 1 (2015, 2035).
- No-Build Alternative (2015, 2035).

The alternatives are described in the Chapter 2, “Project Alternatives;” the analyzed scenarios are described in Chapter 4 of the FTOR.

### ***Methods—Future Conditions Analysis***

#### ***Traffic Forecasts***

The 2035 travel demand forecasts were developed using the STA’s Solano-Napa Travel Demand Model. The travel demand forecasts were documented in a Technical Memorandum dated July 14, 2006, which was reviewed and approved by the Department District 4 Office of Advanced Planning. The Technical Memorandum is included in Appendix C of the FTOR. The construction-year (2015) forecasts were developed by estimating the gateway demand at each of the five entrances to the system, using a straight-line interpolation between the existing (2004) volumes and future (2035) demand volumes; checking to ensure that the resulting gateway volumes were not constrained by gateway capacity; and interpolating the 2015 volumes for each origin zone within the VISUM model and determining the appropriate routes for the trips using the VISUM model with some manual adjustments.

#### ***Traffic Operations Analysis***

The constrained traffic forecasts and freeway system traffic operations analysis were performed with the VISUM/VISSIM forecasting and traffic operations tools. The VISUM/VISSIM tools and the validation of the original models are described in the Final Technical Memorandum, *I-80/I-680/SR 12 Interchange Project PR/ED: VISSIM Model Calibration and Validation for the Project Expansion Area, February 14, 2005*. The intersection operations analysis utilizes the 2000 HCM operations methodology, and was performed with VISSIM for the ramp terminal intersections, and with Synchro for the non-ramp-terminal intersections.

### Evaluation Criteria for Environmental Consequences

The criteria presented below were used in the determination of environmental consequences.

#### *Traffic Operations*

Environmental consequences are identified related to the proposed project's effect on bottlenecks within the project study area; the proposed project's effect on system-wide delay, average travel speed, VMT, and duration of congestion; and the proposed project's effect on intersection LOS at the ramp terminal intersections and non-ramp terminal intersections in the study area.

#### *Pedestrian and Bicycle Circulation*

An environmental consequence is identified if the proposed project's implementation would disrupt or interfere with existing or planned bicycle or pedestrian facilities.

#### *Transit Service*

An environmental consequence is identified if implementation of the proposed project would disrupt or interfere with existing or planned transit operations or facilities of Sacramento Regional Transit.

### Summary of Environmental Consequences

Four summary tables, Tables 3.1.6-6 through 3.1.6-9, and two summary bar charts, Figures 3.1.6-3 and 3.1.6-4, are provided to support the traffic impact discussions below. Additional supporting tables and figures provided in the FTOR are referenced as needed below. They include detailed freeway LOS tables, intersection LOS tables, travel speed and travel time graphics, and bar chart travel time comparisons between conditions in 2015 and 2035.

**Table 3.1.6-6. Construction-Year 2015—A.M. Peak Hour Conditions  
System Wide Measures of Effectiveness<sup>a</sup>**

Route	No-Build	Alternative B, Phase 1	Alternative C, Phase 1
<b>Bottlenecks and Queues</b>			
I-80 WB	None	None	None
I-80 EB	None	None	None
SR 12W WB	None	None	None
SR 12W EB	None	None	None
SR 12E WB	At Beck; queue extends east of Civic Center	At Pennsylvania; queue extends to Jackson Street	Same as No-Build
SR 12E EB	None	None	None
I-680 NB	None	None	None
I-680 SB	None	None	None
<b>Duration of Congestion</b>			
System-wide	Congestion would remain near existing conditions, lasting approximately 1.5 hours.	Congestion would remain near existing conditions, lasting approximately 1 hour.	Congestion would remain near existing conditions, lasting approximately 1.5 hours.
<b>Travel Times</b>			
WB I-80 to SB I-680 <sup>b</sup>	9:40	9:10	9:55
WB I-80 <sup>b</sup>	8:30	8:25	8:25
SR 12E to WB I-80 <sup>b</sup>	15:35	9:45	14:25
<b>Maximum Individual Delay</b>			
WB I-80 to SB I-680 <sup>c</sup>	25 seconds	None	40 seconds
WB I-80 <sup>c</sup>	30 seconds	25 seconds	25 seconds
SR 12E to WB I-80 <sup>c</sup>	7 minutes	1 minute	6 minutes
<b>Speed</b>			
WB I-80 to SB I-680 <sup>b</sup>	62 mph	64 mph	63 mph
WB I-80 <sup>b</sup>	63 mph	64 mph	64 mph
SR 12E to WB I-80 <sup>b</sup>	33 mph	61 mph	34 mph
<b>Flows (volume)</b>			
SB I-680 <sup>d</sup>	3,305	3,272	3,378
WB I-80 <sup>d</sup>	5,466	5,511	5,227
WB SR 12E <sup>d</sup>	2,202	2,393	2,532

Source: Final Traffic Operations Report.

<sup>a</sup> The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.

<sup>b</sup> Travel Time and travel speed from east of Air Base Parkway on I-80 to south of Gold Hill Road on I-680; from east of Air Base Parkway on I-80 to west of Red Top Road on I-80; and from east of Main Street on SR 12E to west of Red Top Road on I-80.

<sup>c</sup> Maximum Individual Delay (when compared to a free-flow speed of 65 mph) from east of Air Base Parkway on I-80 to south of Gold Hill Road on I-680; from east of Air Base Parkway on I-80 to west of Red Top Road on I-80; and from east of Main Street on SR 12E to west of Red Top Road on I-80.

<sup>d</sup> Flow is on SB I-680 between I-80 and Gold Hill Road; on WB I-80 between SR 12W and Red Top Road; and on SR 12E between Chadbourne Road and I-80.

**Table 3.1.6-7. Construction-Year 2015—P.M. Peak Hour Conditions  
System Wide Measures of Effectiveness<sup>a</sup>**

Route	No-Build	Alternative B, Phase 1	Alternative C, Phase 1
<b>Bottlenecks and Queues</b>			
I-80 WB	None	None	None
I-80 EB	At 12 East Connector (due to queue from 12 East EB bottleneck); queue extends to Green Valley Road	None	At 12 East Connector (due to queue from 12 East EB bottleneck); queue extends to Suisun Valley Road
SR 12W WB	None	None	None
SR 12W EB	None	None	None
SR 12E WB	At Pennsylvania; queue extends to Jackson Street	None	Same as No-Build
SR 12E EB	At Pennsylvania; queue extends beyond I-80 Connector and onto I-80 EB	At Pennsylvania; queue extends to I-80 Connector	At Pennsylvania; queue extends beyond I-80 Connector and onto I-80 EB
I-680 NB	At I-80 connector (due to queue from 12 East EB bottleneck); queue extends beyond Gold Hill Road	None	None
I-680 SB	None	None	None
<b>Duration of Congestion</b>			
System-wide	Congestion would significantly increase compared to existing conditions, lasting beyond 3 hours	Congestion would decrease, relative to No-Build conditions, to near existing conditions, lasting approximately 1.5 hours.	Congestion would decrease, relative to No-Build conditions, to near existing conditions, lasting approximately 2 hours.
<b>Travel Times</b>			
NB I-680 to EB I-80 <sup>b</sup>	34:00	9:10	13:05
EB I-80 <sup>b</sup>	11:45	8:10	10:40
SR-12 West to EB I-80 <sup>b</sup>	11:55	8:15	11:00
<b>Maximum Individual Delay</b>			
NB I-680 to EB I-80 <sup>c</sup>	26 minutes	1 minute	5 minutes
EB I-80 <sup>c</sup>	4 minutes	None	3 minutes
SR-12 West to EB I-80 <sup>c</sup>	4 minutes	None	3 minutes
<b>Speed</b>			
NB I-680 to EB I-80 <sup>b</sup>	17 mph	63 mph	49 mph
EB I-80 <sup>b</sup>	45 mph	65 mph	50 mph
SR-12 West to EB I-80 <sup>b</sup>	43 mph	62 mph	48 mph
<b>Flows (volume)</b>			
NB I-680 <sup>d</sup>	2,168	4,037	4,327
EB I-80 <sup>d</sup>	7,272	8,679	7,937
SR 12W <sup>d</sup>	1,548	1,385	1,334

Source: Final Traffic Operations Report.

<sup>a</sup> The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.

<sup>b</sup> Travel Time and travel speed from south of Gold Hill Road on I-680 to east of Air Base Parkway on I-80; from west of Red Top Road on I-80 to east of Air Base Parkway on I-80; and from west of Red Top Road on SR 12W to east of Air Base Parkway on I-80.

<sup>c</sup> Maximum Individual Delay (when compared to a free-flow speed of 65 mph) from south of Gold Hill Road on I-680 to east of Air Base Parkway on I-80; from west of Red Top Road on I-80 to east of Air Base Parkway on I-80; and from west of Red Top Road on SR 12W to east of Air Base Parkway on I-80.

<sup>d</sup> Flow is on NB I-680 between Gold Hill Road and I-80; on EB I-80 between Travis Boulevard and Air Base Parkway; and on EB SR 12W between Red Top Road and I-80.

**Table 3.1.6-8. Design-Year 2035—A.M. Peak Hour Conditions  
System Wide Measures of Effectiveness<sup>a</sup>**

Route	No-Build	Alternative B, Phase 1	Alternative C, Phase 1	Alternative B	Alternative C
<b>Bottlenecks and Queues</b>					
I-80 WB	Between Suisun Valley Road and Truck Scales; queue extends to SR 12E connector	None	None	None	None
I-80 EB	None	None	None	None	None
SR 12W WB	At Red Top Road; queue extends to I-80 connector	Same as No-Build	None	None	None
SR 12W EB	None	None	None	None	None
SR 12E WB	At Beck; queue extends beyond Civic Center Drive	At Pennsylvania; queue extends beyond Civic Center Drive	Same as No-Build	None	None
SR 12E EB	At Pennsylvania; queue extends to Chadbourne	None	Same as No-Build	None	None
I-680 NB	None	None	None	None	None
I-680 SB	None	None	None	None	None
<b>Duration of Congestion</b>					
System-wide	Congestion would significantly increase compared to existing conditions, lasting approximately 3 hours.	Congestion would decrease, relative to No-Build conditions, to near existing conditions, lasting approximately 1.5 hours.	Congestion would decrease, relative to No-Build conditions, lasting approximately 2.5 hours.	Congestion would decrease, relative to No-Build conditions, to near existing conditions, lasting approximately 1.5 hours.	Congestion would decrease, relative to No-Build conditions, to near existing conditions, lasting approximately 1.5 hours.
<b>Travel Times</b>					
WB I-80 to SB I-680 <sup>b</sup>	11:15	9:55	10:25	9:20	9:35
WB I-80 <sup>b</sup>	10:00	9:00	8:45	7:05	8:10
SR-12 East to WB I-80 <sup>b</sup>	19:50	9:50	17:05	6:30	7:40
<b>Maximum Individual Delay</b>					
WB I-80 to SB I-680 <sup>c</sup>	2 minutes	1 minute	2 minutes	5 seconds	20 seconds
WB I-80 <sup>c</sup>	2 minutes	1 minute	1 minute	None	None
SR-12 East to WB I-80 <sup>c</sup>	12 minutes	2 minutes	9 minutes	None	None
<b>Speed</b>					
WB I-80 to SB I-680 <sup>b</sup>	53 mph	58 mph	60 mph	58 mph	59 mph
WB I-80 <sup>b</sup>	54 mph	60 mph	62 mph	60 mph	61 mph
SR-12 East to WB I-80 <sup>b</sup>	26 mph	51 mph	28 mph	61 mph	62 mph
<b>Flows (volume)</b>					
SB I-680 <sup>d</sup>	3,699	3,816	3,929	4,618	4,372
WB I-80 <sup>d</sup>	6,121	6,558	6,074	6,462	6,602
WB SR-12 East <sup>d</sup>	2,139	3,064	2,466	4,115	3,909

Source: Final Traffic Operations Report.

<sup>a</sup> The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.

<sup>b</sup> Travel Time and travel speed from east of Air Base Parkway on I-80 to south of Gold Hill Road on I-680; from east of Air Base Parkway on I-80 to west of Red Top Road on I-80; and from east of Main Street on SR 12E to west of Red Top Road on I-80.

<sup>c</sup> Maximum Individual Delay (when compared to a free-flow speed of 65 mph) from east of Air Base Parkway on I-80 to south of Gold Hill Road on I-680; from east of Air Base Parkway on I-80 to west of Red Top Road on I-80; and from east of Main Street on SR 12E to west of Red Top Road on I-80.

<sup>d</sup> Flow is on SB I-680 between I-80 and Gold Hill Road; on WB I-80 between SR 12W and Red Top Road; and on SR 12E between Chadbourne Road and I-80.

**Table 3.1.6-9. Design-Year 2035—P.M. Peak Hour Conditions  
System Wide Measures of Effectiveness<sup>a</sup>**

Route	No-Build	Alternative B, Phase 1	Alternative C, Phase 1	Alternative B	Alternative C
<b>Bottlenecks and Queues</b>					
I-80 WB	At Suisun Valley Road; queue extends beyond Air Base Parkway	At Suisun Valley Road; queue extends to east of WB truck scales	At Suisun Valley Road; queue extends to Abernathy	None	None
I-80 EB	At 12 East Connector (due to queue from 12 East EB bottleneck); queue extends beyond Red Top Road	Same as No-Build	Same as No-Build	At Air Base Parkway (outside project limits); queue extends to just east of SR 12W connector	At Air Base Parkway (outside project limits); queue extends to Red Top Road
SR 12W WB	None	None	None	None	None
SR 12W EB	At I-80 Connector (due to queue from 12 East EB bottleneck); queue extends beyond Red Top Road	Same as No-Build	Same as No-Build	At I-80 Connector (due to I-80 EB bottleneck at Air Base Parkway); queue extends west of Red Top Road	At I-80 Connector (due to I-80 EB bottleneck at Air Base Parkway); queue extends west of Red Top Road
SR 12E WB	At I-80 connector (due to I-80 congestion); queue extends beyond Civic Center Drive	At Pennsylvania queue extends to Webster/Jackson	At Pennsylvania queue extends to Webster/Jackson	None	None
SR 12E EB	At Pennsylvania; queue extends beyond I-80 Connector and onto I-80 EB	Not designed to serve 2035 demands; queuing similar to No-Build conditions, but congestion improves	Not designed to serve 2035 demands; queuing similar to No-Build conditions, but congestion improves	None	None
I-680 NB	At I-80 connector (due to queue from 12 East EB bottleneck); queue extends beyond Gold Hill Road	Bottleneck limited to Gold Hill Road interchange; duration of congestion improves relative to No-Build conditions	Queue on I-80 EB spills back; duration of congestion improves relative to No-Build conditions	At I-80 connector (due to the I-80 EB bottleneck at Air Base Parkway); queue extends beyond Gold Hill Road	At Gold Hill on-ramp, queue extends to Gold Hill off-ramp
I-680 SB	None	None	None	None	
<b>Duration of Congestion</b>					
System-wide	Congestion would significantly increase compared to existing conditions, lasting beyond 6 hours	Congestion would decrease relative to No-Build conditions, lasting approximately 4.5 hours	Congestion would decrease relative to No-Build conditions, lasting beyond 5 hours	Congestion would significantly decrease relative to No-Build conditions, lasting approximately 3 hours	Congestion would significantly decrease relative to No-Build conditions, lasting approximately 3 hours

Route	No-Build	Alternative B, Phase 1	Alternative C, Phase 1	Alternative B	Alternative C
<b>Travel Times</b>					
NB I-680 to EB I-80 <sup>b</sup>	48:15	13:10	Greater than 60:00	17:45	20:00
EB I-80 <sup>b</sup>	16:50	13:40	21:30	18:35	17:15
SR-12W to EB I-80 <sup>b</sup>	22:05	17:15	Greater than 60:00	19:45	18:30
<b>Maximum Individual Delay</b>					
NB I-680 to EB I-80 <sup>c</sup>	40 minutes	5 minutes	More than 52 minutes	10 minutes	12 minutes
EB I-80 <sup>c</sup>	9 minutes	5 minutes	13 minutes	10 minutes	9 minutes
SR-12W to EB I-80 <sup>c</sup>	14 minutes	9 minutes	More than 52 minutes	12 minutes	10 minutes
<b>Speed</b>					
NB I-680 to EB I-80 <sup>b</sup>	12 mph	35 mph	8 mph	32 mph	26 mph
EB I-80 <sup>b</sup>	31 mph	39 mph	25 mph	28 mph	27 mph
SR-12W to EB I-80 <sup>b</sup>	19 mph	28 mph	8 mph	25 mph	25 mph
<b>Flows (volume)</b>					
NB I-680 <sup>d</sup>	1,223	4,189	1,549	4,565	4,063
EB I-80 <sup>d</sup>	6,974	8,531	6,422	9,705	10,141
SR-12W <sup>d</sup>	234	858	342	2,163	2,908

Source: Final Traffic Operations Report.

- <sup>a</sup> The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.
- <sup>b</sup> Travel Time and travel speed from south of Gold Hill Road on I-680 to east of Air Base Parkway on I-80; from west of Red Top Road on I-80 to east of Air Base Parkway on I-80; and from west of Red Top Road on SR 12W to east of Air Base Parkway on I-80.
- <sup>c</sup> Maximum Individual Delay (when compared to a free-flow speed of 65 mph) from south of Gold Hill Road on I-680 to east of Air Base Parkway on I-80; from west of Red Top Road on I-80 to east of Air Base Parkway on I-80; and from west of Red Top Road on SR 12W to east of Air Base Parkway on I-80.
- <sup>d</sup> Flow is on NB I-680 between Gold Hill Road and I-80; on EB I-80 between Travis Boulevard and Air Base Parkway; and on EB SR 12W between Red Top Road and I-80.

### Effects on System-Wide MOEs

#### Alternative B (2035)

Alternative B would result in significant benefits to all three MOEs in the a.m. peak hour. Corridor-wide mobility would improve, with VMT increasing by approximately 7%, while VHD would decrease by nearly 70%. Average network travel speeds would increase more than 25%, from 42 mph under the 2035 No-Build scenario to approximately 53 mph with Alternative B (Figure 3.1.6-3).

Alternative B would provide even greater benefits to all three MOEs in the p.m. peak hour. Corridor-wide mobility would improve, with VMT increasing by 60%, while VHD would decrease by approximately 70%. Average network travel speed would increase more than 140% from 16 mph to approximately 40 mph (Figure 3.1.6-4).

Alternative B would provide a substantial improvement over the No-Build condition, clearing bottlenecks within the I-80 portion of the project corridor during the morning peak hour and substantially reducing queues in the evening peak hour. Alternative B would provide nearly a 70% reduction in VHD during the a.m. and p.m. peak hours. This alternative would provide travel time savings of 30%, on average, for the major travel routes through the project area in the a.m. peak hour, and 65% savings in the p.m. peak hour. The proposed project would clear all

mainline sections of deficiencies experienced in the No-Build condition in the a.m. peak, although some deficiencies would remain in the p.m. peak hour. These deficiencies, however, are mainly due to the downstream bottleneck at Air Base Parkway, which is outside the project area.

***Alternative B, Phase 1 (2015)***

In the a.m. peak hour, Alternative B, Phase 1 would have very little effect on mobility, with an increase in VMT of less than 2,000 vehicle-miles (less than 0.5%), compared to No-Build conditions. However, Alternative B, Phase 1 would improve system-wide operations, resulting in a decrease in VHD of nearly 22% and an increase in average network travel speed of about 3% (from 51 mph under No-Build conditions to approximately 53 mph with Alternative B, Phase 1). (Figure 3.1.6-3).

In the p.m. peak hour, Alternative B, Phase 1 would improve corridor-wide mobility, increasing VMT by 11% while decreasing VHD by approximately 58%. Average network travel speed would increase by 32% (from 36 mph under No-Build conditions to approximately 48 mph with Alternative B, Phase 1) (Figure 3.1.6-4).

Alternative B, Phase 1 would provide an improvement over the No-Build condition, reducing the extent of queue from the bottleneck on SR 12E during the morning and evening peak hours. Alternative B would provide an approximately 20% reduction in VHD during the a.m. peak hour and a 60% reduction in VHD during the p.m. peak hour. This alternative would provide travel time savings of 10%, on average, for the major travel routes through the project area during the a.m. peak hour, and 35% savings during the p.m. peak hour. Only the WB SR 12E on-ramp from Jackson Street would continue to operate unacceptably during the a.m. peak hour, but this is due to the queue spillback from the SR 12E/Pennsylvania Avenue intersection. During the p.m. peak hour, only EB SR 12E between the truck scales and Beck Avenue would continue to operate unacceptably. Overall, this would be a beneficial effect. No minimization or mitigation measures are required.

***Alternative B, Phase 1 (2035)***

In the a.m. peak hour, relative to the 2035 No-Build scenario, Alternative B, Phase 1 would improve corridor-wide mobility by increasing VMT approximately 5%, while decreasing VHD by nearly 100%. Average network travel speeds would increase 17% (from 42 mph under No-Build conditions to approximately 49 mph) (Figure 3.1.6-3).

In the p.m. peak hour, relative to the 2035 No-Build scenario, Alternative B, Phase 1 would improve corridor-wide mobility by increasing VMT by 39%, while decreasing VHD by 47%. Average network travel speed would increase by 82% (from 16 mph to 29 mph) (Figure 3.1.6-4).

Alternative B, Phase 1 would improve corridor-wide mobility in the a.m. peak hour by increasing VMT approximately 5%, while decreasing VHD by nearly 100%, relative to the 2035 No-Build condition. Average network travel speeds would increase 17%. In the p.m. peak hour, Alternative B, Phase 1 would improve corridor-wide mobility by increasing VMT by 39%, while decreasing VHD by 47%. Average network travel speed would increase by 82%. This would be a beneficial effect.

### ***Alternative C (2035)***

Alternative C would result in significant benefits to all three MOEs in the a.m. peak hour. Corridor-wide mobility would improve, with VMT increasing by approximately 7%, while VHD would decrease by nearly 70%. Average network travel speeds would increase more than 25%, from 42 mph under the 2035 No-Build scenario to approximately 53 mph under Alternative C (Figure 3.1.6-3).

Alternative C would provide even greater benefits to all three MOEs in the p.m. peak hour. Corridor-wide mobility would improve, with VMT increasing by 60%, while VHD would decrease by approximately 70%. Average network travel speed would increase more than 140%, from 16 mph to approximately 40 mph (Figure 3.1.6-4).

Alternative C would provide a substantial improvement over the No-Build condition, clearing bottlenecks within the I-80 portion of the project corridor during the a.m. peak hour and substantially reducing queues in the p.m. peak hour. Alternative C would provide nearly a 70% reduction in VHD during the a.m. and p.m. peak hours. This alternative would provide travel time savings of almost 25%, on average, for the major travel routes through the project area in the a.m. peak hour, and 65% savings in the p.m. peak hour. The proposed project would clear the mainline sections of all deficiencies experienced under the No-Build condition during the a.m. peak hour, although some deficiencies would remain in the p.m. peak hour due to the downstream bottleneck at Air Base Parkway, which is outside the project area. Overall, this would be a beneficial effect. No minimization or mitigation measures are required.

### ***Alternative C, Phase 1 (2015)***

In the a.m. peak hour, Alternative C, Phase 1 would have little effect on mobility relative to the 2015 No-Build condition. VMT would decrease slightly (approximately 1,000 vehicle miles or less than 0.5%) compared to No-Build conditions. Alternative C, Phase 1 would result in a minimal improvement to system-wide operations over No-Build conditions, resulting in an increase in VHD of only 3% and no change in average network travel speed (Figure 3.1.6-3).

In the p.m. peak hour, Alternative C, Phase 1 would improve corridor-wide mobility relative to the 2015 No-Build condition, increasing VMT by 7% while decreasing VHD by approximately 39%. Average network travel speed would increase by 20% (from 36 mph to approximately 43 mph) (Figure 3.1.6-4).

Alternative C, Phase 1 would provide an improvement over the 2015 No-Build conditions, reducing the extent of queue from the bottleneck on SR 12E during the a.m. and p.m. peak hours. Alternative C, Phase 1 would provide no reduction to VHD during the a.m. peak hour, but would provide a 40% reduction during the p.m. peak hour. This alternative would provide negligible travel time savings during the a.m. peak hour, but would provide a 5% savings during the p.m. peak hour. Only WB SR 12E from east of Main Street to Pennsylvania Avenue would continue to operate unacceptably during the a.m. peak hour, due to the queue spillback from the SR 12E/Pennsylvania Avenue intersection. During p.m. peak hour EB, queue spillback from the Beck Avenue and Pennsylvania Avenue intersections on SR 12E would still extend back to I-680, but the extent of queue would be less than under No-Build conditions. Overall, this would be a beneficial effect. No minimization or mitigation measures are required.

### **Alternative C, Phase 1 (2035)**

Alternative C, Phase 1 would improve corridor-wide mobility by increasing VMT approximately 1%, while decreasing VHD by 18%. Average network travel speeds would increase 6% (from 42 mph to approximately 44 mph) (Figure 3.1.6-3).

Alternative C, Phase 1 would improve corridor-wide mobility by increasing VMT by 16%, while decreasing VHD by 16%. Average network travel speed would increase 25% (from 16 mph to 20 mph) (Figure 3.1.6-4).

In the a.m. peak hour, Alternative C, Phase 1 would improve corridor-wide mobility by increasing VMT approximately 1%, while decreasing VHD by 18%. Average network travel speeds would increase 6% (from 42 mph to approximately 44 mph). In the p.m. peak hour, Alternative C, Phase 1 would improve corridor-wide mobility by increasing VMT by 16%, while decreasing VHD by 16%. Average network travel speed would increase 25% (from 16 mph to 20 mph). This would be a beneficial effect.

### **No-Build (2015)**

In the a.m. peak hour, the level of congestion and delays that occurs under existing conditions would continue to occur under No-Build conditions in 2015. The projected increase in vehicular traffic is offset by the programmed and funded projects for the study area, except on WB SR 12E where severe congestion at the Beck Avenue and Pennsylvania Avenue intersections would continue to meter the amount of traffic that can access WB I-80. Despite increase in traffic during the a.m. peak hour, VHD would decrease slightly, and the average network travel speed would increase by 11% relative to existing conditions (Figure 3.1.6-3).

In the p.m. peak hour, congestion on EB SR 12E between the Pennsylvania Avenue and Beck Avenue intersections would result in a bottleneck that would constrain the amount of traffic that can exit the project study area on SR 12E east of Main Street and on I-80 east of Air Base Parkway. In addition, heavy traffic volumes on EB I-80 and NB I-680 would result in approximately 5,000 VHD (Figure 3.1.6-4).

In the a.m. peak hour, conditions would not worsen substantially relative to the existing (2004) condition. However, in the p.m. peak hour, VHD would increase by more than 100%; the duration of congestion would increase from 1.5–2 hours to more than 3 hours; many EB travel times would more than double, and the bottlenecks on SR 12E at Pennsylvania Avenue and at the SR 12E/EB I-80 connector would result in queues backing up onto I-80 as far as Green Valley Road.

### **No-Build (2035)**

In the a.m. peak hour, significant congestion and delays would occur within the project study area, affecting accessibility and mobility throughout Solano County. Because the I-80/I-680/SR 12 interchange serves as a major freeway connector from the San Francisco Bay Area and Sacramento, the No-Build conditions would significantly affect the entire region. Severe congestion on WB SR 12E at the Beck Avenue and Pennsylvania Avenue intersections would meter the amount of traffic that can access WB I-80. Nevertheless, severe congestion at the I-80/I-680 interchange would result in nearly 3,700 VHD and average travel speeds of 40 mph. Relative to existing conditions, VHD would increase by 224% (Table 3.1.6-5).

In the p.m. peak hour, severe congestion on EB SR 12E between the Pennsylvania Avenue and Beck Avenue intersections would result in a major bottleneck constraining the amount of traffic that can exit the project study area on SR 12E east of Main Street and on I-80 east of Air Base Parkway. In addition, heavy traffic volumes on EB I-80 and NB I-680 would result in approximately 19,000 VHD. The average travel speed would drop to 16 mph (Table 3.1.6-6).

Traffic congestion and delays would increase significantly by 2035 without the proposed project, increasing VHD more than 200% during the a.m. peak hour and 900% during the p.m. peak hour. The I-80/I-680/SR 12 interchange would not provide sufficient capacity to serve the projected 2035 traffic volumes, resulting in severe congestion and oversaturated stop-and-go operations during both the a.m. and p.m. peak hours. Queues would extend through much or all of the project area, and the average travel speed would drop to 42 (mph) during the a.m. peak hour and 16 mph during the p.m. peak hour. Without the improvements, the peak period would last 3–4 hours during the a.m. and 6–7 hours during the p.m.

### *Effect on Travel Times*

#### ***Alternative B (2035)***

The benefits of Alternative B during the a.m. peak hour include WB travel time savings of 20%–40%. EB travel time savings would be in the 5%–20% range.

The benefits of Alternative B during the p.m. peak hour include EB travel time savings of 10%–85%. It should be noted that one travel route would actually experience an increase in travel time of about 10% (EB I-80 west of Red Top Road to EB I-80 east of Air Base Parkway). The reason for this increase is the increased number of vehicles served by the proposed project coupled with the removal of the bottleneck on SR 12E. With more vehicles arriving at the downstream bottleneck at Air Base Parkway outside the project area, the travel routes east of SR 12E would experience an increase in travel time due to the additional delay. In the WB direction, Alternative B would result in travel time savings of 60%–70%.

#### ***Alternative B, Phase 1 (2015)***

The benefits of Alternative B, Phase 1 during the a.m. peak hour include substantial WB travel time savings for trips originating from WB SR 12E, with travel time savings of more than 35%. WB I-80 to SB I-680 travel time would improve slightly, with a travel time savings of 5%. All other travel time routes would remain consistent with No-Build conditions, increasing or decreasing by less than 30 seconds.

The benefits of Alternative B, Phase 1 (2015) during the p.m. peak hour include EB travel time savings of 30%–75%. The travel time savings would result in travel times comparable to, or even better than, existing travel times. Those travel time routes that would be better than existing conditions include EB I-80 from Red Top Road to Air Base Parkway and all routes beginning on NB I-680, EB SR 12W, and WB SR 12E. Alternative B, Phase 1 would result in WB travel time savings of 4%–20%. The improved travel times on WB SR 12E are due to the replacement of the Beck Avenue at-grade intersection on SR 12E with a grade-separated interchange, and improvements to the Pennsylvania Avenue intersection.

### ***Alternative B, Phase 1 (2035)***

The benefits of Alternative B, Phase 1 in 2035 during the a.m. peak hour include substantial WB travel time savings for trips originating from WB SR 12E, with travel time savings of 45%–50%. WB I-80 travel time would improve by approximately 10% compared to No-Build conditions. All other travel routes would remain consistent with No-Build conditions.

The benefits of Alternative B, Phase 1 during the p.m. peak hour would include EB travel time savings of up to 70%. All WB travel time routes would improve by more than 50%.

### ***Alternative C (2035)***

The benefits of Alternative C during the a.m. peak hour include WB travel time savings of 20–25%. EB travel time savings would be 10%–15%.

The benefits of Alternative C during the p.m. peak hour include EB travel time savings of 15–80%. One travel route—EB I-80 west of Red Top Road to EB I-80 east of Air Base Parkway—would experience an increase in travel time of approximately 2%, for similar reasons as the increase under Alternative B. WB travel time savings would be 50%–60%.

### ***Alternative C, Phase 1 (2015)***

During the a.m. peak hour, Alternative C, Phase 1 (2015) would result in minimal improvement to WB travel, with increases or decreases of less than 30 seconds compared to No-Build conditions. It should be noted that one travel time route (WB I-80 to WB SR 12W) would increase by more than 10%. This is due to the relocation of Red Top Road 1,500 feet west of the current intersection location, creating a slightly longer travel path. Travel times from WB SR 12E to WB I-80 and SB I-680 would decrease slightly by 7% and 5%, respectively, because of the improvements to freeway flows in the right two lanes on WB I-80 west of the SR 12E connector.

The benefits of Alternative C, Phase 1 during the p.m. peak hour include EB travel time savings of 0%–60%. The travel time savings would result in travel times comparable to, or even better than, existing travel times. Those travel time routes that would be better than existing conditions include those starting on NB I-680. Alternative C, Phase 1 would result in reductions for most WB travel times; however, travel times for the two routes that end on WB SR 12 would increase slightly. The increased travel time would be due to the relocation of interchanges (the current at-grade intersection at Red Top Road on SR 12W would be replaced with a grade-separated interchange located approximately 1,500 feet west of the existing intersection location), resulting in longer travel distances.

### ***Alternative C, Phase 1 (2035)***

During the a.m. peak hour, Alternative C, Phase 1 would result in WB travel time savings of 5% to 20% compared to 2035 No-Build conditions. EB travel times would be similar to No-Build conditions, increasing by 30 seconds or less. The increase in travel time on EB SR 12E is due to an increase in demand served, and therefore more vehicles arriving at the bottleneck, while the increase in travel times on EB I-80 is due to the lengthening of some travel time paths due to the location of new interchanges.

During the p.m. peak hour, Alternative C, Phase 1 would result in an increase in EB travel times. Some of this increase is due to an increase in travel distances because of new ramp locations. However, most of the increase is due to the two lane drops between I-680 and the Suisun Valley Road overcrossing, the short distance between the SR 12W and I-680 on-ramps, and the heavy demand for the rightmost lanes on I-80. WB travel time savings would approach 70% compared to No-Build conditions.

#### ***No-Build (2015)***

Under the No-Build alternative, congestion and delays on SR 12E and SR 12W would result in long travel times and low travel speeds on those facilities in the a.m. peak hour. Moderate amounts of congestion and delay on the other facilities would result in somewhat slower than free-flow travel times and speeds on those facilities.

In the p.m. peak hour, EB congestion under No-Build conditions would result in oversaturated stop-and-go conditions. This would cause several major eastbound travel routes to exceed 30 minutes, including one route exceeding 60 minutes.

#### ***No-Build (2035)***

Under 2035 No-Build conditions, significant congestion and delays would result in long travel times and low travel speeds on all major facilities through the project study area in the a.m. and p.m. peak hours. Severe EB congestion in the p.m. peak hour would result in seven major travel routes exceeding 45 minutes (including five exceeding 60 minutes) as a result of oversaturated stop-and-go conditions.

### **Effects on Freeway Operations**

#### ***A.M. Peak Hour***

#### ***Alternative B (2035)***

During the a.m. peak hour, all freeway segments within the project study area would operate at LOS E or better under Alternative B. Only seven locations would operate at capacity (LOS E), and none of those locations would cause queue spillback into adjacent locations. Those locations are listed below.

- WB I-80 east of Waterman Boulevard/Air Base Parkway.
- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.
- WB I-80 off-ramp to Abernathy Road.
- NB I-680 off-ramp to Gold Hill Road.
- SB I-680 on-ramp from Gold Hill Road.
- WB SR 12E off-ramp to Main Street.
- WB SR 12E on-ramp from Jackson Street.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speed. The HOV lane on WB I-80 would

approach capacity near the I-680/SR 12W interchange due to the HOVs accessing the direct HOV connector to I-680 and due to the HOVs bypassing the slight congestion in the adjacent mixed-flow lanes.

***Alternative B, Phase 1 (2015)***

In the a.m. peak hour, with construction of Alternative B, Phase 1, the bottleneck on SR 12E would be partially relieved due to the replacement of the at-grade intersection at Beck Avenue with grade-separated interchange and improvements at the Pennsylvania Avenue intersection. The additional vehicles on WB SR 12E would reduce speeds and increase congestion, but SR 12E would still operate acceptably. The signalized intersection on SR 12E at Pennsylvania Avenue would continue to meter the amount of WB traffic on SR 12E, but to a lesser extent than under No-Build conditions. Without the bottleneck on SR 12E at Beck Avenue, WB SR 12E and WB I-80 would serve higher demand in 2015.

Alternative B, Phase 1 would improve WB I-80 by increasing its capacity approaching the I-680 and SR 12W connectors. These improvements would reduce the congestion between the truck scales and Suisun Valley Road and would serve the additional traffic released from WB SR 12E. All freeway segments within the project study area would operate at LOS D conditions or better during the a.m. peak hour, except EB SR 12E approaching the Pennsylvania Avenue intersection. Only one location, the WB SR 12E on-ramp from Jackson Street, would operate over capacity (LOS F) as a result of the Pennsylvania Avenue intersection bottleneck on WB SR 12E.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV lane on WB I-80 between SR 12E and SR 12W would approach capacity due to HOVs accessing the direct HOV connector to I-680 and due to HOVs bypassing the high traffic volume in the adjacent mixed-flow lanes.

***Alternative B, Phase 1 (2035)***

With construction of Alternative B, Phase 1, the bottleneck on SR 12E would be partially relieved by the replacement of the at-grade intersection at Beck Avenue with a grade-separated interchange and improvements at the Pennsylvania Avenue intersection. Alternative B, Phase 1 improvements would also improve WB I-80 operations by increasing its capacity approaching the I-680 and SR 12W connectors. These improvements would reduce the congestion between the truck scales and Suisun Valley Road and would serve the additional traffic released from WB SR 12E. The Red Top Road/North Connector/SR 12W intersection would continue to back up onto WB I-80 and cause slowing on the connector and slowing in the right two lanes of I-80 approaching the connector; average speeds on this section of I-80 would remain in the 50–59 mph range. All freeway segments within the project study area would operate at LOS E conditions or better during the a.m. peak hour, except on WB SR 12E approaching the Pennsylvania Avenue intersection.

With construction of Alternative B, Phase 1, 12 freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations:

- WB I-80 on-ramp from Waterman Boulevard/Air Base Parkway.
- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.

- WB I-80 on-ramp from Travis Boulevard.
- WB I-80 weave between Travis Boulevard Loop and Oliver Road.
- WB I-80 mainline between SR 12E connector and truck scales.
- WB I-80 weave between Green Valley Road and SR 12W.
- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.
- NB I-680 mainline between Gold Hill Road and Central Way.
- SB I-680 on-ramp from Gold Hill Road.
- WB SR 12E off-ramp to Main Street.
- WB SR 12E weave between Beck Avenue and Abernathy Road.

During the a.m. peak hour, the HOV lanes on EB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV lane on WB I-80 would operate at free-flow speeds, except between SR 12E and the I-680/SR 12W interchange, which would operate near capacity due to HOVs accessing the direct HOV connector to I-680 and due to HOVs bypassing the high traffic volume in the adjacent mixed-flow lanes.

#### ***Alternative C (2035)***

During the a.m. peak hour, all freeway mainline and weaving sections within the project study area would operate at LOS E conditions or better under Alternative C. Only eight locations would operate at capacity (LOS E), and none of those locations would cause queue spillback into adjacent locations. These locations are:

- WB I-80 east of Waterman Boulevard/Air Base Parkway.
- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.
- WB I-80 weave between Travis Boulevard Loop and Oliver Road.
- WB I-80 off-ramp to Abernathy Road.
- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.
- SB I-680 on-ramp from Gold Hill Road.
- WB SR 12 E off-ramp to Main Street.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds.

#### ***Alternative C, Phase 1 (2015)***

Alternative C, Phase 1 would improve a.m. peak hour operations by adding capacity to WB I-80, but would not alleviate either the Beck Avenue or Pennsylvania Avenue intersection bottlenecks

on WB SR 12E in 2015. The combination of added capacity on WB I-80 and continuation of the bottleneck on WB SR 12E would result in a reduction in congestion on WB I-80.

Alternative C, Phase 1 would also improve SR 12W, including replacing the at-grade intersection at Red Top Road with a grade-separated interchange approximately 1,500 feet west of the current location. This would reduce congestion and queuing on SR 12W and reduce the queue spillback to I-80, improving operations on WB I-80 approaching the SR 12W connector.

All the freeway mainline and weaving sections within the project study area, except for those on WB SR 12E, would operate at LOS D conditions or better during the a.m. peak hour. Locations east of Beck Avenue on WB SR 12E would continue to experience LOS F conditions. Only three locations would operate over capacity (LOS F) as a result of the Beck Avenue and Pennsylvania Avenue intersection bottlenecks on WB SR 12E.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds.

#### ***Alternative C, Phase 1 (2035)***

Alternative C, Phase 1 would improve operations by adding capacity to WB I-80, but would not alleviate either the Beck Avenue or Pennsylvania Avenue intersection bottlenecks on WB SR 12E. The improvements, however, would reduce congestion and queuing on WB I-80 on several segments, including between the SR 12E connector and the I-680 and SR 12W connectors.

Alternative C, Phase 1 would also improve SR 12W, including replacing the at-grade intersection at Red Top Road/North Connector with a grade-separated interchange approximately 1,500 feet west of the current location. This would reduce congestion and queuing on SR 12W and reduce the queue spillback to I-80, improving operations on WB I-80 approaching the SR 12W connector.

All the freeway mainline and weaving sections within the project study, except for those on WB SR 12E, would operate at LOS E conditions or better during the a.m. peak hour. Locations east of Pennsylvania Avenue on WB SR 12E would continue to experience LOS F conditions. Only three locations would operate over capacity (LOS F) as a result of the Beck Avenue and Pennsylvania Avenue intersection bottlenecks on WB SR 12E.

With construction of Alternative C, Phase 1, eight freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations. Those locations are listed below.

- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.
- WB I-80 weave between Travis Boulevard Loop and Oliver Road.
- WB I-80 mainline between SR 12E connector and truck scales.
- WB I-80 weave between truck scales and Suisun Valley Road.
- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.

- NB I-680 off-ramp to Red Top Road.
- SB I-680 on-ramp from Gold Hill Road.

During the AM peak hour, the HOV lanes on EB and WB I-80 and on the direction connectors between I-80 and I-680 would operate at free-flow speeds.

#### ***No-Build (2015)***

During the a.m. peak hour, under No-Build 2015 conditions, WB I-80 would experience heavy traffic flows, but would not reach capacity until the weave between the truck scales on-ramp and the Suisun Valley Road off-ramp. The congestion is mostly due to motorists positioning themselves for the upcoming SB I-680 and WB SR 12W connectors conflicting with trucks merging onto the freeway from the truck scales. However, the average speed over all lanes in this location would be in the 60+ mph range. In addition, the existing signalized intersections on SR 12E at Pennsylvania Avenue and Beck Avenue would meter the amount of SB traffic entering I-80. Without the additional bottlenecks on SR 12E, WB I-80 would experience more congestion in 2015.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 would operate at free-flow speeds.

#### ***No-Build (2035)***

During the a.m. peak hour, under 2035 No-Build conditions, slow-moving traffic in the rightmost lanes would occur on WB I-80 at the SR 12W connector due to the Red Top Road/SR 12W intersection backing up onto WB I-80 and due to WB SR 12W operating at saturated conditions. The resulting queue would extend back to east of the I-680 NB connector. A bottleneck would also develop between the truck scales and Suisun Valley Road, resulting in speeds of less than 30 mph across all lanes at this location. This bottleneck is due to traffic from SR 12E and the truck scales weaving with traffic headed to Suisun Valley Road, I-680, and SR 12W. The resulting queue would extend to the SR 12E connector on WB I-80. In addition to the queuing on I-80, the existing signalized intersections on SR 12E at Pennsylvania Avenue and Beck Avenue would meter the amount of WB traffic entering I-80. Without the additional bottlenecks on SR 12E, the congestion on WB I-80 would be more severe.

Under the No-Build Alternative, nine freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations. Those locations are:

- WB I-80 on-ramp from Waterman Boulevard/Air Base Parkway.
- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.
- WB I-80 on-ramp from Travis Boulevard.
- WB I-80 weave between Travis Boulevard Loop and Oliver Road.
- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.

- NB I-680 mainline between Gold Hill Road and Central Way.
- NB I-680 off-ramp to Central Way.
- SB I-680 on-ramp from Gold Hill Road.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 would operate at free-flow speeds.

#### *P.M. Peak Hour*

##### ***Alternative B (2035)***

During the p.m. peak hour, the queuing on WB I-80 would be eliminated, and vehicles would travel at free-flow speeds under Alternative B. The bottleneck on EB I-80 would move from the present location at the SR 12E connector to the lane drop east of Air Base Parkway, which is at capacity for a four-lane freeway. The extent of the queuing would be considerably less than under the No-Build scenario, only extending back to the SR 12W merge onto I-80, and not extending onto NB I-680. Another bottleneck would occur northbound on I-680 at the Gold Hill Road on-ramp, where the demand at this location would exceed the capacity.

Only two freeway segments within the project study area would operate at capacity (LOS E), with neither of these locations causing queue spillback into adjacent locations. Those locations are:

- NB I-680 off-ramp to Gold Hill Road.
- EB SR 12E on-ramp from Civic Center Boulevard.

During the p.m. peak hour, the HOV lanes on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV Lane on WB I-80 would operate near free-flow speed. The HOV lane would approach capacity on WB I-80 near the I-680/SR 12W interchange due to the HOVs accessing the direct HOV connector to I-680 and due to the HOVs bypassing the high traffic volumes in the adjacent mixed-flow lanes. The HOV lane on EB I-80 would operate just below free-flow speed, but at more than double the average speed of the adjacent mixed-flow lanes. The EB HOV lane would operate at capacity between I-680 and SR 12E and would operate near capacity east of SR 12E due to HOVs bypassing the congestion in the adjacent mixed-flow lanes and due to HOVs directly accessing the HOV lane from the I-680 HOV connector.

##### ***Alternative B, Phase 1 (2015)***

During the p.m. peak hour, with construction of Alternative B, Phase 1, the queuing on WB I-80 would be eliminated, and vehicles would travel at free-flow speeds in 2015. The bottleneck on EB SR 12E would be partially relieved with the replacement of the Beck Avenue at-grade intersection with a grade-separated interchange and improvements to the Pennsylvania Avenue intersection. The extent of queuing due to the bottleneck on EB SR 12E would be substantially reduced, but not entirely eliminated. The EB queue from Pennsylvania Avenue would extend to the EB I-80 connector, but would not spill back onto EB I-80. All other queues on EB I-80 would be eliminated and vehicles would travel at free-flow speeds.

With construction of Alternative B, Phase 1, one freeway segment within the project study area, NB I-680 off-ramp to Gold Hill Road, would operate at capacity (LOS E) but would not cause queue spillback into adjacent locations.

During the p.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds.

***Alternative B, Phase 1 (2035)***

With construction of Alternative B, Phase 1, the length of the queue on WB I-80 between the truck scales and Suisun Valley Road would be significantly reduced (from beyond the project study area east of Air Base Parkway to Travis Boulevard), resulting in an increase in volume served from 48% under No-Build conditions to 79% (a 65% increase). The queue spillback from I-80 to WB SR 12E would also be reduced significantly.

The bottleneck on EB SR 12E would be slightly reduced by the replacement of the Beck Avenue at-grade intersection with a grade-separated interchange and with improvements to the Pennsylvania Avenue intersection. However, the at-grade intersection at Pennsylvania Avenue would still result in long queues on SR 12E.

The queue from Pennsylvania Avenue on EB SR 12E would also continue to spill back to EB I-80 and still extend beyond the project study area on EB I-80 west of Red Top Road. However, the severity of the congestion on EB I-80 would be significantly reduced so that twice as many vehicles would be served as under No-Build conditions. The demand served on I-80 between Suisun Valley Road and the truck scales would double from 35% to 70% served compared to the No-Build condition. The queue would also continue to spill back onto WB SR 12W beyond the project study area. However, with the Alternative B, Phase 1 improvements, the queue would no longer spill back onto NB I-680 because that connector would merge from the left side instead of the more heavily queued right side of EB I-80.

Because of the increased traffic flow on EB I-80, freeway segments downstream of the SR 12E connector would operate near or over capacity. EB I-80 would develop a new bottleneck at the weave between Abernathy Road and West Texas Street, where the demand at this location exceeds the capacity. The queue from this bottleneck would spill back to the SR 12E connector on EB I-80 and contribute to the queuing from SR 12E.

NB I-680 would develop a new bottleneck at the Gold Hill Road on-ramp that would spill back to the Gold Hill Road off-ramp because of over-capacity operations.

With construction of Alternative B, Phase 1, two freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations. Those locations are:

- EB I-80 on-ramp from Air Base Parkway/Waterman Boulevard.
- EB SR 12E on-ramp from Civic Center Boulevard.

During the p.m. peak hour, the HOV lanes on WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The WB HOV lane would be affected by the

queues in the adjacent mixed-flow lanes, prohibiting vehicles from exiting the HOV lane. The HOV lane on EB I-80 would operate at a speed 40% higher than the average speed on the adjacent mixed-flow lanes. The EB HOV lane would operate near capacity near the SR 12E off-ramp due to HOVs bypassing the congestion in the adjacent mixed-flow lanes.

#### ***Alternative C (2035)***

During the p.m. peak hour, the queuing on WB I-80 would be eliminated and vehicles would travel at free-flow speeds. However, as with Alternative B, the bottleneck on EB I-80 would move from the present location at the SR 12E connector to the lane drop east of Air Base Parkway, which would be at capacity for a four-lane freeway. The extent of the queuing, however, would be considerably less than under No-Build conditions, extending to just west of Red Top Road on I-80, just west of Red Top Road on SR 12W, and south of Gold Hill Road on I-680. (By comparison, the No-Build extent of queue would be far outside the study area).

Even though several freeway sections under both Alternatives B and C would continue to operate at LOS F within the project study area, this condition would not be attributable to deficiencies of the proposed project. This condition would be attributable to the bottleneck at Air Base Parkway that backs up into the project study area. With the proposed project, the demand served is much greater than under the No-Build condition (i.e., 80%–100% of the demand is served). Overall, relieving the major bottlenecks during the evening peak hour would provide major system-wide benefits, as well as improve freeway mainline operations.

During the p.m. peak hour, the HOV lanes on WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV lane on EB I-80 would operate at nearly double the average speed of the adjacent mixed-flow lanes. The EB HOV lane would operate at capacity between I-680 and Abernathy Road and near capacity east of Abernathy Road due to HOVs bypassing the congestion in the adjacent mixed-flow lanes and due to HOVs directly accessing the HOV lane from the I-680 HOV connector.

#### ***Alternative C, Phase 1 (2015)***

With construction of Alternative C, Phase 1, the queuing on WB I-80 would be eliminated and vehicles would travel at free-flow speeds. The bottleneck on EB SR 12E, however, would continue to result in congestion spilling back onto EB I-80. The addition of the third lane on EB SR 12E would increase the queuing capacity and throughput on SR 12E, but would only slightly improve the amount of traffic served at the Beck Avenue and Pennsylvania Avenue intersections. The queue from SR 12E would continue to spill back to the connector ramp from NB I-680, a spillback comparable to the extent of the queue under No-Build conditions. This queue would also cause congestion along Abernathy Road and other local streets because vehicles would not be able to enter I-80 and SR 12E heading east.

The bottleneck on SR 12E would constrain the amount of traffic exiting the project area on EB I-80 and thus the freeway downstream of SR 12E would operate at LOS D or better, similar to No-Build conditions. The number of vehicles served would improve slightly under Alternative C, Phase 1 (55%–70% of the demand), compared to No-Build conditions.

Under Alternative C, Phase 1, WB SR 12E would continue to experience congestion and queuing as far back as Jackson Street, similar to No-Build conditions, due to the at-grade intersections.

With construction of Alternative C, Phase 1, two freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations. Those locations are:

- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.

During the p.m. peak hour, the HOV lanes on WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV lane on EB I-80 would operate just under free-flow speeds due to the queues in the adjacent mixed-flow lanes prohibiting vehicles from exiting the HOV lane.

#### ***Alternative C, Phase 1 (2035)***

With construction of Alternative C, Phase 1, the length of the queue on WB I-80 that starts at the weave between the truck scales and Suisun Valley Road would significantly reduce from beyond the project study area east of Air Base Parkway to Abernathy Road. The severity of the congestion on WB I-80 would also reduce significantly, and the volume served would increase from 48% to 82% (a 70% increase) over the No-Build condition. The queue spillback from I-80 to WB SR 12E queue would also be reduced significantly.

The bottleneck on EB SR 12E would continue to result in severe congestion spilling back to EB I-80. The addition of the third lane on EB SR 12E would increase the queuing capacity of SR 12E and would slightly increase the amount of traffic served at the Beck Avenue and Pennsylvania Avenue intersections. However, the queue from SR 12E would still spill as far back as under the No-Build scenario, to beyond the project study area on EB I-80, NB I-680 and EB SR 12W. This queue would also cause congestion to spill back to adjacent ramp terminal intersections, as vehicles would not be able to enter I-80 and SR 12E. Most local streets would also become congested due to queue spillback from the freeway and motorists diverting to alternative routes.

The bottlenecks on EB SR 12E would continue to constrain the amount of traffic exiting the project area on EB I-80; consequently, the freeway downstream of SR 12E would operate at LOS D or better, as it would under No-Build conditions.

During the p.m. peak hour, the direct HOV connector from WB I-80 to SB I-680 would operate at free-flow speeds. The HOV lane on WB I-80 between Abernathy Road and Suisun Valley Road would operate just below free-flow speed due to the queues in the adjacent mixed-flow lanes prohibiting vehicles from exiting the HOV lane. The HOV lane on EB I-80 west of SR 12E and the direct HOV connector from NB I-680 to EB I-80 would experience intermittent congestion due to the queue in the adjacent mixed-flow lanes prohibiting vehicles from exiting the HOV lanes. Despite these slowdowns, the speed of the EB I-80 HOV lane would be more than double the speed of the adjacent mixed-flow lanes.

#### ***No-Build (2015)***

During the p.m. peak hour, under No-Build conditions, a bottleneck would occur on EB SR 12E at the Beck Avenue and Pennsylvania Avenue at-grade intersections. The demand exceeding the capacity of these two intersections would constrain the amount of traffic that can exit the project

study area (EB SR 12E east of Main Street and I-80 east of Air Base Parkway), resulting in congestion queuing back onto EB I-80 as far as the Green Valley Road on-ramp, on NB I-680 beyond Gold Hill Road, and on WB SR 12E to Jackson Street. This queue would also cause congestion along Abernathy Road and other local streets because vehicles are unable to enter EB SR 12E. This bottleneck would constrain the amount of traffic exiting the project area on EB I-80; consequently, the freeway downstream of SR 12E would operate at LOS D or better. However, the number of vehicles served would be considerably less than the demand (only 55%–65% of the demand would be served).

On WB I-80 a bottleneck would develop between the truck scales and Suisun Valley Road under. This would cause some local slowing across all lanes, but would not result in queue spillback.

During the p.m. peak hour, the HOV lane on WB I-80 would operate at free-flow speeds. The HOV lane on EB I-80 would operate at a speed nearly 40% higher than the average speed of the adjacent mixed-flow lanes. The EB HOV lane would operate at capacity between I-680 and SR 12E due to HOVs bypassing the severe congestion in the adjacent mixed-flow lanes.

#### ***No-Build (2035)***

During the p.m. peak hour, under 2035 No-Build conditions, a bottleneck would occur on WB I-80 between the truck scales and Suisun Valley Road. As a result, a queue would extend east of Waterman Boulevard/Air Base Parkway on I-80 and east of Main Street on SR 12E.

More importantly, a bottleneck would develop on EB SR 12E at the Beck Avenue and Pennsylvania intersections, extending from these intersections back onto I-80 and outside the study area on I-80, I-680, and SR 12W. The bottleneck would constrain the amount of traffic that can exit SR 12E east of Main Street, and the queue behind it would constrain the amount of traffic that can exit I-80 east of Air Base Parkway. Because the bottleneck on EB SR 12E would constrain the amount of traffic that can travel beyond the SR 12E connector, the number of vehicles served on EB I-80, east of the connector, would be considerably less than the demand (only 40%–60% of the demand). The result of this bottleneck is that freeway operations downstream of this location on I-80 would be LOS D or better. This queue would also cause congestion along Chadbourne Road/Abernathy Road because vehicles would not be able to enter EB SR 12E.

During the p.m. peak hour, the HOV lane on WB I-80 would operate just under free-flow speed, but at more than double the average speed of the adjacent mixed-flow lanes. The WB HOV lane would not approach capacity, but would be affected by the queues in the mixed-flow lanes prohibiting vehicles from exiting the HOV lane. The speeds on the EB I-80 HOV lane would be nearly double the average speed of the adjacent mixed-flow lanes. The EB HOV lane would operate at capacity near the SR 12E off-ramp due to HOVs bypassing the severe congestion in the mixed-flow lanes.

#### **Effects on Intersection Operations**

##### ***Alternative B (2035)***

With construction of Alternative B, all ramp terminal intersections would operate acceptably under 2035 a.m. peak hour conditions, except the Lopes Road/Gold Hill Road intersection,

which would operate at unacceptable LOS E conditions. In the p.m. peak hour, only four non-ramp terminal intersections would continue to operate unacceptably, compared to 14 ramp terminal intersections and eight non-ramp terminal intersections operating unacceptably in the 2035 No-Build p.m. peak hour. Implementation of avoidance and minimization measures to design and construct intersection improvement would result in improved conditions.

***Alternative B, Phase 1 (2015)***

Construction of Alternative B, Phase 1 would replace the Beck Avenue intersection with a grade-separated interchange and would include improvements to the Pennsylvania Avenue intersection, but LOS F conditions would continue at the Pennsylvania Avenue intersection in the a.m. peak hour. Despite the worsening in LOS at Pennsylvania Avenue, the WB SR 12E volume leaving the Pennsylvania Avenue intersection would increase from 84% of demand served under No-Build conditions to 94% of demand served under Alternative B, Phase 1 in 2015.

Two non-ramp terminal intersections would continue to operate unacceptably under the Alternative B, Phase 1 a.m. peak hour conditions, as under the 2015 No-Build condition.

In the p.m. peak hour, all ramp terminal intersections would operate at LOS E or better, except the Beck Avenue/I-80 EB on-ramp/West Texas Street intersection. Operations at the Central Way/Cordelia Road intersection would improve to LOS A (relative to the unacceptable 2015 No-Build LOS), but three other non-ramp terminal intersections would continue to operate unacceptably, as under the 2015 No-Build p.m. peak hour condition.

Improvements to the SR 12E/Beck Avenue interchange would shift congestion to SR 12E/Pennsylvania Avenue, which would operate at LOS F in the a.m. peak hour. In the p.m. peak hour, five intersections would improve from LOS F under the 2015 No-Build conditions to LOS E or better under Alternative B, Phase 1. Overall, with implementation of avoidance and minimization measures to design and construct intersection improvements, there would be no adverse effect.

***Alternative B, Phase 1 (2035)***

Alternative B, Phase 1 would replace the Beck Avenue intersection with a grade-separated interchange, resulting in LOS D conditions in the a.m. peak hour at the Pennsylvania Avenue/SR 12E intersection. The Red Top Road/Jameson Canyon Road (SR 12W) would improve to LOS E conditions in the a.m. peak hour, relative to the 2035 No-Build scenario. LOS F conditions would continue at the Red Top Road/I-80 EB ramps intersection. The Central Way/Cordelia Road intersection would improve to acceptable conditions; however, Green Valley Road/Business Center Drive would degrade to LOS E conditions due to a change of the traffic patterns in the area. Unacceptable conditions would continue at the three other non-ramp terminal intersections.

With the construction of Alternative B, Phase 1, eight of the 14 deficient ramp terminal intersections under No-Build conditions would improve to acceptable LOS E or better conditions or, in the case of the Central Way/I-680 NB off-ramp, the intersection would be removed. Operations at the Abernathy/I-80 EB ramps and West Texas Street/I-80 EB off-ramp ramp terminal intersections would degrade to unacceptable LOS F conditions due to changes in traffic patterns.

In the a.m. peak hour, four intersections (three ramp terminal intersections and one non-ramp terminal intersection) would improve from LOS F under the 2035 No-Build scenario to LOS E or better with Alternative B, Phase 1. In the p.m. peak hour, seven intersections (all ramp terminal intersections) would improve from LOS F under the 2035 No-Build scenario to LOS E or better with Alternative B, Phase 1. Two intersections—Abernathy/I-80 EB ramps and West Texas Street/I-80 EB off-ramp—are projected to worsen from LOS E to LOS F as the result of trip pattern changes. Overall, with implementation of avoidance and minimization measures to design and construct intersection improvements, there would be no adverse effect.

#### ***Alternative C (2035)***

With construction of Alternative C, all ramp terminal and non-ramp terminal intersections would operate acceptably under 2035 a.m. peak hour conditions. In the p.m. peak hour, only three non-ramp terminal intersections would continue to operate unacceptably. Overall, with implementation of avoidance and minimization measures to design and construct intersection improvements, there would be no adverse effect.

#### ***Alternative C, Phase 1 (2015)***

During the a.m. peak hour, the SR 12E/Beck Avenue intersection would continue to operate at LOS F, as it would under 2015 No-Build conditions. The two non-ramp terminal intersections that operate unacceptably under the 2015 No-Build scenario would operate acceptably, at LOS D, under Alternative C, Phase 1.

During the p.m. peak hour, two of the five ramp terminal intersections that operate unacceptably under the 2015 No-Build condition would improve to LOS C or better; the other three would continue to operate at unacceptable LOS F conditions. In addition, two of the four non-ramp terminal intersections that operate unacceptably under the 2015 No-Build condition would improve to LOS C, and the other two would remain at unacceptable LOS F.

In the a.m. peak hour, two non-ramp terminal intersections would improve from LOS F under the 2015 No-Build condition to LOS D under Alternative C, Phase 1; in the p.m. peak hour, two ramp terminal intersections and two non-ramp terminal intersections would improve from LOS F under the 2015 No-Build condition to LOS C or better under Alternative C, Phase 1. This would be a beneficial effect.

#### ***Alternative C, Phase 1 (2035)***

Alternative C, Phase 1 would improve operations at the Red Top Road/I-80 EB ramps to acceptable LOS C conditions. Also, this alternative would replace the Red Top Road/Jameson Canyon Road (SR 12W) intersection with a grade-separated interchange that would operate acceptably. LOS F conditions would continue at two other ramp terminal intersections, as under the 2035 No-Build scenario. Operations at the Lopes Road/Gold Hill Road and the Central Way/Cordelia Road intersections would improve to acceptable conditions; however, Green Valley Road/Business Center Drive would degrade to LOS E conditions due to a change of traffic patterns in the area. Unacceptable conditions would continue at two other non-ramp terminal intersections, as under the 2035 No-Build scenario.

In the a.m. peak hour, three intersections (two ramp terminal intersections and one non-ramp terminal intersection) would improve from LOS F to LOS E or better under Alternative C, Phase

1. In the p.m. peak hour, five intersections (four ramp terminal intersections and one non-ramp terminal intersection) would improve from LOS F under the 2035 No-Build scenario to LOS E or better under Alternative C, Phase 1. One intersection (Oliver Road/I-80 WB on-ramp/Rockville Road) would worsen to LOS F under Alternative C, Phase 1, and one new intersection (Red Top Road/SR 12W EB ramps) is projected to operate at LOS F. Overall, with implementation of avoidance and minimization measures to design and construct intersection improvements, there would be no adverse effect.

#### ***No-Build (2015)***

Table 6-7 in the FTOR shows that during the a.m. peak hour, the WB I-80 congestion would result in one ramp terminal intersection and two non-ramp terminal intersections operating at unacceptable LOS F conditions under No-Build conditions.

Table 6-8 in the FTOR shows that with the bottleneck locations discussed in the previous section, five of the 24 ramp terminal intersections would operate at unacceptable LOS F conditions in the p.m. peak hour under 2015 No-Build conditions. Additionally, four other study intersections would operate unacceptably in the p.m. peak hour.

Under the No-Build Alternative, in the a.m. peak hour, one intersection is projected to operate at LOS E, and two are projected to operate at LOS F. In the p.m. peak hour, one intersection is projected to operate at LOS E, and eight are projected to operate at LOS F.

#### ***No-Build (2035)***

During the a.m. peak hour condition, the WB I-80 congestion would result in four ramp terminal intersections operating at unacceptable LOS F conditions. Additionally, four non-ramp terminal intersections would operate unacceptably under No-Build conditions.

During the p.m. peak hour, 14 of the 24 ramp terminal intersections would operate at unacceptable LOS F conditions. Additionally, eight non-ramp terminal intersections would operate unacceptably under No-Build conditions.

A total of eight study intersections (four ramp terminal intersections and four non-ramp terminal intersections) would operate unacceptably in the a.m. peak hour, and 22 study intersections (14 ramp terminal intersections and eight non-ramp terminal intersections) would operate unacceptably in the p.m. peak hour. This compares to only two of the study intersections operating unacceptably under existing conditions.

#### **Effects on Safety**

Both project alternatives will improve safety by reducing congestion and by braiding on- and off-ramps and reducing weaving. Additionally, the relocation of the I-80/I-680 interchange under Alternative C and Alternative C, Phase 1 would further improve safety by increasing the distance between interchanges allowing more room for traffic to weave. Both alternatives will further improve safety because the westbound truck scales would be relocated and braided ramps would reduce the effects of slow moving trucks and truck weaving on congestion and safety.

Under the No-Build Alternative congestion would continue to increase and no changes would be made to on- and off-ramps to reduce weaving.

### Effects on Pedestrian and Bicycle Facilities

Both project alternatives may require special design or construction measures to ensure that the existing facilities can be maintained, and that planned new pedestrian and bicycle facilities (Figure 3.1.6-1) can be provided as envisioned. Compliance with Department policy and implementation of avoidance and minimization measures to accommodate existing and planned bicycle and pedestrian facilities will ensure that there is no adverse effect.

The No-Build Alternative includes certain improvement projects that are expected to be constructed prior to the proposed project. These projects are described in Chapter 4 of the FTOR. Certain of these projects may require special design or construction measures to ensure that the existing facilities can be maintained, and that planned new pedestrian and bicycle facilities (Figure 3.1.6-1) can be provided as envisioned.

### Effects on Transit Routes and Service

The improved traffic operations under both project alternatives, relative to No-Build conditions in the same year, would reduce delays for buses and paratransit vehicles. Implementation of avoidance and minimization measures to adjust transit routes and stops as needed, will ensure that there is no adverse effect.

The substantially worsened traffic congestion in the p.m. peak hour under 2015 and 2035 No-Build conditions will incur delays to buses and paratransit vehicles, potentially resulting in additional operating costs to transit agencies to provide more service vehicles, drivers, and support functions.

### Construction Period Disruption of Vehicle, Pedestrian, and Bicycle Circulation

Construction of either project alternatives would entail additional truck and construction worker traffic, temporary lane closures and detours, and various construction-related activities that would increase congestion to varying degrees throughout the construction period. Implementation of avoidance and minimization measures to develop and implement the TMP will ensure that there is no adverse effect.

Alternative B, Alternative C, and Alternative C, Phase 1 may require closing the existing bicycle path from Green Valley Road to the vicinity of the SR 12 West/Red Top Road intersection during construction.

Under the No-Build Alternative, no construction would take place and therefore there would be no disruption of vehicle, pedestrian or bicycle circulation due to construction.

## ***Avoidance, Minimization, and/or Mitigation Measures***

### **Design and Construct Intersection Improvements**

To minimize the impact of traffic pattern changes associated with the proposed project's on-ramp terminal and non-ramp terminal intersections, the Department, in cooperation with the City of Fairfield, Suisun City, and Solano County, will design and construct intersection improvements (including signalization, lane configuration changes, approach widening, and operational improvements) as part of each project phase. The specific intersections projected to

operate at LOS F for each project alternative are listed in the FTOR and referenced in the section titled “Intersection Operations,” above. The improvements should be designed to provide LOS E or better under either project alternative. Intersection improvements would be designed in accordance with Highway Design Manual (HDM) sections 405.2 and 405.3, and would include adequate turn lane storage, including multiple turn lanes where needed.

### **Maintain Existing or Accommodate Planned Bicycle and Pedestrian Facilities**

The Department, in cooperation with STA, will ensure that the design of each project phase accommodates existing and planned bicycle and pedestrian facilities within the project area, including providing for alternative connecting routes if and where needed. In particular, the planned improvements in the Fairfield General Plan Bicycle Network and the North Connector Corridor Transportation for Livable Communities Concept Plan will be incorporated into the project design at each project phase.

To minimize potential impacts to bicycle and pedestrian users of the bicycle path from Green Valley Road to the vicinity of the SR 12 West/Red Top Road intersection, the project shall implement a bike and pedestrian bridge (i.e. van service) during construction to transport bicyclists and pedestrians traveling between Green Valley Road at I-80 and Red Top Road at McGary Road. After construction is complete, bicyclists and pedestrians would be able to traverse the project area utilizing the new extension of Business Center Drive to cross over SR12W, the UPRR tracks and connect with Red Top and McGary Road.

### **Adjust Transit Routes and Stops as Needed**

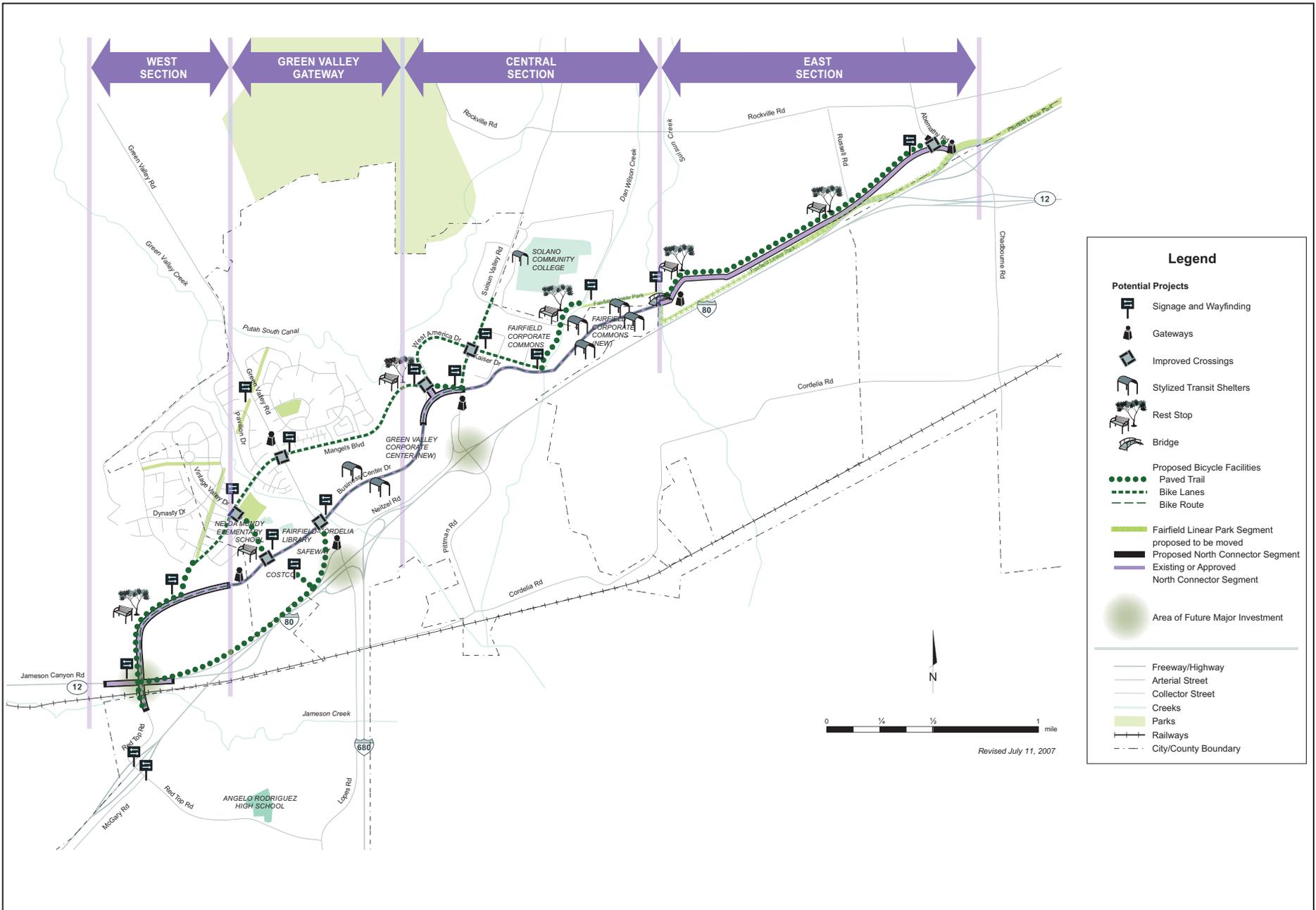
The Department, in cooperation with STA, local transit agencies, the City of Fairfield, Suisun City, and Solano County, will ensure that transit routes and stops are adjusted as needed, concurrent with each project phase, preserving service levels to be consistent with current and planned levels.

### **Develop and Implement a Transportation Management Plan and Construction Scheduling to Minimize Adverse Effects**

The Department, in cooperation with STA and the affected local jurisdictions, will require the following measures to be implemented as part of project construction.

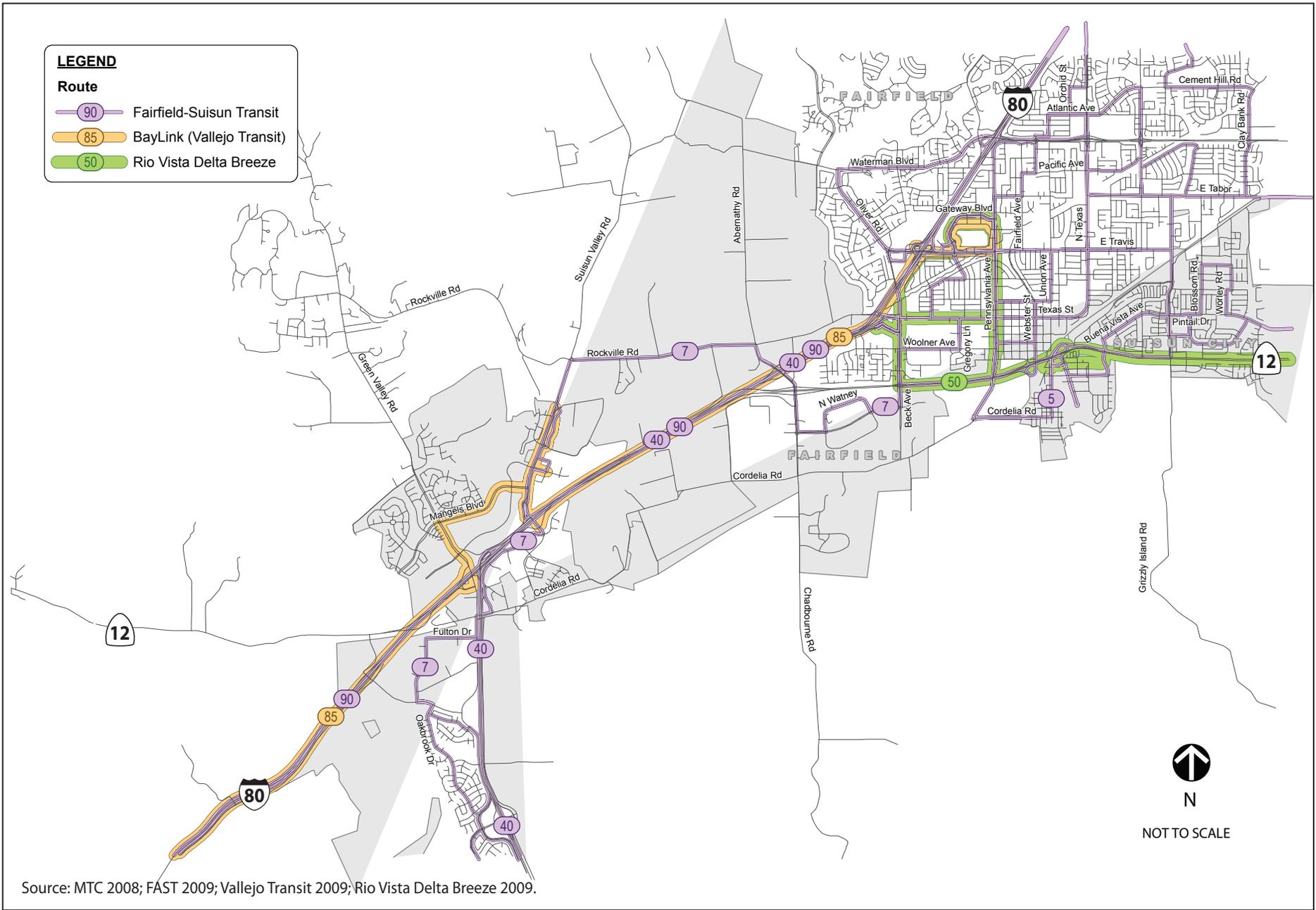
- The contractor will be required to prepare and implement a TMP that identifies the locations of temporary detours and signage to facilitate local traffic patterns and through-traffic requirements.
- The Project Special Provisions of the highway contract will require that emergency service providers (i.e., law enforcement, fire protection, and ambulance services) be given adequate notice of any street closures during the construction phases of the proposed project.
- Construction activities will be coordinated to avoid blocking or limiting access to homes and businesses to the extent possible. Residents will be notified in advance about potential access or parking effects before construction activities begin.

- Any interchange, ramp, or road closures required during construction will, to the extent possible, be limited to nighttime hours to reduce effects on businesses in or adjacent to the project limits.
- Construction activities will be coordinated to avoid blocking or limiting access to businesses in or adjacent to the project area during business hours. Businesses will be notified in advance concerning construction activities before construction begins near businesses.
- The TMP will be prepared to address short-term disruptions in existing circulation patterns during construction. For example, the TMP will identify the locations of temporary detours or temporary roads to facilitate local traffic circulation and through-traffic requirements.



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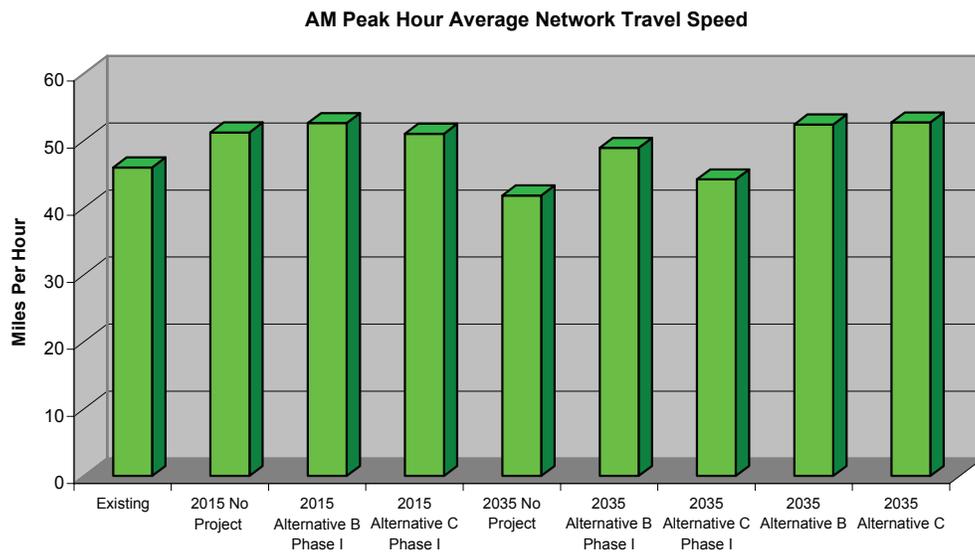
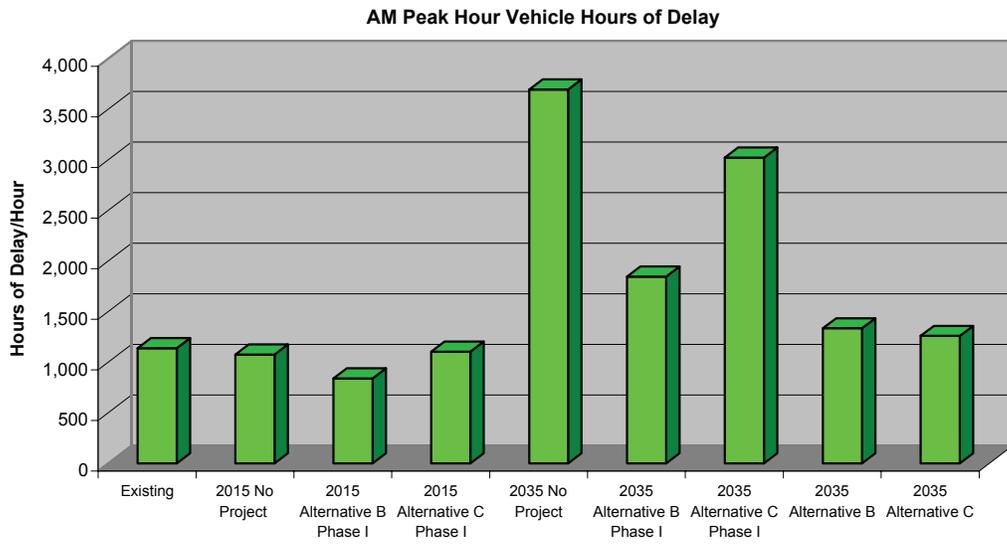
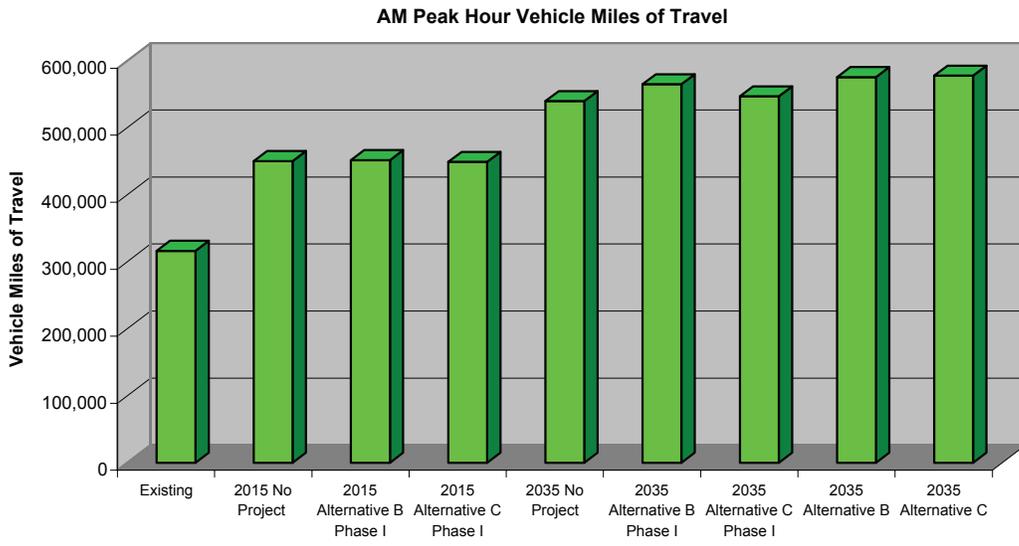
**Figure 3.1.6-1**  
**Existing and Planned Bicycle/Trails System**



Source: MTC 2008; FAST 2009; Vallejo Transit 2009; Rio Vista Delta Breeze 2009.

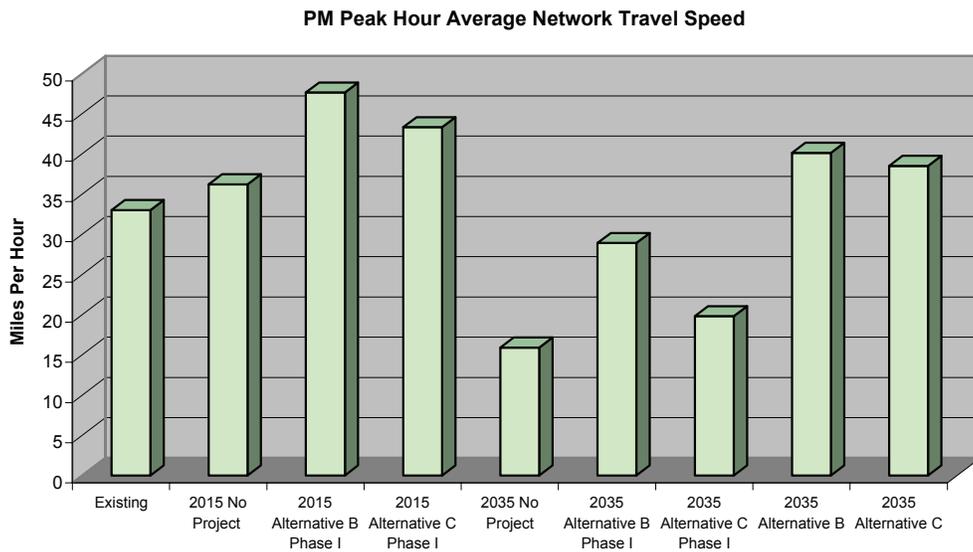
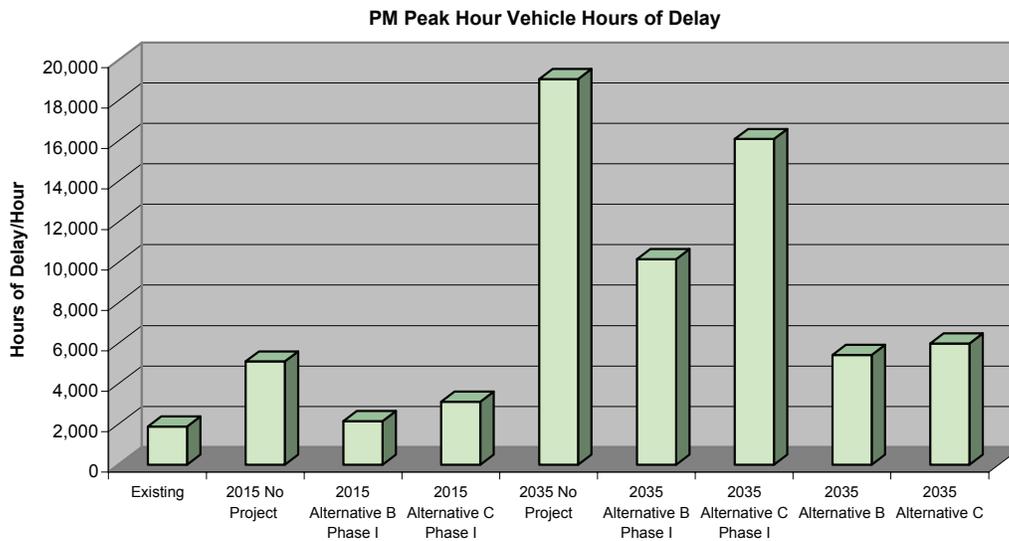
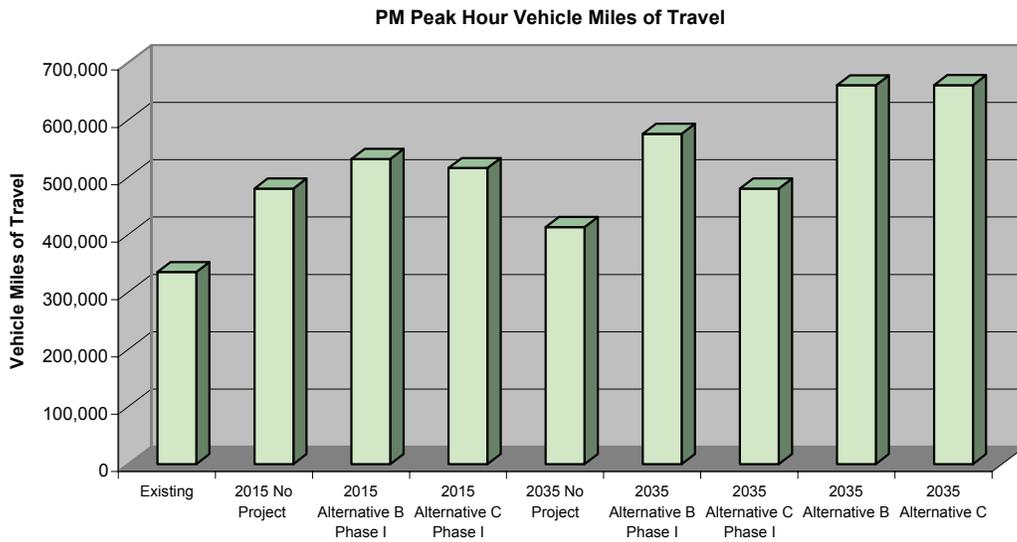
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**Figure 3.1.6-2**  
**Existing Transit System**



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**Figure 3.1.6-3  
System-Wide AM Measures of Effectiveness**



**Figure 3.1.6-4  
System-Wide PM Measures of Effectiveness**