State Route 113 Major Investment Study (MIS)

SOLANO TRANSPORTATION AUTHORITY

Prepared for

STA
Solano Transportation Authority

In Partnership with

Caltrans

Prepared by

Kimley-Horn and Associates, Inc.

CAMBRIDGE SYSTEMATICS

SP&R Partnership Planning Grant Provided By:
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MAY 2009

State Route 113

Major Investment and Corridor Study

Prepared for:

Solano Transportation Authority
City of Dixon
County of Solano

In Partnership with:

Caltrans
City of Davis
Yolo County Transportation District
U.C. Davis
Metropolitan Transportation Commission

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May 2009

ACKNOWLEDGMENTS

State Route 113 Major Investment and Corridor Study

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1.0 Introduction

Kimley-Horn and Associates (KHA) and Cambridge Systematics (CSI) have been retained by the Solano Transportation Authority (STA), in coordination with the City of Dixon, County of Solano, and Caltrans to prepare a Major Investment Study (MIS) for SR 113 to evaluate transportation needs for existing and future conditions. The MIS is a subset of the more comprehensive metropolitan transportation system planning process. Metropolitan planning regulations require major investment studies to support decisions on significant transportation investments. MIS identifies all reasonable alternative strategies for addressing the transportation demands and other problems at a corridor or subarea level. The MIS provides information to elected officials, technical staff, the business community, and the general public on the costs, benefits, and impacts of these alternatives so that an informed choice can be made.

This study comes at an important and opportune time. During the last 20 years, there has not been a comprehensive corridor study for State Route (SR) 113, and it remains one of the last corridors in Solano County with no major investment study. A Route Concept Report (fact sheet only) was completed in May 1985 for SR 113. It is anticipated that traffic will increase along SR 113 in conjunction with the anticipated developments in Solano and Yolo Counties. In addition, the anticipated land use and traffic growth in the Central Valley, Sacramento, and San Francisco Bay Area regions will also impact this corridor. State Route 113 defines the future needs and requirements for the corridor.

The purpose of the SR 113 MIS is to identify the current and future traffic and transportation needs in the corridor and to develop an implementation plan that identifies the needs in consideration of community requirements. The report has reviewed traffic operations, safety, goods movement, financing, railroad crossings, traffic signals, and other transportation planning issues in this corridor, which is located in eastern Solano County. The study is focused on the portion of SR 113 between SR 12 and the Solano/Yolo County line in Davis. As shown in **Figure 1.1**, this corridor includes interchanges with Interstate 80 in Dixon and in Davis. While the study is focused on transportation planning issues within the immediate area, travel patterns were investigated over a broader geographic area to help determine if investments or policies outside of the study limits can address deficiencies and needs within the study area in a cost-effective manner.

SR 113 corridor is an important transportation facility for the movement of people and goods in eastern Solano County. This mainly rural highway serves a mixture of local, interregional, and tourist traffic. With few north-south highways in the area,

SR 113 serves as a critical connector between communities of metropolitan Sacramento, the eastern Bay Area, and the Central Valley.

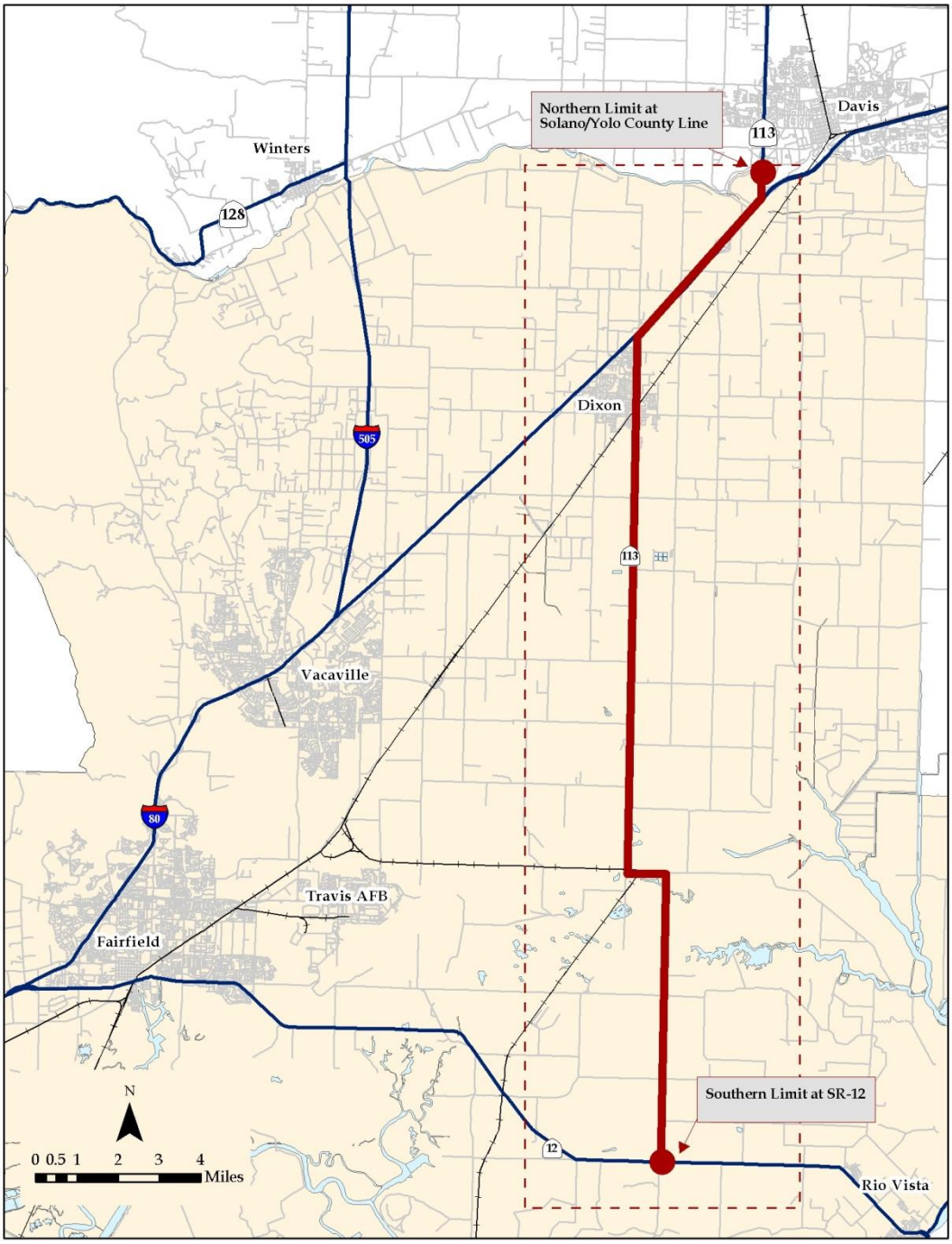
When viewed as a whole, certain themes arise across several topics. These themes are the most critical current issues for the SR 113 corridor:

- Capacity along the corridor is generally sufficient to handle existing traffic volumes;
- Corridor traffic is regional and local within the City of Dixon and is mainly regional and interregional outside of the city limits;
- Increased levels of agricultural traffic occur between the spring and fall;
- The rural segment of the corridor is physically constrained by alternating east and west side utility poles and bridge structures;
- Shoulder and recovery areas are limited along the rural segment of the corridor as a result of irrigation and drainage ditches;
- The 90-degree turns at Hastings Road and Cook Lane and adjacent railroad crossings break traffic continuity;
- Roadway undulation on the approach to SR 12 and poor pavement conditions in selected locations on the corridor;
- Overall collision rates along the corridor are higher than the statewide average;
- Lighting for several intersections is inadequate;
- Clearance gap intervals are short during peak periods at the SR 12/SR 113/ Birds Landing Road intersection;
- High rate of truck collisions occur on the roadway considering a relatively low truck volume percentage; and
- Speeding is the predominant issue cited as the "primary collision factor."

The MIS identifies strategies to address these issues through capital investment, operational management, and other means both on and off the SR 113 corridor. Items that may be worth considering in the future include a corridor system management plan and interregional traffic impact fees that can pay for improvements in the corridor.

The Consultant team has worked, for over a year with the stakeholders and the public to prepare this study.

Figure 1.1 - SR 113 Major Investment and Corridor Study Project Limits



Note: The segment of I-80 between Dixon and Davis is not part of this study; however, it is highlighted along with the rest of the SR 113 corridor to indicate that this segment connects the two separate portions of SR 113.

This report is divided into the following chapters:

1. **Existing Baseline Conditions** – Existing baseline conditions examines existing traffic, safety, landuse and general facility descriptions.
2. **Landuse Conditions** – Landuse conditions examines existing and future landuse patterns, opportunities and restrictions along the project corridor.
3. **Future Conditions** – Future conditions examines future traffic volumes, traffic patterns and growth needs and evaluates level of service conditions and requirements for a 20-year time horizon.
4. **Alternative Analysis** – Alterative analysis examines various alignment alternatives for SR 113 to respond to community needs, specifically realignment of SR 113 through the Downtown Dixon. Cost estimates for various alternatives, including a Toll Road alternative are presented. All alternatives are included for future consideration.
5. **Environmental Constraints** – The environmental scan provides a general overview of the environmental constraints in the corridor, including future technical analysis requirements.
6. **Implementation Plan** – Implementation Plan provides a general recommendation in phasing and grouping of the project for future considerations, considering funding, and environmental impacts. The Implementation Plan considers independent utility of projects to allow each project to advance through the environmental process and provide a sequential approach to full project implementation.
7. **Summary and Conclusions** – This is a summary of the project goals, and next steps, providing a general overview of the steps involved in environmental analysis and selection of alternatives.

2.0 Existing Baseline Conditions

2.1 Introduction

This section presents the existing traffic volumes, landuse conditions, physical roadway conditions and traffic patterns along SR 113 within the study area. This discussion of existing conditions provides an overview of the magnitude of current needs related to travel demand and available capacity, as well as documentation of existing conditions.

2.2 Existing Volumes and Traffic Conditions

2.2.1 Existing Traffic Volumes

Hourly count data from the California Department of Transportation's (Caltrans) count inventory was obtained for the last 10 years for several corridor locations. Traffic counts were assembled from this source for the following locations on SR 113.

- North of the SR 12 junction (September 14 to 16, 2004);
- North of the Fry Road junction (March 20 to 22, 2001);
- North of the Cherry Street junction in downtown Dixon (December 5 to 7, 2006);
- North of the A Street junction in downtown Dixon (March 13 to15, 2001)
- North of the North Adams Street junction in downtown Dixon (December 5 to 7, 2006);
- South of the I-80 junction in Dixon (September 14 to 16, 2004); and
- Solano/Yolo county line in Davis (April 7 to 8 and April 13 to 14, 2004).

Daily, and AM and PM peak hour counts were assembled for each of these locations, and were adjusted to represent 2008 conditions. Traffic adjustment factors were developed using growth estimates from the Caltrans Traffic and Vehicle Data Systems Unit over a 10-year period (1996 to 2006). A consistent growth factor was not used for the entire corridor as different segments have experienced varying degrees of growth over the period. Once the counts were factored to represent 2008 conditions, the traffic counts were balanced to ensure traffic movement continuity in the corridor. The results of this balancing process are shown in **Figures 2.1, 2.2**, and **Figure 2.3**, which display Daily, and AM, and PM peak hour bi-directional traffic flows on SR 113.

Dixon Downs was a proposed horse racetrack and commercial development that would have been located at the junction of I-80 and Pedrick Road. The Environmental Impact Report (EIR) developed for Dixon Downs contained traffic analyses that are referred to in this section.

Figure 2.1 - SR 113 Bi-Directional Daily Traffic Volumes

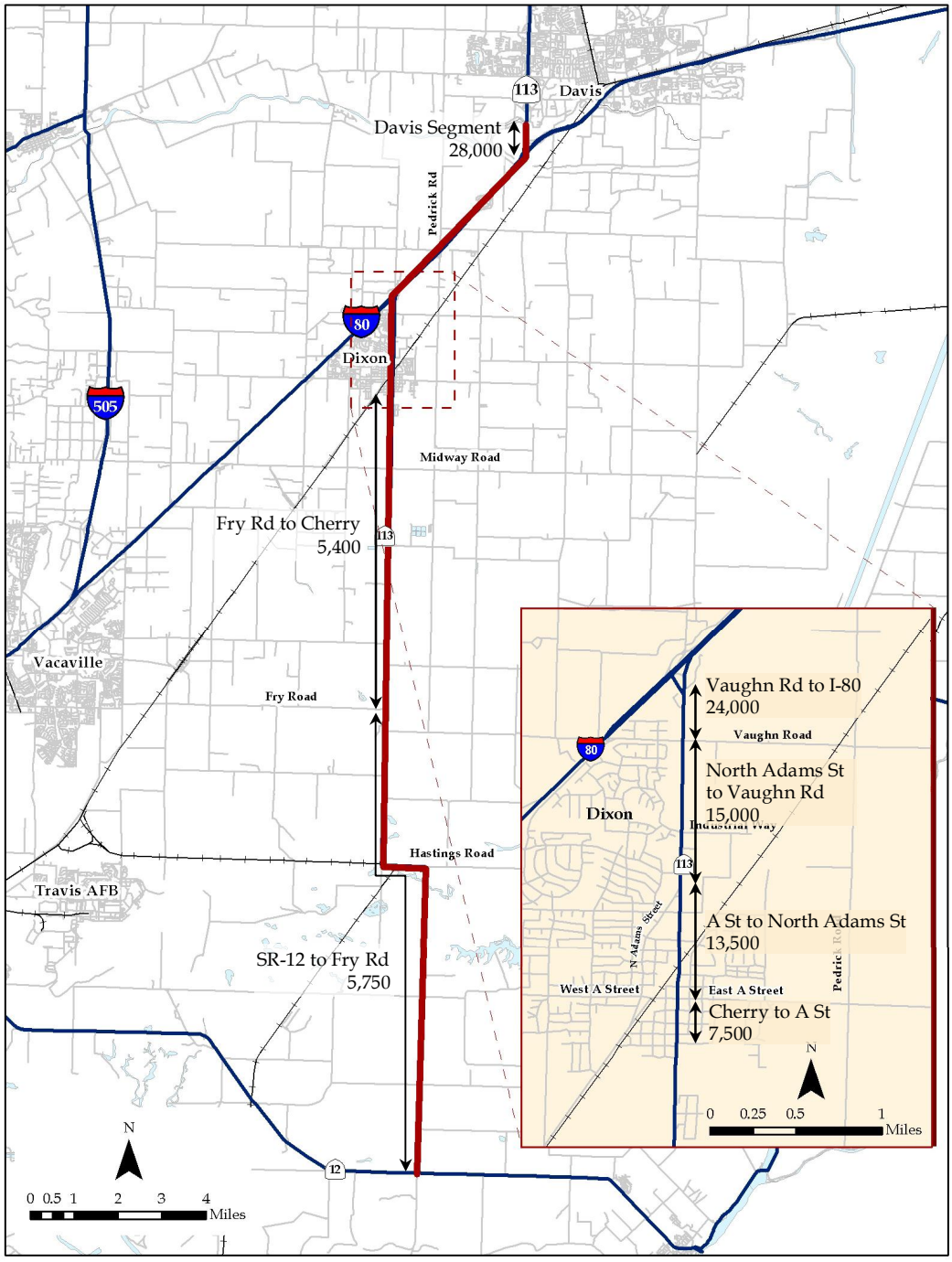


Figure 2.2 - SR 113 Bi-Directional AM Peak Hour Traffic Volumes

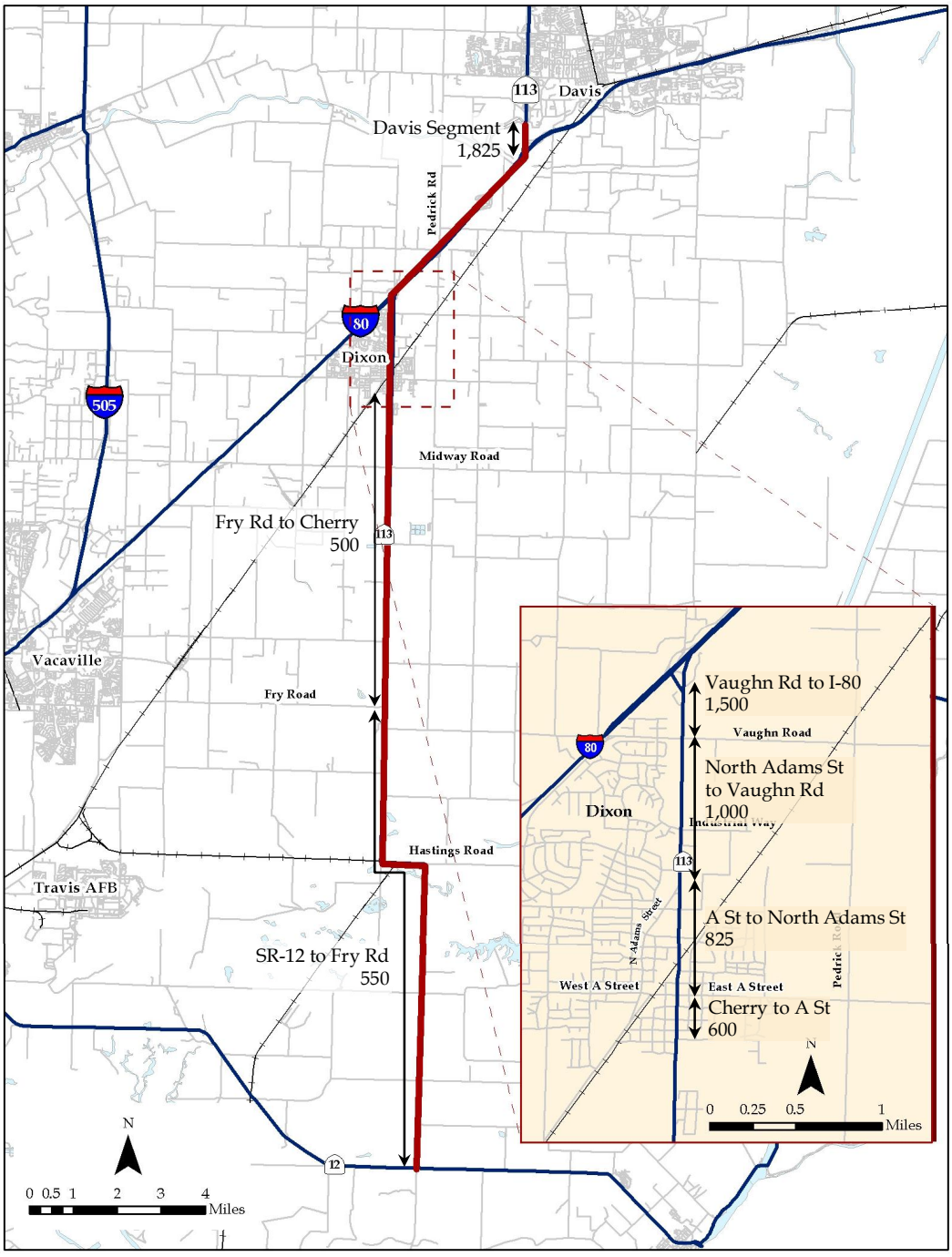
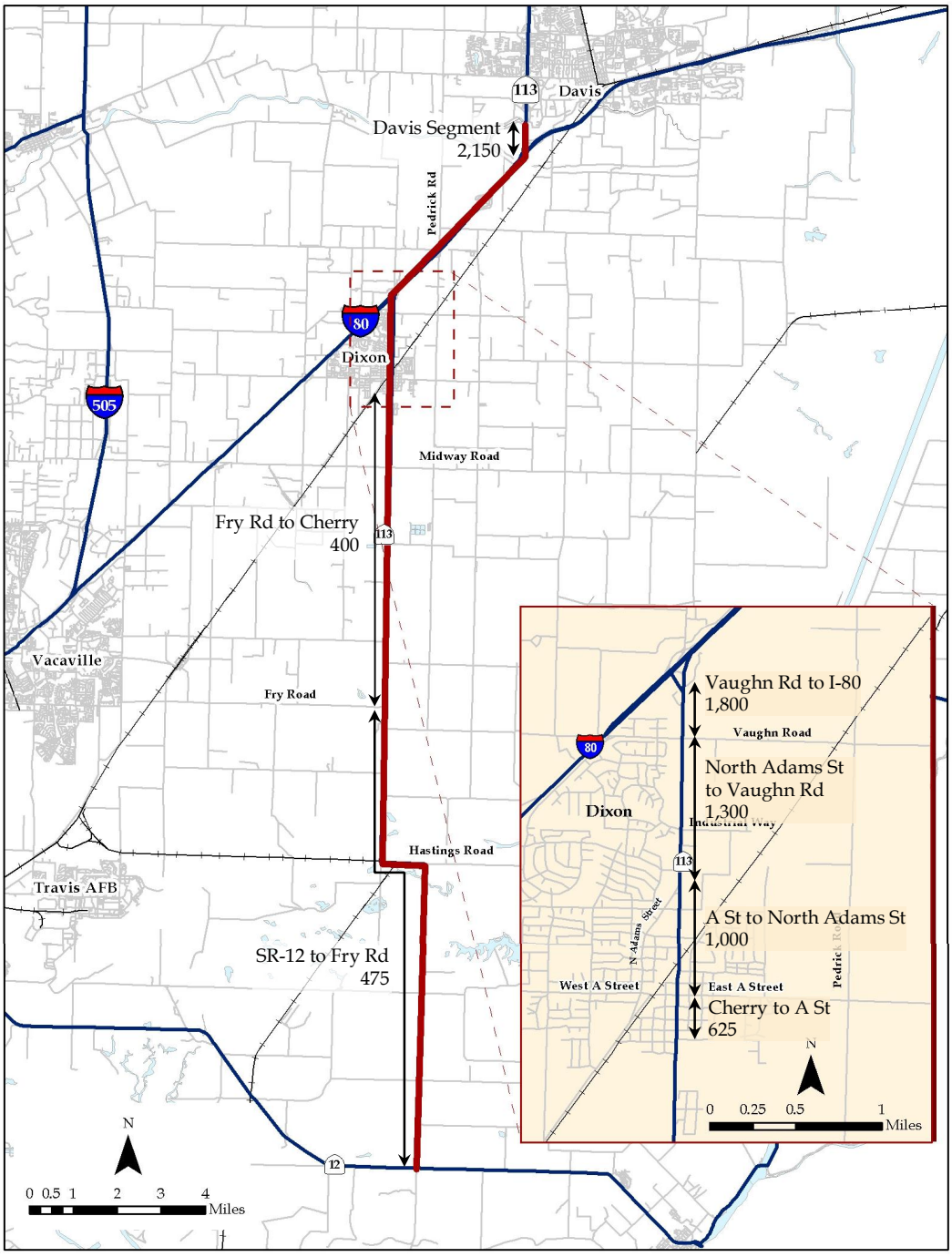


Figure 2.3 - SR 113 Bi-Directional PM Peak Hour Traffic Volumes



A more detailed description of traffic volumes can be best presented by dividing the corridor into several sections, each characterized based on the amount of traffic. On a daily basis, the highest volumes in the SR 113 corridor are located north of I-80, where SR 113 operates as a divided freeway. This portion of the corridor bisects the University of California, Davis campus. SR 113 in the Davis area serves as a connector for the community to I-80, which ultimately connects to the San Francisco

Bay Area and Sacramento regions. Furthermore, SR 113 serves as a north-south connector to Woodland and I-5, located north of the corridor study area.

The segments with the next highest traffic volumes are located within the urban area of the City of Dixon. SR 113 within this area is an urban arterial that serves as a major thoroughfare for local traffic. In the rural areas south of Dixon, traffic volumes are significantly lower, mostly comprised of regional travel, with a mix of through regional and interregional traffic. SR 113 serves as a detour from I-80 during cases of incident response. Based on the Caltrans traffic data and the Dixon Downs Draft Environmental Impact Report (EIR), truck percentages along SR 113 ranges between five and eight percent.

2.2.2 Traffic Conditions

This section presents a planning-level analysis of current traffic conditions along SR 113 within the study area. A planning level of service (LOS) analysis was conducted to assess the adequacy of SR 113 to accommodate existing traffic levels. LOS is used to characterize operational conditions within a traffic stream and the motorist's perception of these conditions. LOS is a quantitative measure of transportation system operations with LOS A representing free-flow conditions and LOS F representing gridlock conditions. **Table 2.1** describes each LOS category used in this analysis.

Table 2.1 - Level of Service Definitions

LOS	Operational Characteristics
A	No congestion or delay. Free flow.
B	No congestion or delay. Free to stable flow, light to moderate volumes.
C	None to minimal delays. Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
D	Minimal to substantial delays. Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
E	Significant delays. Extremely unstable flow, maneuverability, and psychological comfort extremely poor.
F	Considerable delays. Forced or breakdown of traffic flow.

Source: Caltrans District 11, State Route 76 Transportation Concept Report, 2002.

Roadway segment LOS was determined for peak-hour traffic volume levels on the rural and freeway segments of the SR 113 corridor. This LOS analysis was based on thresholds established in the Solano Comprehensive Transportation Plan (2002), as well as from measurements from the Dixon Downs Horse Racetrack and Entertainment Center Project Draft EIR. Roadway segment LOS for the urban segment of SR 113 in Dixon was determined based on thresholds established by the City of Dixon. **Tables 2.2 and 2.3** display the maximum bi-directional traffic volume for each LOS category and by functional class.

Table 2.2 - Roadway Segment Level of Service Volume Thresholds

Functional Classification	Number of Lanes	Maximum Bi-Directional Peak Hour Traffic Volume at				
		LOS A	LOS B	LOS C	LOS D	LOS E
Freeway	4	2,100	3,300	4,900	6,200	7,000
	6	3,000	4,700	7,000	8,900	10,500
	8	3,900	6,100	9,100	11,600	14,000
Urban Minor Arterial	2	N/A	N/A	820	1,230	1,380
	4	N/A	N/A	1,730	2,540	2,800
Rural Minor Arterial	2	N/A	N/A	640	1,150	1,250
Collector	2	N/A	N/A	550	820	920

Source: Solano Comprehensive Transportation Plan, 2002.

Table 2.3 - City of Dixon Traffic Volume Thresholds

Functional Classification	Number of Lanes	Maximum Traffic Volume (Daily/Peak Hour)				
		LOS A	LOS B	LOS C	LOS D	LOS E
Arterial	2	N/A	N/A	8,800/950	13,200/1,400	14,800/1,540
	4	N/A	N/A	18,600/1,950	27,300/2,850	30,100/3,100
Minor/Major Collector and Industrial	2	N/A	N/A	5,900/750	8,800/1,110	9,900/1,220
	4	N/A	N/A	12,500/1,540	18,300/2,250	20,200/2,460
Local	2	N/A	N/A	N/A	N/A	N/A

Source: City of Dixon Engineering Design Standards and Construction Specifications, 2003.

Table 2.4 shows the LOS values for SR 113 for both the a.m. and p.m. peak hours. It should be noted that the segment of SR 113 between North Adams and A Street is approaching unacceptable LOS levels as a result of the high volume of traffic on this two-lane segment. Whereas a slight deficiency in the LOS is shown for this roadway location, the intersection LOS for the adjacent junction of SR 113 and A Street, as detailed in the Dixon Downs Draft EIR, is shown to be acceptable with LOS C.

Table 2.4 - Peak-Hour Level of Service for SR 113 Highway Segments

		Bi-Direction Traffic Volume					
		AM Peak		PM Peak		Daily	
SR 113 Segment	Functional Class	Volume	LOS	Volume	LOS	Volume	LOS
Solano/Yolo Line – I-80	Freeway	1,825	B	2,150	B	28,000	N/A
I-80 – Vaughn	4-lane Arterial	1,500	C	1,800	C	24,000	D
Vaughn – North Adams	4-lane Arterial	1,000	C	1,300	C	15,000	C
North Adams – A	2-lane Arterial	825	C	1,000	D	13,500	E
A – Cherry	2-lane Arterial	600	C	625	C	7,500	C
Cherry – Fry	Rural Minor Arterial	500	B	400	B	5,400	N/A
Fry – SR 12	Rural Minor Arterial	525	B	475	B	5,700	N/A

Source: Cambridge Systematics, Inc., 2008.

North of Dixon, through traffic on SR 113 must navigate I-80 in order to access the continuation of SR 113 in Davis. **Table 2.5** displays the p.m. peak-hour LOS of I-80 segments before and after the junction with SR 113 in Dixon. The results of this analysis show the operational performance of the freeway and the affects of those vehicles accessing SR 113 from points east and west of Dixon. The LOSs for the I-80 freeway segments were obtained from the Dixon Downs Draft EIR (based on vehicle density).

Table 2.5 - I-80 Freeway Mainline Levels of Service

	PM Peak Hour LOS	
Freeway Mainline Segment	Westbound	Eastbound
West of SR 113 Dixon	C	C
East of SR 113 Dixon	C	C

Source: Dixon Downs Horse Racetrack and Entertainment Center Project Draft Environmental Impact Report, 2005.

Table 2.6 shows the LOS for the ramps that connect SR 113 with I-80 north of Dixon. These values were also obtained from the Dixon Downs Draft EIR and are also based on density.

Table 2.6 - I-80 Ramp Junction Levels of Service

Freeway Ramp Junction	Weekday PM Peak Hour
SR 113 Dixon to I-80 EB	C
I-80 EB to SR 113 Dixon	C
I-80 WB to SR 113 Dixon	D
SR 113 Dixon to I-80 WB	C
Currey Road to I-80 WB	C

Source: Dixon Downs Horse Racetrack and Entertainment Center Project Draft Environmental Impact Report, 2005.

2.2.3 Trucks

The truck classification counts, performed as part of the Dixon Downs Draft EIR, indicate that truck traffic along SR 113 in the vicinity of I-80 in Dixon represents approximately five to eight percent of total traffic in the p.m. peak hour. As a comparison, trucks represent three to six percent of total traffic on I-80 in the Dixon area. Data from the Caltrans Traffic and Vehicle Data Systems Unit for 2007 indicate that trucks represent approximately six to seven percent of traffic on the rural segments of SR 113 south of Dixon. This proportion is lower than that of SR 12, which has 11 percent of its traffic classified as trucks.

2.2.4 Transit

The City of Dixon operates a public dial-a-ride transit system that provides curb-to-curb transit service within Dixon city limits. Operating hours are from 7:00 a.m. to 6:00 p.m., and fares range from $0.50 for children to $1.50 for adults. Senior and disabled passenger fares are $1.00, while youth fares are $1.25. Fixed transit services are not currently available within city limits or in the SR 113 corridor. The Solano Transportation Authority's Route 30 provides service on I-80 between Sacramento and Fairfield that includes stops in Dixon, Vacaville, and Davis. Solano Paratransit provides door-to-door transportation service for residents of Dixon and other cities within Solano County.

2.2.5 Summary of Existing Traffic Issues

A review of existing traffic conditions in the SR 113 corridor reveals that:

- Capacity along the corridor is generally sufficient to handle current traffic volumes; and
- The freeway segment located in Davis has the highest traffic volumes, followed by the urban segments in Dixon.

2.3 Travel Patterns

A variety of topographic realities and past transportation decisions have led to current conditions in which the SR 113 corridor must simultaneously serve multiple travel patterns. With few alternative routes connecting the communities of eastern Solano County with communities in the Central Valley, truck and automobile traffic are likely to use this corridor when traveling between these areas. The analyses in this section show the origin and destination locations of trips using the SR 113 corridor. Although agriculture is the predominant land use in the corridor and contributes to current traffic conditions, the analyses of travel patterns in this section focus on both local, regionally, and interregionally generated trips that impact the corridor.

SR 113 is the key north-south access route into Dixon and significantly influences traffic patterns within the community. Hence, long-distance traffic mixes with larger volumes of locally generated commute, non-commute, and truck traffic. The urban segments of SR 113 are also populated with a number of local businesses, necessitating that truly local traffic use (at least) small stretches of SR 113 to complete trips. Furthermore, a railway line bisects Dixon, which limits the number of east-west and north-south routes for local travel and places more pressure for travelers to use SR 113.

SR 113 serves a variety of, and sometimes conflicting, interregional, regional and local traffic patterns. This section explores the nature and magnitude of these travel patterns through the study area. This travel pattern analysis is based on a select-link analysis using the Solano/Napa travel demand model.

2.3.1 General Patterns

Using the Solano/Napa travel demand model, an analysis was performed of the origin and destination travel patterns of trips that currently use the SR 113 corridor. Three segments were evaluated for this analysis, including the following:

1. SR 113 at the junction with SR 12;
2. SR 113 connecting with I-80 West in Davis; and
3. SR 113 north of North Adams Street in Dixon.

Both southbound and northbound origin and destination analysis were performed for each of the three segments. **Figures 2.4 and 2.5** show the southbound and northbound travel patterns analysis for SR 113 at the junction with SR 12. The majority of traffic that travels on SR 113 at this location is destined to or originating from east of the junction, primarily Rio Vista, San Joaquin County, and eastern Contra Costa and Alameda Counties. North of the junction, the majority of traffic

originates or terminates within Solano County, particularly Dixon and Vacaville. The Cities of Davis and Woodland also generate traffic that uses this roadway segment.

Figure 2.4 - Southbound Travel Patterns for SR 113 at the Junction of SR 12

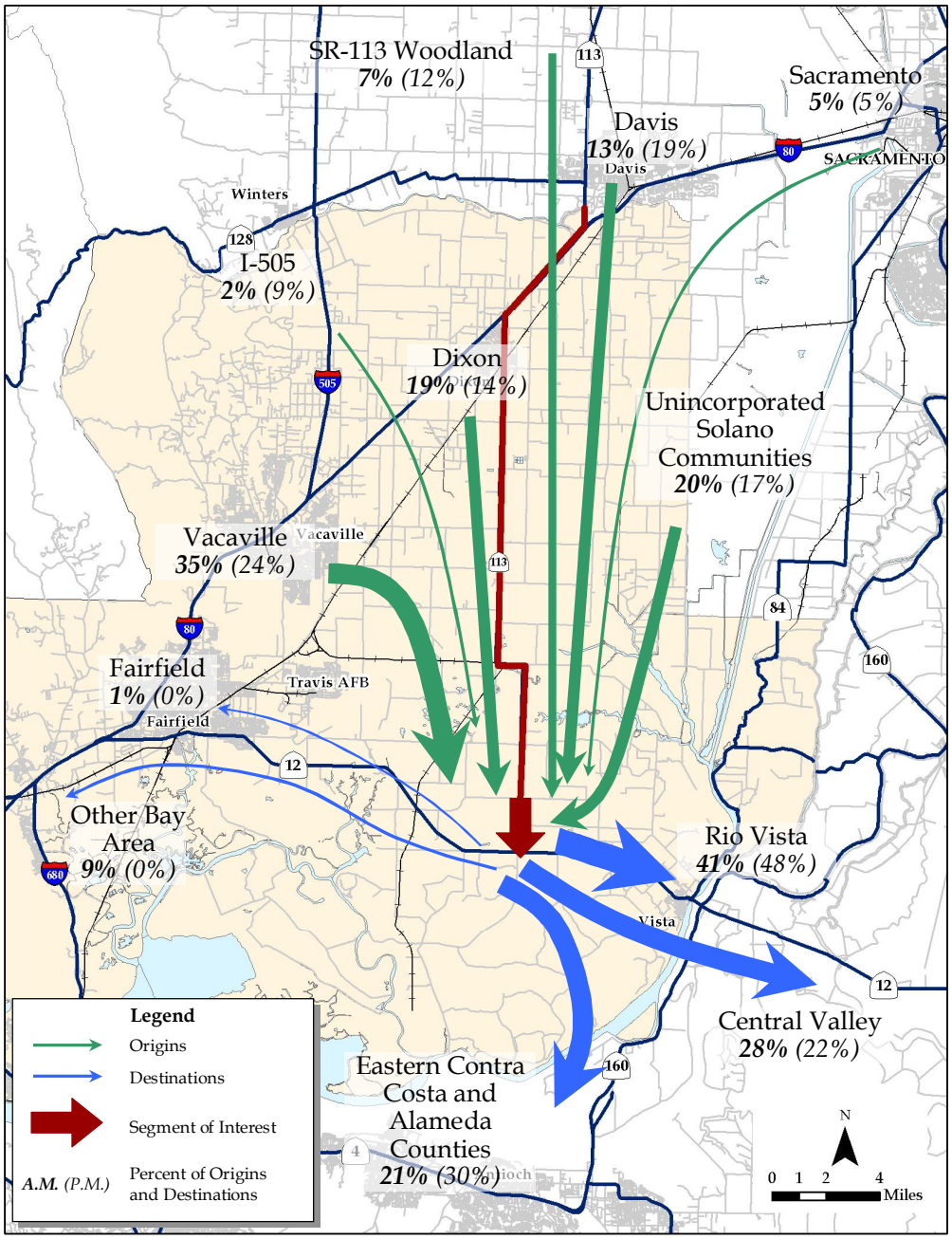
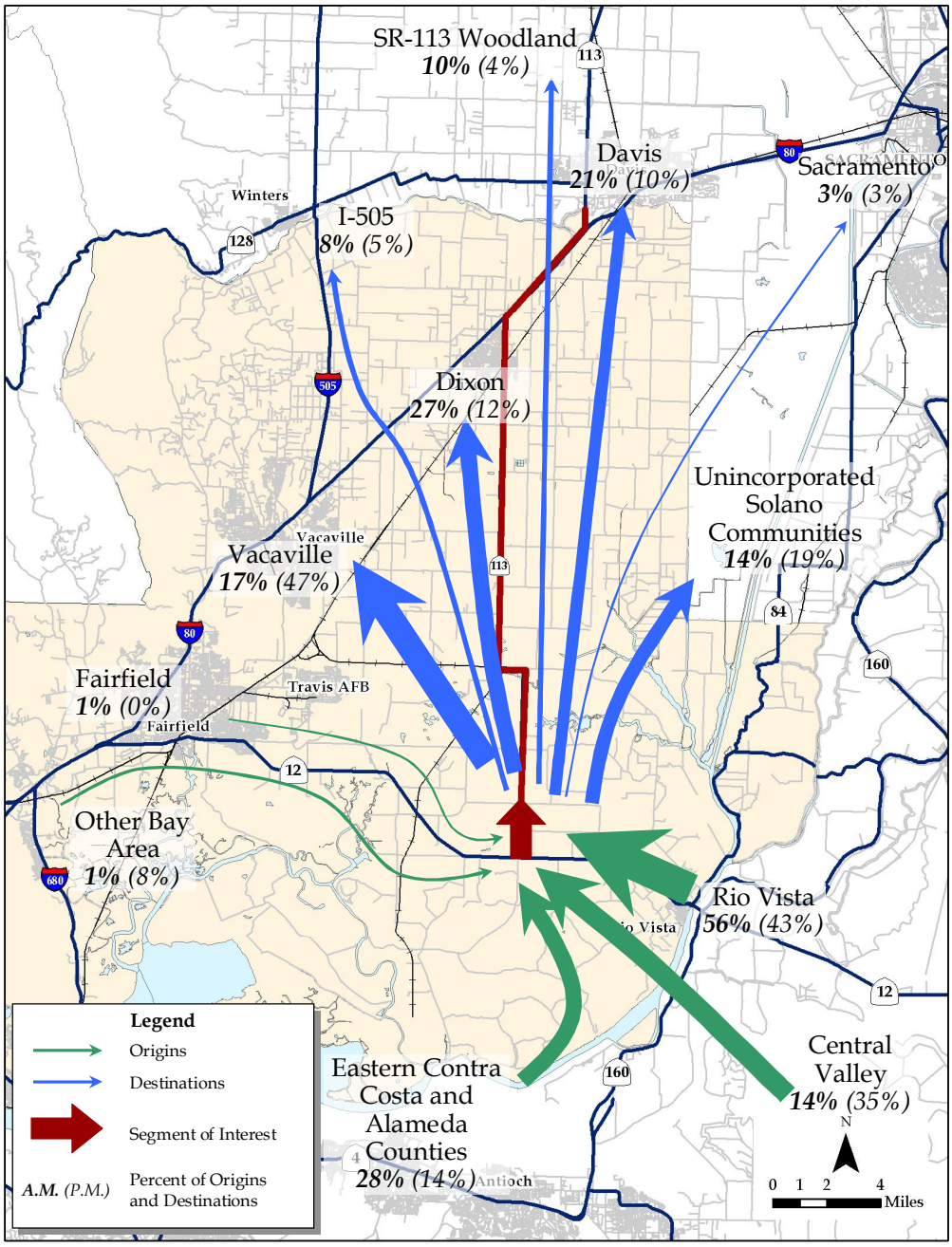


Figure 2.5 - Northbound Travel Patterns for SR 113 at the Junction of SR 12



Figures 2.6 and 2.7 show the travel pattern analysis for SR 113 connecting with I-80 West in Davis. This analysis indicates that approximately one-quarter of traffic traveling south on this highway segment originates or is destined for Dixon. Vacaville is also a major generator of travel demand impacting this segment. SR 113 south of Dixon generates relatively minimal travel demand that uses this segment.

North of the segment, Davis and Woodland, and to a lesser extent, north Sacramento County, generates the majority of the traffic in this location.

Figure 2.6 - Southbound Travel Patterns for SR 113 at I-80 Davis

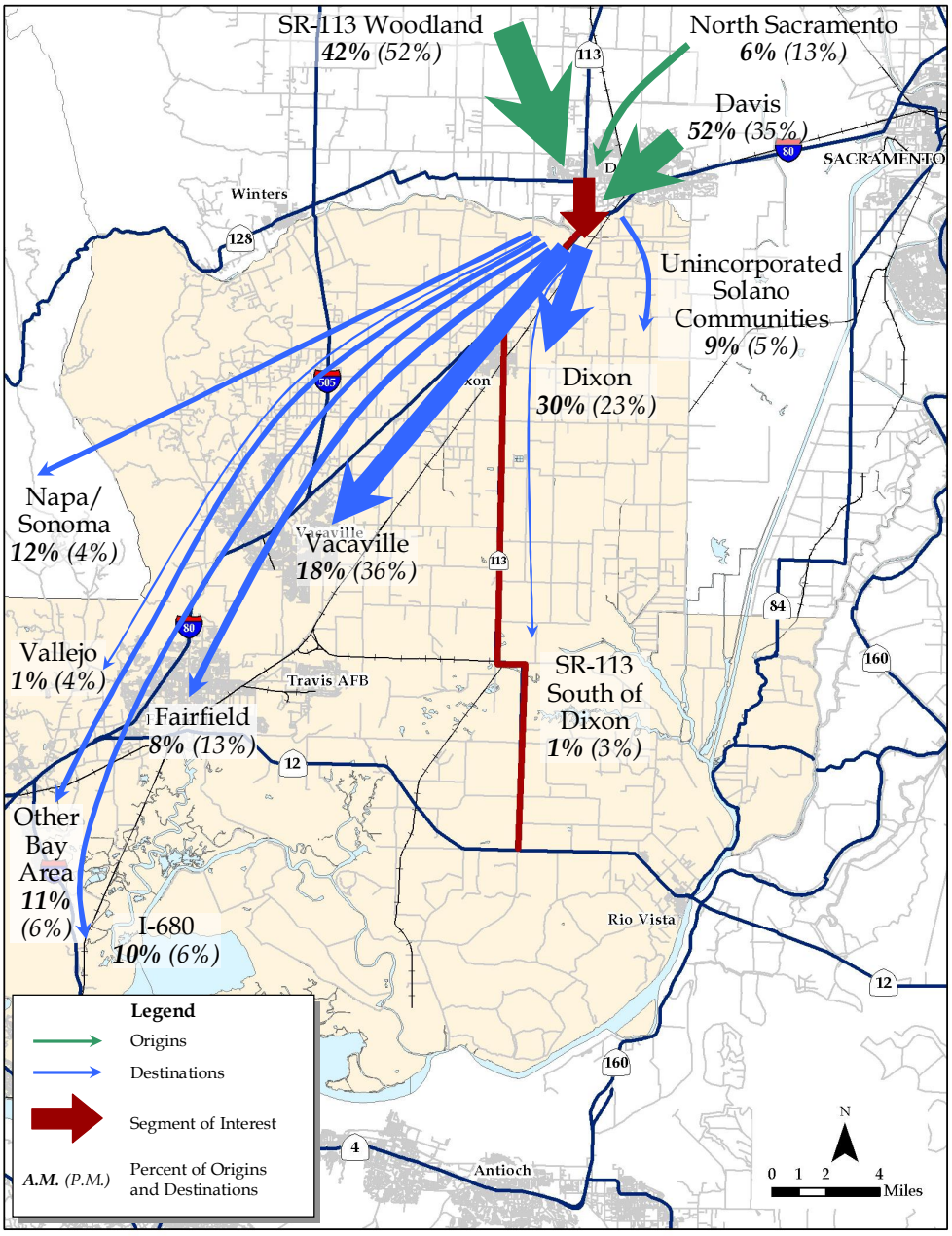
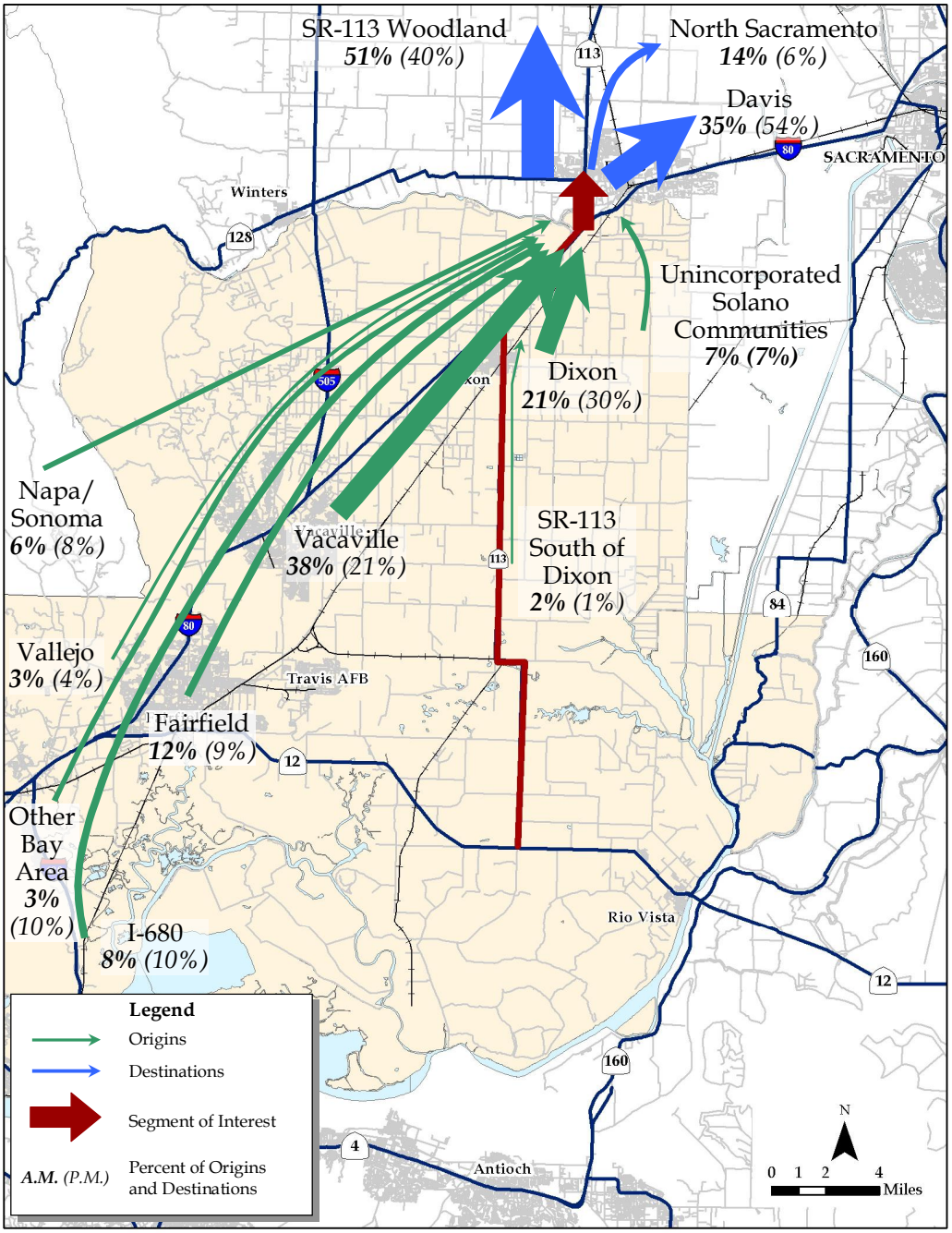


Figure 2.7 - Northbound Travel Patterns for SR 113 at I-80 Davis



Figures 2.8 and 2.9 show the origins and destinations of traffic on SR 113 at North Adams Street in downtown Dixon. This analysis indicates that south of the segment, the majority of traffic on SR 113 is both originating in and destined for Dixon. Even to the north of the segment, a number of trips originate or terminate in Dixon as a result of commercial areas in this area. In addition, further to the north, a large

percentage of trips are being made between Dixon and the neighboring communities of Davis and Sacramento.

Figure 2.8 - Southbound Travel Patterns for SR 113 at North Adams Street

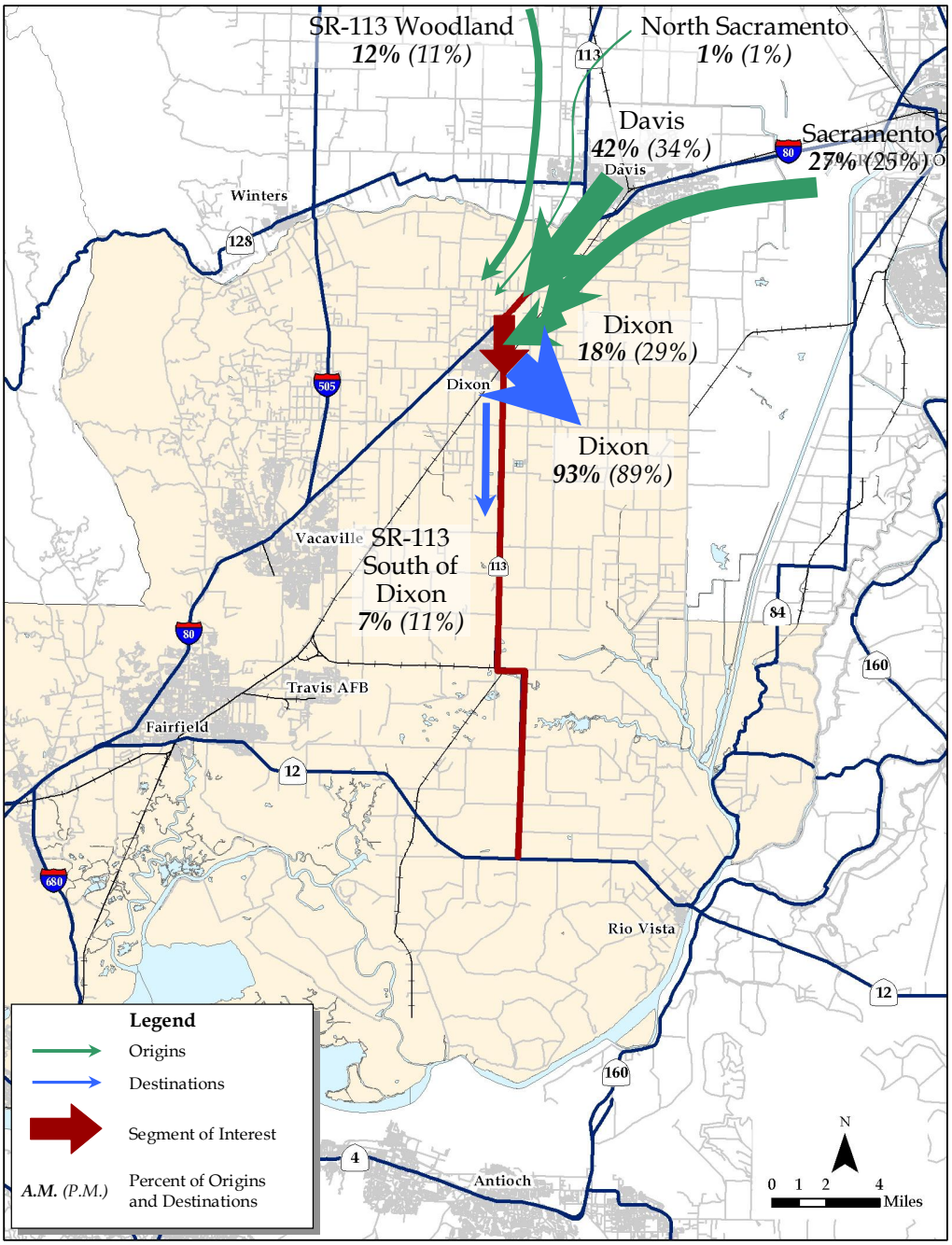
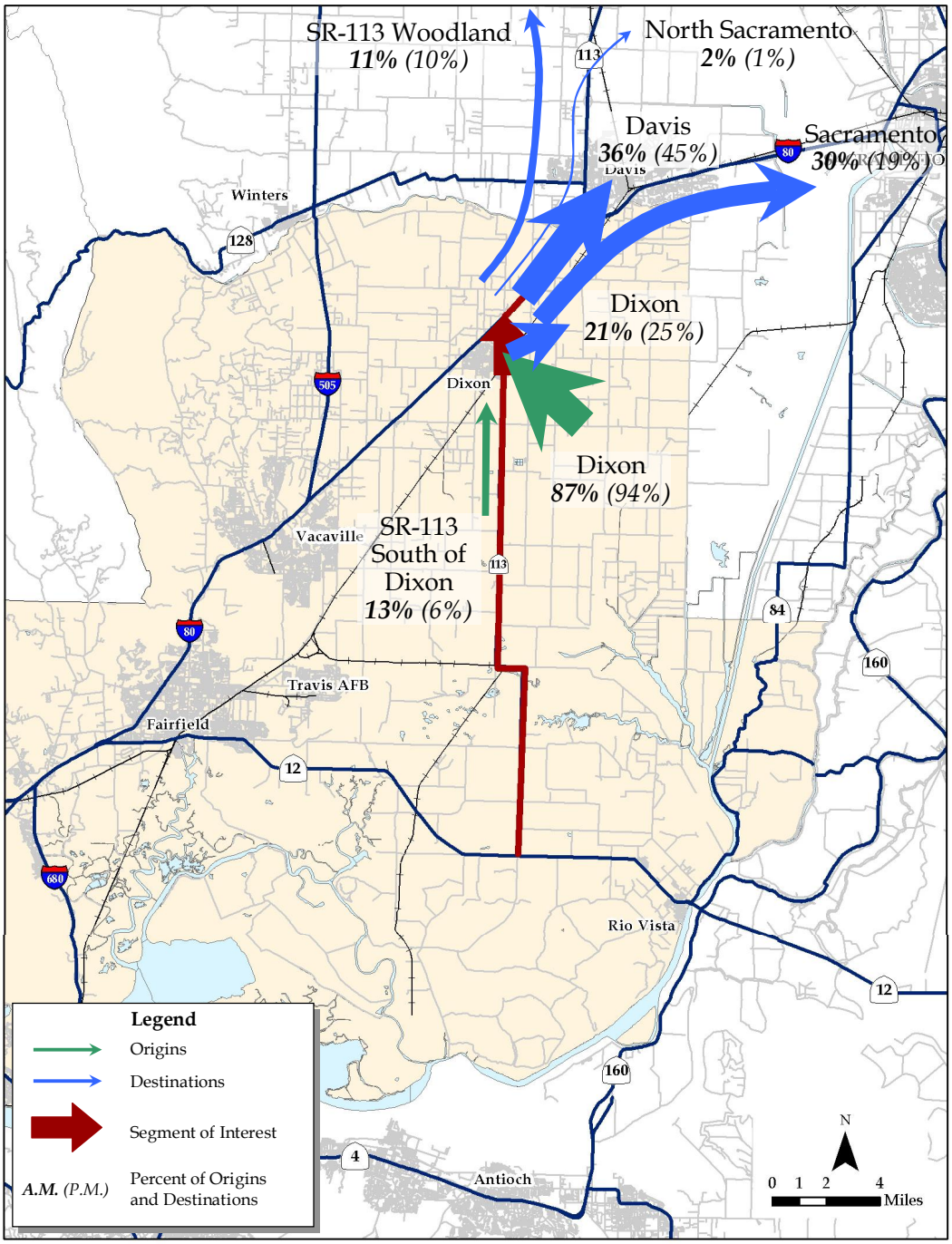


Figure 2.9 - Northbound Travel Patterns for SR 113 at North Adams Street



2.3.2 Freight Markets

Understanding the impacts of freight generators is imperative while analyzing goods movement and truck traffic along the SR 113 corridor, since the types of freight generators and their locations can have a direct impact on truck traffic routing patterns, as well as truck types. For example, an industrial land use (a

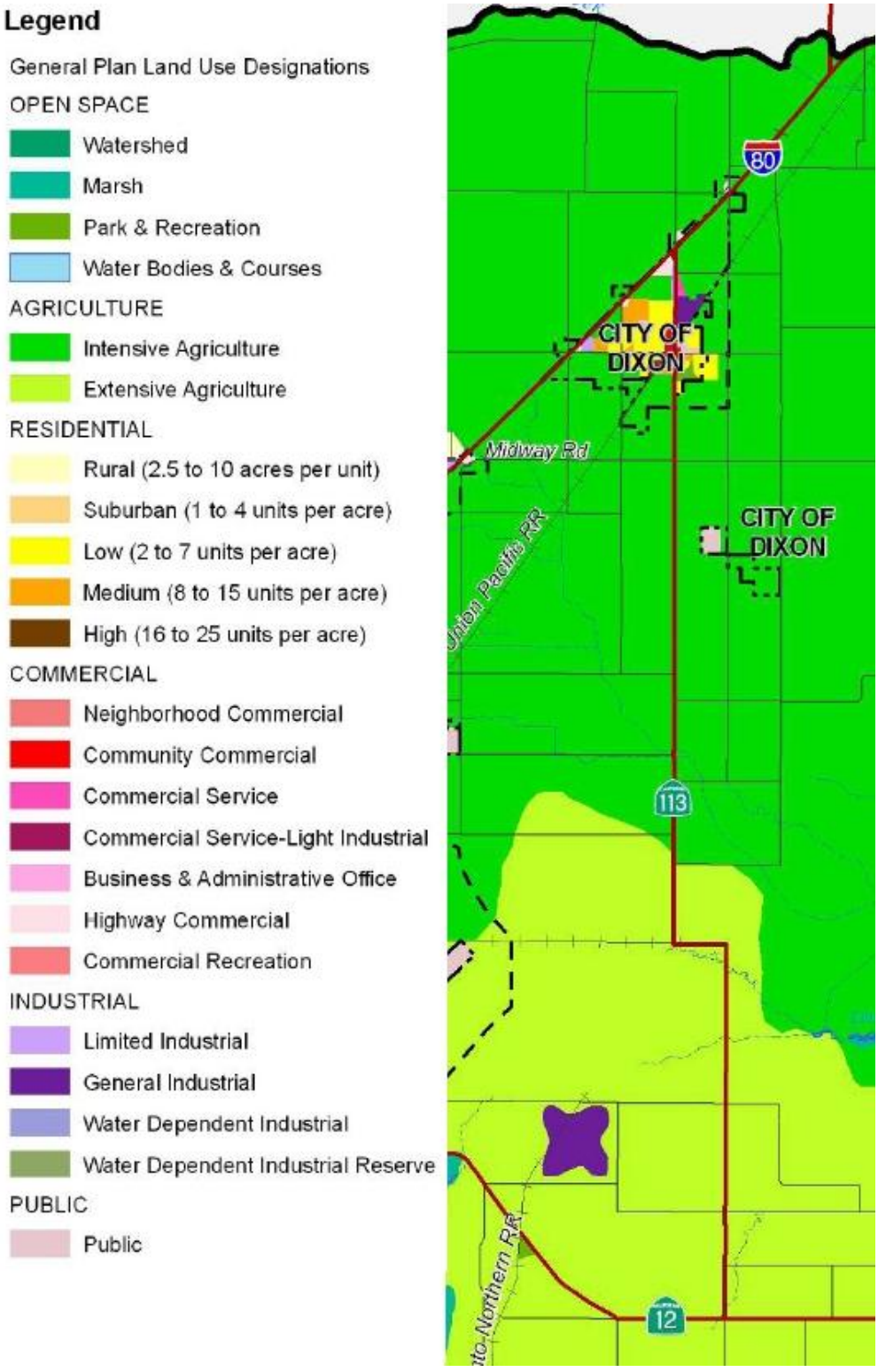
manufacturing plant or a warehouse) will typically generate higher movements of heavy-heavy duty trucks (HHDTs), while commercial land uses (office space) will be associated with higher movements of light-heavy duty trucks (LHDTs).

Freight generators and markets impacting the SR 113 are presented in this section in terms of land use information from the County of Solano General Plan Update. The major land use categories with their associated goods movement characteristics include the following:

- **Industrial.** This land use category includes manufacturing plants, processing facilities, recycling facilities, and industrial (including transportation terminals, warehouses, distribution centers, and logistics parks).
- **Commercial.** This land use category includes office buildings, financial institutions, and retail facilities.
- **Agriculture.** This land use category includes farms for crop and livestock production and is further divided into intensive (high output and labor use per unit area) and extensive (low output and labor use per unit area) agricultural land uses.
- **Residential.** This land use category includes areas used for residential purposes and is further divided into rural; suburban; and low-, medium-, and high-density urban residential land uses.
- **Public.** This land category includes public land uses (government jurisdictional areas, libraries, churches, etc.) and government land uses that account for a largest share of freight activity.

Other land use categories that impact the SR 113 corridor include "Open Space" land uses (parks and recreational areas, watersheds). However, these land use are not typically associated with goods movement activity. **Figure 2.10** presents the land use diagram showing the major land uses in the SR 113 study area.

Figure 2.10 - General Plan Land Use Diagram for SR 113 Corridor



Source: County of Solano General Plan Update, Land Use Background Report, EDAW, 2006.

Agriculture is the predominant land use adjacent to the SR 113 corridor between I-80 and SR 12, as shown above in **Figure 2.10**. Mixed land uses along the SR 113 corridor are located in the City of Dixon, with the existence of industrial, commercial, residential, and agricultural (outer parts of Dixon) land uses. These land use characteristics along the SR 113 corridor corroborate the observed truck traffic distributions on SR 113 by truck type, where a large number of LHDT traffic currently access the City of Dixon (associated with commercial land uses), while traffic in rural segments of SR 113 are dominated by HHDTs. The highest truck traffic volumes on SR 113 between I-80 and SR 12 occur on the segment just south of I-80 (in the City of Dixon). Based on current land use patterns in Dixon, these truck volumes are primarily associated with industrial and commercial land use. A small number of truck volumes using this segment are associated with agricultural land; residential (for example, truck traffic associated with pick-up and delivery activity); and public uses.

The major centers of industrial activity in the County are observed along the SR 12 corridor, in the City of Fairfield, and at the Lambie Industrial Park on Lambie Road in unincorporated Solano County. However, truck trips generated by industrial activity at these locations currently have minimal impact on truck traffic volumes on SR 113 since most of these truck trips will use SR 12 and I-80 to reach other regional and interregional market locations. Caltrans District 10 data and information from the SR 12 Comprehensive Transportation Corridor Study indicate that the proportion of trucks to total traffic using SR 12 is over 10 percent, which is larger than the five to eight percent of trucks that currently use SR 113.

The primary public/governmental land use in the region is the Travis Air Force Base (AFB), located northeast of Fairfield. Travis AFB handles a larger volume of cargo and passenger traffic through its airport than any other military air terminal in the U.S. Consequently, it is a major generator of truck freight traffic in the region. However, most of the truck traffic accessing the base will use the SR 12 and I-80 corridors, with minimal impact on truck volumes on SR 113.

2.3.3 Summary of Key Travel Patterns

The travel pattern and freight analysis reveal several key points:

- SR 113 is a key local thoroughfare within the City of Dixon, whereas in other segments, regional trips dominate.
- The origin and destination analysis illustrates that SR 113 is a preferred connector between Sacramento, Woodland, Davis, Dixon, Vacaville, Rio Vista, and the communities of San Joaquin and eastern Contra Costa County.
- Larger amounts of freight traffic are found on other adjacent highway corridors as those highways provide better access to key destinations.

2.4 Physical Conditions

This section describes the physical conditions of the SR 113 corridor, namely, roadway geometry, structural features, physical constraints, and overall physical conditions of the built facility.

2.4.1 Existing Geometry

The SR 113 study corridor is a two- to six-lane facility within Solano County. The corridor extends from the SR 113/SR 12 intersection north toward the City of Davis and the Yolo County line. Between Dixon and Davis, SR 113 follows the I-80 freeway corridor. The basic lane configuration for SR 113 through the 22-mile corridor is predominantly a two-lane rural highway. A detailed physical description of SR 113 can be provided by breaking down the corridor into three distinct segments, including:

- **Segment 1.** SR 12 to Dixon city limits
- **Segment 2.** SR 113 in downtown Dixon
- **Segment 3.** SR 113 at I-80 in Davis

The following sections describe the current physical conditions of the SR 113 study corridor from the south to the north.

Segment 1 - SR 12 to Dixon City Limits

At the southern limit of the corridor study area, SR 113 is a two-lane facility containing one lane in each direction. The intersection of SR 113/SR 12/Birds Landing Road is currently two-way stop controlled with a flashing red beacon on SR 113 and a flashing yellow beacon on SR 12. As shown in **Figure 2.11**, the westbound right turn movement (SR 12 to SR 113) is a free-right movement as shown. Birds Landing Road is the southern leg of the SR 113/SR 12/Birds Landing Road intersection and is slightly offset to the east of the intersection. Although a small volume of traffic accesses Birds Landing Road, the offset layout of the intersection, combined with significantly higher traffic volumes on SR 12 and SR 113, result in a potentially difficult scenario for vehicles to access this road.

From SR 12, SR 113 continues north within Solano County. Just north of SR 12, SR 113 enters rolling hills type terrain where the drivers line of sight is reduces when compared to the rest of the corridor. SR 113 crosses two-way stop controlled intersections at McCormack Road, Flannery Road, and Creed/Robinson Road before reaching the sharp turns at Hastings Road and Cook Lane. These intersections are predominantly used for local access and agricultural farm equipment as there are few or no driveways in between the intersections. It is important to note that the

shoulders along the mainline SR 113 corridor range from very narrow to no shoulders at all in some places. **Figure 2.12** shows a typical setting of the highway along the rural portion of the corridor.

Figure 2.11 - SR 113/SR 12 Intersection

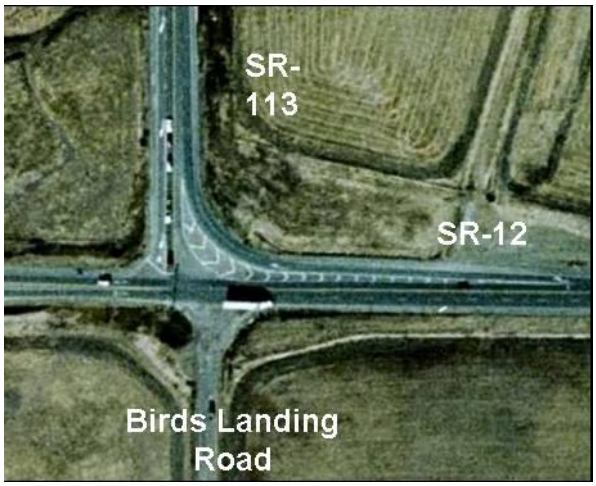


Figure 2.12 - SR 113 Between SR 12 and Hastings Road

Six miles north of SR 12, SR 113 makes a 90-degree turn west at Hastings Road (**Figure 2.13**). One mile west of the first sharp turn, SR 113 turns back 90 degrees to the north at Cook Lane. These two sharp 15 mph turns are marked with warning signs and flashing yellow beacons. These sharp curves are abnormal in conjunction with the rest of the SR 113 corridor as they affect continuity and safety. Furthermore, an at grade railroad crossing splits the two sharp turns and crosses SR 113. Railroad operations are infrequent at this location. For example, this crossing is used for occasional tourist train excursions from the Western Railroad Museum located on SR 12, five miles west of the SR 113/SR 12 intersection.

Figure 2.13 - SR 113 Southbound at Hastings Road (Sharp Turns)

North of the sharp turns at Hastings Road and Cook Lane, SR 113 corridor continues north towards the City of Dixon. SR 113 crosses two-way stop controlled intersections at Brown Road, Hay Road, Main Prairie Road, Fry Road, Binghamton Road, Hawkins Road, Casey Road, and Midway Road before entering the City of Dixon. These intersections are predominantly used for local access and agricultural farm equipment.

The mainline speed limit along SR 113 is 55 mph, and the corridor is physically constrained by alternating east and west side utility poles offset eight feet from the edge of travel way, as well as by drainage ditches. Traveling along this segment may be difficult for some drivers due to high travel speeds given the width of the travel lanes and shoulders.

Segment 2 - Downtown Dixon

As shown in **Figure 2.13**, SR 113 continues north and enters the City of Dixon. Within the City limits, the roadway changes to an urban configuration with numerous driveways and cross streets. At the southern Dixon city limits, the roadway changes name to South First Street and gradually changes from two lanes to a four-lane divided road with bike lanes, curb, gutter, and sidewalk on both sides of the roadway. Immediately north of Dixon City limits, SR 113 passes through an existing residential area.

In this area, there is an existing school zone, as well as the May Fair grounds. As the study corridor crosses north of A Street in the historical heart of Dixon (**Figure 2.15**), the roadway changes name again to North First Street.

Figure 2.14 - SR 113 Northbound at May Fair Grounds

Figure 2.15 - SR 113 Northbound at A Street

Immediately, north of the residential area, the Union Pacific railroad crosses the study corridor at grade. The roadway expands to a four-lane divided road with predominately commercial and industrial developments on both sides of the roadway. The speed limit in the City of Dixon is 25 mph in the residential areas and up to 45 mph in the four-lane commercial section. There are signalized intersections at A Street, Stratford Avenue, Regency Parkway/Industrial Way, Atkinson Court, North Lincoln Street/Vaughn Road, Dorset Drive and Parkway Boulevard. New traffic signals are expected to be installed at Chestnut Street, Valley Glen Drive and H Street.

As shown in **Figure 2.15**, SR 113 intersects I-80 north of the City of Dixon. Currently, access to the freeway is via uncontrolled intersections (**Figure 2.16**) on either side of the I-80 interchange. The interchange is a modified trumpet design, which currently does not meet Caltrans standards for high volume demand.

Figure 2.16 - SR 113 Modified Trumpet Design Interchange at I-80

Figure 2.17 - SR 113 Northbound Access to I-80

Segment 3 - SR 113 at I-80 in Davis

From the SR 113/I-80 intersection just north of Dixon, SR 113 follows I-80 northeast towards the City of Davis for approximately five miles. This section of the corridor is a six-lane freeway facility, containing three lanes in each direction. There are two interchanges (Pedrick Road and Kidwell Road) along the SR 113/I-80 freeway section of the study corridor. Pedrick Road is a partial cloverleaf interchange configuration, while Kidwell Road is a diamond interchange configuration. Both interchanges have overpass structures that span the SR 113/I-80 freeway.

Nearing the City of Davis, SR 113/I-80 widens to 8 - 10 lanes (as shown in **Figure 2.17**), and SR 113 ultimately leaves the I-80 freeway corridor and continues north toward the City of Woodland and I-5. This second SR 113/I-80 interchange is a three-legged directional configuration and is relatively heavy in volume. This

interchange serves as a quick connection from I-80 to I-5 via SR 113, thus bypassing the City of Sacramento. Just north of the I-80/SR 113 intersection, SR 113 is a four-lane divided highway, where it crosses into Yolo County and continues north toward Woodland. This SR 113 study area ends at the Solano/Yolo County line.

Figure 2.18 - SR 113 Interchange with I-80 in Davis

2.4.2 Pavement Conditions

Table 2.7 summarizes the pavement structural type and the general pavement conditions based on field observations conducted in 2007. The majority of the corridor was originally constructed in the late 1960s, although some sections have been recently improved, including the section between Chestnut Street and I-80. The majority of the corridor consists of asphalt concrete. Existing pavement conditions include several holes, deteriorating patch repairs, and cracks largely due to rapid traffic growth in the area and truck traffic on the corridor.

Table 2.7 - Observed SR 113 Corridor Pavement Conditions

	Northbound		Southbound	
Segment Number	**Pavement Type**	**Pavement Quality**	**Pavement Type**	**Pavement Quality**
SR 113 Segment 1	Asphalt concrete	Poor – cracks, holes, patches	Asphalt concrete	Poor – cracks, holes, patches
SR 113 Segment 2	Asphalt concrete	Good	Asphalt concrete	Good
SR 113 Segment 3	Portland cement concrete/asphalt concrete	Good	Portland cement concrete/asphalt concrete	Good

Source: Kimley-Horn Associates, Inc., 2007.

2.4.3 Corridor Structures

Table 2.8 summarizes the bridge structures along the SR 113 study corridor. These structures are all located within Segment 3 at the SR 113/I-80 intersections and along the SR 113/I-80 freeway corridor. The minimum standard vertical clearance is 5.1 meters. The bridges that do not meet minimum standards for vertical clearance may preclude some improvement options, such as mainline widening or pavement overlay, unless the bridges are replaced.

Table 2.8 - SR 113 Corridor Bridge Structures

I-80 Post Mile	Structure Name	Structure Type	Bridge Span Length Width (Meters)	Minimum Vertical Clearance (Meters)	Year Built
38.21	Route 113/80 Separation	Steel girder	4-span structure 103.0 long x 12.3 wide	5.51	1963
39.74	Pedrick Road	Steel girder	4-span structure 116.4 long x 11.3 wide	5.00	1965
41.30	Kidwell Road	Prestressed concrete girder	2-span structure 74.4 long x 13.3 wide	5.56	1992
42.36	South Fork Putah Creek	Concrete tee beam	2 x 11-span structures 145.7 long x 28.7 wide and 145.7 long x 21.9 wide	–	1941/1974
42.37	I-80 east to SR 113 north connector	Concrete box beam/girder	6-span structure 174.3 long x 12.8 wide	–	1974
42.67	I-80 east to SR 113 north connector	Prestressed concrete box beam/girder	2-span structure 132.6 long x 12.8 wide	5.18	1974
43.02	SR 113 south to I-80 east connector	Prestressed concrete box beam/girder	2-span structure 111.3 long x 12.8 wide	5.18	1974
43.35	I-80 west to SR 113 north connector	Prestressed concrete box beam/girder	3-span structure 106.1 long x 12.8 wide	4.85	1974

2.4.4 Projects Planned for the Corridor

There are a limited number of future transportation infrastructure projects in various stages of planning and implementation within the vicinity of the study area. These projects will affect future travel patterns, mainline capacity, or roadway operations through the SR 113 study area. Recently completed projects, which impacts have yet to be assessed, include the Dixon Transportation Center (Transit Project) and the SR 113 Rehabilitation Highway Project. The $1.3 million Dixon Transportation Center involved the construction of a new train station in downtown Dixon with the intent of establishing the City as a future stop for Sacramento/San Francisco Bay Area-bound passenger trains. Train service is currently being studied and such a service, if implemented, may impact the SR 113 Corridor. Parking and bus stops were also constructed adjacent to the station. The station was built partly in response to growing congestion on I-80. The SR 113 Rehabilitation Highway Project was implemented for a 0.8-mile segment from East Chestnut Street to H Street in downtown Dixon. This project was instituted as part of the 2004 to 2005 State Highway Operation Protection Program (SHOPP) funding cycle and construction has been completed. The impacts of these and other projects will be assessed in later tasks of this study.

2.4.5 Summary of Key Physical Conditions

The key findings related to physical conditions of the SR 113 study corridor include the following:

- Segment 1 has major pavement width and condition issues.
- Segment 3 contains several travel lanes and structures in comparison to the Segment 1 rural corridor. The potential development of future improvements related to these structures will be more constrained and costly.
- A few projects are either under construction or in the planning phases. These projects have the potential to create substantial changes in traffic volumes and/or roadway capacity along SR 113 through the study area. The precise nature and magnitude of these changes will be determined in later tasks of this study.

2.5 Safety and Collisions

This section provides an overview of collision statistics and an overview analysis of safety in the SR 113 corridor. Data used to support this analysis included crash statistics from October 1996 to October 2006 for the SR 113 corridor. These statistics were reported by highway segment which do not report collisions by exact location. As a result, specific locations with high numbers of collisions could not be identified. Among the statistics that are considered include:

- Overall collision rates
- Fatality and injury rates
- Collisions involving trucks
- Primary collision factors
- Type of collisions
- Time of day

The SR 113 corridor study area does not have uniform physical and operational characteristics. Segments of SR 113 consider very different levels of travel demand and resulting traffic volumes than others. In addition, the segment north of I-80 in Davis operates as a divided highway facility, while the segment south of I-80 within Dixon operates as an urban arterial. South of the Dixon City limits, SR 113 is a two-lane undivided rural highway. Such variation in physical and operational characteristics may have an influence on crash rates.

2.5.1 Overall Collision Rates

As shown in **Table 2.9**, the rural segment of SR 113 located south of Dixon exhibited the highest collision rate; however, this rate is only slightly higher than the segment

within Dixon. Nevertheless, both of these segments exhibit a higher collision rate than the statewide average for similar facilities, which is approximately 0.94 collision per million vehicle miles traveled (MVM). The collision rate along the freeway segment of SR 113 in Davis is significantly lower than the state average for similar facilities, which is 0.49 collision per MVM. Of the collisions along the rural segment, 15 percent occurred in the vicinity of the S-curves at Hastings Road and Cook Lane.

Table 2.9 - Overall Collision Rates 1996 to 2006

Highway Segment	Number of Collisions	Collision Rate (Per Million Vehicle Miles)	Statewide Average Collision Rate – For Similar Facilities (Per Million Vehicle Miles)
SR 12 – A Street	305	1.10	0.94
A Street – I-80 (City of Dixon)	88	1.07	2.47
North of I-80 (to Yolo County Line)	21	0.13	0.49

Source: Traffic Accident Surveillance and Analysis System, 2007.

Additional data from the Traffic Accident and Surveillance and Analysis System (TASAS) show that there were 46 collisions in the vicinity of the SR 113/SR 12/Birds Landing Road intersection. These could include collisions on SR 113 or SR 12.

2.5.2 Overall Fatality and Injury Rates

Similar to the overall collision rate, the highest combined fatality and injury rate occurred in the segments south of I-80. The rural segment has a combined fatality and injury rate that is on par with the state average of 0.46 fatality and injuries per MVM traveled. The SR 113 segment north of I-80 to the Yolo County Line exhibited a rate one-seventh of the state average for similar facilities. For the entire corridor, there were 10 fatalities over the 10-year period, 7 of which occurred in the rural segment, although the rural segment had the lowest traffic volume. No persons were killed in the vicinity of the S-curves at Hastings Road and Cook Lane; however, there were 18 injuries. TASAS data show that there were one fatality and 32 injuries in the vicinity of the SR 113/SR 12/Birds Landing intersection.

Table 2.10 -Overall Fatality and Injury Rates 1996 to 2006

Highway Segment	Number of Fatalities (and Injuries)	Fatality and Injury Rate (Per Million Vehicle Miles)	Statewide Average Fatality and Injury Rate (Per Million Vehicle Miles)
SR 12 – A Street	7 (111)	0.43	0.46
A Street – I-80 (City of Dixon)	2 (50)	0.63	1.06
North of I-80 (to Yolo County Line)	1 (4)	0.03	0.21

Source: Traffic Accident Surveillance and Analysis System, 2007.

2.5.3 Collisions Involving Trucks

SR 113 is a major north-south transport route and serves as a critical artery for goods movement between the communities of Davis, Dixon, and Vacaville and areas in the Central Valley. With no other major north-south routes adjacent to the study area, SR 113 serves as a freight route. As shown in Table 2.11, the rural segment of SR 113 exhibits a greater rate of truck collisions than other corridor segments. Even with the greater rate of truck collisions, this segment also has a high rate of collisions between passenger vehicles. Truck collisions represent approximately one-fifth of all collisions in the segment. This rate is quite a bit higher than the approximately ten-percent share of overall traffic that is represented by trucks. Of the truck collisions between SR 12 and A Street, eight occurred in the vicinity of the S-curves at Hastings Road and Cook Lane. TASAS data show that 11 of 46, or 24 percent of collisions in the vicinity of the SR 113/SR 12/Birds Landing intersection involved trucks.

Table 2.11 - Truck Collisions
1996 to 2006

Highway Segment	Number of Collisions Involving Trucks	Truck Collisions As Percentage of All Collisions	Collision Rate (Per Million Truck Miles)*
SR 12 – A Street	62	20.3%	2.24
A Street – I-80 (City of Dixon)	10	11.4%	1.21
North of I-80 (to Yolo County Line)	1	4.8%	0.16

Source: Traffic Accident Surveillance and Analysis System, 2007.

*Cambridge Systematics, Inc., 2008

2.5.4 Primary Collision Factors

A traffic collision could be caused by a number of factors, such as speeding and the influence of alcohol; however, in preparing collision reports, a primary collision factor or driving action is determined by a police officer that best describes the

primary or main cause of the collision. On a corridor-wide basis, as shown in **Table 2.12**, speeding is the primary collision factor (PCF) accounting for one-quarter of all collisions in the study corridor. Speeding is the most significant factor in crashes at the S-curves at Hastings Road and Cook Lane (63 percent). Speeding is also a factor at the SR 113/SR 12/Birds Landing Road intersection, contributing to 37 percent of all collisions. Improper turns are a factor in about 22 percent of collisions on the corridor. Improper turns can also be attributed to narrow pavement width along the corridor. Failure to yield serves as a factor for 28 percent of collisions at the SR 113/SR 12/Birds Landing Road intersection, which can be attributed to the limited amount of clearance time available for traffic entering and exiting SR 113/Birds Landing at the junction with SR 12.

Table 2.12 also shows the rate of collisions by factor in each segment. Speeding is a much greater factor in collisions within the City of Dixon than in other segments. Approximately one-half of the collisions along the SR 113 freeway segment in Davis can be attributed to improper lane changes.

Table 2.12 - Primary Collision Factors
Number of Collisions and Percent of Segment Collisions (1996 to 2006)

Primary Collision Factor	SR 12 to A Street (Rural Segment)	A Street to I-80 (City of Dixon)	North of I-80 (to Yolo County Line)	Total Corridor
Alcohol	16 (5.2%)	7 (8.0%)	1 (4.8%)	**24 (5.8%)**
Improper turn	68 (22.3%)	14 (15.9%)	10 (47.6%)	**92 (22.2%)**
Speeding	78 (25.6%)	26 (29.5%)	2 (9.5%)	**106 (25.6%)**
Failure to yield	39 (12.8%)	26 (29.5%)	0 (0.0%)	**65 (15.7%)**
Other*	104 (34.1%)	15 (17.0%)	8 (38.1%)	**127 (30.7%)**

Source: Traffic Accident Surveillance and Analysis System, 2007.

* Other primary collision factors represent small percentages of all collisions or cannot be distinguished; they include following too closely, improper driving, other than driver, fell asleep, unknown, not stated, and other violations.

2.5.5 Types of Collisions

As **Table 2.13** shows the rate of hit object, broadside, and rear-end collisions are higher than those of other collision types in the corridor. The higher rate of hit object collisions along the rural segment can be attributed to speeding. Speeding can also be the cause for the high rate of broadside collisions at intersections in the corridor. Furthermore, the higher rate of broadside collisions within Dixon could be attributed to the larger number of driveways and cross streets in the corridor.

Table 2.13 - Type of Collisions
Number of Collisions and Percent of Segment Collisions (1996 to 2006)

Type of Collision	SR 12 to A Street (Rural Segment)	A Street to I-80 (City of Dixon)	North of I-80 (to Yolo County Line)	Total Corridor
Head-On	17 (5.6%)	5 (5.7%)	0 (0.0%)	**22 (5.3%)**
Sideswipe	26 (8.5%)	121 (13.6%)	1 (4.8%)	**39 (9.4%)**
Rear End	40 (13.1%)	25 (28.4%)	3 (14.3%)	**68 (16.4%)**
Broadside	61 (20.0%)	31 (35.2%)	1 (4.8%)	**93 (22.5%)**
Hit Object	103 (33.8%)	12 (13.6%)	13 (61.9%)	**128 (30.9%)**
Overturn	29 (9.5%)	1 (1.1%)	2 (9.5%)	**32 (7.7%)**
Other*	29 (9.5%)	2 (2.3%)	1 (4.8%)	**32 (7.7%)**

Source: Traffic Accident Surveillance and Analysis System, 2007.

* Other types of collisions represent small percentages of all collisions or cannot be distinguished; they include auto-pedestrian, not stated, and other.

Hit objects represent the leading type of collision at the S-curves at Hastings Road and Cook Lane, representing 72 percent of all collisions at those locations (speeding can be attributed to these collisions). Broadside accidents represent the largest share (37 percent) of collisions at the SR 113/SR 12/Birds Landing Road intersection, and can also be attributed to entry and exit clearance for SR 113/Birds Landing traffic at the junction with SR 12.

2.5.6 Time of Day Accident Analysis

On an hourly basis, the rate of collisions is relatively consistent throughout the morning peak, midday, and afternoon peak periods (**Table 2.14**). The segment of SR 113 north of I-80 has a noticeably higher rate of late night and early morning crashes. Conversely, the urban segment within Dixon has proportionally fewer overnight crashes.

Table 2.14 - Time of Collisions
Number of Collisions and Percent of Daily Collisions (1996 to 2006)

Time of Collision	SR 12 to A Street (Rural Segment)	A Street to I-80 (City of Dixon)	North of I-80 (to Yolo County Line)	Total Corridor
6:00 a.m.-10:00 a.m.	65 (21.3%)	22 (25.0%)	6 (28.7%)	**93 (22.5%)**
10:00 a.m.-3:00 p.m.	76 (24.9%)	35 (39.8%)	3 (14.3%)	**114 (27.5%)**
3:00 p.m.-7:00 p.m.	75 (24.6%)	20 (22.7%)	2 (9.5%)	**97 (23.4%)**
7:00 p.m.-6:00 a.m.	89 (29.3%)	11 (12.5%)	10 (47.6%)	**110 (26.6%)**

Source: Traffic Accident Surveillance and Analysis System, 2007.

At the S-curves at Hastings Road and Cook Lane, 41 percent of collisions occur during the night hours between 7:00 p.m. and 6:00 a.m., which is more than the morning and afternoon peaks combined. Poor lighting, sharp turns, and speeding contribute to the higher rate of collisions during night conditions. Conversely, the highest rate of collisions at the SR 113/SR 12/Birds Landing Road intersection is during the morning and afternoon peak periods. This may be attributed to the higher amount of traffic during those periods and the resulting short clearance times for traffic entering and exiting SR 113/Birds Landing at SR 12.

2.5.6 Summary of Key Safety Findings

Several key findings can be reported based on a review of the crash statistics for the SR 113 study area:

- The entire corridor south of I-80 exhibits overall crash rates that are higher than the statewide average for similar facilities.
- Combined fatal and injury rates are is slightly higher than the state average in the rural segment and is below the state average for the other two segments.
- Speeding is the predominant issue cited as the "primary collision factor" in the SR 113 corridor. High speeds are particularly problematic along the corridor since:
    - Posted speed limits within the urban segment are lower than in adjacent segments;
    - The relatively narrow road width along the rural segment combined with a high-speed limit leaves little room for error while driving;
    - Agricultural vehicles increase the need for passing and increases accident potential; and
    - Truck collision rates are high when compared to the composition of trucks in the overall traffic stream.
- Clearance gap time is a problem at the intersection of SR 113/SR 12/Birds Landing Road as indicated by the number of broadside collisions and the number of collisions during morning and afternoon peak periods.
- Speeding is a major collision factor at the s-curves at Hastings Road and Cook Lane.
- It should be noted that approximately ten percent of collisions in the corridor occur during periods of rain or fog; all other collisions occur during clear or cloudy conditions.

3.0 Land Use Conditions

3.1 Introduction

The section presents existing and expected future land use developments and development constraints in the SR 113 corridor. The information contained in this section was generated using available sources, including the County of Solano General Plan Update, *Land Use Background Report*, 2006; information provided by the City of Dixon Engineering Department, 2005; and other data sources and reports.

3.2 Land Use

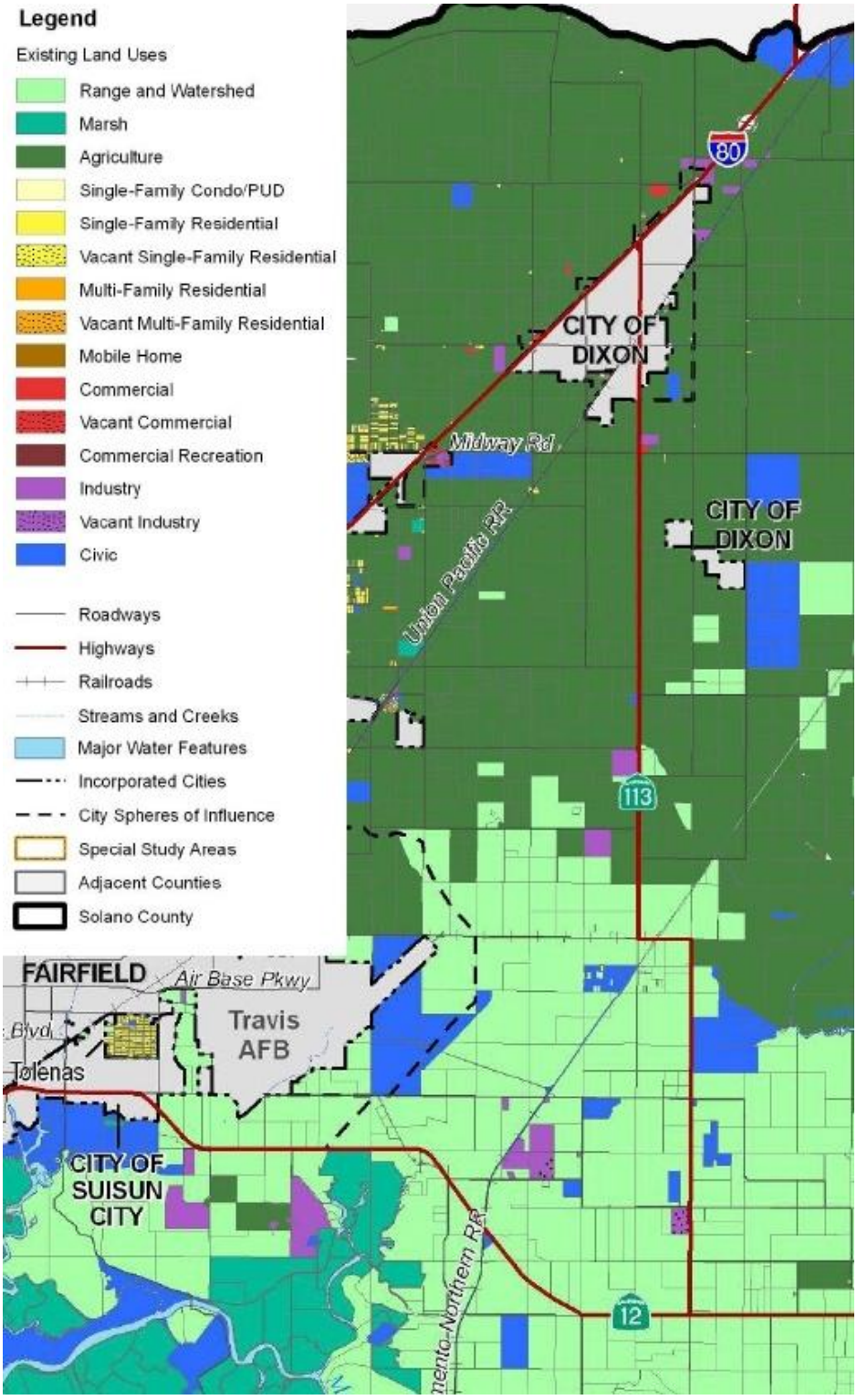
3.2.1 Existing SR 113 Corridor Land Use

Solano County has adopted a city-centered growth strategy that has focused urban development into the cities and preserved the majority of unincorporated land for natural resource, agriculture, and other nonurban land uses. The majority of land along the SR 113 corridor is located within the unincorporated portions of Solano County. **Figure 3.1** shows that agriculture, range, and watershed land uses are predominant in the SR 113 corridor.

A large portion of Solano County's agricultural land is concentrated along the SR 113 corridor. According to a report by the University of California Extension Office, *The Economic Impact of Solano County's Agricultural Industry*, 64 percent of the land in the County are used for agriculture, of which one-half is irrigated agriculture. Crops include nursery stock, processing tomatoes, alfalfa, wine grapes, irrigated wheat, hay, walnuts, and field corn. Livestock include cattle, calves, and feeder lambs. The Solano County Agricultural Commissioner's Office estimates that agricultural and related activities generate almost $1.3 billion each year in gross output value in the County and provide more than 10,000 jobs. Agriculture generates income and produces jobs directly on farms, as well as in associated industries such as processing and goods movement.

Properties adjacent to the I-80/Kidwell Road interchange have been purchased as part of an initiative to preserve agricultural lands and to establish a greenbelt between Davis and Dixon. To the west of the SR 113 corridor, near the I-80/Midway Road interchange in the City of Vacaville, several acres of land have been designated for commercial highway use. There is an existing service commercial development at this location as well. The University of California (UC) Davis lands to the west and south of the I-80/SR 113 interchange are mainly open space. This open space is used by the University for teaching and research and is typically free of large buildings. Lands adjacent to SR 113 in the City of Davis are mainly designated for residential use.

Figure 3.1 - Existing SR 113 Corridor and Solano County Land Uses



Source: County of Solano General Plan Update, Land Use Background Report, 2006.

Note: Legend does not convey City of Dixon's land use. Figure 3.2 shows Dixon land use in detail.

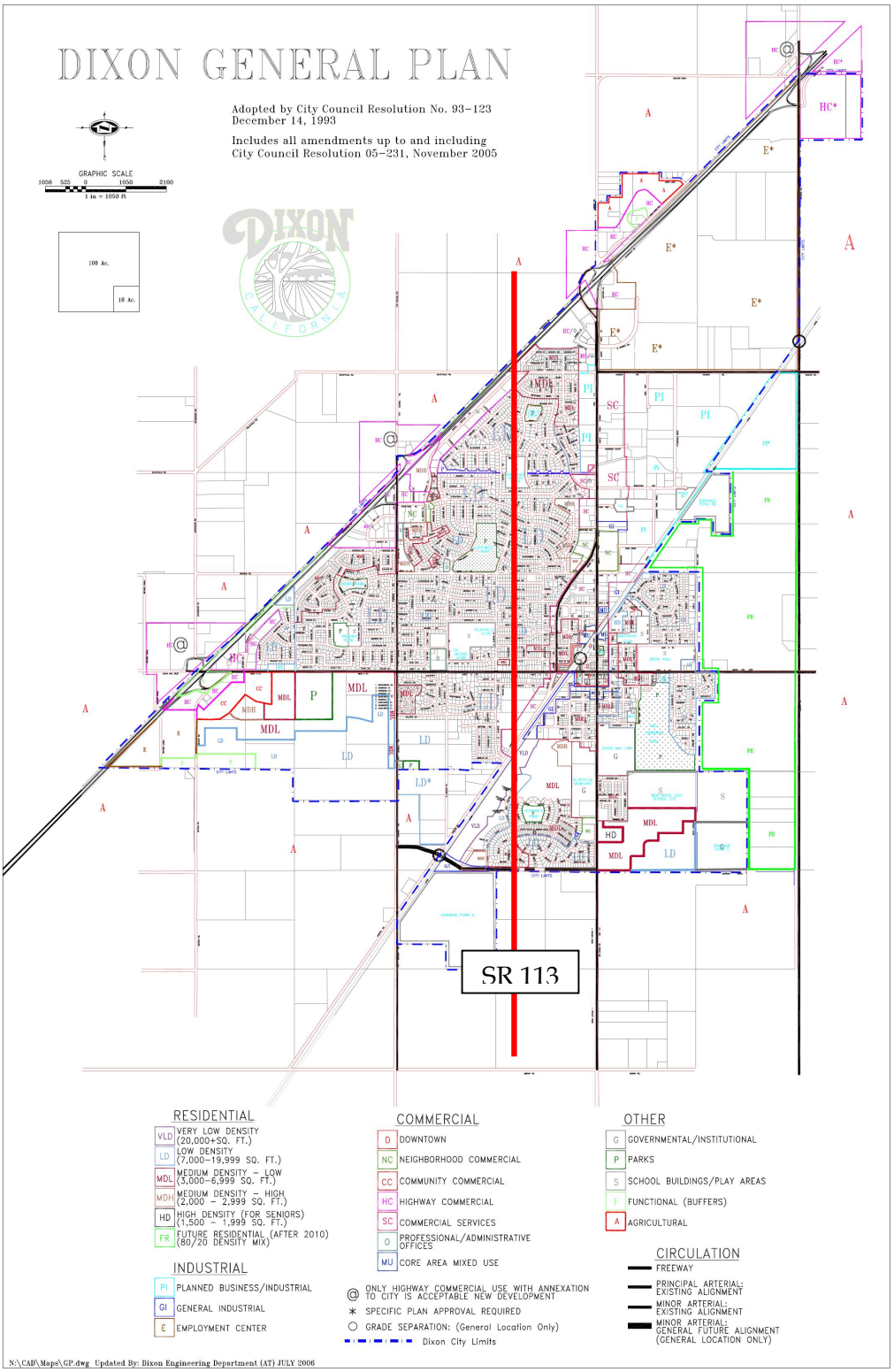
3.2.2 Existing City of Dixon Land Use

The City of Dixon covers 4,268 acres, while another 1,216 acres lie within the Sphere of Influence (SOI) of Dixon. The General Plan Planning Area for the City of Dixon covers an area that extends more than one mile from the SOI. The SOI is established by the Local Agency Formation Commission (LAFCo) through negotiations between the City of Dixon and the County, and defines the physical boundaries and service area of the City. The SOI for Dixon generally follows the area planned for urbanization under the General Plan for the City, and includes the I-80 interchange areas and an area east of the city limits. The SOI was reviewed and approved in 2005 by the City, County, and LAFCo, and is currently in effect.

Figure 3.2 shows that the majority of the City's urban areas are located to the south of I-80. Much of the land to the west of SR 113 has been developed for residential use at varying densities. Expected future residential growth is planned for the area immediately southeast of the City. Commercial and industrial land uses are concentrated in the northeastern portions of Dixon to capitalize on access to I-80. The remaining areas within the Dixon planning area are designated for agriculture. The County General Plan designates the lands surrounding Dixon as Intensive Agriculture.

The Dixon Northeast Quadrant Specific Plan, as approved in 1995, designated the area bounded by I-80, North First Street (SR 113), Pedrick Road, and Vaughn Road for development. This development was intended to provide the City with an employment center and provide shopping services for city residents, employees, and travelers on I-80. The majority of land in this area remains undeveloped.

Figure 3.2 - Dixon Land Use Map

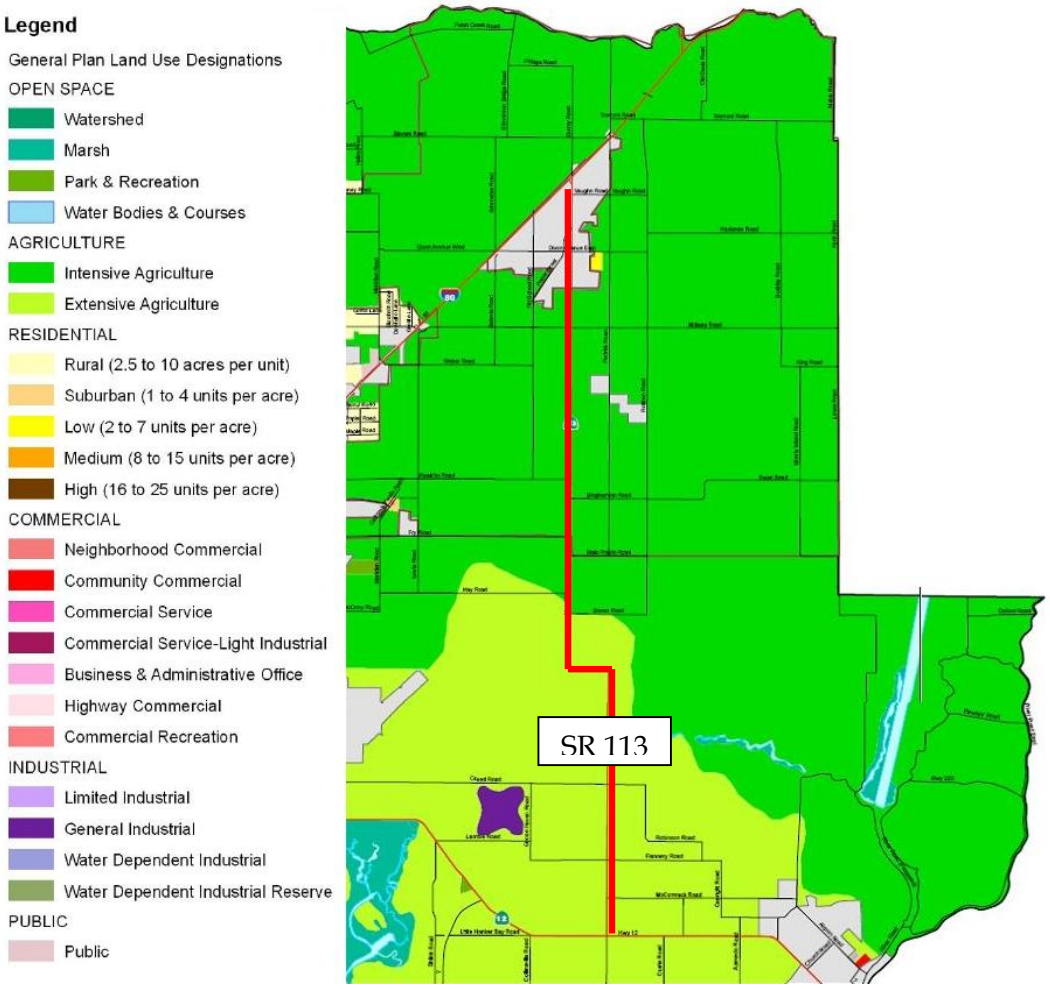


Source: City of Dixon Engineering Department, 2005.

3.2.3 Expected Future Land Use Development

Figure 3.3 shows the expected future land use development designations in the SR 113 corridor, as defined in the Solano County General Plan. This General Plan is an open space plan with the majority of land in the unincorporated areas of the County designated for some type of agricultural use, including those lands adjacent to the SR 113 corridor. Areas of the County that are designated for urban development are concentrated mostly along I-80.

Figure 3.3 - Future Land Use Designations in the Solano County Portion of the SR 113 Corridor



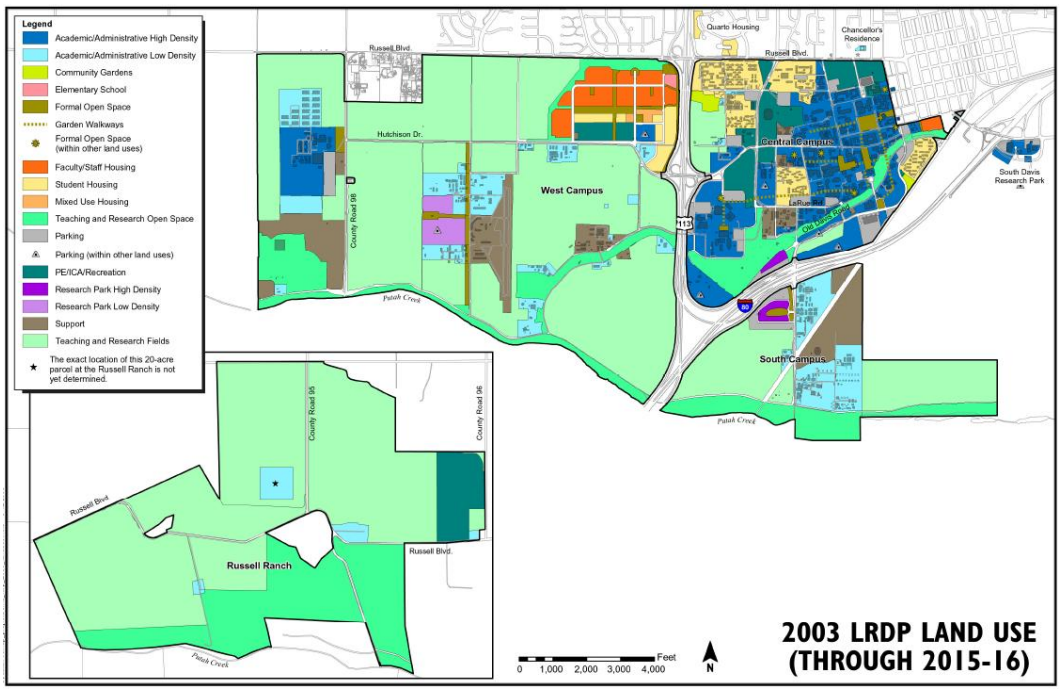
Source: County of Solano General Plan Update, Land Use Background Report, 2006.

Major future land use developments proposed in the SR 113 corridor include the following:

- The Lambie Business Park is an industrial area built on a landfill near the intersection of SR 12 and Lambie Road, approximately two miles west of SR 113. While expected future developments are being evaluated for this site, there are significant challenges to new development in this area due to minimal access to the site, a lack of utilities, and a variety of endangered species that make this area home.
- The Flying J Travel Plaza is a proposed project located at the junction of I-80 and Pedrick Road. This site is located within lands designated for the Dixon Northeast Quadrant Specific Plan. This particular project would include development of approximately 27 acres of a 60-acre property within the Flying J Travel Plaza. Among the services proposed to be provided by this facility include a gas station, 24-hour convenience store, restaurant, fast-food court, driver lounge, and laundry and shower facilities.
- The Dixon City Council approved the Southwest Dixon Specific Plan and Annexation, which features a proposed 477-acre site east of I-80, south of A Street, and west of Pitt School Road. This area is slated for future residential and commercial development.
- The Brookfield Homes project including more than 400 homes and a 120-unit senior citizen complex is being proposed for a 94-acre site east of South First Street (SR 113). The Dixon City Council approved this project in November 2005. The Dixon Planning Commission approved this development in April 2007.
- The Milk Farm Partners Project is a 60-acre site on the north side of I-80 at the junction with SR 113 and Currey Road. Among the new developments proposed for this site include highway commercial office and research facilities. The Environmental Impact Report for this project was certified by the Dixon City Council in 2005.
- The West Parkway Infill Plan is an 89-acre site at the southern end of Dixon along Pitt School Road that is being planned for future low-density residential. Annexation has been approved by the Dixon City Council for this project.
- The Dixon General Plan designates lands adjacent to the southeast corner of the City for residential development after the year 2010.
- The I-80/Kidwell Road interchange remains a part of a greenbelt between Dixon and Davis.
- Lands at the I-80/Midway Road interchange are designated for highway commercial, service commercial, and industrial park uses.
- City of Davis and County of Yolo planning documents indicate that future development in Davis is to be contained within the current urban footprint.

- **Figure 3.4** shows future development for UC Davis. The West Campus area, located at the northwest corner of the I-80/SR 113 interchange, is designated for agricultural research facilities and for student and staff housing. The South Campus planning area, located south of I-80 and to the east of SR 113, will be used for field teaching, research, and support services. The Russell Ranch property, located 1.5 miles west of the main campus, will be used for agricultural research.

Figure 3.4 - UC Davis Long-Range Development Plan (LRDP) Land Use Map



Source: UC Davis Long-Range Development Plan, 2003.

3.2.4 Future Land Use Development Constraints in the Corridor

Future land use development in the SR 113 corridor will be constrained due to both Travis Air Force Base land use compatibility plans and the Solano County Williamson Act Lands. Both are briefly summarized below.

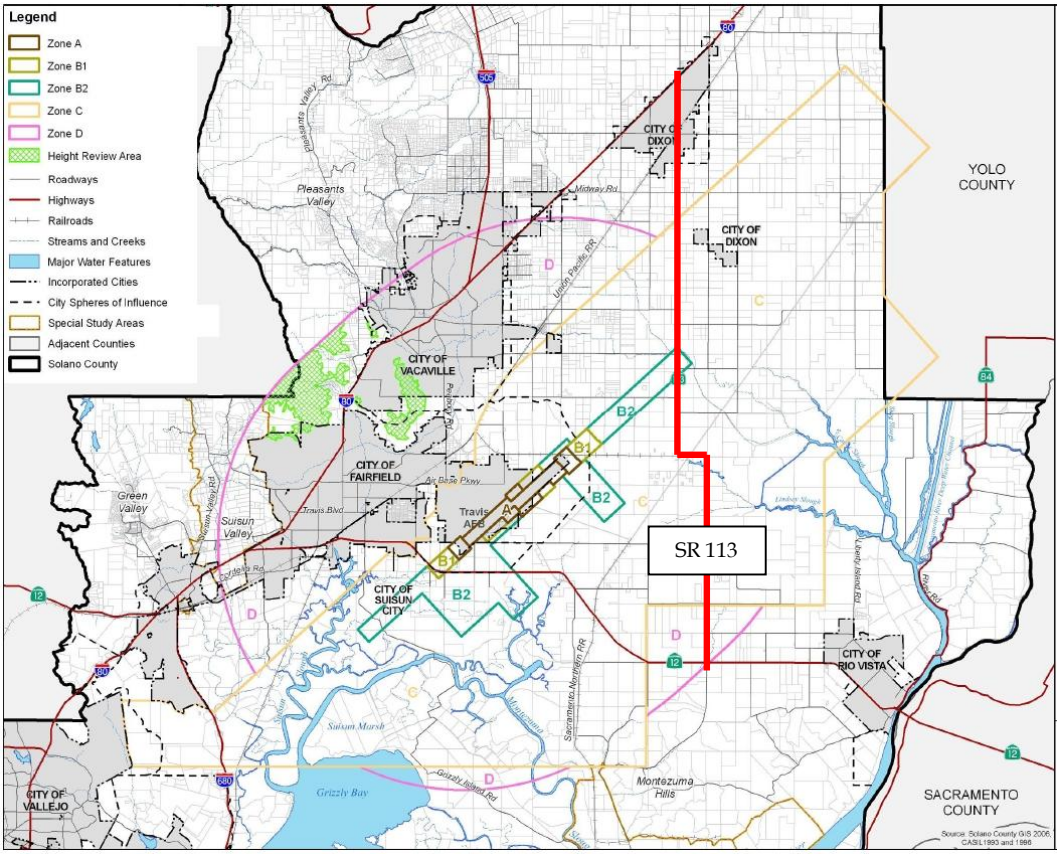
3.2.5 Travis Air Force Base Airport Land Use Constraints

Travis Air Force Base has been in operation for several decades, and there is a public interest in protecting the viability of the facility. An effort is being made to prevent the introduction of incompatible land uses in the vicinity of the Base. Potential airport and land use conflicts for each public use and military airport in California are addressed in Airport Land Use Compatibility Plans (ALUCPs), as required by state law.

A number of restrictions on residential development are defined by the 2002 Travis Air Force Base Land Use Compatibility Plan. Nonresidential development restrictions are also addressed by this document according to the number of people per acres and noise sensitivity thresholds. **Figure 3.5** shows that several acres of land near the intersection of SR 113 and Fry Road fall within the B2 compatibility zone, which is defined as an area with a high risk of accidents and potential noise levels. New residential development in this area is strongly discouraged. The division of existing parcels for the development of additional dwelling units is not permitted. Current county land use and zoning designations for this area will not allow for any potentially incompatible land use development.

The remainder of the lands adjacent to SR 113 south of the City of Dixon falls within the C compatibility zone. Such parcels of land are exposed to potentially high noise levels and are potentially affected by a concentrated number of low-altitude aircraft movements. The amendment of a general plan land use policy that allows for more dwelling units than approved by current zoning is not permitted.

Figure 3.5 Travis Air Force Base Safety Zones



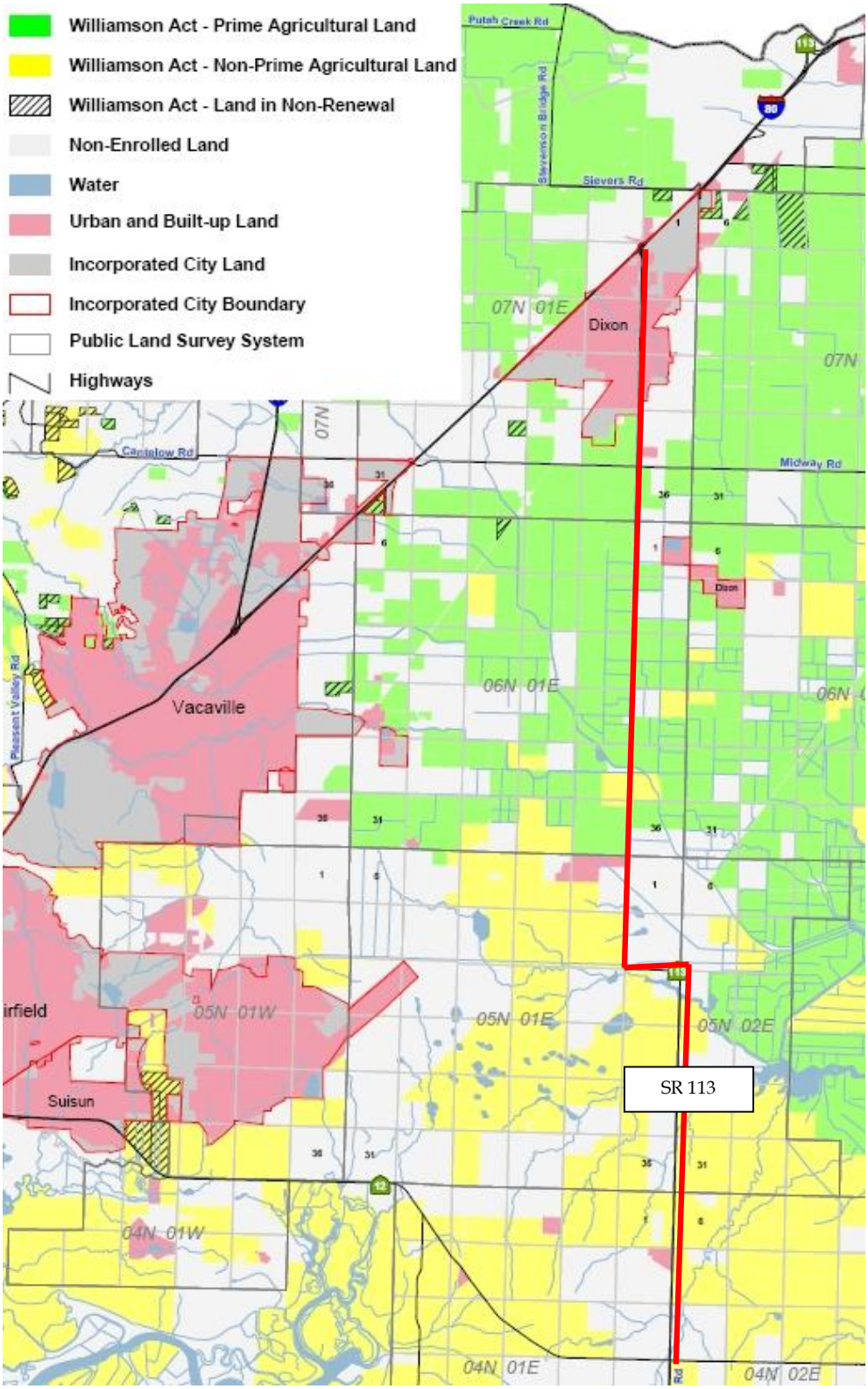
Source: County of Solano General Plan Update, *Land Use Background Report*, 2006.

3.2.6 Solano County Williamson Act Lands

In addition to the expected future land use developments identified, there may be additional opportunities for new industrial development within the unincorporated areas along SR 113 south of Dixon. The limitation of such development will consider the availability of sites suitable for commercial uses and limitations to adequate infrastructure to support new development. Much of the land adjacent to the SR 113 corridor fall under the Solano County Williamson Act Lands contracts, which means that landowners currently cannot develop commercial uses that are not compatible with the agricultural use of the land. **Figure 3.6** shows the location of Williamson Act Lands in Solano County, which directly impacts the potential land use development along the SR 113 corridor.

Contracts under the Williamson Act must be maintained for a minimum of 10 years. Contracts are automatically renewed every year unless a nonrenewal notice is filed. If this notice is filed, a nine-year, nonrenewal process is initiated that gradually increases the annual tax assessment for the property. The Williamson Act contract terminates after the nine-year, nonrenewal period.

Figure 3.6 - Solano County Williamson Act Lands, 2006



Source: California Department of Land Resource Protection, 2006.

3.3 Population, Employment, and Economic Trends

This section presents a discussion of both existing population and employment growth in the SR 113 corridor, City of Dixon, and Solano County. An assessment of regional economic trends that will likely impact travel demand and patterns in the County and in the SR 113 corridor is also presented below.

3.3.1 Population

Table 3.1 shows that Dixon has grown at a slightly faster rate than Solano County from 2000 to 2007. In addition, Dixon's growth rate was much more significant prior to 2000. Although the growth rate has slowed in recent years, the City is expecting similar levels of future population growth, considering the availability of land for development as documented in the General Plan.

Table 3.1 - SR 113 Corridor Population Growth, 1980 to 2007

					Percentage of Growth		
	1980	1990	2000	2007	1980-1990	1990-2000	2000-2007
Dixon	7,541	10,401	16,103	17,644	38%	55%	10%
Unincorporated lands	N/A	2,346	3,047	N/A	N/A	30%	N/A
Solano County Total	235,203	340,421	394,542	424,823	45%	16%	8%

Source: U.S. Census 1990 and 2000, SF 1; and California Department of Finance, 1980 and 2007.

Table 3.2 shows that Dixon has a slightly lower population and housing unit density than other cities within the County. The unincorporated lands adjacent to the SR 113 corridor also show lower population and housing unit density than other unincorporated lands within the County.

Table 3.2 - SR 113 Corridor Population Density

City/Place	Population	Housing Units	Area (Square Miles)			Density Per Square Mile of Land	
			Total	Water	Land	Population	Housing Units
Dixon	16,103	5,172	7	0	7	2,434	782
All county cities	375,220	127,546	147	22	125	2,997	1,019
Unincorporated lands	3,047	1,344	247	0	247	12	5
Unincorporated lands – all county	19,322	6,116	751	56	695	28	9
Solano County	394,542	134,513	907	77	829	476	162

Source: U.S. Census Bureau, 2000.

Table 3.3 shows that Dixon is expected to grow at a rate almost twice of that of Solano County. New residential areas, as specified in the Dixon General Plan, are expected to accommodate this projected growth.

Table 3.3 - Projected Population and Household Growth, 2000 to 2030

	2000	2005	2030	Percentage of Growth 2005-2030
Dixon Population	16,103	16,700	27,300	63%
Solano County Population	394,542	423,800	581,800	37%

Source: Association of Bay Area Governments, 2005.

3.3.2 Employment

Table 3.4 shows that employment growth of 46 percent is expected in the nine-county Bay Area region between 2005 and 2030. Solano County will have similar employment growth during the same period. Dixon is projected to have slower employment growth than the County and the Bay Area. Solano County employment growth is driven by increases in Fairfield, Vacaville, and Vallejo. Compared to Dixon, these cities are more influenced by growth in other portions of the Bay Area. Employment growth in Dixon is highly influenced by the economies of Sacramento and Davis.

Table 3.4 - Employment Projections, 2000 to 2030

	2000	2005	2030	Percentage of Growth 2005-2030
Dixon	4,980	5,830	7,380	27%
Solano County	136,740	148,640	217,910	47%
Bay Area	3,452,117	3,516,960	5,120,600	46%

Source: Association of Bay Area Governments, 2006.

Table 3.5 shows projected employment growth by industry in the Bay Area, Solano County, and the City of Dixon. The industries that exhibit the greatest rate of growth at the county and regional level are in the financial and professional services, and health, educational, and recreational service sectors. Dixon's proximity to I-80, as well as the availability of land for commercial and industrial use, will contribute to a higher rate of growth in the manufacturing, wholesale, and goods movement sectors than in other industry sectors. Although agriculture is the primary land use along the SR 113 corridor, employment in agriculture and natural resources is projected to decline slightly in Dixon and remain consistent with existing levels at the county level.

Table 3.5 - Projections by Industry, 2005 to 2030

	Percentage of Growth		
Job Category	Dixon	Solano County	Bay Area
Agriculture and natural resources	(4%)	0%	4%
Manufacturing, wholesale and goods movement	30%	45%	39%
Retail	24%	44%	46%
Financial and professional service	28%	48%	47%
Health, educational and recreational service	27%	47%	48%
Other	30%	51%	50%
All job categories	**27%**	**47%**	**46%**

Source: Association of Bay Area Governments, 2006.

3.3.3 Regional Economic Trends

Solano County, due to its location between the Bay Area and Sacramento, will be affected by economic trends in both regional markets. The *Bay Area Economic Profile*, published by the Bay Area Economic Forum in 2006, states that the Bay Area economy is on track to outperform all other major regions in the United States. The

region will grow from knowledge-intensive industries, including research and development ventures. Scarcity of developable land and the high costs of doing business in the region (relative to other comparable regions) are drawbacks for growth in the Bay Area. Employees who cannot afford to live near their place of work may be more willing to commute longer distances to their jobs. Such commute trends will have a direct impact on the transportation system within Solano County, as goods movement from distribution centers along I-80 will become hampered with increased congestion on the transportation system. Lower office rental rates in Solano County could also result in attraction of businesses and their employees to the County.

The Sacramento economy is more likely to affect the areas adjacent to SR 113 in the eastern portions of Solano County than the western and southern portions of Solano County. The Sacramento Area Council of Governments estimates that the region's population will grow by 33 percent over the next 20 years. To meet these projected residential demands, land is being tied up in development plans, and there is now a diminishing supply of available land for new development. Development companies are looking to areas away from the edge of the Sacramento urban area, such as Solano County, for investment opportunities. Solano County has the potential to accommodate new industrial and warehousing as the Sacramento area is lacking sufficient industrial-zoned land.

Based on these regional economic trends, Solano County and the Solano Economic Development Corporation are initiating plans to attract several industries to the County, including the following:

- Biotechnology and other light manufacturing uses;
- Value-added food and beverage processing uses;
- Divisional and office headquarters, backroom office, information technology, and call center uses;
- Transportation, logistics, and distribution uses;
- Construction production materials; and
- Research and development, including technology-based startups.

Most of these uses would be located within city limits, as the County and the cities are using a city-centered growth approach. Such a growth strategy means that for the SR 113 corridor, the City of Dixon would accommodate these industries. The current economic development strategy for the City of Dixon involves capitalizing on its location between Vacaville and UC Davis. Potential businesses that could locate in the Dixon area include biotechnology firms that want to be located closer to UC Davis. The City is also targeting professional office space and light manufacturing uses.

4.0 Future Conditions

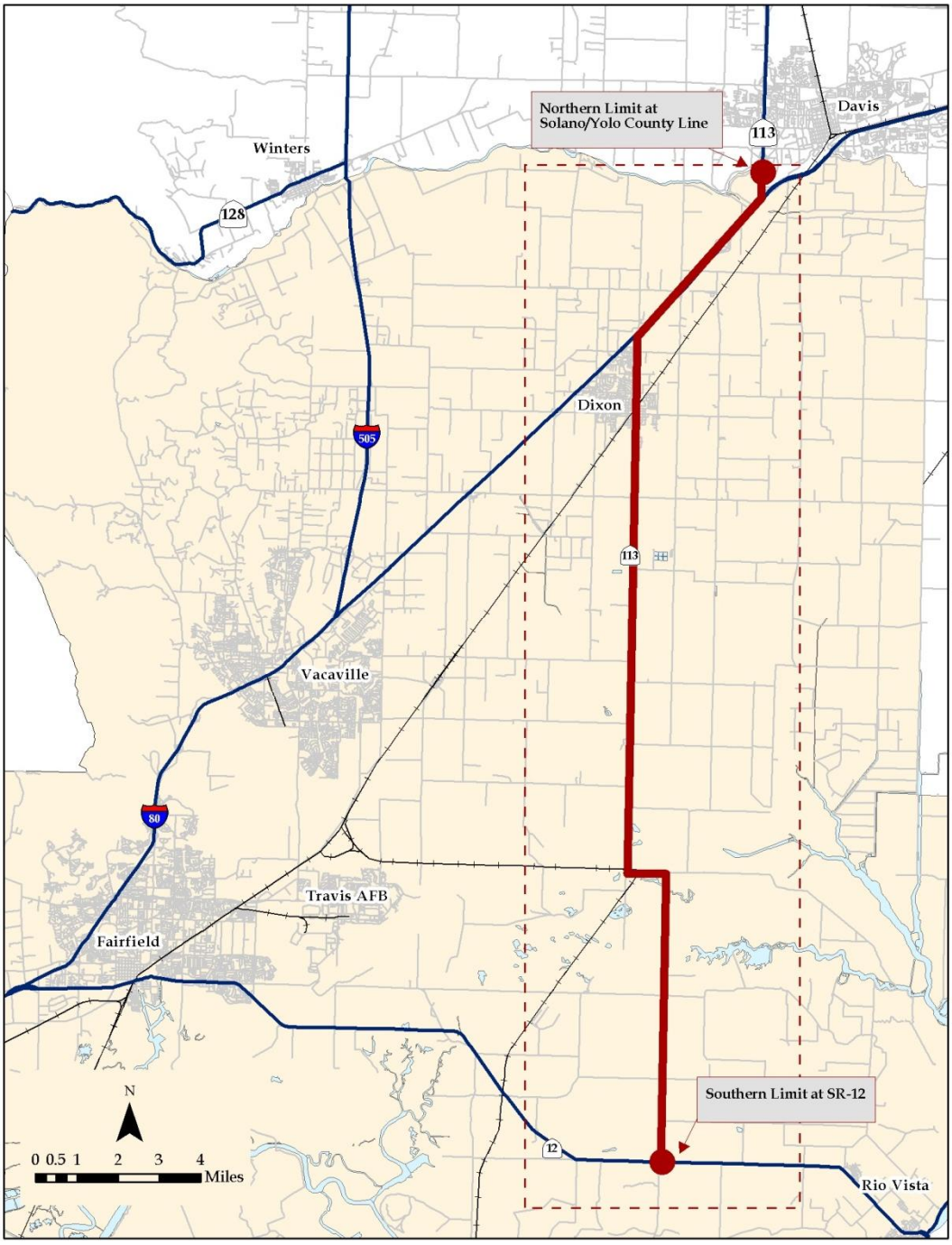
4.1 Introduction

The chapter describes the future transportation system conditions for the SR 113 Major Investment and Corridor Study. Future conditions examine the following conditions:

- Future baseline traffic conditions representing the 2030 transportation system conditions expected for the SR 113 study area. This analysis, referred to as the No Build Scenario, includes the representation of existing plus committed projects programmed by regional agencies by 2030.
- Future 2030 feasibility analysis of a parallel toll facility alternative in the SR 113 corridor.
- Future 2030 analysis of proposed alternative project solutions in the SR 113 corridor.

The 2030 future No Build Scenario evaluations presented in the following sections are compared to the Existing Conditions 2008, while the 2030 tolling and alternative strategies are compared to the 2030 No Build Scenario results discussed in detail in section 5.

Figure 4.1 - SR 113 Major Investment and Corridor Study Project Limits



4.2 Future No Build Traffic Conditions

The expected future 2030 transportation system conditions and needs of the SR 113 corridor and study area are presented in this section. This analysis, referred to as the No Build Scenario, represents the existing transportation system plus the specific committed future projects in the corridor and region. These committed projects include projects expected to be built by 2030 in the corridor, Solano County, the Bay Area, Central Valley, and Sacramento regions. A list of Countywide Transportation Projects is included in **Appendix B**. This list of projects was included in the latest Solano Napa Travel Demand Model Update and was used to analyze current and future traffic conditions.

4.2.1 Future Traffic Volumes

Future 2030 travel demand, travel patterns, and traffic volumes used to support this analysis were derived from the Solano/Napa regional travel demand model maintained by the STA. The expected 2030 population and employment growth for the corridor, Solano County, the Bay Area and Sacramento regions, were built into these future models and used as the foundation for generating the travel demand analysis. A matrix of the future roadway projects built into the Solano Napa Travel Demand Model is included in as Appendix 2. The City of Dixon's growth cap rate of three percent also was integrated into this analysis. Based on these factors, traffic volumes in the SR 113 corridor would increase three percent annually from 2008 to 2030.

As with the Existing Conditions Report previously prepared for this study, the following highway segments for SR 113 were evaluated:

- North of the SR 12 junction;
- North of the Fry Road junction;
- North of the Cherry Street junction in downtown Dixon;
- North of the A Street junction in downtown Dixon
- North of the North Adams Street junction in downtown Dixon;
- South of the I-80 junction in Dixon; and
- South of the Solano/Yolo County line in Davis.

Daily and morning (AM) and afternoon (PM) peak-hour traffic volumes for existing (2008) and expected future (2030) No Build conditions are shown in **Table 4.1**. Based on existing traffic counts, the morning peak hour generally occurs between 7:00 a.m. to 8:00 a.m., while the afternoon peak occurs between 4:00 p.m. to 5:00 p.m., however, this may vary by roadway segment. **Figures 4.1, 4.2, and 4.3** display Daily and AM and PM peak-hour bi-directional traffic flows on SR 113 for 2030.

Table 4.1 - 2008 and 2030 No Build Scenario SR 113 Traffic Volumes by Roadway Segment and Time of Day

	AM		PM		Daily	
Segment	**2008**	**2030**	**2008**	**2030**	**2008**	**2030**
Solano/Yolo Line – I-80	1,825	3,500	2,150	4,120	28,000	53,700
I-80 – Vaughn	1,500	2,870	1,800	3,450	24,000	46,000
Vaughn – North Adams	1,000	1,920	1,300	2,490	15,000	28,700
North Adams – A	825	1,580	1,000	1,920	13,500	25,900
A – Cherry	600	1,150	625	1,200	7,500	14,400
Cherry – Fry	500	960	400	770	5,400	10,300
Fry – SR 12	525	1,100	475	910	5,700	11,000

Traffic volumes from 2008 to 2030 are expected to increase by about 100 percent on average for each of the SR 113 road segments over the next 22 years, from 2008 to 2030. This increase in traffic volume is largely due to significant growth in through traffic from the Bay Area, Central Valley, and Sacramento regions that will use SR 113 to access origins and destinations. Increases in locally generated traffic volumes from Solano County, the City of Dixon, and other communities are also anticipated to impact the SR 113 corridor.

The highest volumes in the SR 113 corridor are expected to remain north of I-80 and Davis, where SR 113 will continue to operate as a divided freeway and a connector for Davis to the Bay Area and Sacramento regions. SR 113 also is expected to continue to serve as a north-south connector to Woodland and I-5, located north of the corridor study area.

SR 113 in the City of Dixon is forecasted to remain an urban arterial that serves as a major thoroughfare for local traffic. In the rural areas along the corridor south of Dixon, traffic volumes are expected to continue to be lower; mostly comprising of regional travel with a mix of through traffic.

Truck percentages along SR 113 are projected to remain consistent with the 2008 range of five to eight percent of total traffic. Land uses in the corridor are expected to remain agricultural in nature, with urban development confined to the City of Dixon limits.

Figure 4.2 - 2030 No Build Scenario SR 113 Bi-Directional Daily Traffic Volumes

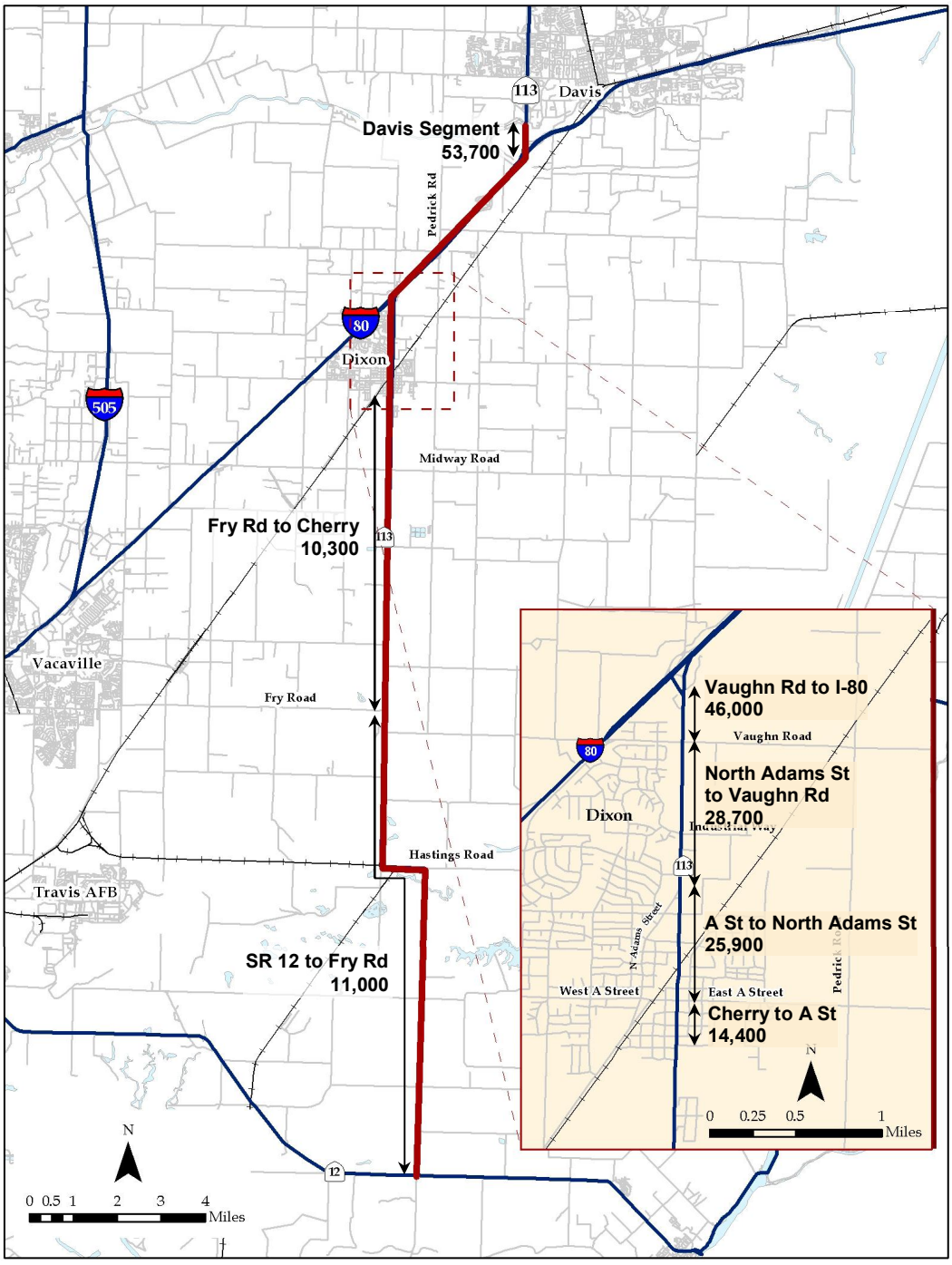
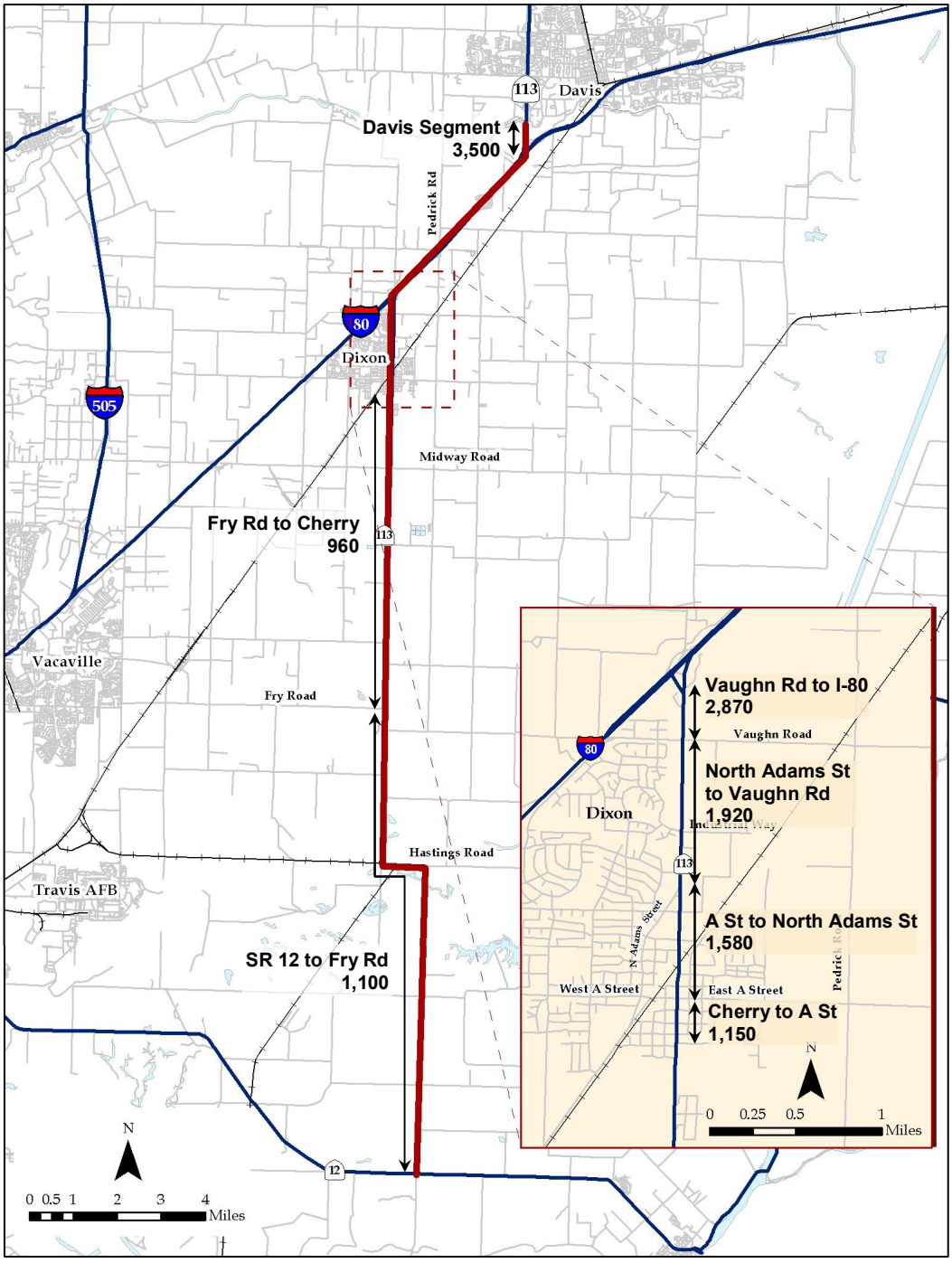
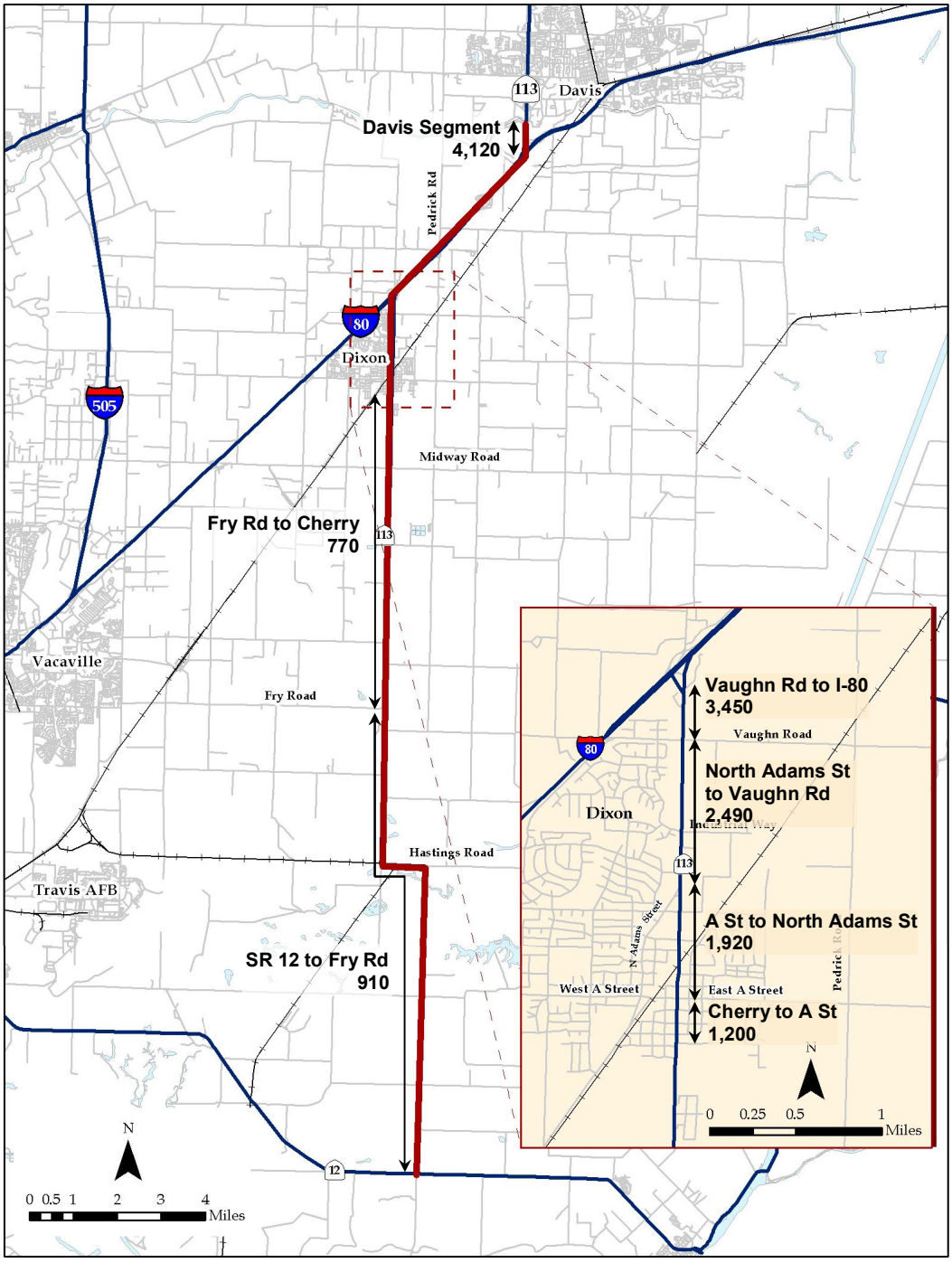


Figure 4.3 - 2030 No Build Scenario SR 113 Bi-Directional AM Peak-Hour Traffic Volumes



Note: Based on existing traffic counts, the AM peak hour generally occurs between 7:00 a.m. and 8:00 a.m.; however, this may vary by roadway segment.

Figure 4.4 - 2030 No Build Scenario SR 113 Bi-Directional PM Peak-Hour Traffic Volumes



Note: Based on existing traffic counts, the PM peak hour generally occurs between 4:00 p.m. and 5:00 p.m.; however, this may vary by roadway segment.

Additional analyses were conducted to determine future traffic volumes on segments of SR 113 north of the Solano/Yolo County line. These segments are located within Yolo County in the urban area of the City of Davis. **Table 4.2** shows these segments in order from north to south.

Table 4.2 - 2008 and 2030 No Build Scenario SR 113 Traffic Volumes by Roadway Segment and Time of Day – Yolo County

	AM		PM		Daily	
SR 113 Segment	**2008**	**2030**	**2008**	**2030**	**2008**	**2030**
North of Covell	2,300	2,875	2,550	3,175	23,200	32,000
Covell – Russell	3,500	4,350	3,850	4,800	33,000	48,000
Russell – Solano/Yolo Line	4,400	5,475	4,850	6,050	39,000	61,000

Source: Cambridge Systematics, Inc., 2008.

4.2.2 Traffic Conditions

This section presents a planning-level analysis of expected 2030 traffic conditions along SR 113 within the study area. Similar to the Existing Conditions analysis, a planning Level of Service (LOS) analysis was conducted to assess the adequacy of SR 113 to accommodate future expected traffic levels. LOS characterizes operational conditions within a traffic stream and the motorist's perception of these conditions. LOS is a quantitative measure of transportation system operations, with LOS A representing free-flow conditions and LOS F representing gridlock conditions. **Table 4.3** describes each LOS category used in this analysis.

Table 4.3 - Level of Service Definitions

LOS	Operational Characteristics
A	No congestion or delay. Free flow.
B	No congestion or delay. Free to stable flow, light to moderate volumes.
C	None to minimal delays. Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
D	Minimal to substantial delays. Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
E	Significant delays. Extremely unstable flow, maneuverability, and psychological comfort extremely poor.
F	Considerable delays. Forced or breakdown of traffic flow.

Source: California Department of Transportation (Caltrans) District 11, State Route 76 Transportation Concept Report, 2002.

Future 2030 roadway segment LOS was determined for peak-hour traffic volumes on the rural and freeway segments of the SR 113 corridor. This LOS analysis was based on thresholds established in the Solano Comprehensive Transportation Plan (2002), as well as from measurements from the Dixon Downs Horse Racetrack and Entertainment Center Project Draft Environmental Impact Report (EIR). Future roadway segment LOS for the urban segment of SR 113 in Dixon was determined based on thresholds established by the City of Dixon. **Tables 4.4 and 4.5** show the maximum bi-directional traffic volume for each LOS category and by functional class.

Table 4.4 - Roadway Segment LOS Volume and LOS Thresholds

Functional Classification	Number of Lanes	Maximum Bi-Directional Peak-Hour Traffic Volume at				
		LOS A	LOS B	LOS C	LOS D	LOS E
Freeway	4	2,100	3,300	4,900	6,200	7,000
	6	3,000	4,700	7,000	8,900	10,500
	8	3,900	6,100	9,100	11,600	14,000
Urban Minor Arterial	2	N/A	N/A	820	1,230	1,380
	4	N/A	N/A	1,730	2,540	2,800
Rural Minor Arterial	2	N/A	N/A	640	1,150	1,250
Collector	2	N/A	N/A	550	820	920

Source: Solano Comprehensive Transportation Plan, 2002.

Table 4.5 - City of Dixon Traffic Volume and LOS Thresholds

Functional Classification	Number of Lanes	Maximum Traffic Volume (Daily/Peak Hour)				
		LOS A	LOS B	LOS C	LOS D	LOS E
Arterial	2	N/A	N/A	8,800/950	13,200/1,400	14,800/1,540
	4	N/A	N/A	18,600/1,950	27,300/2,850	30,100/3,100
Minor/Major Collector and Industrial	2	N/A	N/A	5,900/750	8,800/1,110	9,900/1,220
	4	N/A	N/A	12,500/1,540	18,300/2,250	20,200/2,460
Local	2	N/A	N/A	N/A	N/A	N/A

Source: City of Dixon Engineering Design Standards and Construction Specifications, 2003.

Table 4.6 shows the existing and future LOS values for SR 113 for both the AM and PM peak hours. Future 2030 LOSs for the roadway segments of SR 113 operate between grades C and F, depending on the time of day and segment. These same roadway segments operate between LOS B and LOS E in 2008, as reported in the Existing Conditions analysis.

- LOSs is expected to degrade significantly SR 113 segments between North Adams and Cherry. This is in large part due to the lack of capacity in these segments which are two lanes in width.
- AM and PM peak-hour LOSs for the Fry to SR 12, Cherry to Fry, and Solano/Yolo Line to I-80 roadway segments decrease from LOS B in 2008 to LOS C/D in 2030.
- AM and PM peak-hour LOS for the I-80 to Vaughn roadway segment is expected to show a degradation of LOS from C in 2008 to E/F in 2030.
- AM and PM peak-hour LOS for the Yolo County segments remain at LOS B/C for both 2008 and 2030 conditions.

Table 4.6 - No Build Scenario Peak-Hour LOS by Highway Segments and Time of Day

SR 113 Segment	2030 Functional Class	Level of Service					
		AM Peak		PM Peak		Daily	
		2008	2030	2008	2030	2008	2030
North of Covell	Freeway	B	B	B	B	N/A	N/A
Covell – Russell	Freeway	C	C	C	C	N/A	N/A
Russell – Solano/Yolo Line	Freeway	B	C	C	C	N/A	N/A
Solano/Yolo Line – I-80	Freeway	B	C	B	C	N/A	N/A
I-80 – Vaughn	4-lane Arterial	C	E	C	F	D	F
Vaughn – North Adams	4-lane Arterial	C	C	C	D	C	E
North Adams – A	2-lane Arterial	C	F	D	F	E	F
A – Cherry	2-lane Arterial	C	D	C	D	C	E
Cherry – Fry	2-lane Arterial	B	D	B	C	N/A	N/A
Fry – SR 12	2-lane Arterial	B	D	B	C	N/A	N/A

Source: Cambridge Systematics, Inc., 2008.

4.2.3 Travel Patterns

In 2030, as with 2008 conditions, there will continue to be few alternative routes connecting the communities of eastern Solano County with communities in the Central Valley. While agriculture will remain the predominant land use in the corridor, the analyses of travel patterns presented in this section focuses on both local and regionally generated trips that impact the corridor.

The following are characteristics of the SR 113 Corridor that are expected to remain consistent with 2008 conditions:

- SR 113 will remain a key north-south access route into Dixon;
- SR 113 is expected to continue to significantly influence traffic patterns within the City of Dixon;
- SR 113 is expected to include a mix of long-distance traffic with locally generated commute, noncommute, and truck traffic;
- SR 113 will continue to serve local traffic to access/egress local businesses; and
- SR 113 will continue to serve conflicting regional and local traffic patterns.

Future SR 113 corridor traffic volumes are expected to increase significantly by 2030 in the SR 113 corridor, including 100 percent or more for most of the roadway segments evaluated in the corridor.

Consistent with the Existing Conditions analysis previously performed for this study, 2030 travel patterns along the SR 113 were evaluated using the Solano/Napa travel demand model for three segments:

1. SR 113 at the junction of SR 12;
2. SR 113 connecting with I-80 West in Davis; and
3. SR 113 north of Adams Street in Dixon.

Travel patterns for each location were evaluated separately for the northbound and southbound directions. Both the AM and PM peak hours were assessed for each roadway segment and direction.

Figures 4.5 and 4.6 show the southbound and northbound AM and PM peak-hour travel patterns for SR 113 at the junction of SR 12. Consistent with Existing Conditions, the majority of southbound AM and PM peak-hour traffic will continue to be destined to eastern Contra Costa, Alameda, and San Joaquin Counties, and Rio Vista, including 93 percent of AM peak-hour and 99 percent of PM peak-hour traffic. The origins of this southbound traffic are expected to be focused on the Cities of Dixon, Vacaville, Davis, Sacramento, and Woodland (approximately 68 percent of AM peak-hour traffic and 72 percent of PM peak-hour traffic), with the remaining AM and PM peak-hour traffic volumes originating from other eastern Solano County locations and communities located in the I-505 region.

Figure 4.5 - 2030 No Build Scenario AM and PM Peak-Hour Southbound Travel Patterns for SR 113 at the Junction of SR 12

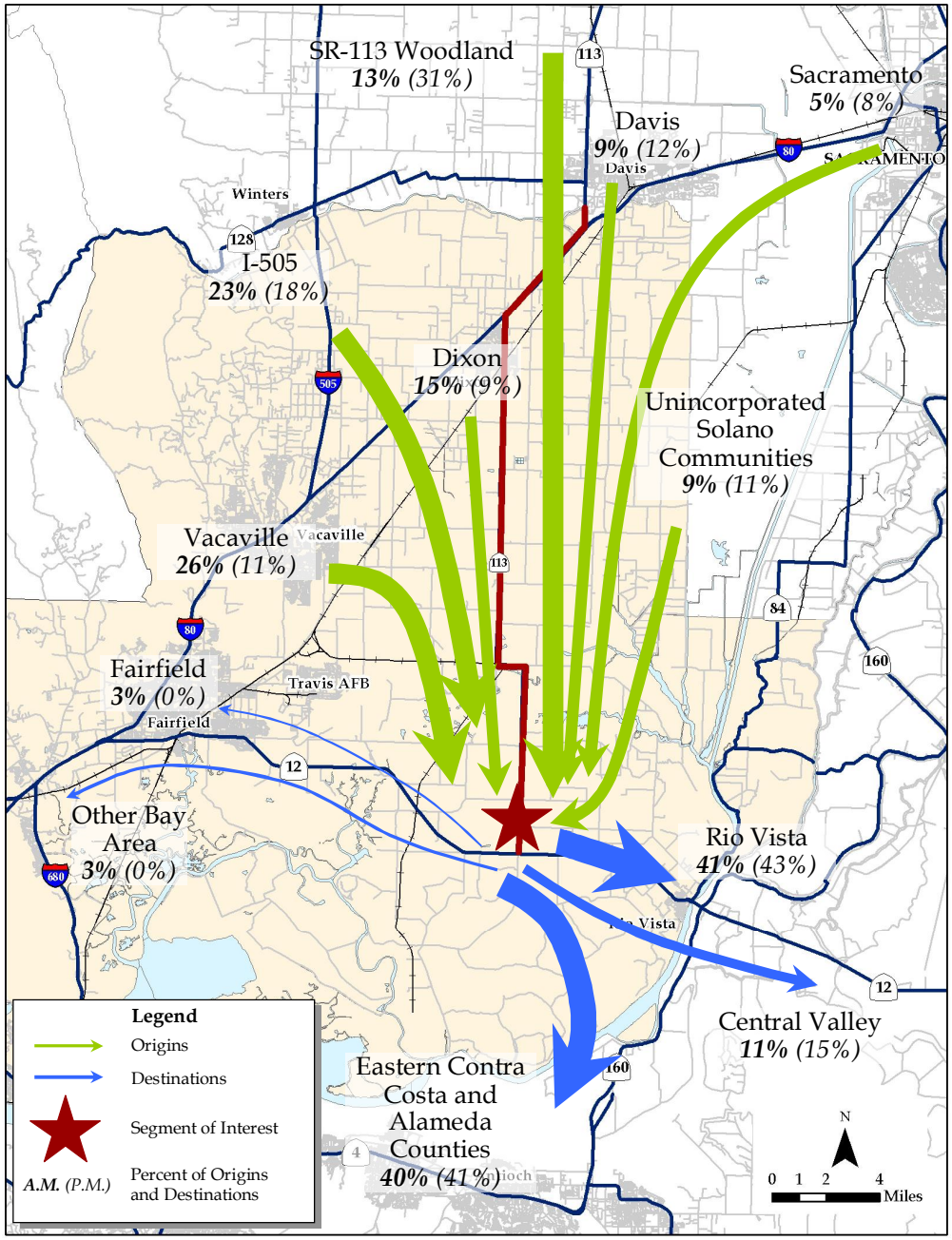
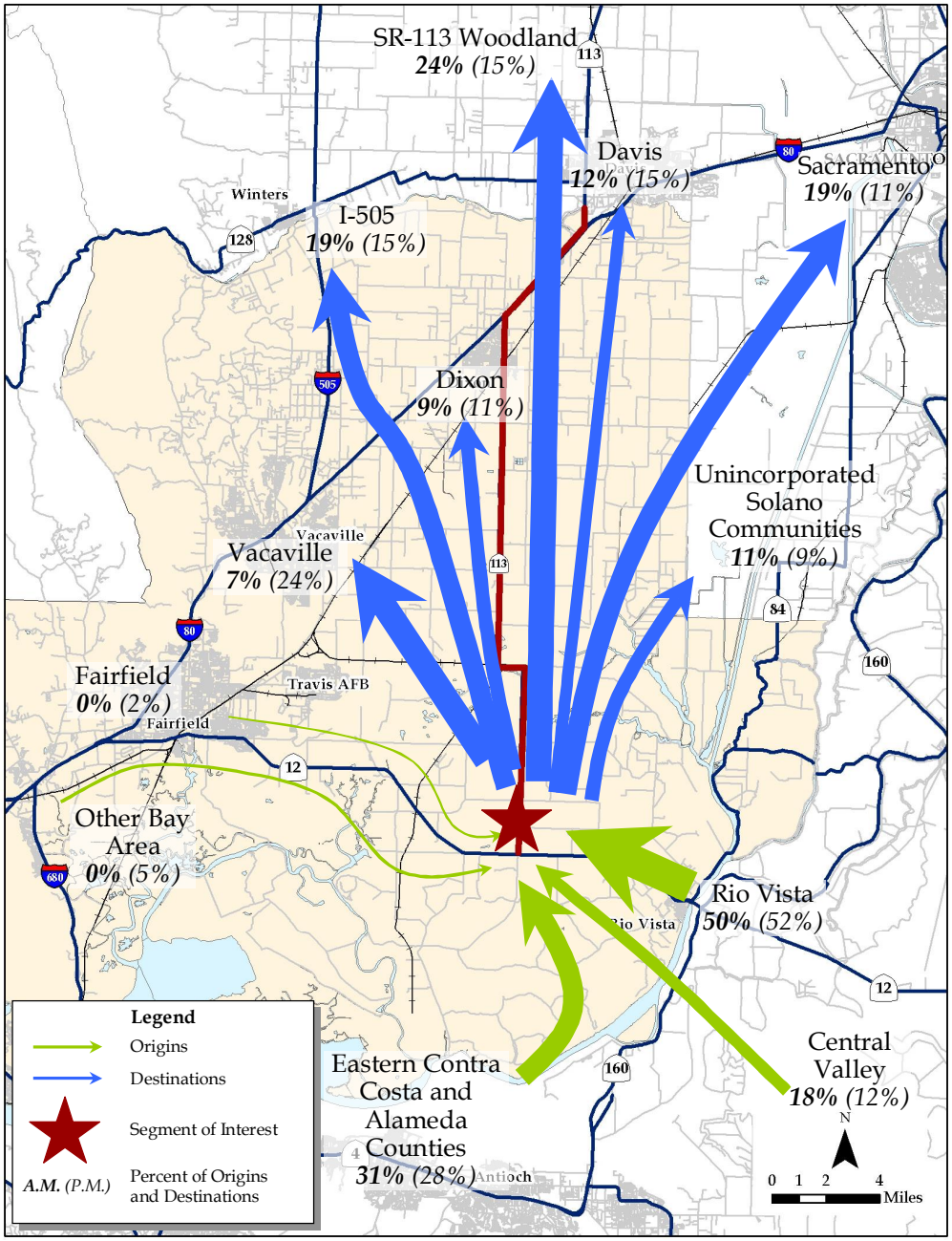


Figure 4.6 - 2030 No Build Scenario AM and PM Peak-Hour Northbound Travel Patterns for SR 113 at the Junction of SR 12



The expected 2030 AM and PM peak-hour northbound analysis for SR 113 at the junction of SR 12 shows the mirror image of the southbound traffic origin and destination locations. Approximately 99 percent of the AM peak-hour traffic originates in eastern Contra Costa, Alameda, and San Joaquin Counties, and Rio Vista, while 92 percent of the PM peak-hour traffic is expected to originate in these locations. Destination traffic in the northbound direction includes 71 percent traveling to Dixon, Vacaville, Davis, Sacramento, and Woodland in the AM peak hour and 76 percent in the PM peak hour. The remaining traffic in both AM and PM peak hours will be destined for other eastern Solano communities and communities in the I-505 corridor.

Figures 4.7 and 4.8 show the expected 2030 No Build Scenario AM and PM peak-hour northbound and southbound travel patterns for SR 113 connecting with I-80 West in Davis. Similar to 2008 conditions, one-quarter (30 percent and 26 percent in the AM and PM peak hours, respectively) of traffic traveling south on SR 113 originates or are expected to be destined for Dixon. Vacaville is expected to be a major generator of travel demand impacting this segment with between 28 percent and 31 percent of AM and PM peak-hour origins and destinations, respectively. North of the segment, Davis and Woodland, and to a lesser extent, north Sacramento County, generate the majority of the AM and PM peak-hour traffic for this roadway segment, including 31 percent to 41 percent of origins and destinations to Davis and 31 percent to 33percent to Woodland. Various travel origins and destinations, depending on the time of day, impacting this segment include Fairfield (8 percent), Vallejo (3 percent), Napa and Sonoma (3 to 12 percent), communities in the I-680 corridor (8 to 11 percent), and other Bay Area locations (10 to 15 percent).

Figures 4.9 and 4.10 show the 2030 No Build Scenario AM and PM peak-hour northbound and southbound origins and destinations of traffic on SR 113 at North Adams Street in downtown Dixon. South of the segment, all of the traffic on SR 113 is expected to both originate in and be destined for Dixon and just south of Dixon. Similar to 2008 conditions, a portion of the trips originating or terminating in Dixon, as a result of commercial areas in this area, include a high percentage of local trip making (between 21 and 33 percent originating and destined for Dixon depending on the direction of traffic and time of day). A large percentage of trips are being made between Dixon and the neighboring communities of Davis (up to 41 percent of destination traffic and up to 32 percent of originating traffic) and Sacramento.

Figure 4.7 - 2030 No Build Scenario AM and PM Peak-Hour Southbound Travel Patterns for SR 113 at I-80 Davis

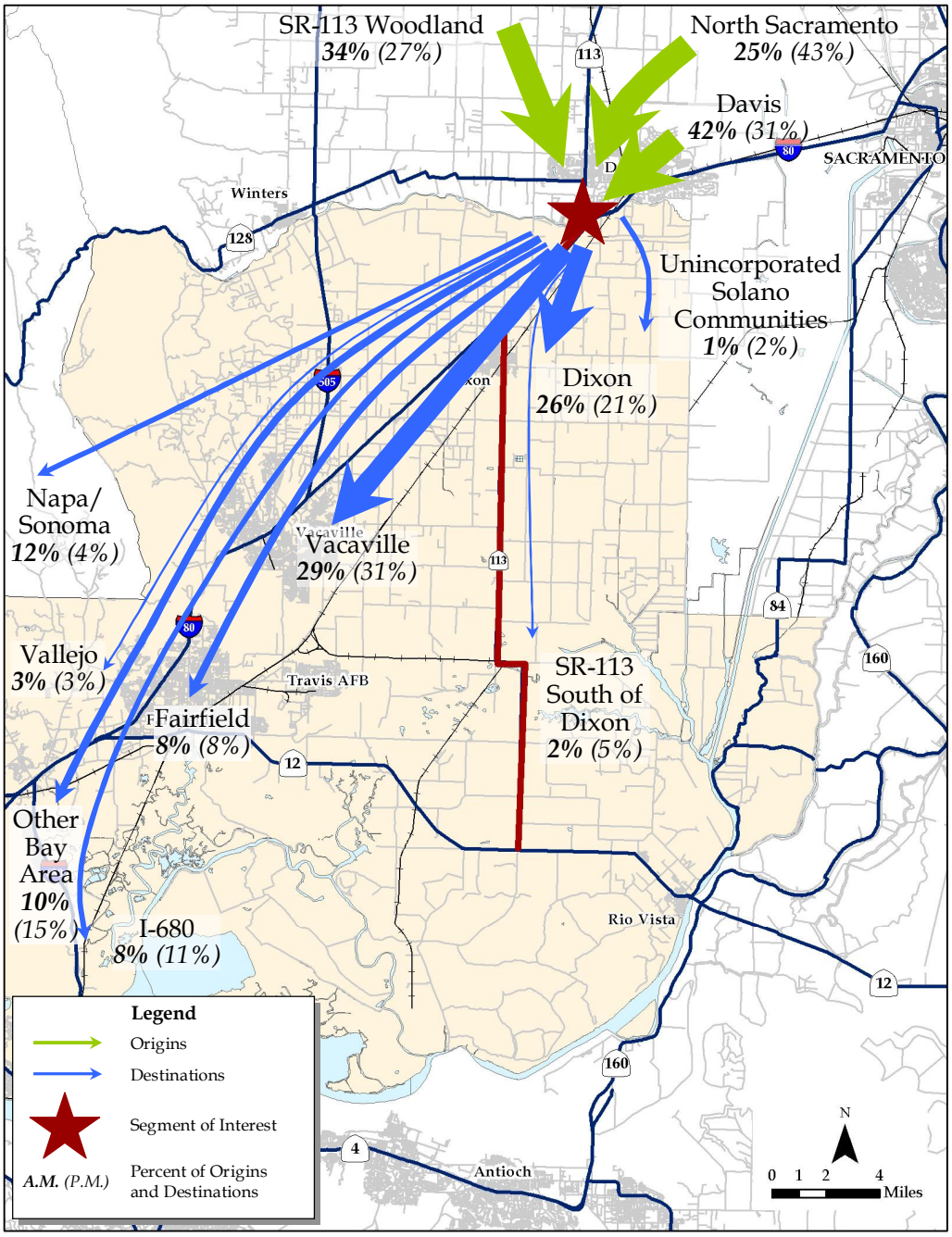


Figure 4.8 - 2030 No Build Scenario AM and PM Peak-Hour Northbound Travel Patterns for SR 113 at I-80 Davis

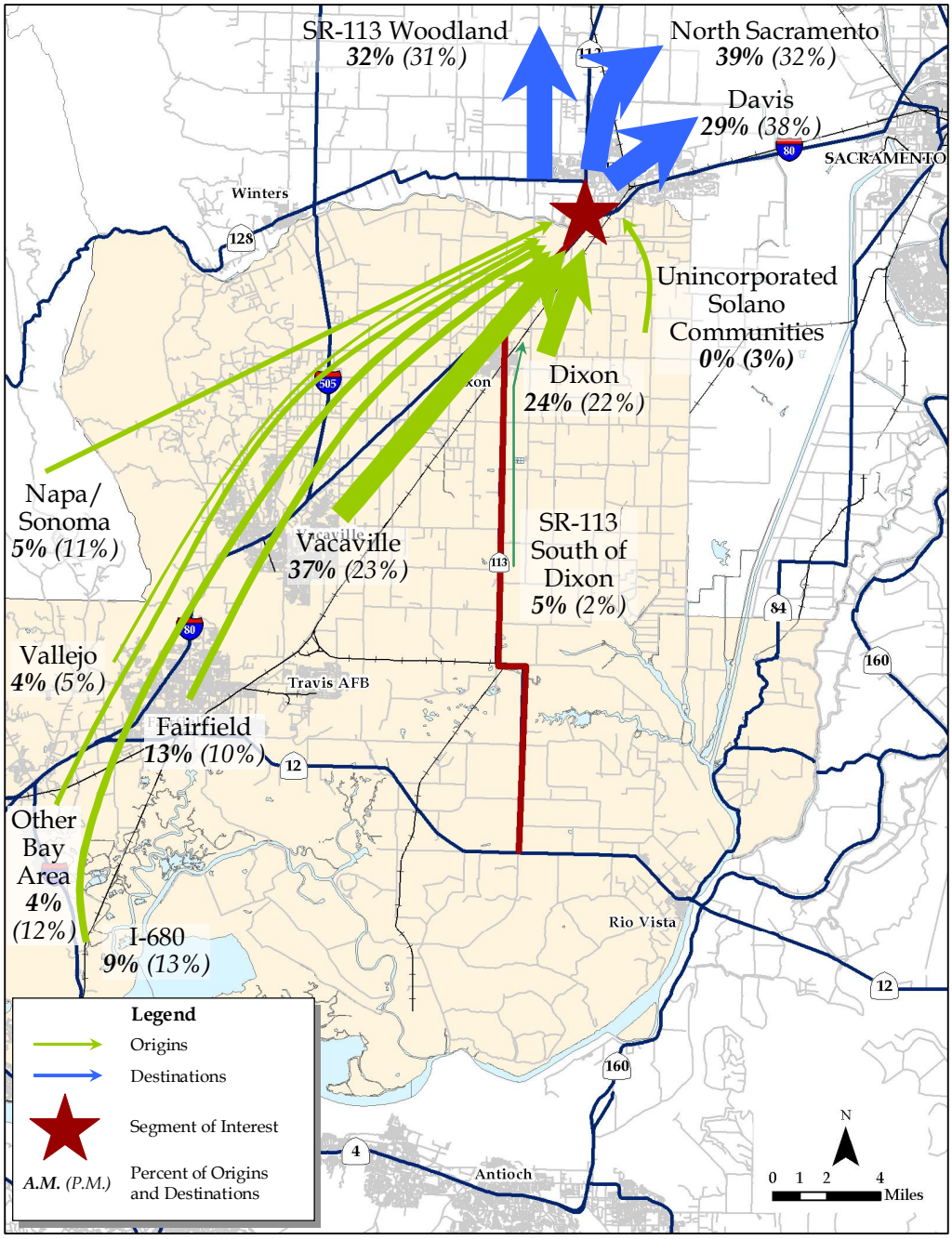


Figure 4.9 - 2030 No Build Scenario AM and PM Peak-Hour Southbound Travel Patterns for SR 113 at North Adams Street

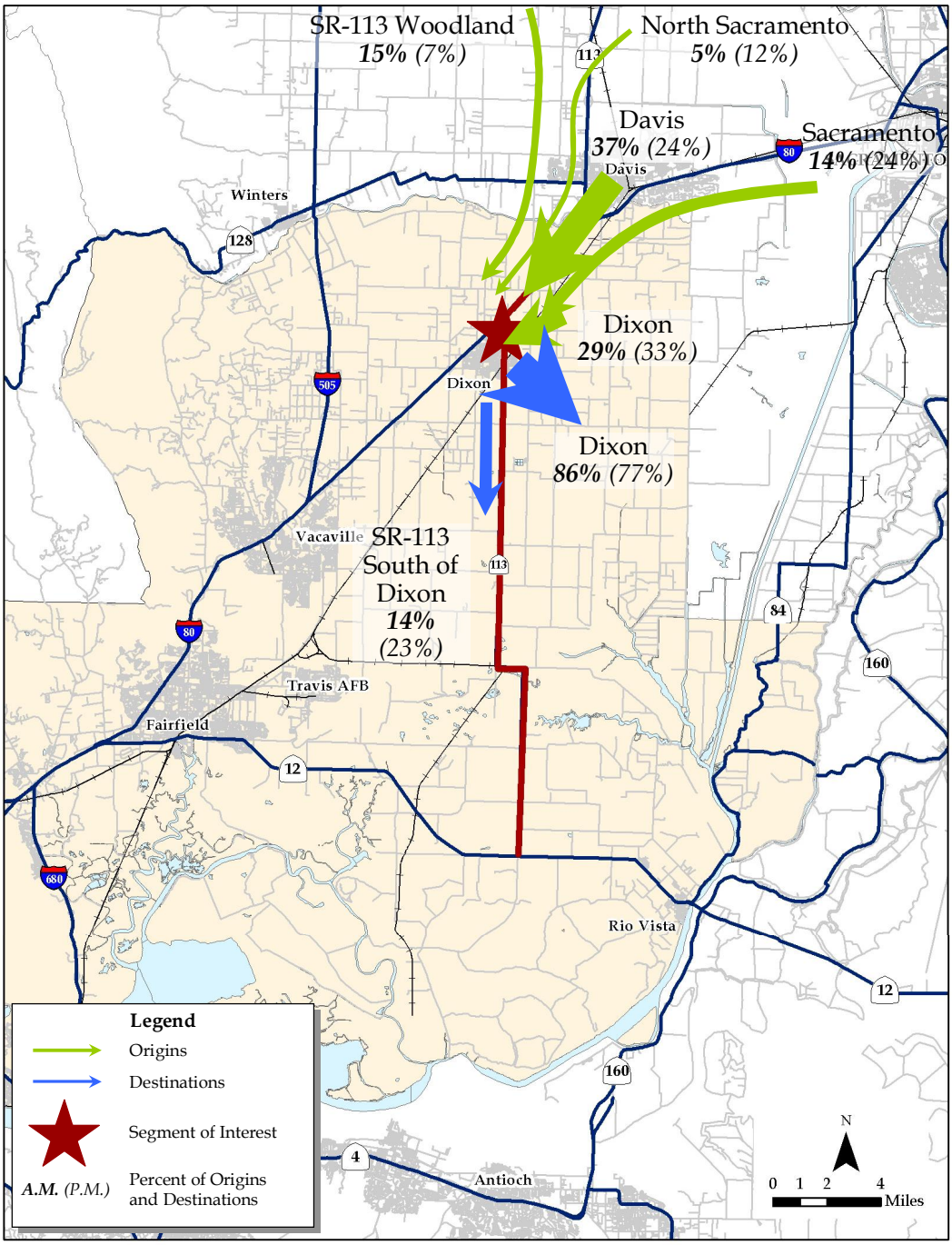
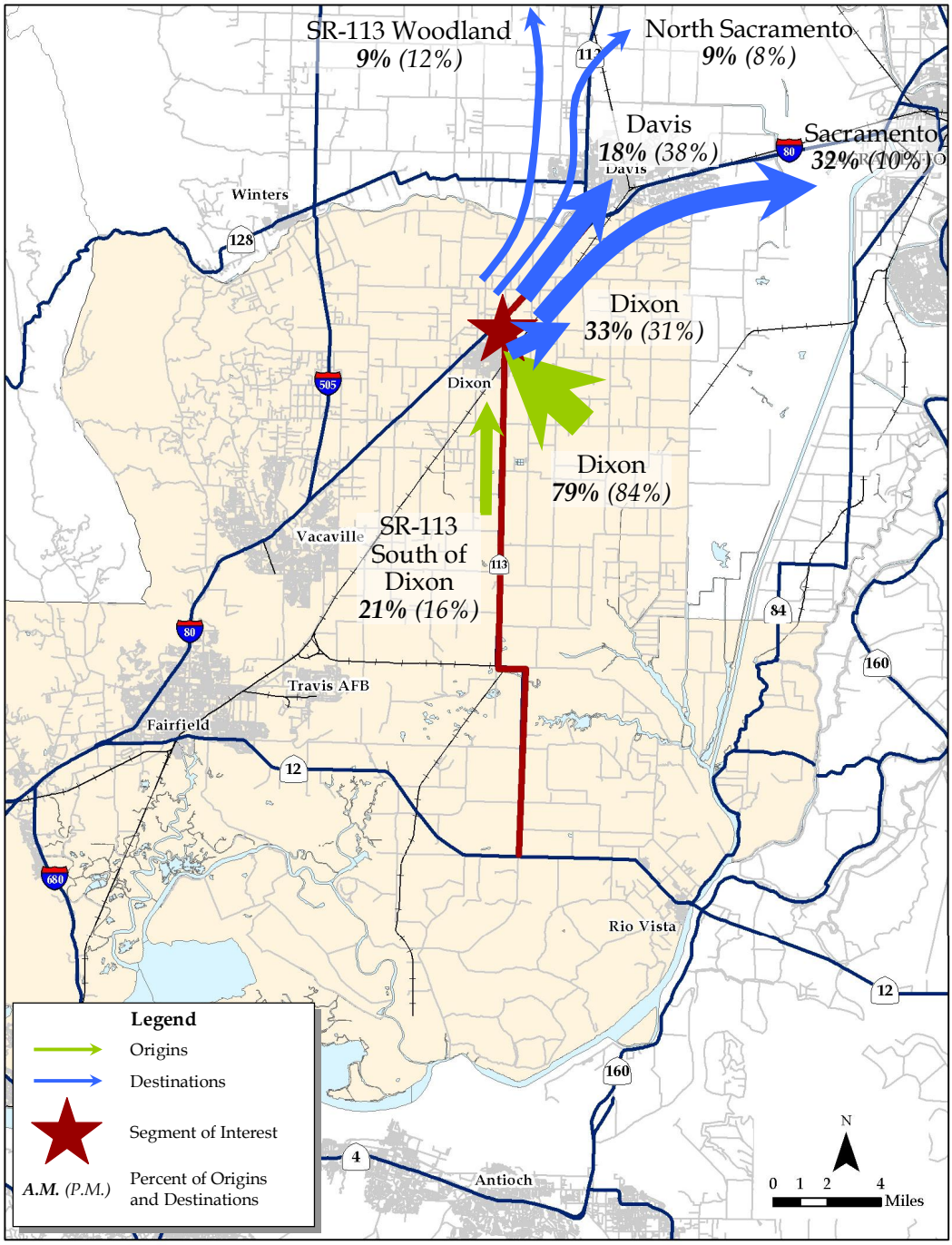


Figure 4.10 - 2030 No Build Scenario AM and PM Peak-Hour Northbound Travel Patterns for SR 113 at North Adams Street



4.2.4 Trucks

It is anticipated that future 2030 truck traffic, as a proportion of overall traffic, will remain at percentages similar to those operating in current conditions. Land uses in the corridor will remain consistent in future years – predominantly agricultural, with urban development confined within the existing boundaries of the City of Dixon. The truck classification counts, performed as part of the Dixon Downs Draft EIR, indicate that truck traffic along SR 113 in the vicinity of I-80 in Dixon represents approximately 5 to 8 percent of total traffic in the PM peak hour. As a comparison, trucks represent 3 to 6 percent of total traffic on I-80 in the Dixon area. Data from the Caltrans Traffic and Vehicle Data Systems Unit indicate that trucks represent approximately 6 to 7 percent of traffic on the rural segments of SR 113 south of Dixon, and this percentage is expected to be consistent in 2030. This proportion is lower than that of SR 12 in the vicinity of SR 113, which has 11 percent of its traffic classified as trucks.

4.2.5 Summary of 2030 No Build Traffic Conditions

The 2030 No Build Scenario analysis of traffic, LOS, and travel patterns reveal the following key issues:

- Many characteristics of the SR 113 Corridor are expected to remain consistent with 2008 conditions, including:
  - Remaining a key north-south access route into Dixon;
  - Continuing to significantly influence traffic patterns within the City of Dixon;
  - Continuing to include a mix of long-distance traffic with locally generated commute, noncommute, and truck traffic;
  - Continuing to serve local traffic to access/egress local businesses; and
  - Continuing to serve conflicting regional and local traffic patterns.
- While future 2030 traffic volumes in the corridor are expected to increase significantly by 2030, including 100 percent or more for most of the roadway segments evaluated in the corridor, the expected roadway segment LOS will be very similar to those identified in 2008, primarily because of its future four-lane configuration.
- Expected travel patterns of origins and destinations are expected to be consistent with SR 113 serving both regional and local markets, including travelers' use of SR 113 as the primary connector between Sacramento; Woodland; Davis; Dixon; Vacaville; Rio Vista; and communities in San Joaquin, Alameda, and Contra Cost Counties.

5.0 Alternative Analysis

5.1 Introduction

This chapter describes alternative alignment options of the SR 113 corridor as a result of the traffic analysis and stakeholder input. Various alignment alternatives, corresponding improvements and cost estimates have been developed as a result of the future traffic needs and discussions with the stakeholders and public input. These alternatives and estimates would be the basis of the next step in the Project Development and Environmental analysis. An existing corridor alignment illustration is provided in **Figure 5.1.**

As part of the evaluation process, both localized, and, corridor-wide improvements were considered as described below:

5.1.1 Localized Improvements

The localized improvements identified in this report examine specific locations along the corridor that are in need of improvement as part of the potential alternative alignment selection. Examples of these are below:

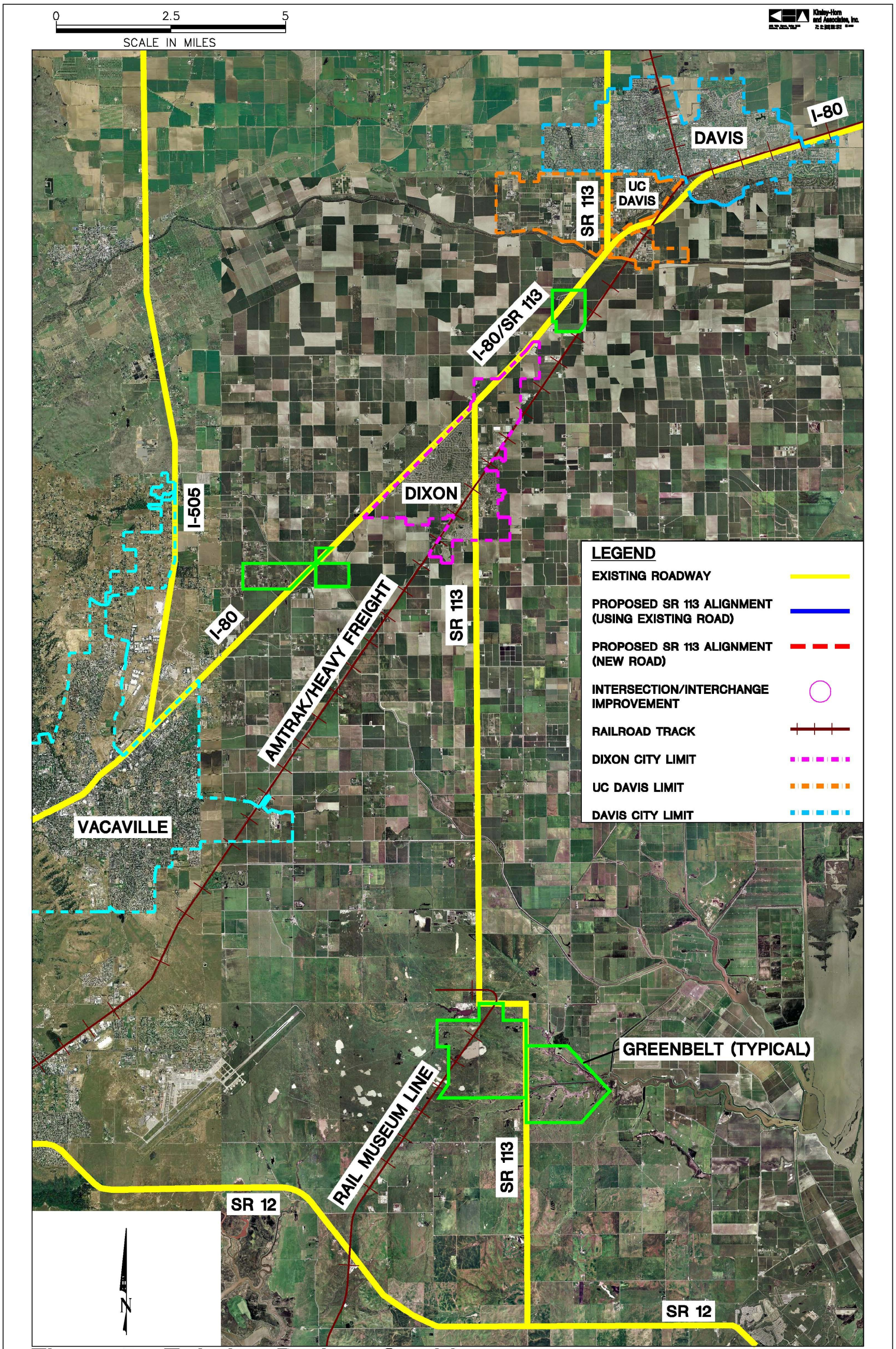
- SR 113/SR 12 intersection modifications
- Sharp turn modifications on SR 113
- Kidwell/I-80 interchange connection
- Bridge/railroad crossing improvements

5.1.2 Corridor-Wide Improvements

The corridor-wide improvements identified in this report examine the need for upgrades and improvements to the entire SR 113 corridor as part of a potential alternative alignment selection. Examples of these are below:

- SR 113 widening from a 2-lane to a 4-lane facility north of Midway Road
- Existing roadway pavement width and condition improvements
- Median barrier from SR 12 to Midway Road

Figure 5.1 - Existing Project Corridor



5.2 Basic Design Criteria

There are a number of basic criteria that should be considered in developing the alternatives and alignments for SR 113 Major Investment Study. The horizontal alignment should provide for safe and continuous operation at uniform design speed for a substantial length of the highway. Major considerations in horizontal alignment design are safety, profile, type of facility, design speed, geotechnical features, topography, and construction cost. Is should be noted that any proposed improvements on State Route 113 shall conform to Caltrans Standard Design which would include and not limit to the latest edition of Caltrans HW design manual (HDM) and the California Manual on Uniform Traffic Control Devices (MUTCD).

Basic criteria for the horizontal alignment include design speed, cross section, minimum horizontal curve, access control, and environmental constraints/greenbelt requirements. Below is a brief description for each of the basic design criteria that were considered in the alternative analysis:

5.2.1 Design Speed

A design speed to meet minimum geometric design requirements is required for the design consideration. Horizontal and vertical roadway alignments, sight distance, corridor traffic volume, land use, and geographic location (urban/rural) are all factors that influence the selection of a corridor design speed. Design speed should also be consistent with the typical speeds that drivers are likely to use based on their perception of the roadway's limitations. Subject to these roadway considerations, as high a design speed as feasible should be selected. Once a design speed is selected for a highway corridor, it is preferred that the design speed remain as constant as possible.

The Highway Design Manual relates conventional highways to design speed based on three rural types of roadway conditions. These conventional highway classifications are rural flat terrain, rural rolling terrain and rural mountainous terrain. A highway in a level or rolling region justifies a higher design speed than one in a mountainous region. Based on data and field investigation of the existing corridor conducted in July 2007, SR 113 includes segments that are considered both a rural rolling and a flat terrain conventional highway. **Table 5.1** below illustrates the relationship of roadway conditions vs. design speed.

Table 5.1 - Relation of Conditions to Design Speed

Conditions	Design Speed (mph)
Limited Access Types	
Freeways and expressways in mountainous terrain	50-80
Freeway in urban areas	55-80
Freeways and expressways in rural areas	70-80
Expressways in urban areas	50-70
Conventional Highways	
Rural flat terrain	55-70
Rural rolling terrain	50-60
Rural mountainous terrain	40-50
Urban arterial streets	40-60
Urban arterial streets with extensive developments	30-40

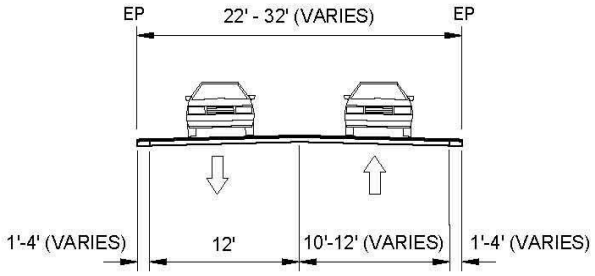
Source: Highway Design Manual

5.2.2 Highway Capacity and Cross Section

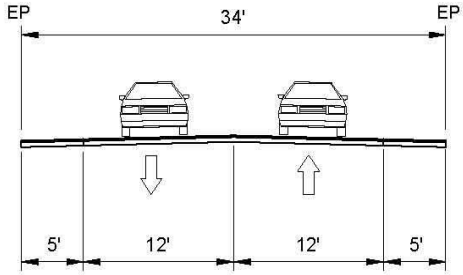
A design capacity is the maximum volume of traffic for which a future highway can provide a selected LOS. Design capacity varies based on lane width, number of lanes, shoulder width, horizontal alignments, grades, and selected LOS. As an approximation, a rural highway can operate at a LOS C-D, with 1000-1200 vehicles per lane per hour. Based on the future highway capacity assumptions, a preliminary cross section can be established to identify the number of lanes, median types, and shoulder widths necessary to maintain an acceptable LOS. The design capacity is typically based on estimated traffic, 20 years after completion of construction. Based on future traffic projections, a typical cross section of the SR 113 is provided for potential options 2-6 shown as **Figures 5.2**. Option 1 is a no-build alternative, therefore a future cross section is not included. Options 2-6 show an ultimate four-lane roadway facility from SR 12 to I-80 with a surfaced median, however an intermediate construction step will be made prior to a full roadway build-out. Intermediate construction steps may include enhancing the two-lane facility to include shoulders or a median barrier, widening segments of the alignment to include a passing lane. Median widths should be increased whenever possible and where is appropriate. In addition, construction of a median barrier should include a 5′ minimum inside shoulder.

SR 113 TYPICAL CROSS-SECTIONS OPTION 2-6

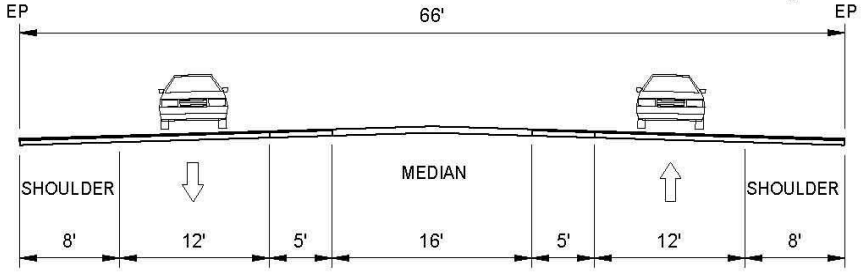
EXISTING SR 113



INTERIM 1 BUILDOUT SR 113



POSSIBLE INTERIM 2 BUILDOUT SR 113



ANTICIPATED MAXIMUM BUILDOUT SR 113

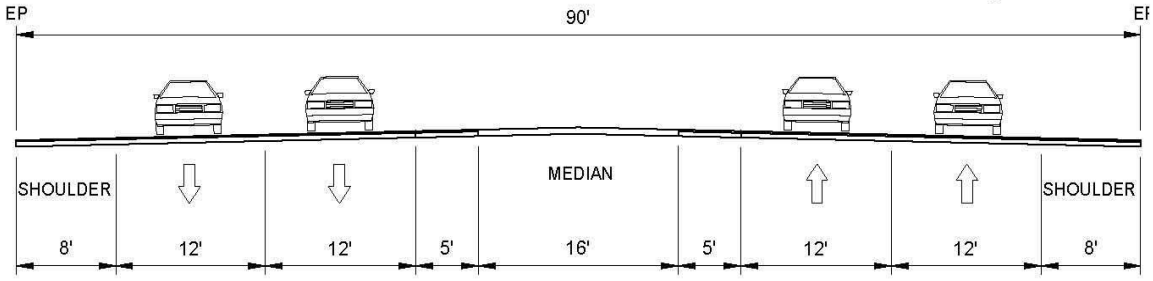


Figure 5.2

Kimley-Horn and Associates, Inc.

Kimley-Horn and Associates, Inc.

5.2.3 Horizontal Alignment

Horizontal alignment shall provide at least the minimum stopping sight distance for the chosen design speed at all points on the highway. The minimum curve radius, which correlates directly with stopping sight distance for various design speeds is shown below in **Table 5.2**.

Table 5.2 - Standards for Curve Radius

Design Speed (mph)	Minimum Radius of Curve (ft)
20	130
30	300
40	550
50	850
60	1,150
70	2,100
80	3,900

Source: Highway Design Manual

5.2.4 Accident Analysis

Accident information was obtained from Caltrans to examine accident trends at the sharp turns, the SR 113/SR 12 intersection and for the overall SR 113 corridor. Accident data shows that the primary cause of accidents at the two sharp turns along the SR 113 corridor are speeding and improper turns. The majority of these accidents are hit objects and overturns. Additional accident data shows that the primary causes of accidents at the SR 113/SR 12 intersection are speeding and failure to yield. The majority of these accidents are broadside and rear end collisions. Finally, accident data trends show that the overall SR 113 study corridor accident rate is below average, however the mainline segment of SR 113 from SR 12 to I-80 (Dixon) is above average for a similar facility statewide.

Improving the turn radii at the sharp turns along the SR 113 corridor may help reduce accidents and improve the flow of traffic through the corridor. A design speed of 65 MPH would require a minimum curve radius of 1,700 feet.

Modifying the SR 113/SR 12 intersection control to allow protected turning movements and improved sight distance may help reduce accidents and regulate the flow of traffic through the SR 113 corridor. To further reduce accidents, a grade separated interchange could be implemented at SR 113/SR 12 intersection. It is important to note that the STA will soon begin a SR 12 median barrier Project Study Report (PSR). The STA PSR barrier study will need to incorporate results from this report and make improvement recommendations towards a future grade separated interchange at SR 113/SR 12. Furthermore, widening and dividing the overall SR 113

corridor may help reduce accidents and regulate the flow of traffic through the SR 113 corridor.

5.2.5 Highway Access Control

Highway access control is obtained by acquiring rights of access to the roadway from adjacent properties and permitting ingress/egress at State determined locations only. This access control will eliminate direct access to the roadway from private property. The number of access openings to a highway should be held to a minimum. For the existing alignment, currently there is no access control. However, for the potential toll road option, an access control facility is recommended. Access control should be obtained only if SR 113 is designated as an Expressway. Any new alignments and facility upgrades may require the State to enter into Highway Access Control Freeway Agreements between the City of Dixon and Solano County per the Caltrans Project Development Procedures Manual, Chapter 24 - Freeway Agreements. Proposed improvements and changed of access points on Interstate 80 shall be reviewed by FHWA. It should be noted that as of October, 2008, the potential SR 113 toll alternative was deemed infeasible by the SR 113 Working Group.

5.2.6 Environmental and Greenbelt Considerations

The Cities of Dixon, Davis and Vacaville, as well as Solano County, are dedicated toward protecting farmland from development. As such, the Vacaville/Dixon and Dixon/Davis greenbelts have been established. The greenbelts are agricultural buffers between the cities.

In most cases, the properties that comprise the greenbelts are land that has been protected by means of placing a "conservation easement" on the property. Typically, agencies such as the Department of Conservation, Solano Land Trust, and/or the Cities will purchase the development rights of particular properties. A private party will continue to own the land and can use it for farming, but not development.

In the vicinity of the Dixon/Davis greenbelt, approximately 900 acres are currently protected from development. Particularly relevant to this project, the property surrounding the I-80/Kidwell interchange (approximately 300-acre McConeghy Farm) is covered by a conservation easement.

5.2.7 Summary of Design Criteria

Based on the highway design criteria stated above, it is recommended that a four-lane highway facility be considered from SR 12 to I-80 with a design speed of 65 MPH for all alternative alignment options. This design speed meets the highway design manual requirements and is relatively consistent with the current posted speed limit of 55 MPH.

5.3 Alignment Options

Various alignments were considered for the SR 113 study based on the basic design criteria described previously. In addition, input from the SR 113 Working Group/ Technical Advisory Committee (TAC) members, public input, and independent evaluation of the corridor provided the basis for the alignment options.

Other considerations for the project that were used in our evaluation included:

- traffic volumes;
- truck traffic;
- accident information;
- pavement quality;
- school zones;
- railroad crossings;
- protected land and waterways;
- toll road options;
- traffic signal spacing;
- sharp turn safety concerns;
- Downtown Dixon by-pass;
- City of Dixon and Davis Urban limit by-pass;
- Connections to Pedrick Road, Kidwell Road and Midway Road/I-80 interchanges; and
- Pedrick Road, Robben Road and Midway Road utilization.

Figure 5.3 provides an illustration of several preliminary roadway alignment options that were examined as part of the initial alternative analysis. These roadway alignment options we eliminated at early stages of this study due stakeholder feedback.

Figure 5.4 provides an illustration of several preliminary roadway alignment options that were examined as part of the initial alternative analysis. These roadway alignment options we studied further and refined into the alignment options that are presented in this report. Details of the alignment options are presented below.

Figure 5.3 – Several Eliminated Roadway Alignment Options

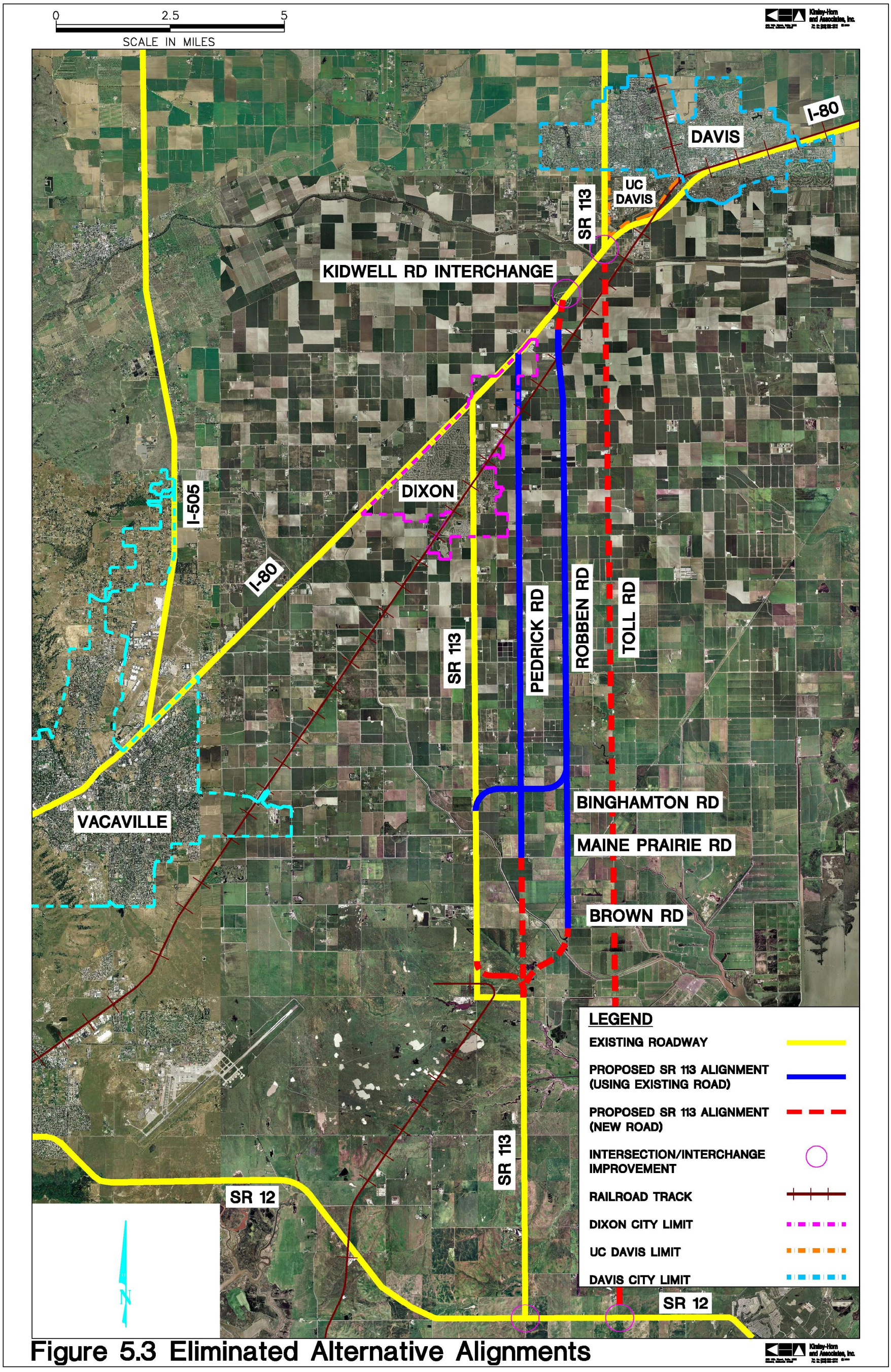


Figure 5.4 – Several Preliminary Roadway Alignment Options

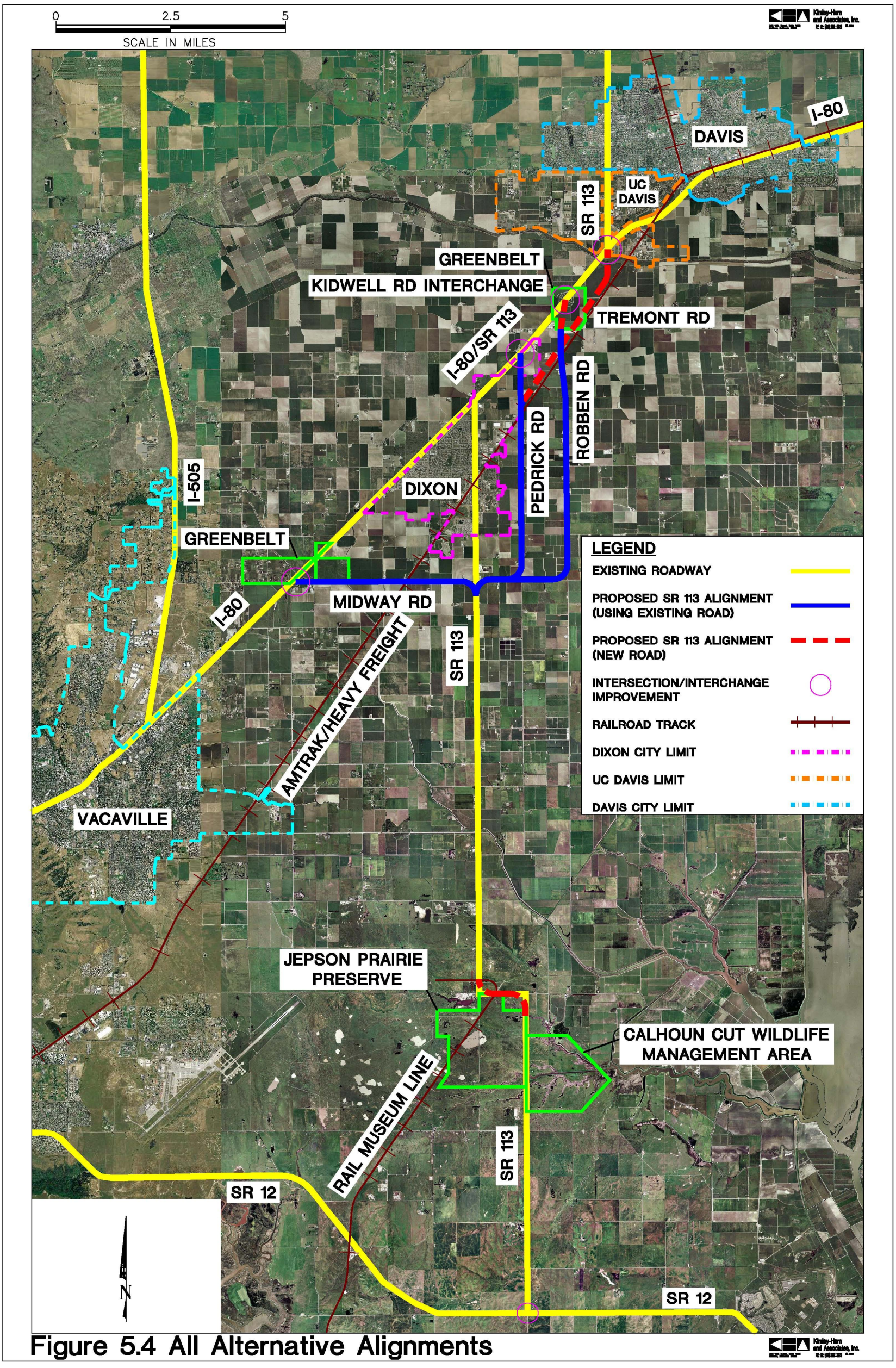


Figure 5.4 All Alternative Alignments

5.4 Future Traffic Demand and Needs

This section presents the analysis of alternative future transportation system projects and solutions for the SR 113 corridor. Alternatives evaluated include the following:

- Robben Road Alternative Alignment A and B;
- Midway Road Alternative Alignment; and
- Pedrick Road Alternative Alignments A and B.

For each alternative below, a physical description is presented including an analysis of the travel demand patterns, traffic volumes, and roadway levels of service. In addition, a comparison of each alternative to the No Build Scenario is provided for the morning (AM) and afternoon (PM) peak hours, and daily conditions. For each option, the recommended design speed should be maintained by designing appropriate horizontal curves, consistent with the design speed.

This section also includes a comparison of the alternatives to one another related to traffic volumes and travel demand as well as a level of service analysis for I-80 as related to each 5 alternative alignment option.

5.4.1 Robben Road Alternative A

As shown in **Figure 5.5**, the Robben Road Alternative A alignment follows the four-lane SR 113 from the SR 12/SR 113 intersection, north to Midway Road just south of the City of Dixon. The realigned corridor will then use Midway Road east to Robben Road. The realigned corridor will then use Robben Road north to Tremont Road. In addition, a new mile and half roadway would be constructed to extend Robben Road to the Kidwell Road interchange with I-80. This alternative would then follow I-80 along its existing alignment towards the Solano/Yolo County Line. This alternative will be constructed as a four-lane facility between SR 12 and I-80 with two lanes in each direction with a median separation.

Tables 5.3 and **5.3** show the expected 2030 AM and PM peak-hour and daily traffic volumes and levels of service for each of the SR 113 roadway segments of the Robben Road Alternative A. When compared to the 2030 No Build Scenario, the potential impacts and diversions associated with this alternative include the following:

- Slight increases in traffic occur on I-80 for all time periods largely due to an increase in through, multi-regional traffic diverting to the SR 113 corridor and accessing I-80 to the Solano/Yolo Line.
- Traffic decreases on SR 113 roadway segments within the City of Dixon for all time periods, with the greatest decrease at the I-80 to Vaughn segment.
- Traffic increases slightly on the southernmost SR 113 segments, including Fry to Cherry and SR 12 to Fry.

Figure 5.5 2030 SR 113 Alternative Strategy Robben Road Alternative Alignment A

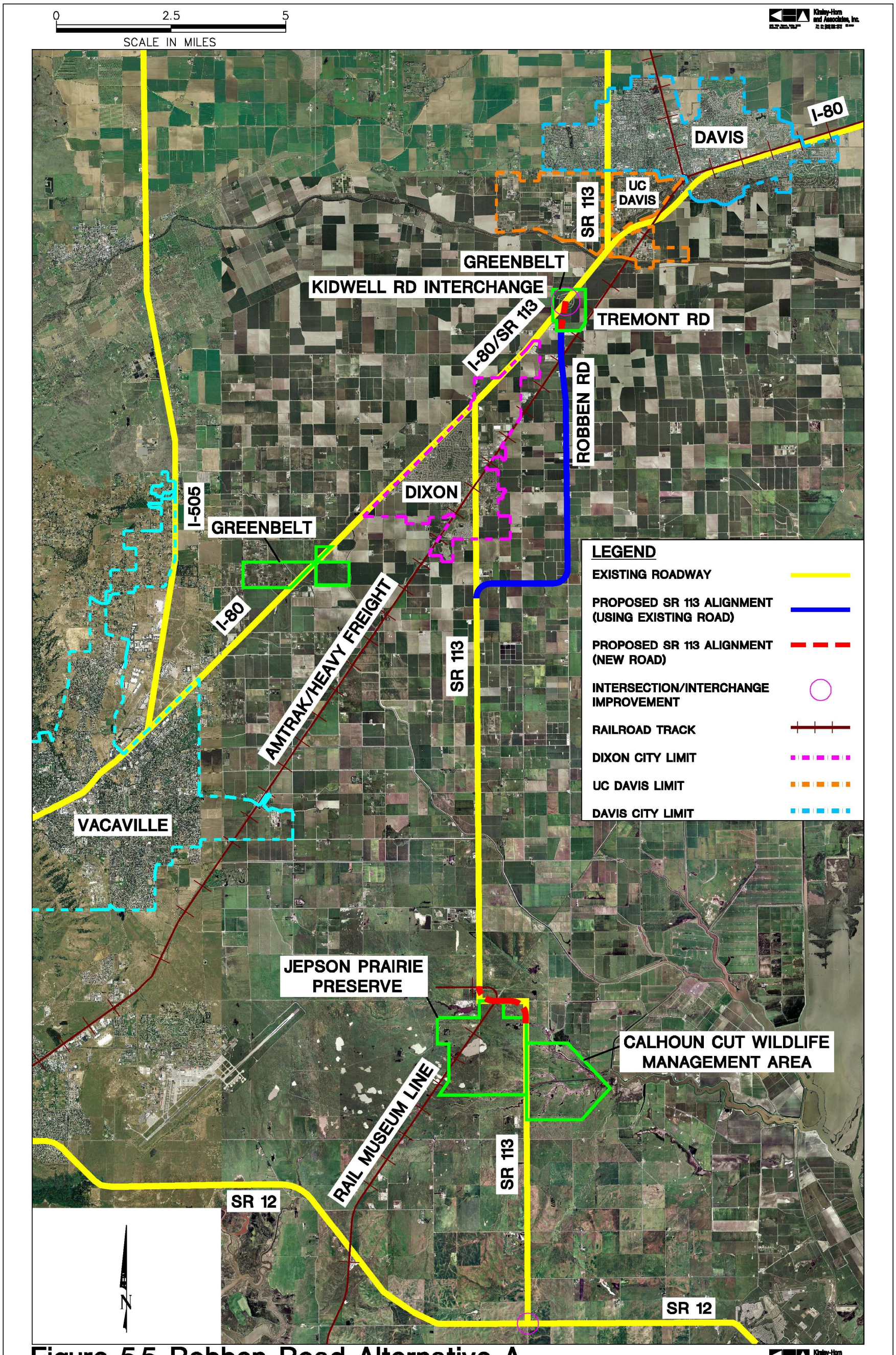


Figure 5.5 Robben Road Alternative A

Table 5.3 - 2030 Peak-Hour and Daily Traffic Volumes by Roadway Segment
Robben Road Alternative A

	AM Peak		PM Peak		Daily	
	No-Build	Build	No-Build	Build	No-Build	Build
Existing SR 113 Segment						
North of Covell	2,875	2,925	3,175	3,225	32,000	32,000
Covell – Russell	4,350	4,375	4,800	4,900	48,000	49,000
Russell – Solano/Yolo Line	5,475	5,525	6,050	6,275	61,000	63,000
Solano/Yolo Line – I-80	3,500	3,700	4,120	4,400	53,700	57,100
I-80 – Vaughn	2,870	1,800	3,450	1,900	46,000	27,100
Vaughn – North Adams	1,920	1,200	2,490	1,500	28,700	17,600
North Adams – A	1,580	900	1,920	900	25,900	13,400
A – Cherry	1,150	700	1,200	700	14,400	8,600
Cherry – Fry	960	1,100	770	900	10,300	11,900
Fry – SR 12	1,100	1,300	910	1,100	11,000	13,100
Future SR 113 Alignment						
Robben Road A	100	1,400	10	1,300	1,000	13,500

Table 5.4 - 2030 Peak-Hour and Daily LOS by Roadway Segment
Robben Road Alternative A

	Bi-Direction Traffic Volume					
	AM Peak		PM Peak		Daily	
	Volume	LOS	Volume	LOS	Volume	LOS
Existing SR 113 Segment						
North of Covell	2,925	B	3,225	B	32,000	N/A
Covell – Russell	4,375	C	4,900	C	49,000	N/A
Russell – Solano/Yolo Line	5,525	C	6,275	C	63,000	N/A
Solano/Yolo Line – I-80	3,700	C	4,400	C	57,100	N/A
I-80 – Vaughn	1,800	C	1,900	C	27,100	D
Vaughn – North Adams	1,200	C	1,500	C	17,600	C
North Adams – A	900	C	900	C	13,400	E
A – Cherry	700	C	700	C	8,600	C
Cherry – Fry	1,100	C	900	C	11,900	N/A
Fry – SR 12	1,300	C	1,100	C	13,100	N/A
Future SR 113 Alignment						
Robben Road A	1,400	C	1,300	C	13,500	C

- With the exception of the daily LOS for the I-80 to Vaughn segment (LOS D) and the North Adams to A segment (LOS E), the expected LOS across each roadway segment and time period are expected to be LOS C; and
- LOS improvements are expected to occur on the I-80 to Vaughn segment from LOS E-F to LOS C-D (depending on time period), and the Vaughn to North Adams segment (from LOS D and E for the PM peak-hour and daily condition to LOS C and D).

The Robben Road Alternative A is expected to provide a quicker route between SR 12 and I-80 by serving as a bypass, with uncongested travel speeds, to the City of Dixon. As a result, local traffic originating or destined to Dixon is expected to divert to this new alignment. Through or regional traffic with origins and destinations in the Bay Area, Central Valley, and Sacramento also will divert to this alternative due to improved travel times between SR 12 and I-80. This is reflected with the higher 2030 traffic volumes expected on SR 113 just north of SR 12, and also at the Solano/Yolo County Line. Traffic within Dixon on the existing SR 113 will be comprised of a higher percentage of local trips than current (2008) percentages. The freeway to freeway interchange spacing between the Kidwell Interchange and the I-80/SR113 (Davis) interchange is less than the two mile design standard needed as stated in the Highway Design Manual section 501.3 (The minimum interchange spacing shall be one mile in urban areas, two miles in rural areas, and two miles between freeway-to-freeway interchanges and local street interchanges). A Design Exception would need to be obtained for this alternative.

5.4.2 Robben Road Alternative B

As shown in **Figure 5.6**, the Robben Road Alternative B would use the existing SR 113 corridor from the SR 12/SR 113 intersection, north to Midway Road just south of the City of Dixon. The alternative would then follow Midway Road east to Robben Road north to the Union Pacific right-of-way in Dixon. A new 2.5-mile roadway would be constructed adjacent to the Union Pacific right-of-way to connect to the existing SR 113 interchange in Davis. This alternative will be constructed as a four-lane facility between SR 12 and I-80 with two lanes in each direction with a median separation.

Tables 5.5 and 5.6 show the expected 2030 AM and PM peak-hour and daily traffic volumes and levels of service for each of the SR 113 roadway segments of the Robben Road Alternative B. Comparisons of traffic impact to the 2030 No Build Scenario include the following:

- Slight increases in traffic occur on I-80 for all time periods largely due to an increase in through, multi-regional traffic diverting to the SR 113 corridor and accessing I-80 to the Solano/Yolo Line.

- Traffic decreases significantly on SR 113 roadway segments within the City of Dixon for all time periods, with the greatest decrease at the I-80 to Vaughn segment and significant decreases at the Vaughn to North Adams and North Adams to A Street roadway segments.
- Traffic increases slightly on the southernmost SR 113 segments including Fry to Cherry and SR 12 to Fry.
- LOS improvements are expected to occur on the I-80 to Vaughn, North Adams to A Street, and A Street to Cherry segments from LOS E to F to LOS C to D (depending on the time period).

Robben Road Alternative B, as with the Robben Road Alternative A and Pedrick Road Alternative A and B, provides a faster route between SR 12 and I-80. Compared to the other alternatives, this alternative results in the highest amount of diversion of locally oriented traffic to and from Dixon, because it provides a direct connection onto SR 113 at I-80 near Davis.

Figure 5.6 - 2030 SR 113 Alternative Strategy
Robben Road Alternative B Alignment

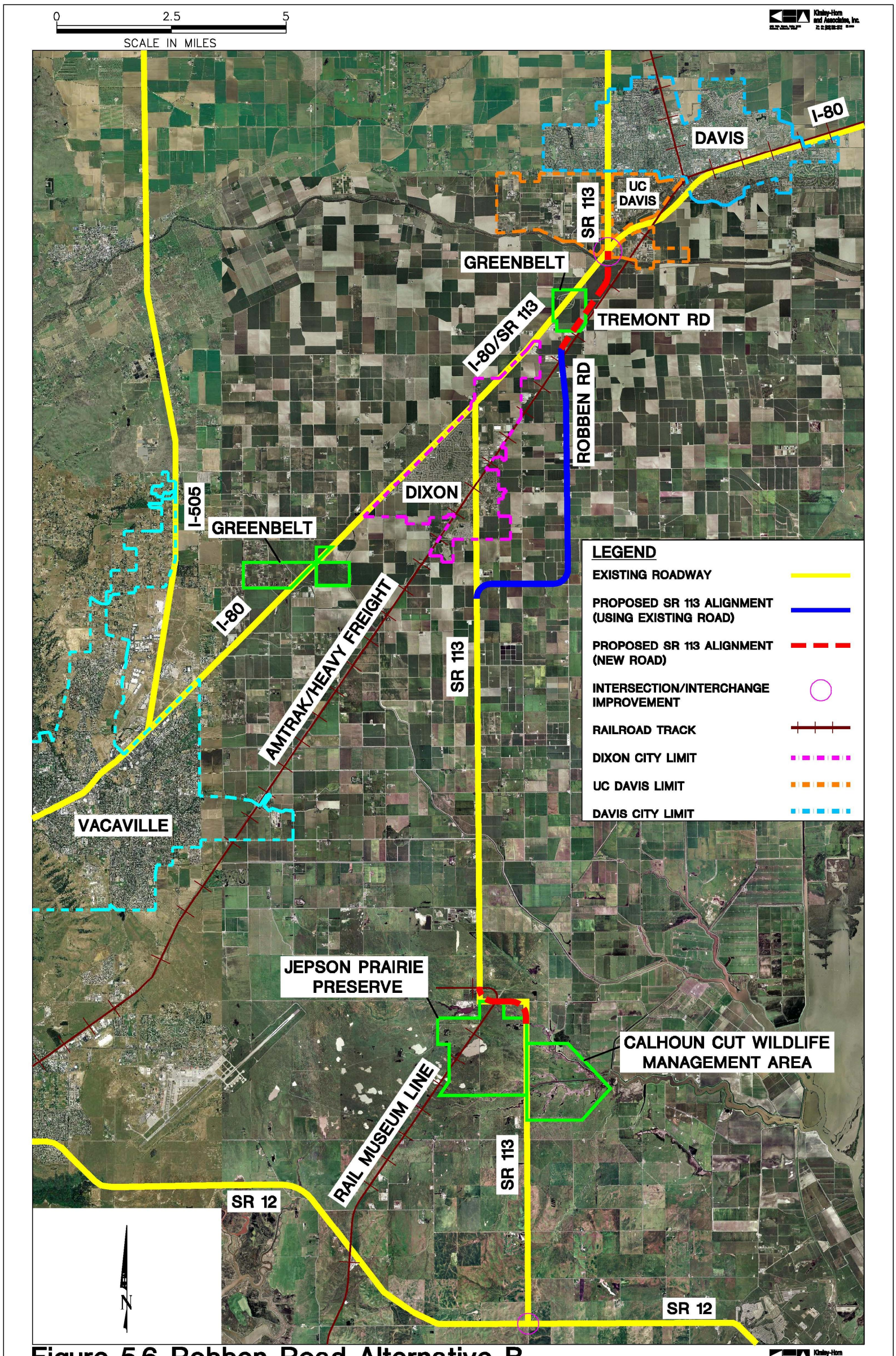


Figure 5.6 Robben Road Alternative B

Table 5.5 - 2030 Peak-Hour and Daily Traffic Volumes by Roadway Segment

Robben Road Alternative B

	AM Peak		PM Peak		Daily	
	No-Build	Build	No-Build	Build	No-Build	Build
Existing SR 113 Segment						
North of Covell	2,875	2,925	3,175	3,175	32,000	32,000
Covell – Russell	4,350	4,375	4,800	4,800	48,000	48,000
Russell – Solano/Yolo Line	5,475	5,575	6,050	6,200	61,000	62,000
Solano/Yolo Line – I-80	3,500	3,800	4,120	4,400	53,700	57,800
I-80 – Vaughn	2,870	1,200	3,450	1,700	46,000	21,000
Vaughn – North Adams	1,920	1,200	2,490	1,700	28,700	18,800
North Adams – A	1,580	800	1,920	900	25,900	12,600
A – Cherry	1,150	700	1,200	800	14,400	9,200
Cherry – Fry	960	1,200	770	900	10,300	12,500
Fry – SR 12	1,100	1,300	910	1,100	11,000	13,100
Future SR 113 Alignment						
Robben Road B	700	1,600	700	1,500	7,000	15,500

Table 5.6 - 2030 Peak Hour and Daily LOS by Roadway Segment

Robben Road Alternative B

	Bi-Direction Traffic Volume					
	AM Peak		PM Peak		Daily	
	Volume	LOS	Volume	LOS	Volume	LOS
Existing SR 113 Segment						
North of Covell	2,925	B	3,175	B	32,000	N/A
Covell – Russell	4,375	C	4,800	C	48,000	N/A
Russell – Solano/Yolo Line	5,575	C	6,200	C	62,000	N/A
Solano/Yolo Line – I-80	3,800	C	4,400	C	57,800	N/A
I-80 – Vaughn	1,200	C	1,700	C	21,000	D
Vaughn – North Adams	1,200	C	1,700	C	18,800	D
North Adams – A	800	C	900	C	12,600	D
A – Cherry	700	C	800	C	9,200	D
Cherry – Fry	1,200	C	900	C	12,500	N/A
Fry – SR 12	1,300	C	1,100	C	13,100	N/A
Future SR 113 Alignment						
Robben Road B	1,600	C	1,500	C	15,500	C

5.4.3 Midway Road Alternative

As shown in **Figure 5.7**, the Midway Road Alternative would use the existing SR 113 corridor from the SR 12/SR 113 intersection, north to Midway Road, just south of the City of Dixon. The alternative would then follow Midway Road west to the existing Midway Road interchange with I-80. The corridor would then follow I-80 along its existing alignment towards the Solano/Yolo County Line. This alternative will be constructed as a four-lane facility between SR 12 and I-80 with two lanes in each direction with a median separation.

Tables 5.7 and **5.8** show the expected 2030 AM and PM peak hour and daily traffic volumes and levels of service for each of the SR 113 roadway segments of the Midway Road Alternative. When compared to the 2030 No Build Scenario, the potential impacts and diversions associated with this alternative include the following:

- Traffic either increases slightly or remains consistent with the 2030 No Build Scenario traffic volumes for all SR 113 roadway segments and all time periods.
- The PM peak-hour traffic volumes increase more consistently over 2030 No Build Scenario traffic volumes than the AM peak hour.
- Traffic increases more consistently on the southernmost or rural roadway segments (Cherry to Fry and Fry to SR 12) for all time periods than the northern, urban segments on I-80 and within the City of Dixon.

Figure 5.7 - 2030 SR 113 Alternative Strategy
Midway Road Alternative Alignment

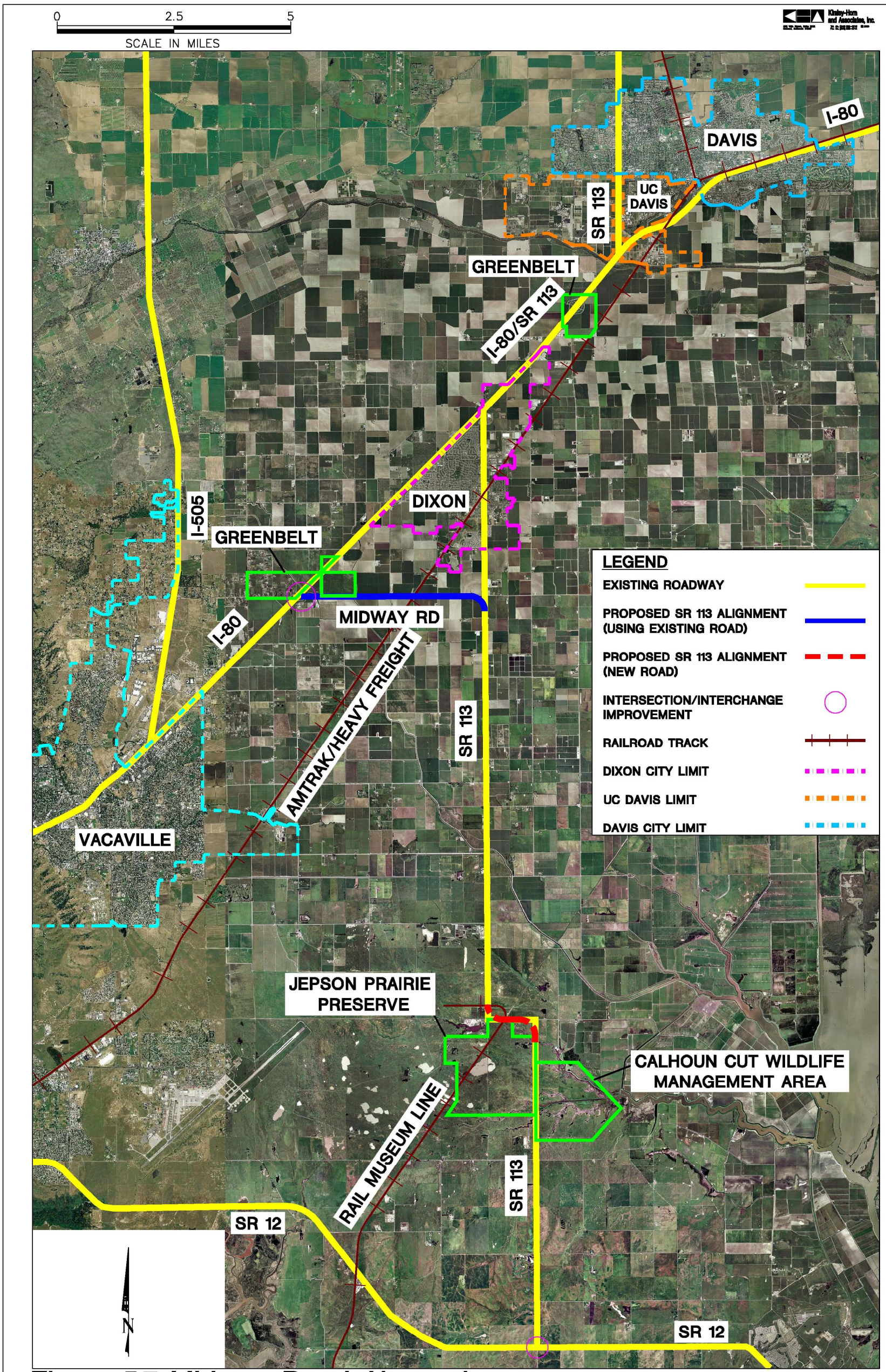


Figure 5.7 Midway Road Alternative

Table 5.7 - 2030 Peak-Hour and Daily Traffic Volumes by Roadway Segment
Midway Road Alternative

	AM Peak		PM Peak		Daily	
	No-Build	Build	No-Build	Build	No-Build	Build
Existing SR 113 Segment						
North of Covell	2,875	2,875	3,175	3,225	32,000	32,000
Covell – Russell	4,350	4,400	4,800	4,850	48,000	49,000
Russell – Solano/Yolo Line	5,475	5,500	6,050	6,125	61,000	61,000
Solano/Yolo Line – I-80	3,500	3,500	4,120	4,200	53,700	54,200
I-80 – Vaughn	2,870	3,000	3,450	3,500	46,000	47,400
Vaughn – North Adams	1,920	1,900	2,490	2,500	28,700	28,600
North Adams – A	1,580	1,600	1,920	1,900	25,900	25,900
A – Cherry	1,150	1,100	1,200	1,200	14,400	14,100
Cherry – Fry	960	1,200	770	900	10,300	12,500
Fry – SR 12	1,100	1,300	910	1,100	11,000	13,100
Future SR 113 Alignment						
Midway Road	225	875	250	1,000	2,500	9,000

Table 5.8 - 2030 Peak Hour and Daily LOS by Roadway Segment
Midway Road Alternative

	Bi-Direction Traffic Volume					
	AM Peak		PM Peak		Daily	
	Volume	LOS	Volume	LOS	Volume	LOS
Existing SR 113 Segment						
North of Covell	2,875	B	3,225	B	32,000	N/A
Covell – Russell	4,400	C	4,850	C	49,000	N/A
Russell – Solano/Yolo Line	5,500	C	6,125	C	61,000	N/A
Solano/Yolo Line – I-80	3,500	C	4,200	C	54,200	N/A
I-80 – Vaughn	3,000	E	3,500	F	47,400	F
Vaughn – North Adams	1,900	C	2,500	D	28,600	E
North Adams – A	1,600	F	1,900	F	25,900	F
A – Cherry	1,100	D	1,200	D	14,100	E
Cherry – Fry	1,200	C	900	C	12,500	N/A
Fry – SR 12	1,300	C	1,100	C	13,100	N/A
Future SR 113 Alignment						
Midway Road	875	C	1,000	C	9,000	C

- In large part due to the similarity in traffic volumes for this alternative with the 2030 No Build Scenario, levels of service remain the same for each SR 113 roadway segment and time period, including poorer levels of service on the I-80 to Vaughn, Vaughn to North Adams, and the North Adams to A Street roadway segments.

The Midway Road alternative does not provide the same diversion of traffic away from Dixon as with the Robben Road Alternative. This alignment does not provide a faster route between SR 12 and I-80 in Davis. However, this alternative does provide improved travel times between SR 12 and I-505 via Midway Road. This is reflected in the higher volume of traffic at the southern end of the corridor. Traffic volumes in Dixon, as well as the proportion of traffic that is locally oriented, are expected to be similar to that of the No Build Alternative.

5.4.4 Pedrick Road Alternative A

The Pedrick Road Alternative A would use the existing SR 113 corridor from the SR 12/SR 113 intersection, north to Midway Road, just south of the City of Dixon (**Figure 5.8**). The alternative would then follow Midway Road east to Pedrick Road, north to the existing interchange with I-80. The corridor would then follow I-80 along its existing alignment towards the Solano/Yolo County Line. This alternative will be constructed as a four-lane facility between SR 12 and I-80 with two lanes in each direction with a median separation.

Tables 5.9 and **5.10** show the expected 2030 AM and PM peak-hour and daily traffic volumes and levels of service for each of the SR 113 roadway segments of the Pedrick Road Alternative A. Traffic impacts for this alternative are very similar to those presented for the Robben Road Alternative. Comparisons of traffic impact to the 2030 No Build Scenario include the following:

- Traffic remains relatively the same as the No Build Scenario on I-80 for all time periods.
- Traffic decreases on SR 113 roadway segments within the City of Dixon for all time periods, with the greatest decrease at I-80 to Vaughn segment.
- Traffic increases slightly on the southernmost SR 113 segments, including Fry and Cherry and SR 12 and Fry.
- LOS improvements are expected to occur on the I-80 to Vaughn segment from LOS E-F, to LOS D-F (depending on the time period), the Vaughn to North Adams segment (from LOS D and E for the PM peak-hour and daily condition to LOS C and D for these same time periods), and the segments between North Adams and Cherry from LOS D to F to LOS C to D during peak periods.

Figure 5.8 -2030 SR 113 Alternative Strategy
Pedrick Road Alternative A Alignment

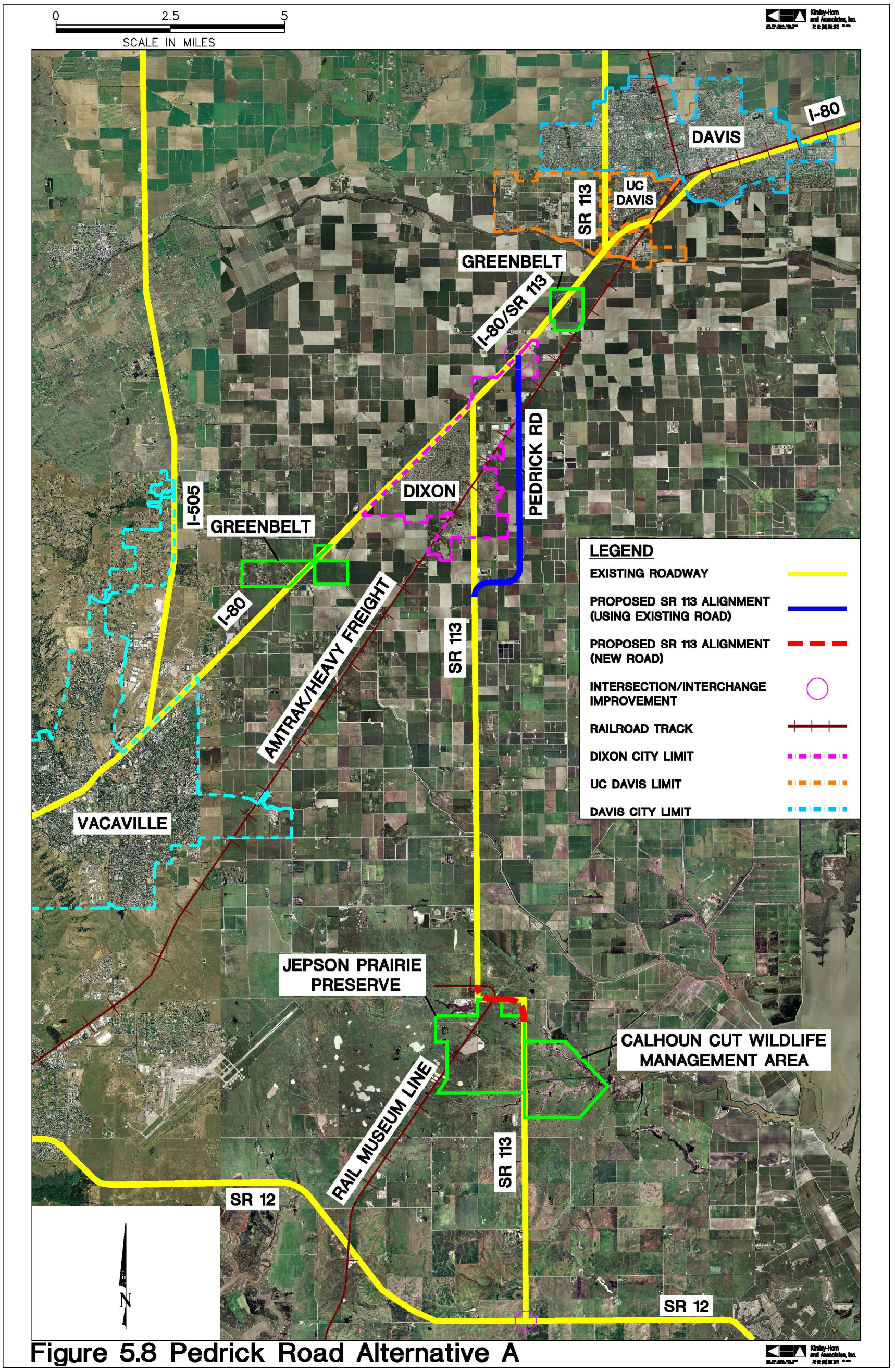


Table 5.9 - 2030 Peak-Hour and Daily Traffic Volumes by Roadway Segment
Pedrick Road Alternative A

	AM Peak		PM Peak		Daily	
	No-Build	Build	No-Build	Build	No-Build	Build
Existing SR 113 Segment						
North of Covell	2,875	2,875	3,175	3,175	32,000	32,000
Covell – Russell	4,350	4,375	4,800	4,800	48,000	48,000
Russell – Solano/Yolo Line	5,475	5,525	6,050	6,050	61,000	61,000
Solano/Yolo Line – I-80	3,500	3,500	4,120	4,100	53,700	53,600
I-80 – Vaughn	2,870	2,100	3,450	2,500	46,000	33,500
Vaughn – North Adams	1,920	1,400	2,490	1,800	28,700	20,800
North Adams – A	1,580	1,000	1,920	1,200	25,900	16,300
A – Cherry	1,150	700	1,200	800	14,400	9,200
Cherry – Fry	960	1,000	770	800	10,300	10,700
Fry – SR 12	1,100	1,100	910	1,000	11,000	11,500
Future SR 113 Alignment						
Pedrick Road A	700	1,250	700	1,100	7,000	12,000

Table 5.10 - 2030 Peak-Hour and Daily LOS by Roadway Segment
Pedrick Road Alternative A

	Bi-Direction Traffic Volume					
	AM Peak		PM Peak		Daily	
	Volume	LOS	Volume	LOS	Volume	LOS
Existing SR 113 Segment						
North of Covell	2,875	B	3,175	B	32,000	N/A
Covell – Russell	4,375	C	4,800	C	48,000	N/A
Russell – Solano/Yolo Line	5,525	C	6,050	C	61,000	N/A
Solano/Yolo Line – I-80	3,500	C	4,100	C	53,600	N/A
I-80 – Vaughn	2,100	D	2,500	D	33,500	F
Vaughn – North Adams	1,400	C	1,800	C	20,800	D
North Adams – A	1,000	D	1,200	D	16,300	F
A – Cherry	700	C	800	C	9,200	D
Cherry – Fry	1,000	C	800	C	10,700	N/A
Fry – SR 12	1,100	C	1,000	C	11,500	N/A
Future SR 113 Alignment						
Pedrick Road A	1,250	C	1,100	C	12,000	C

Pedrick Road Alternative A, similar to the Robben Road Alternative A, provides improved travel times for the entire length of the corridor, from SR 12 to I-80. Traffic is diverted from Dixon onto this new alignment, which results in an expected higher percentage of local trip-making on the SR 113 than current percentages. The freeway to freeway interchange spacing between the Kidwell Interchange and the I-80/SR113 (Davis) interchange is less than the two mile design standard needed as stated in the Highway Design Manual section 501.3 (The minimum interchange spacing shall be one mile in urban areas, two miles in rural areas, and two miles between freeway-to-freeway interchanges and local street interchanges). A Design Exception would need to be obtained for this alternative.

5.4.5 Pedrick Road Alternative B

As shown in **Figure 5.9**, the Pedrick Road Alternative B would use the existing SR 113 corridor from the SR 12/SR 113 intersection, north to Midway Road just south of the City of Dixon. The alternative would then follow Midway Road east to Pedrick Road north to the Union Pacific right-of-way in Dixon. A new 3.5-mile roadway would be constructed adjacent to the Union Pacific right-of-way to connect to the existing SR 113 interchange in Davis. This alternative will be constructed as a four-lane facility between SR 12 and I-80 with two lanes in each direction with a median separation.

Tables 5.11 and 5.12 show the expected 2030 AM and PM peak-hour and daily traffic volumes and levels of service for each of the SR 113 roadway segments of the Pedrick Road Alternative B. Comparisons of traffic impact to the 2030 No Build Scenario include the following:

- Slight increases in traffic occur on I-80 for all time periods largely due to an increase in through, multi-regional traffic diverting to the SR 113 corridor and accessing I-80 to the Solano/Yolo Line.
- Traffic decreases significantly on SR 113 roadway segments within the City of Dixon for all time periods, with the greatest decrease at the I-80 to Vaughn segment and significant decreases at the Vaughn to North Adams and North Adams to A roadway segments.
- Traffic increases slightly on the southernmost SR 113 segments including Fry to Cherry and SR 12 to Fry.
- LOS improvements are expected to occur on the I-80 to Vaughn, North Adams to A Street, and A Street to Cherry segments from LOS E to F to LOS C to D (depending on the time period).

Pedrick Road Alternative B, as with the Robben Road Alternative A and B and Pedrick Road Alternative A, provides a faster route between SR 12 and I-80. Compared to the other alternatives, this alternative results in the highest amount of diversion of locally

oriented traffic to and from Dixon, because it provides a direct connection onto SR 113 at I-80 near Davis.

Figure 5.9 - 2030 SR 113 Alternative Strategy
Pedrick Road Alternative B Alignment

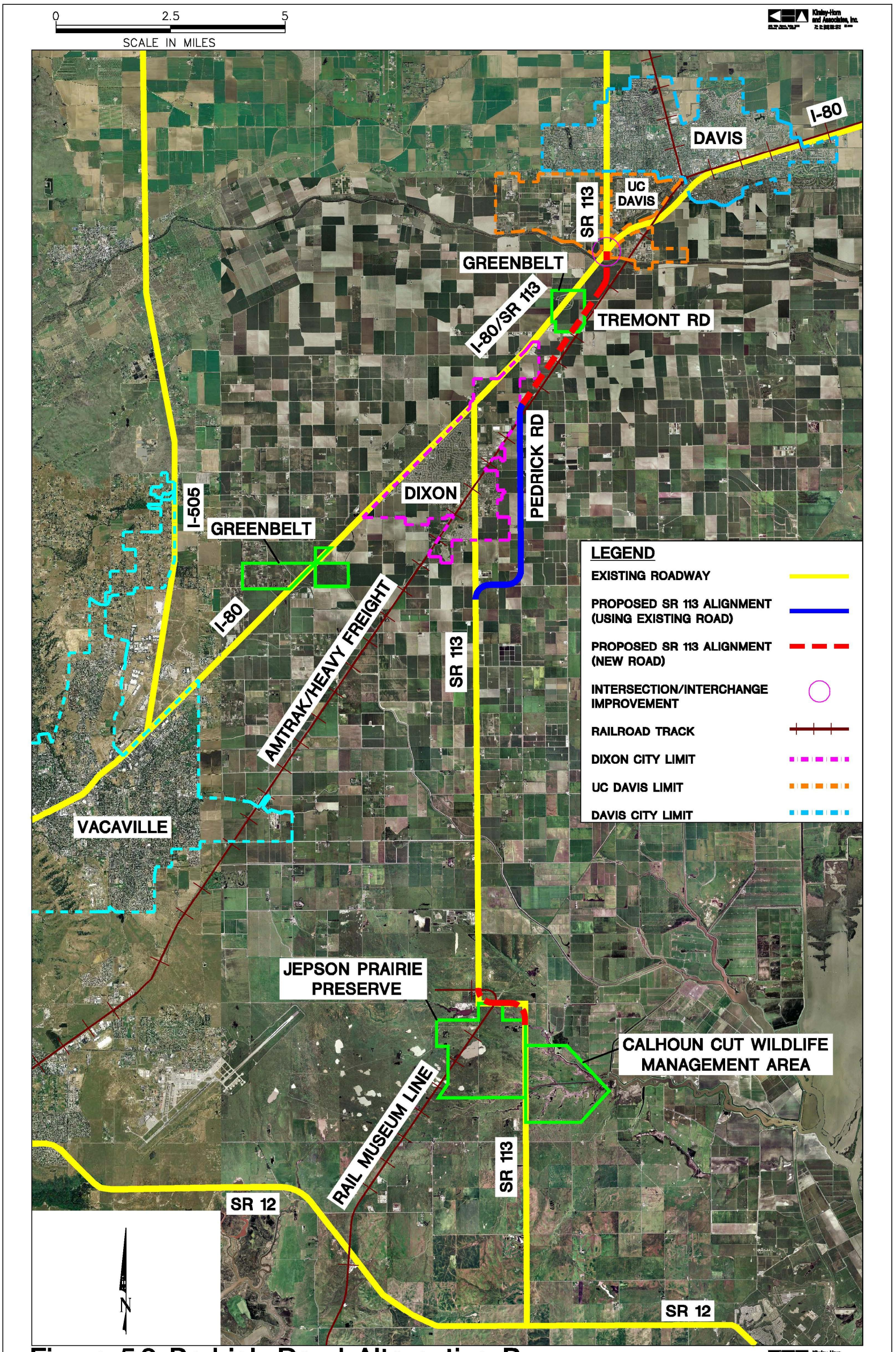


Table 5.11 - 2030 Peak-Hour and Daily Traffic Volumes by Roadway Segment

Pedrick Road Alternative B

	AM Peak		PM Peak		Daily	
	No-Build	Build	No-Build	Build	No-Build	Build
Existing SR 113 Segment						
North of Covell	2,875	2,925	3,175	3,175	32,000	32,000
Covell – Russell	4,350	4,375	4,800	4,800	48,000	48,000
Russell – Solano/Yolo Line	5,475	5,575	6,050	6,200	61,000	62,000
Solano/Yolo Line – I-80	3,500	3,800	4,120	4,400	53,700	57,800
I-80 – Vaughn	2,870	1,200	3,450	1,700	46,000	21,000
Vaughn – North Adams	1,920	1,200	2,490	1,700	28,700	18,800
North Adams – A	1,580	800	1,920	900	25,900	12,600
A – Cherry	1,150	700	1,200	800	14,400	9,200
Cherry – Fry	960	1,200	770	900	10,300	12,500
Fry – SR 12	1,100	1,300	910	1,100	11,000	13,100
Future SR 113 Alignment						
Pedrick Road B	700	1,600	700	1,500	7,000	15,500

Table 5.12 - 2030 Peak Hour and Daily LOS by Roadway Segment

Pedrick Road Alternative B

	Bi-Direction Traffic Volume					
	AM Peak		PM Peak		Daily	
	Volume	LOS	Volume	LOS	Volume	LOS
Existing SR 113 Segment						
North of Covell	2,925	B	3,175	B	32,000	N/A
Covell – Russell	4,375	C	4,800	C	48,000	N/A
Russell – Solano/Yolo Line	5,575	C	6,200	C	62,000	N/A
Solano/Yolo Line – I-80	3,800	C	4,400	C	57,800	N/A
I-80 – Vaughn	1,200	C	1,700	C	21,000	D
Vaughn – North Adams	1,200	C	1,700	C	18,800	D
North Adams – A	800	C	900	C	12,600	D
A – Cherry	700	C	800	C	9,200	D
Cherry – Fry	1,200	C	900	C	12,500	N/A
Fry – SR 12	1,300	C	1,100	C	13,100	N/A
Future SR 113 Alignment						
Pedrick Road B	1,600	C	1,500	C	15,500	C

5.4.6 Comparison of Alternatives

A comparison of the traffic volume and LOS impacts by existing SR 113 roadway segment and time of day for each of the 2030 alternatives are presented in this section (**Tables 5.13 to 5.18**). The traffic impacts on SR 113 show a range of impacts on the roadway segments by time of day. Toll road impacts, directly impacting traffic and levels of service on the SR 113 segments, are also presented in these tables. Bolded LOS ratings in **Tables 4.21 to 4.2**3 indicate an operational improvement over a no-build scenario. The following is a summary of this comparison:

- The Robben Road Alternative A operates in terms of traffic volumes and LOS very similarly to those conditions reported for the Pedrick Road Alternative A. For example, this alternative shows similar reductions in traffic and improvements in LOS as the Pedrick Road Alternative A for the southern rural segments, and also provides similar levels of congestion relief and traffic reduction on the roadway segments in the City of Dixon. However, this alternative is expected to generate more traffic volumes on I-80 at the Solano/Yolo County Line when compared to the other alternatives.
- The Robben Road or Pedrick Alternative B is expected to provide the most traffic relief during all time periods to the City of Dixon roadway segments, including significant decreases in traffic volumes on the I-80 to Vaughn, Vaughn to North Adams, and North Adams to A roadway segments. However, this alternative is expected to generate higher traffic volumes for rural roadway segments (Cherry to Fry and Fry to SR 12) for all time periods in the corridor.
- The Midway Road Alternative for all roadway segments and time periods (AM, PM, and daily) will be expected to operate at similar (if not the same) traffic volumes and levels of service as the No Build Scenario. This alternative offers insignificant improvements to levels of service on the roadway segments within the City of Dixon as well as the rural segments in the corridor.
- The Pedrick Road Alternative A will provide traffic relief and reduced traffic volumes and levels of service for roadway segments across the entire corridor including for both City of Dixon and rural segments. While the City of Dixon traffic relief and reduction of traffic volumes are not expected to reach those levels as reported for the Pedrick Road Alternative B, the traffic relief on the rural segments improves compared to Alternative B.
- For all alternatives, the LOS of the segments within Yolo County are not expected to change from existing levels as there is sufficient capacity to accommodate additional demand.
- The toll road is not expected to provide as much diversion away from the parallel SR 113 within Dixon as with some of the other alternatives evaluated in this study. This would be primarily due to the toll road operating as a limited-access route with limited connections to as many intersecting roads with SR 113 than the other alternatives. However, outside of Dixon, the toll

road alternative has the capacity to attract a significant amount of traffic away from the parallel SR 113, depending on the toll rate that is charged.

Table 5.13 - 2030 AM Peak-Hour Traffic Volumes by Roadway Segment and Future Alternative

AM	No-Build	Robben A	Robben B	Midway	Pedrick A	Pedrick B	Toll
North of Covell	2,875	2,925	2,925	2,875	2,875	2,925	2,900
Covell – Russell	4,350	4,375	4,375	4,400	4,375	4,375	4,325
Russell – Solano/Yolo Line	5,475	5,525	5,575	5,500	5,525	5,575	5,550
Solano/Yolo Line – I-80	3,500	3,700	3,800	3,500	3,500	3,800	3,900
I-80 – Vaughn	2,870	1,800	1,200	3,000	2,100	1,200	2,100
Vaughn – North Adams	1,920	1,200	1,200	1,900	1,400	1,200	1,300
North Adams – A	1,580	900	800	1,600	1,000	800	1,000
A – Cherry	1,150	700	700	1,100	700	700	800
Cherry – Fry	960	1,100	1,200	1,200	1,000	1,200	100
Fry – SR 12	1,100	1,300	1,300	1,300	1,100	1,300	200

Table 5.14 - 2030 PM Peak-Hour Traffic Volumes by Roadway Segment and Future Alternative

PM	No-Build	Robben A	Robben B	Midway	Pedrick A	Pedrick B	Toll
North of Covell	3,175	3,225	3,175	3,225	3,175	3,175	3,400
Covell – Russell	4,800	4,900	4,800	4,850	4,800	4,800	5,150
Russell – Solano/Yolo Line	6,050	6,275	6,200	6,125	6,050	6,200	6,625
Solano/Yolo Line – I-80	4,120	4,400	4,400	4,200	4,100	4,400	5,100
I-80 – Vaughn	3,450	1,900	1,700	3,500	2,500	1,700	2,500
Vaughn – North Adams	2,490	1,500	1,700	2,500	1,800	1,700	1,700
North Adams – A	1,920	900	900	1,900	1,200	900	1,100
A – Cherry	1,200	700	800	1,200	800	800	800
Cherry – Fry	770	900	900	900	800	900	100
Fry – SR 12	910	1,100	1,100	1,100	1,000	1,100	100

Table 5.15 - 2030 Daily Traffic Volumes by Roadway Segment and Future Alternative

Daily	No-Build	Robben A	Robben B	Midway	Pedrick A	Pedrick B	Toll
North of Covell	32,000	32,000	32,000	32,000	32,000	32,000	34,000
Covell – Russell	48,000	49,000	48,000	49,000	48,000	48,000	52,000
Russell – Solano/Yolo Line	61,000	63,000	62,000	61,000	61,000	62,000	66,000
Solano/Yolo Line – I-80	53,700	57,100	57,800	54,200	53,600	57,800	63,200
I-80 – Vaughn	46,000	27,100	21,000	47,400	33,500	21,000	33,500
Vaughn – North Adams	28,700	17,600	18,800	28,600	20,800	18,800	19,500
North Adams – A	25,900	13,400	12,600	25,900	16,300	12,600	15,600
A – Cherry	14,400	8,600	9,200	14,100	9,200	9,200	9,800
Cherry – Fry	10,300	11,900	12,500	12,500	10,700	12,500	1,200
Fry – SR 12	11,000	13,100	13,100	13,100	11,500	13,100	1,600

Table 5.16 - 2030 AM Peak-Hour LOS by Roadway Segment and Future Alternative

AM	No-Build	Robben A	Robben B	Midway	Pedrick A	Pedrick B	Toll
North of Covell	B	B	B	B	B	B	B
Covell – Russell	C	C	C	C	C	C	C
Russell – Solano/Yolo Line	C	C	C	C	C	C	C
Solano/Yolo Line – I-80	C	C	C	C	C	C	C
I-80 – Vaughn	E	**C**	**C**	E	**D**	**C**	**D**
Vaughn – North Adams	C	C	C	C	C	C	C
North Adams – A	F	**C**	**C**	F	**D**	**C**	**D**
A – Cherry	D	**C**	**C**	D	**C**	**C**	**C**
Cherry – Fry	C	C	C	C	C	C	C
Fry – SR 12	C	C	C	C	C	C	C

Table 5.17 - 2030 PM Peak-Hour LOS by Roadway Segment and Future Alternative

PM	No-Build	Robben A	Robben B	Midway	Pedrick A	Pedrick B	Toll
North of Covell	B	B	B	B	B	B	C
Covell – Russell	C	C	C	C	C	C	D
Russell – Solano/Yolo Line	C	C	C	C	C	C	C
Solano/Yolo Line – I-80	C	C	C	C	C	C	D
I-80 – Vaughn	F	**C**	**C**	F	**D**	**C**	**D**
Vaughn – North Adams	D	**C**	**C**	D	**C**	**C**	**C**
North Adams – A	F	**C**	**C**	F	**D**	**C**	**D**
A – Cherry	D	**C**	**C**	D	**C**	**C**	**C**
Cherry – Fry	C	C	C	C	C	C	C
Fry – SR 12	C	C	C	C	C	C	C

Table 5.18 - 2030 Daily LOS by Existing SR 113 Roadway Segment and Future Alternative

Daily	No-Build	Robben A	Robben B	Midway	Pedrick A	Pedrick B	Toll
North of Covell	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Covell – Russell	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Russell – Solano/Yolo Line	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Solano/Yolo Line – I-80	N/A	N/A	N/A	N/A	N/A	N/A	N/A
I-80 – Vaughn	F	**D**	**D**	F	F	**D**	F
Vaughn – North Adams	E	**C**	**D**	E	E	**D**	**D**
North Adams – A	F	**E**	**D**	F	F	**D**	F
A – Cherry	E	**C**	**D**	E	**D**	**D**	**D**
Cherry – Fry	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fry – SR 12	N/A	N/A	N/A	N/A	N/A	N/A	N/A

5.4.6 I-80 LOS with Alignment Alternatives

A LOS analysis was conducted to determine the future LOS for I-80 as it relates to each of the 5 alternative alignment options. I-80 AM and PM LOS was determined at two locations along the I-80 corridor in both the eastbound and westbound direction. The LOS locations along the I-80 corridor are located between Midway Road and the City of Dixon and between the City of Dixon and the Kidwell Interchange. Table **5.19** illustrates the LOS results along I-80 as it relates to each of the 5 alternative alignment options.

Table 5.19 - 2030 I-80 AM/PM LOS with Alternative Alignment Option

	I-80 LOS			
	West of Dixon		East of Dixon	
	Westbound	Eastbound	Westbound	Eastbound
Alternative Alignment (AM)				
Robben Road Alternative Alignment A	C	E	C	F
Robben Road Alternative Alignment B	C	E	C	F
Midway Road Alternative Alignment	C	E	C	F
Pedrick Road Alternative Alignments A	C	E	C	F
Pedrick Road Alternative Alignment B	C	E	C	F
Alternative Alignment (PM)				
Robben Road Alternative Alignment A	E	D	F	D
Robben Road Alternative Alignment B	E	D	F	D
Midway Road Alternative Alignment	E	D	F	D
Pedrick Road Alternative Alignments A	E	D	F	D
Pedrick Road Alternative Alignments B	E	D	E	C

5.5 Physical Description of Alternatives

The following section provides a general physical description of the each of the alignments considered for the project.

5.5.1 Alignment 1 (No-Build)

Alignment alternative option 1 addresses a no-built solution.

Alignment alternative option 1 would utilize the existing SR 113 corridor from the southern end SR 12/SR 113 intersection, north to I-80 in the City of Dixon. The corridor will then follow the I-80 freeway along its existing alignment towards the City of Davis and the Yolo County line. The SR 113 alignment option 1 will maintain the existing number of lanes and will not include any modifications to the existing corridor.

5.5.2 Alignment 2 (Robben Road A)

Alignment alternative option 2 addresses the interest to by-pass both downtown Dixon and the urban area of the City of Dixon. This option utilizes existing roadway when possible, increases roadway capacity by adding travel lanes, and modifies the 90 degree sharp turns to increase corridor safety.

Option 2 would utilize the existing SR 113 corridor from the southern end SR 12/SR 113 intersection, north to Midway Road just south of the City of Dixon. The realigned corridor will then follow Midway Road east to Robben Road and Robben Road north to Tremont Road. A new mile and a half roadway will be constructed to extend Robben Road to the Kidwell Road interchange to connect with the I-80. The corridor will then follow I-80 along its existing alignment towards the City of Davis and the Yolo County line.

The SR 113 alignment option 2 will include the following modifications to the corridor:

- Transportation Management System, Traffic Demand Management and Intelligent Transportation Systems enhancements.
- Repairing existing poor pavement sections of SR 113 between SR 12 and I-80.
- Realignment and improvement of the curve radius/design speed for the two existing sharp turns along SR 113. A curve radius of 1,700 feet and a design speed of 65 MPH would conform to the Highway Design Manual.
- Modification of SR 113/SR 12 intersection. The ultimate SR 113/SR 12 should be a grade separated interchange structure. Intermediate improvements should include signalization and the addition of a southbound left-turn lane.
- Realignment of SR 113 to follow Midway Road to Robben Road and then Robben Road to Tremont Road to complete the by-pass the City of Dixon urban limits.

- Extension of Robben Road to from Tremont Road to the Kidwell Road Interchange.
- Modify the existing Kidwell interchange to accommodate a four-lane roadway connection.
- Widen the realigned corridor between SR 12 and I-80 (Kidwell interchange). Widening will be from a two-lane to a four-lane facility with two lanes in each direction and a median separation. It is assumed that widening will need right-of-way acquisition.

Portions of the existing SR 113 corridor would no longer be needed with this alignment option. These roadway segments would need to be vacated back to Solano County or City ownership, depending on location, for future use as County or City roads. Prior to their reversion back to the County or City, the roadway segments should be improved to current County or City roadway width and pavement condition standards. SR 113 relinquishment requirements shall follow Caltrans Project Development Procedures Manual (PDPM) Chapter 25 – Relinquishments http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm.

5.5.3 Alignment 3 (Robben Road B)

This option addresses the interest to by-pass downtown Dixon however does not by-pass the urban area of the City of Dixon. This option utilizes existing roadway when possible, increases roadway capacity by adding travel lanes, and modifies the 90 degree sharp turns to increase corridor safety.

This would utilize the existing SR 113 corridor from the southern end SR 12/SR 113 intersection, north to Midway Road just south of the City of Dixon. The realigned corridor will then follow Midway Road east to Robben Road and Robben Road north to Tremont Road. A new 2.5-mile roadway will be constructed parallel to the existing railroad right-of-way. This new roadway will connect the Robben Road to the SR 113/ I-80 (Davis) interchange. The corridor will then follow the SR 113 along its existing alignment north of the City of Davis toward the Yolo County line.

The SR 113 alignment option 3 will include the following modifications to the corridor:

- Transportation Management System, Traffic Demand Management and Intelligent Transportation Systems enhancements.
- Repairing existing poor pavement sections of SR 113 between SR 12 and I-80.
- Realignment and improvement of the curve radius/design speed for the two existing sharp turns along SR 113. A curve radius of 1,700 feet and a design speed of 65 MPH would conform to the Highway Design Manual.
- Modification of SR 113/SR 12 intersection. The ultimate SR 113/SR 12 should be a grade separated interchange structure. Intermediate improvements should include signalization and the addition of a southbound left-turn lane.

- Realignment of SR 113 to follow Midway Road east to Robben Road and then Robben Road north to just north to Vaughn Road to complete the by-pass the City of Dixon urban limits.
- New 2.5-mile roadway from the intersection of Robben Road at Vaughn Road to the SR 113/I-80 Interchange (Davis).
- Modify the existing SR 113/I-80 (Davis) interchange to accommodate new a roadway connection.
- Widen the re-aligned corridor between SR 12 and the I-80/SR 113 (Davis) interchange. Widening will be from a two-lane to a four-lane facility with two lanes in each direction and a median separation. Intermediate designs can be incorporated to accommodate traffic. It is assumed that widening will need right-of-way acquisition.

Portions of the existing SR 113 corridor would no longer be needed with this alignment option. These roadway segments would need to be relinquished back to Solano County or City ownership, depending on location, for future use as County or City roads. Prior to their reversion back to the County or City, the roadway segments should be improved to current County or City roadway width and pavement condition standards. SR 113 relinquishment requirements shall follow Caltrans Project Development Procedures Manual (PDPM) Chapter 25 – Relinquishments http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm.

5.5.4 Alignment 4 (Midway Road)

This option would address the interest to by-pass both downtown Dixon and the urban area of the City of Dixon. This option utilizes existing roadway when possible, increases roadway capacity by adding travel lanes, and modifies the 90 degree sharp turns to increase corridor safety.

This would utilize the existing SR 113 corridor from the southern end SR 12/SR 113 intersection, north to Midway Road just south of the City of Dixon. The realigned corridor will then follow Midway Road west to connect with I-80. The corridor will then follow I-80 along its existing alignment towards the City of Davis and the Yolo County line.

The SR 113 alignment option 3 will include the following modifications to the corridor:

- Transportation Management System, Traffic Demand Management and Intelligent Transportation Systems enhancements.
- Repairing existing poor pavement sections of SR 113 between SR 12 and I-80.
- Realignment and improvement of the curve radius/design speed for the two existing sharp turns along SR 113. A curve radius of 1,700 feet and a design speed of 65 MPH would conform to the Highway Design Manual.

- Modification of SR 113/SR 12 intersection. The ultimate SR 113/12 should be a grade separated interchange structure. Intermediate improvements should include signalization and the addition of a southbound left-turn lane.
- Realignment of SR 113 to follow Midway Road west to I-80 to complete the by-pass the City of Dixon downtown.
- Widen the re-aligned corridor between SR 12 and the I-80 (Midway interchange). Widening from a two-lane to a four-lane facility with two lanes in each direction and a median separation. Widening is assumed to need right-of-way acquisition.
- Modify the existing Midway interchange to accommodate a four-lane roadway connection.
- Modification of the SR 113/UPRR crossing to include a grade separated structure.

Portions of the existing SR 113 corridor would no longer be needed with this alignment option. These roadway segments would need to be relinquished back to Solano County or City ownership, depending on location, for future use as County or City roads. Prior to their reversion back to the County or City, the roadway segments should be improved to current County or City roadway width and pavement condition standards. SR 113 relinquishment requirements shall follow Caltrans Project Development Procedures Manual (PDPM) Chapter 25 – Relinquishments http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm.

5.5.5 Alignment 5 (Pedrick Road A)

This option addresses the interest to by-pass downtown Dixon however does not by-pass the urban area of the City of Dixon. This option utilizes existing roadway when possible, increases roadway capacity by adding travel lanes, and modifies the 90 degree sharp turns to increase corridor safety.

This would utilize the existing SR 113 corridor from the southern end SR 12/SR 113 intersection, north to Midway Road just south of the City of Dixon. The realigned corridor will then follow Midway Road east to Pedrick Road. The realigned corridor will then follow Pedrick Road north to the I-80/Pedrick Road interchange. The corridor will then follow the I-80 freeway along its existing alignment towards the City of Davis and the Yolo County line.

The SR 113 alignment option 4 will include the following modifications to the corridor:

- Transportation Management System, Traffic Demand Management and Intelligent Transportation Systems enhancements.
- Repairing existing poor pavement sections of SR 113 between SR 12 and I-80.

- Realignment and improvement of the curve radius/design speed for the two existing sharp turns along SR 113. A curve radius of 1,700 feet and a design speed of 65 MPH would conform to the Highway Design Manual.
- Modification of SR 113/SR 12 intersection. The ultimate SR 113/SR 12 should be a grade separated interchange structure. Intermediate improvements should include signalization and the addition of a southbound left-turn lane.
- Realignment of SR 113 to follow Midway Road east to Pedrick Road and then north along Pedrick Road to the I-80/Pedrick Road interchange to complete the by-pass the City of Dixon downtown.
- Modify the existing Pedrick Road interchange to accommodate a four-lane roadway connection.
- Widen the re-aligned corridor between SR 12 and the I-80 (Pedrick interchange). Widening will ultimately be from a two-lane to a four-lane facility with two lanes in each direction and a median separation. Intermediate designs can be incorporated to accommodate traffic. Widening is assumed to need right-of-way acquisition.

Portions of the existing SR 113 corridor would no longer be needed with this alignment option. These roadway segments would need to be relinquished back to Solano County or City ownership, depending on location, for future use as County or City roads. Prior to their reversion back to the County or City, the roadway segments should be improved to current County or City roadway width and pavement condition standards. SR 113 relinquishment requirements shall follow Caltrans Project Development Procedures Manual (PDPM) Chapter 25 – Relinquishments http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm.

5.5.6 Alignment 6 (Pedrick Road B)

This option addresses the interest to by-pass downtown Dixon however does not by-pass the urban area of the City of Dixon. This option utilizes existing roadway when possible, increases roadway capacity by adding travel lanes, and modifies the 90 degree sharp turns to increase corridor safety.

This would utilize the existing SR 113 corridor from the southern end SR 12/SR 113 intersection, north to Midway Road just south of the City of Dixon. The realigned corridor will then follow Midway Road east to Pedrick Road and Pedrick Road north to Tremont Road. A new four-mile roadway will be constructed parallel to the existing railroad right-of-way. This new roadway will connect the Pedrick Road to the SR 113/ I-80 (Davis) interchange. The corridor will then follow the SR 113 along its existing alignment north of the City of Davis toward the Yolo County line.

The SR 113 alignment option 5 will include the following modifications to the corridor:

- Transportation Management System, Traffic Demand Management and Intelligent Transportation Systems enhancements.

- Repairing existing poor pavement sections of SR 113 between SR 12 and I-80.
- Realignment and improvement of the curve radius/design speed for the two existing sharp turns along SR 113. A curve radius of 1,700 feet and a design speed of 65 MPH would conform to the Highway Design Manual.
- Modification of SR 113/SR 12 intersection. The ultimate SR 113/SR 12 should be a grade separated interchange structure. Intermediate improvements should include signalization and the addition of a southbound left-turn lane.
- Realignment of SR 113 to follow Midway Road east to Pedrick Road and then Pedrick Road north to just north to Vaughn Road to complete the by-pass the City of Dixon urban limits.
- New four-mile roadway from the intersection of Pedrick Road at Vaughn Road to the SR 113/I-80 Interchange (Davis).
- Modify the existing SR 113/I-80 (Davis) interchange to accommodate new a roadway connection.
- Widen the re-aligned corridor between SR 12 and the I-80/SR 113 (Davis) interchange. Widening will be from a two-lane to a four-lane facility with two lanes in each direction and a median separation. Intermediate designs can be incorporated to accommodate traffic. It is assumed that widening will need right-of-way acquisition.

Portions of the existing SR 113 corridor would no longer be needed with this alignment option. These roadway segments would need to be relinquished back to Solano County or City ownership, depending on location, for future use as County or City roads. Prior to their reversion back to the County or City, the roadway segments should be improved to current County or City roadway width and pavement condition standards. SR 113 relinquishment requirements shall follow Caltrans Project Development Procedures Manual (PDPM) Chapter 25 – Relinquishments http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm.

5.6 Estimates of Probable Costs

Preliminary opinions of probable costs have been developed for the SR 113 alignment Alternatives 2 to 6. The preliminary cost estimates follows Caltrans planning level estimating format and includes the following estimating assumptions. These assumptions are based on recent similar projects and Caltrans unit pricing from recent bid results:

- Aggregate sub-base, aggregate base, and asphalt concrete are based on the most recent Caltrans unit pricing schedules.
- Clearing and grubbing costs are assumed to be 10% of the roadway excavation cost.
- Drainage costs are assumed to be 5%of the total roadway items cost.
- Irrigation systems costs are assumed to be 3% of the roadway items cost.
- Erosion control and storm water pollution prevention plan (SWPPP) costs are assumed to be 5% of roadway items cost.
- Environmental mitigation costs are assumed to be 5%of the roadway and structure items cost.
- Signing and striping are assumed to be 3% of the total roadway items cost.
- Traffic control and traffic management plan (TMP) costs are assumed to be 2% of total work excluding mobilization.
- Minor Items (unforeseen roadway items) are assumed to be 5% of roadway items cost.
- Mobilization costs are assumed to be 10% of total work.
- Bridge widening costs are assumed to be $300/SF.
- New bridge costs are assumed to be $250/SF.
- Grade separations and Interchanges were estimated based on lump sum amounts.
- Right of way land acquisition costs are assumed to be $2/SF.
- Utility relocation costs are assumed at $50/LF.
- Contingency costs are assumed to be 25% of total costs.
- Engineering costs are assumed to be 30% percent of total costs.

Based on the above estimating assumptions and the alternative alignment, a preliminary opinion of probable cost was developed for the SR 113 alternative alignment options as summarized below:

Alternative 2 (Robben Road A)

The estimated 2008 cost for this alternative is $354 million dollars, with $77.96 million estimated for the realignment and $276.32 million estimated for the mainline improvements. A detailed breakdown of the cost items is included in **Table 5.20**.

Alternative 3 (Robben Road B)

The estimated 2008 cost for this alternative is $431 million dollars, with $154.85 million estimated for the realignment and $276.32 million estimated for the mainline improvements. A detailed breakdown of the cost items is included in **Table 5.20**.

Alternative 4 (Midway)

The estimated 2008 cost for this alternative is $328 million dollars, with $51.62 million estimated for the realignment and $276.32 million estimated for the mainline improvements. A detailed breakdown of the cost items is included in **Table 5.20**.

Alternative 5 (Pedrick Road A)

The estimated 2008 cost for this alternative is $352 million dollars, with $76.16 million estimated for the realignment and $276.32 million estimated for the mainline improvements. A detailed breakdown of the cost items is included in **Table 5.20.**

Alternative 6 (Pedrick Road B)

The estimated 2008 cost for this alternative is $425 million dollars, with $148.92 million estimated for the realignment and $276.32 million estimated for the mainline improvements.. A detailed breakdown of the cost items is included in **Table 5.20**.

Complete cost estimate worksheets are included in the SR 113 implementation report and the appendix.

Table 5.20 –State Route 113 Major Investment Study Estimate of Probable Cost

Timeline	ID	Description	Construction	Right of Way	Support	Total	Notes
Short Term 1-5 Years	**Base**	TSM, TDM and ITS Enhancements	$3.24	$0.00	$0.97	$4.21	
	P1	Reconstruct S-Curves	$3.34	$1.00	$1.00	$5.34	
	P2	Signalization at SR 113/SR 12	$1.32	$0.18	$0.40	$1.90	
	P3	SR 113 rehab roadway pavement	$4.59	$0.00	$1.38	$5.97	
Mid Term 5-10 Years	P4	Widen to standard lane width, widen shoulders, add safety lighting	$21.49	$6.99	$6.45	$34.93	
	P5	Widen shoulders to 8', construct median, and install signal at Midway	$35.71	$3.93	$10.71	$50.35	
	P6	Construct Passing Lanes along SR 113 *	$5.98	$0.76	$1.79	$8.53	
Long Term	P7-2	Realign SR 113 between Midway and I-80 via Robben A	$56.02	$5.13	$16.81	$77.96	Choose One Option
	P7-3	Realign SR 113 between Midway and I-80 via Robben B	$113.91	$6.77	$34.17	$154.85	
	P7-4	Realign SR 113 between Midway and I-80 via Midway	$37.57	$2.78	$11.27	$51.62	
	P7-5	Realign SR 113 between Midway and I-80 via Pedrick A	$56.80	$2.32	$17.04	$76.16	
	P7-6	Realign SR 113 between Midway and I-80 via Pedrick B	$110.34	$5.48	$33.10	$148.92	
Longer Term	P8	Widen SR 113 to 4 lanes from SR 12 to I-80 **	$73.27	$11.09	$21.98	$106.34	
	P9	Interchange at SR 12 and SR 113 ***	$14.24	$0.25	$4.27	$18.76	
	P10	Upgrade I-80/SR 113 (Davis) interchange with direct ramp connectors	$29.99	$1.00	$9.00	$39.99	

* P6 Passing lane could be evaluated in combination with the 4-lane widening project, based on future traffic demand

** P8 Widening SR 113 to 4 lanes from SR 12 to I-80 is dependant on future traffic demand

*** P9 SR 113/SR 12 interchange should be evaluated as a part of the SR 12 Corridor Study

Table 5.21 provides a summary of advantages, disadvantage and estimates of probable costs for each alignment alternative.

Table 5.21 –Alternative Alignment Comparison

Alignment Alternative Option	Preliminary Estimate of Probable Costs[1]	Alternative Pros	Alternative Cons
No Build Alternative 1	-	• Would have no impacts on existing landuses or properties.	• Would not address future needs of the corridor. • Would not address Dixon's concerns
Alternative Alignment 2 (Robben Road A)	$354M	• Addresses sharp turns • Addresses SR 113/SR 12 intersection • Downtown Dixon by-pass • Utilizes Kidwell Interchange • Utilizes additional lane on I-80 between Kidwell Road and Davis SR 113/I-80 interchange • Mainline safety improvements	• Requires Robben Road extension from Tremont Rd to I-80 (Kidwell Rd Interchange) • Introduces new curves to SR 113 • Crosses protected land • Potential right-of-way acquisition
Alternative Alignment 3 (Robben Road B)	$431M	• Addresses sharp turns • Addresses SR 113/SR 12 intersection • Downtown Dixon by-pass • Mainline safety improvements	• Requires new road from Robben Rd/Vaughn Rd to I-80/ SR 113 Interchange (Davis) • Introduces new curves to SR 113
Alternative Alignment 4 (Midway Road)	$328M	• Addresses sharp turns • Addresses SR 113/SR 12 intersection • Downtown Dixon by-pass • Use of existing roadways • Mainline safety improvements	• Introduces new curves to SR 113 • Crosses protected land
Alternative Alignment 5 (Pedrick Road A)	$352M	• Addresses sharp turns • Addresses SR 113/SR 12 intersection • Downtown Dixon by-pass • Utilizes additional lane on I-80 between Kidwell Road and Davis SR 113/I-80 interchange • Mainline safety improvements	• Requires Robben Road extension from Tremont Rd to I-80 (Kidwell Rd Interchange) • Introduces new curves to SR 113 • Crosses protected land
Alternative Alignment 6 (Pedrick Road B)	$425M	• Addresses sharp turns • Addresses SR 113/SR 12 intersection • Downtown Dixon by-pass • Mainline safety improvements	• Requires new road from Pedrick Rd/Vaughn Rd to I-80/ SR 113 Interchange (Davis) • Introduces new curves to SR 113

[1] Includes costs for all improvements along SR 113 between SR 12 and I-80.

5.7 Preliminary Toll Analysis

A preliminary toll feasibility analysis was conducted to assess the potential for a toll project in the SR 113 corridor. The alignment of such a facility could potentially provide travelers the option to bypass the downtown and the urban areas of the City of Dixon and with a direct connection to both I-80 to the north and SR 12 to the south. The potential configuration included the following:

- A four-lane divided toll roadway parallel to the undivided SR 113;
- Built to Interstate standards with a 65 mph speed limit; and
- Extending the entire length of the corridor from SR 12 to the I-80/SR 113 interchange at the Solano/Yolo County line near the City of Davis.

Full interchanges for the toll facility were coded at SR 12, Fry Road/Maine Prairie Road, Midway Road, and I-80/SR 113, while a partial interchange was coded at Dixon Avenue/A Street for traffic originating from or destined to areas south of Dixon.

In order to assess the feasibility of this future alternative, the facility was coded and assessed under toll free conditions to understand the potential diversion of regional and local users to this facility. This also provided a baseline of users that will still likely use the two-lane SR 113 for travel. Once the toll-free demand for the project was estimated, a range of toll rates was tested to estimate the traffic and revenue potential for the tolled facility. The analysis of the facility with and without tolls is presented in this section.

5.7.1 Estimated Toll Free Traffic

To determine baseline 2030 usage of a potential parallel toll facility to SR 113, a future alternative was assessed to define the potential diversion to this facility under toll-free conditions. This alternative was assessed using the Solano/Napa travel demand model. The resulting analysis identified the potential 2030 diversion of traffic from SR 113 and other roadways to this parallel facility.

Tables 5.22 and 5.23 show expected 2030 traffic volumes and the LOS on SR 113 (two-lane configuration) and the project. Expected traffic volumes and LOSs are shown for the SR 113 roadway segments and the project for the AM peak hour, the PM peak hour, and daily conditions.

Table 5.22 - 2030 Toll Free Alternative

SR 113 No-Build and Toll Free Traffic Volumes by Time of Day

	AM Peak		PM Peak		Daily	
	No-Build	Build	No-Build	Build	No-Build	Build
Existing SR 113 Segment						
North of Covell	2,875	2,900	3,175	3,400	32,000	34,000
Covell – Russell	4,350	4,325	4,800	5,150	48,000	52,000
Russell – Solano/Yolo Line	5,475	5,550	6,050	6,625	61,000	66,000
Solano/Yolo Line – I-80	3,500	3,900	4,120	5,100	53,700	63,200
I-80 – Vaughn	2,870	2,100	3,450	2,500	46,000	33,500
Vaughn – North Adams	1,920	1,300	2,490	1,700	28,700	19,500
North Adams – A	1,580	1,000	1,920	1,100	25,900	15,600
A – Cherry	1,150	800	1,200	800	14,400	9,800
Cherry – Fry	960	100	770	100	10,300	1,200
Fry – SR 12	1,100	200	910	100	11,000	1,600
Future SR 113 Alignment						
Toll Road (no tolls)		1,500		2,100		20,000

Table 5.23 - 2030 Toll Free Alternative

SR 113 No Build and Toll Free Level of Service by Time of Day

	Bi-Direction Traffic Volume					
	AM Peak		PM Peak		Daily	
	Volume	LOS	Volume	LOS	Volume	LOS
Existing SR 113 Segment						
North of Covell	2,900	B	3,400	C	34,000	N/A
Covell – Russell	4,325	C	5,150	D	52,000	N/A
Russell – Solano/Yolo Line	5,550	C	6,625	C	66,000	N/A
Solano/Yolo Line – I-80	3,900	C	5,100	D	63,200	N/A
I-80 – Vaughn	2,100	D	2,500	D	33,500	F
Vaughn – North Adams	1,300	C	1,700	C	19,500	D
North Adams – A	1,000	C	1,100	C	15,600	C
A – Cherry	800	C	800	C	9,800	C
Cherry – Fry	100	C	100	C	1,200	N/A
Fry – SR 12	200	C	100	C	1,600	N/A
Future SR 113 Alignment						
Toll Road @ I-80	1,500	A	2,100	A	20,000	N/A

Under toll-free conditions, the project would divert traffic away from SR 113, especially on the predominantly rural roadway segments between SR 12 and Cherry Street. These rural segments show a potential diversion rate of traffic of over 80 percent to the project. Within the City of Dixon on SR 113, between Cherry Street and I-80, 25 to 45 percent of traffic will likely be diverted to the project. Even with this parallel toll road, the SR 113 segment between I-80 and the Solano/Yolo county line is expected to show increases in traffic volumes as travel times are improved between SR 113 and SR 12 and SR 113 with several communities, including Davis, Dixon, Woodland, and Winters.

For all time periods, the traffic volumes expected to use the project exceeds those volumes diverting from SR 113, indicating some level of traffic diversions (local and regional) that are now attracted to the project. The project is expected to attract 1,500 vehicles during the AM peak hour; 2,100 vehicles during the PM peak hour; and 20,000 daily vehicles. These volumes represent the average of traffic volumes for the segments of the project. Approximately one-half of the expected traffic on the project diverts from SR 113, while the remaining is traffic from additional local and interregional traffic.

As shown in **Table 5.23**, when compared to the 2030 No Build Scenario, the LOS of the existing SR 113 will improve; especially the segment between Vaughn and I-80 during peak hours (improves from LOS E to LOS D). However, the daily LOS for the Vaughn to I-80 segment will continue to exceed the City of Dixon's daily maximum traffic threshold (LOS F). The project is expected to be LOS A for all time periods.

5.7.2 Estimated Toll Traffic and Revenue

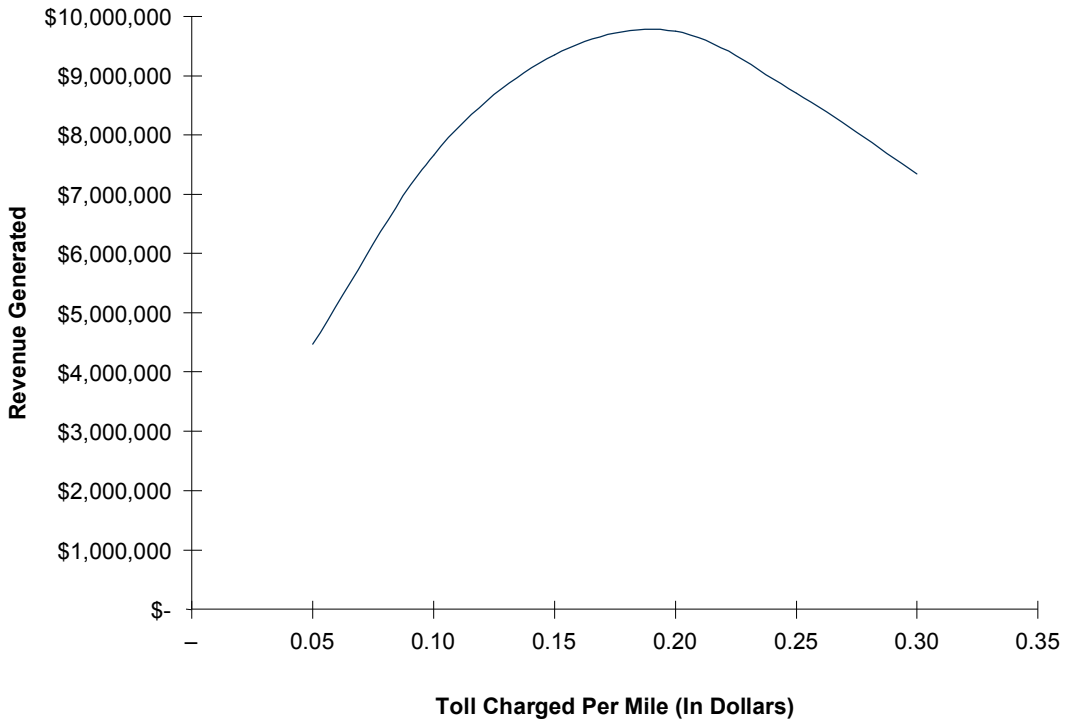
Preliminary estimates of toll traffic and revenue were developed by applying the toll-free estimates for the project using a spreadsheet diversion analysis tool. **Table 5.24** and **Table 5.25** show the potential "gross" revenue generated by a parallel toll facility in the SR 113 corridor. The following parameters/assumptions were applied in this analysis:

- A value of time was assumed to be 40 percent of the wage rate. The median household income for Solano County was obtained from the 2000 U.S. Census ($54,099) and inflated by the Consumer Price Index (CPI) to 2008 ($69,758). A wage rate on a per-minute basis was developed by assuming 2000 work hours in a year. This equated to approximately $0.23 per minute of time.
- Vehicle operating costs were assumed at a rate of $0.17 per mile (for sedans) based on estimates provided in the 2008 publication, *Your Driving Costs*, published by the American Automobile Association. This assumed vehicle operating cost rate does not reflect further increases in gas prices in recent months.

Table 5.24 - 2030 Toll Road Alternative
Estimated Annual Traffic and Gross Revenue

Toll Rate (in dollars)	Gross Revenue	Tolled Vehicles	Percent of Vehicles on Existing SR 113 Diverted to Toll Facility
0.15	$9,348,384	10,100	51%
0.16	$9,564,234	9,650	48%
0.17	$9,671,267	9,175	46%
0.18	$9,751,010	8,750	44%
0.19	$9,808,973	8,300	42%
0.20	$9,747,904	7,825	39%

Table 5.25 - Gross Revenue Generated vs. Toll Rate Charged in Year 2030



- Based on travel pattern analyses determined using the Solano/Napa travel demand model, 75 percent of the initial traffic volumes using the toll road are expected to be through or regional travelers using the entire length of the toll road (22 miles). The remaining 25 percent are expected to be local trip-makers traveling on one-half (or less) of the toll road length (11 miles).
- Based on the travel demand analysis, 50 percent of 2030 estimated average weekday traffic occurs during peak periods, while the other 50 percent occur during nonpeak periods. It was assumed that the peak periods occur between 5:00 and 9:00 in the morning, and 3:00 and 7:00 in the afternoon. Traffic count

data from Caltrans indicated that these peak periods account for one-half of daily traffic in the corridor.

- Travel time for the full length of the toll facility is approximately 20 minutes, compared to 38 minutes on the existing SR 113 during peak periods and 31 minutes during off-peak periods.
- An annualization factor of 307.5 was used in calculating annual toll traffic and revenue that accounts for 250 weekdays and 115 weekend days, which is equivalent to one-half of weekday as travel (This annualization factor is the standard in Cambridge Systematics tolling evaluations.).
- A range of toll rates from $0.05 to $0.30 per mile were tested to estimate the revenue maximizing toll rate (**Table 5.24**).

The estimated gross revenues generated by the toll road using the above assumptions (and alternative toll rates) are shown in **Table 5.25**. The revenue estimates for toll rates between $0.15 and $0.20, which is the range at which revenue is maximized, are shown. A toll rate of $0.18 per mile was estimated to maximize revenue potential for the toll road, and to provide additional leeway to increase tolling rates to a peak revenue generating rate of $0.19 per mile. Based on this toll rate and the length of the toll facility at 22 miles, a driver would spend $4.00 to travel the full length of the toll road. Using the expected 2030 future diversions of 20,000 daily vehicles, for diversions to toll road without pricing), the subsequent diversion of vehicles between the tolled and the toll-free facilities result in a maximum gross revenue estimate of $9.8 million per year generated in 2030. The toll rate of $0.18 also results in a diversion of 44 percent of traffic on the existing SR 113 onto the new toll facility.

The following is a discussion of potential gross revenues to be generated by the toll road between an assumed opening year of 2012 to a future forecast year of 2030. As shown in **Table 5.24,** traffic on the toll-free facility is double that of SR 113 at the junction with SR 12 in the 2030 No Build Scenario. Based on 2030 traffic and 2008 traffic trends, and an annual traffic growth rate of three percent, there would be approximately 12,000 vehicles using the toll road if it were to open in 2012. Using the same assumptions as above, a tolling rate of $0.18 would provide the maximum gross revenue generated of $5.9 million for the toll road in 2012.

Assuming the revenues increase on a straight line from 2012 to 2030 from $5.9 million to $9.8 million, and also assuming a discount rate of 7 percent, the revenues generated between 2012 and 2030 would be $62 million in 2008 dollars. Based on the construction cost of $332 million, as reported in the Potential Alternative Alignments Interim Report produced for this study, the gross revenues generated by the toll facility are low relative to the cost of the project. It should be noted that these estimates do not include annual operational costs including expenses for toll equipment maintenance, roadway maintenance, communications, administration, and enforcement.

5.7.3 Estimated Toll Road Costs

Preliminary estimates of probable costs for a 4-lane, grade separated toll road, between SR 12 and I-80, has been estimated around $332 million in 2009 dollars.

5.7.4 Summary of Toll Analysis

Based on the estimated revenue of $62 million and costs of $332 million, a toll road option is not feasible. This is primarily due to the short distance between SR 12 and SR 113, which would not attract enough traffic to become a viable financial alternative.

5.8 Summary of Key Alternative Analysis Findings

Key findings can be reported based on existing physical conditions of the SR 113 study corridor, preliminary corridor research, and traffic information available at the time of this study.

- A four-lane roadway facility was considered for alternative options 2-6. Typical cross sections were determined based on future traffic forecast demands.
- The SR 113 corridor crosses land that is protected and or at risk for development.
- Alternative alignments options 2-6 provide by-pass options that could reduce the truck traffic through the City of Dixon.
- Realignment and improvement of the curve radius/design speed for the two existing sharp turns along SR 113. A curve radius of 1,700 feet and a design speed of 65 MPH would conform to the Highway Design Manual.
- SR 113 Corridor has bridges crossings at Ulatis Creek, Barker Slough and Calhoun Cut Canal. See Chapter 6 for more details.
- Existing SR 113 has two railroad crossings at the sharp turns and one railroad crossing in downtown Dixon. Alternative alignment option 2 and 3 will require a new highway overpass on Robben Road to cross the existing railroad tracks near I-80. Alternative alignment option 4 will require a new highway overpass on Midway Road to cross the existing railroad tracks near I-80. Alternative alignment option 5 and 6 will require a new highway overpass on Pedrick Road to cross the existing railroad tracks near I-80. A northern realignment of the sharp turns in each alternative options will eliminate the railroad crossing at the sharp turns altogether.
- Modification of SR 113/SR 12 intersection. The ultimate SR 113/12 should be a grade separated structure. Intermediate improvements should include signalization and the addition of a south left-turn lane.
- A Toll Road option is not financially feasible, due to lack of revenue generation capability.

6.0 Environmental Constraints

6.1 Introduction

The SR 113 Major Investment Study evaluated a number of alternatives roadway improvement along SR 113 from SR 12 to Highway 80. The purpose of the environmental analysis is to review major environmental issues related to the proposed improvements and the alternatives associated with the project. This report is a preliminary environmental review outlining potential issues associated with the SR 113 improvements and recommended technical studies based on review of existing environmental data and a field reconnaissance of the general corridor area. This information would be used by STA as the authority moves forward with a more detailed environmental analysis.

The existing SR 113 alignment extends northward from its intersection with SR 12, through two 90-degree turns, traverses the City of Dixon to the junction at I-80, where it becomes a shared route heading northeast towards the City of Davis. SR 113 then splits off from I-80 and heads north towards the City of Woodland crossing the Solano County line. Sensitive resources in close proximity to the existing alignment include threatened and endangered species, several water bodies, and prime and unique farmland.

In order to summarize the environmental constraints, the proposed alternatives have been summarized into the following three general zones of impacts, which would capture the various alternative analyses under consideration.

- **Option 1**: A four-lane widening option, along the existing alignment of SR 113.
- **Option 2**: Safety improvements in the southern portion of the corridor and the realignment of SR 113 to the east via Midway Road to Robben Road or Pedrick Road, where SR 113 is would connect to the I-80 highway.
- **Option 3**: Safety improvements in the southern portion of the corridor and the realignment of SR 113 to the west at Midway Road, where SR 113 would connect to I-80 via Midway Road interchange.

In addition to these options, the consultant team looked at a potential Toll Road option that would follow a general north-south alignment, between SR 12 and I-80; this option would traverse the agricultural areas between SR 12 and I-80.

The SR 113 Impact Analysis is summarized in the following table:

Table 6.1 - Environmental Impact Analysis

Resource Category	Option 1	Option 2	Option 3
Community Impacts	Low	Low	Low
Land Use	Moderate	Moderate	Low
Farmland	Moderate	Moderate	Moderate
Section 4(f) (a)	None	None	None
Geologic and Seismic	Low	Low	Low
Hazards and Safety	Low	Low	Low
Visual Resources	Moderate	Moderate	Low
Hydrology and Water Quality	Moderate	Moderate	Moderate
Floodplain	Moderate	Moderate	Moderate
Traffic and Transportation	None	None	None
Noise	None	None	None
Air Quality	Moderate	Moderate	Moderate
Cultural Resources	Low	Low	Moderate
Paleontology	Low	Low	Moderate
Hazardous Waste and Materials	Moderate	Moderate	Moderate
Biological Resources	High	High	High
Wetlands and Waters of the US	High	High	High

Notes:

(a) Publicly owned parks and recreational facilities, and significant historical sites as outlined in section 4(f) of the Department of Transportation Act of 1966.

High	Significant impacts considered likely; mitigation required
Moderate	Possible significant impact; mitigation may be required
Low	Relatively minor impact; mitigation considered unlikely
None	Impacts considered unlikely

6.2 Discussion of Technical Review

The following is a technical analysis of resources providing impact information based on the individual options described above for different types of environmental impacts. The intent is to provide STA with impact information to facilitate decision-making with respect to the three general options listed above. The rationale regarding relative impact levels for the options is also described in further detail below.

6.2.2 Community Impacts: Relocations

Implementation of all options may necessitate relocation of a number of homes and businesses. All options would have low impacts, given the predominantly agricultural land use south of the City of Dixon. Although most existing businesses and residences are set back far enough from SR 113 to avoid any direct impacts, there are several structures between Binghamton Road and Casey Road that may be impacted by Options 2 and 3. Depending on the alignment identified for the toll lane concept, there are numerous properties that may be crossed by the roadway, including existing structures north of Hackman Road. A community impact assessment should be conducted to evaluate potential effects of the proposed project.

6.2.3 Land Use

Options 2 and 3 would avoid existing land uses within the City of Dixon. These options would traverse the Jepson Prairie Preserve and state-owned protected open space to the south of Hastings Road. Depending on the design of the facility and the limits of existing right-of-way, land use impacts may result. The toll lane concept would be located to the east of the state-owned land located on the west side of the existing SR 113 and is assumed to avoid the radio tower installation north of Binghampton Road; accordingly relatively low land use impacts are anticipated.

6.2.4 Farmland

All options will impact farmlands within the project area. These farmlands consist of prime farmland in the northern portion of the project study corridor, a small amount of unique farmland in the central portion and grazing land in the southern portion of the proposed project area. Although all options would involve roadway widening within agricultural areas in the range of 75 to 160 acres depending on selected route, the expected impacts would be moderate.

6.2.5 Section 4(f) Resources[2]

Given the agricultural character of existing land uses adjacent to both options, no impacts to Section 4(f) resources are expected for all options.

6.2.6 Geologic and Seismic

The proposed project options all intersect with the Midland Fault Zone. The area is considered to be generally stable lands with slopes of zero to fifteen percent and underlain by stable deposits. According to the Health and Safety Element of the Solano County General Plan there are high areas of special concern given potentially liquefiable prime agricultural soils which underlie major transportation and transmission lines. Additionally, there are moderate areas of special concern where a natural gas pipeline and the northern fork and the southern fork of the Midland Fault Trace intersect. Given this is a roadway project occurring on generally stable lands and that a geotechnical investigation would be conducted to address any site-specific soil stability issues, it is estimated that all three options would result in low impacts to this resource area.

6.2.7 Hazards and Safety

All options contain improvements to the existing alignment within the High Grassfire Risk Area. It is anticipated that none of the three options would contribute substantially to an increase in occurrence or exposure of people to wildfires. In analyzing these risks collectively, given the issues stated above, the three options are expected to result in low impacts.

6.2.8 Visual Resources

SR 113 is a Designated Scenic Roadway per the Scenic Roadway Element of the Solano County General Plan. Therefore visual impacts are expected to be moderate; whereas visual impacts of the toll lane concept would be low because only a small portion of SR 113 would be affected. All options would avoid visually distinct areas within the City of Dixon. A visual assessment will be required and should include potential project effects and any appropriate mitigation. The assessment should evaluate potential effects to the visual environment from the proposed design of the roadway and associated structures.

[2] Publicly-owned parks and recreational facilities, and significant historical sites as outlined in section 4 (f) of the Department of Transportation Act of 1966.

6.2.9 Hydrology and Water Quality

The project area is located within the Elmira Hydrologic Area (HA), 511.10 of the Valley Putah-Cache Hydrologic Unit (HU) and the Sacramento Delta HA, 510.00 of the Sacramento Delta HU. The area within these watersheds drains to the southeast. Runoff flows directly into the following 303d waterbodies: eastern and western portions of the Delta Waterways and the Lower Putah Creek. The specific 303d pollutants are as follows:

- **Delta Waterways (eastern portion):** Chlorpyrifos, DDT, Diazinon, Group A Pesticides, Mercury, Unknown Toxicity
- **Delta Waterways (western portion):** Chlorpyrifos, DDT, Diazinon, Electrical Conductivity, Group A Pesticides, Mercury, Unknown Toxicity
- **Putah Creek, Lower:** Mercury

All options would indirectly discharge to other 303d waterbodies downstream, including the Sacramento San Joaquin Delta and the Suisun Bay. The options would result in the creation of additional impervious surfaces, which has the potential to alter surface flow velocities and erosion rates unless mitigated through project design and implementation of Best Management Practices (BMPs). A hydrology study and water quality report should be completed; if it is determined that Treatment BMPs are appropriate and feasible, preliminary design should be performed to determine size and location. Costs and additional right-of-way for BMPs would also be considered. The options are expected to disturb more than 1.0 acre of soil. Therefore, a Storm Water Pollution Prevention Plan will be required. All build options would involve the widening of existing facilities and is therefore expected to have similar impacts in terms of new impervious surfaces. The toll lane concept would involve new roadway construction, and would result in an incrementally higher impact level.

6.2.10 Floodplain

The following Flood Insurance Rate Maps were reviewed:

- 0606310500C - Solano County, California, April 5, 1988;
- 0606310295C - Solano County, California, April 5, 1988;
- 0606310300C - Solano County, California, April 5, 1988;
- 0606310175B - Solano County, California, August 2, 1982;
- 0606310158B - Solano County, California, August 2, 1982;
- 0606310154B - Solano County, California, August 2, 1982;
- 0606310075B – Solano County, California, August 2, 1982; and
- 060369-000B – City of Dixon, May 19, 1981

The proposed project is located in multiple areas with flood zone designations. Portions of the proposed project intersect Zone A which is considered an area of a 100-year flood where base flood elevations and flood hazard factors have not been determined. The Zone A areas consist of the Big Ditch, Calhoun Cut, Barker Slough, the Alamo A-1 Channel, Alamo Creek, Ulatis Creek, Putah Creek and additional unnamed areas shown on the Flood Insurance Rate Maps listed above. Portions of the proposed project intersect Zone C, which is considered an area of minimal flooding. The City of Dixon was designated as an area not included. Given the similarities between the locations of the floodplain and the drainages within both options, the impacts are estimated to be the same. The project drainage study should evaluate whether there are any areas of potential flooding within the project site that may need to be addressed during project design.

6.2.11 Traffic and Transportation

The additional lanes would be expected to improve traffic flow due to additional capacity, and the removal of the two 90-degree turns would improve safety. Intersection improvements would also provide a benefit with respect to safety and capacity. Under short term conditions, additional capacity may divert traffic from parallel routes to SR 113. Options 2 and 3 would have a beneficial impact on traffic in Dixon by diverting through trips around the existing developed areas of the City, resulting in no impact.[3]

6.2.12 Noise

Options 2 and 3, as well as the Toll Road, would avoid the existing developed areas of the Dixon, thereby avoiding impacts to sensitive noise receptors in the City.

6.2.13 Air Quality

The proposed project area is within the Yolo-Solano Air Quality Management District which has been designated a non-attainment area for ozone and PM 10. All options are estimated to have similar impacts due to potential traffic increases resulting from new roadway construction or widening. Based on the above impacts it is estimated that these options will have moderate impacts.

6.2.14 Cultural Resources

An archeological survey, historical property survey, and a Native American consultation will be required for the project. The proposed Area of Potential Effect

[3] Implementation of toll facilities may result in less traffic shifting from SR 113 in Dixon to the new SR 113 alignment.

(APE) must include all access roads, work areas and staging areas necessary for construction of the project.

Additionally, the town of Dixon is located in the vicinity of the proposed project alternatives and contains multiple structures that meet the National Register of Historic Places criteria. As mentioned in the Dixon 1993 General Plan, these include:

1) Silveyville Lodge R & A.M. No. 201;

2) C.D. Schulze Jeweler Building;

3) Montezuma Lodge No. 172;

4) Dixon Theater; and

5) Barbara's Women's Store Building.

In addition to these structures the following were confirmed in the town of Dixon: Silveyville Cemetery, the Dixon fair grounds, the Dixon Veteran's Memorial and Women's Improvement Park.

Given that options 2 and 3 would by-pass Dixon, these options would have no impact on the cultural resources within the City. Toll Road option involves more new roadway construction than all other options and would be expected to have somewhat higher potential impacts on archaeological resources.

6.2.15 Paleontology

Paleontological resources may be present in soils that would be disturbed by the proposed project. Maximum depth of excavation is unknown at this time. Options 2 and 3 would cross generally disturbed areas, and the potential for impacts to paleontological resources are considered low. Toll Road option would involve more new roadway construction than the other options, and may therefore have a relatively higher impact.

6.2.16 Hazardous Waste/Materials

An Initial Site Assessment may be required to address the potential for hazardous waste within the project area and vicinity. There are some uses scattered in or throughout the project area that may contain or be proximate to hazardous materials, including aerially deposited lead. Other sites, hazardous sites include the landfill west of the SR 113. Furthermore, given the agricultural uses pesticides and fertilizers are likely to be present within the soil.

Options 2 and 3 will run adjacent to the landfill and therefore have a higher probability of impacts. All options are estimated to impact farmland and therefore may have impacts associated with the past or current use of pesticides and fertilizers. Based on a combination of the above factors, all options are expected to result in moderate impacts with respect to hazardous waste/materials.

6.2.17 Biological Resources

Portions of the study area contain developed areas, riparian areas and wetland areas; however, the majority of the study area contains farmland. The California Natural Diversity Data Base (CNDDB) indicates the following sensitive species may be found within the project vicinity:

- California Tiger Salamander, *Ambystoma californiense*, Federally Threatened
- Vernal Fairy Pool Shrimp, *Branchinecta lynchi*, Federally Threatened
- Swainson's Hawk, *Buteo swainsoni*, State Threatened
- Burrowing Owl, *Athene cunicularia*, CDFG Species of Concern
- Valley Elderberry Longhorn Beetle, *Desmocerus californicus dimorphus*, Federally Threatened
- Delta Green Ground Beetle, *Elaphrus viridis*, Federally Threatened
- Vernal Pool Tadpole Shrimp, *Lepidurus packardi*, Federally Endangered
- Boggs Lake Hedge-Hyssop, *Gratiola heterosepala*, State Endangered

Focused surveys for some of these species may be required as part of the biological resources technical study. If incidental take of endangered or threatened species is necessary to construct the project, a Biological Assessment will need to be submitted to the United State Fish and Wildlife Service (USFWS) for consultation under Section 7 of the Federal Endangered Species Act. A letter of concurrence with the USFWS Biological Opinion would be sought from the California Department of Fish and Game (CDFG.)

Executive Order 13112 requires that any Federal action may not cause or promote the spread or introduction of invasive species. Areas disturbed by project construction would need to be revegetated with a planting plan that avoids the use of species listed in Lists A and B of CalIPC's List of Exotic Pest Plants of Greatest Ecological Concern in California (October 1999).

All options would involve construction within or adjacent to habitat which may support one or more of the species described above. As discussed above under Land Use, Option 2 and 3 may result in encroachment into the Jepson Prairie Preserve and/or state-protected open space to the east of SR 113. Although the Toll Road Option would avoid impacts to potential habitat to the west of the SR 113/Hastings Road intersection and a triangular wetlands area south of the landfill, it would cross a less disturbed area located to the north of this intersection which may also provide suitable habitat for these species. Given these considerations, options 2, 3 and Toll Road options are expected to have high impacts on biological resources. It is possible that significant biological impacts from roadway widening may result in higher costs than the costs identified in table 7-2.

The proposed project options cross a combination of the following waterbodies: Round Hill Creek, Calhoun Cut Canal, Barker Slough, Alamo Channel, Alamo Creek, Ulatis Creek, and Putah Creek and may cross other jurisdictional waters of the U.S. A jurisdictional delineation will need to be conducted to identify any jurisdictional waters or wetlands that may be affected by the proposed project. Executive Order 11990 requires an avoidance alternative analysis for wetland impacts unless there is no practicable alternative available. Impacts to waters of the U.S. and wetlands from the project and any temporary access roads will need to be quantified.

Although there would be some variation between the alternatives in terms of impact acreage (depending whether or not jurisdictional areas can be spanned), options 2, 3 and Toll Road options would necessitate preparation of a Clean Water Act Section 404 permit and appropriate mitigation as identified by the US Army Corps of Engineers. All realignment options are considered to have high impacts to wetlands and waters of the US, while the Toll Road option expected to also have high impacts due to the need to construct a new bridge crossing of Lindsey Slough and other potentially jurisdictional waterways to the north.

6.3 Anticipated Environmental Approval

All realignment and toll road options may impact habitat for sensitive species and may impact jurisdictional waters and wetlands. Options 2 and 3 would encroach into the Jepson Prairie Preserve, while a portion of the Toll Road Option would involve new roadway construction across generally undisturbed areas. All options would also impact prime and unique farmland. Accordingly, it is anticipated that an Environmental Impact Report (EIR) would be necessary for compliance with the California Environmental Quality Act (CEQA). Should the proposed project be designed and constructed with federal funds or involve federal lands, this project will be subject to the NEPA process, and either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) would be required, depending on whether project impacts can be mitigated.

6.3.1 Permits

In addition to necessary construction permits, the following resource agency permits will be required for any impacts to waters of the U.S:

- Clean Water Act Section 401 permit
- Clean Water Act Section 404 permit
- Department of Fish and Game Code section 1602 permit

Additionally, NPDES coordination will be required for storm water discharges. As discussed above, Section 7 consultation with the USWFS and concurrence from

CDFG may be required if endangered or threatened species are adversely affected by the proposed project.

6.3.2 Environmental Technical Reports or Studies Required

The following represents a list of technical reports or studies that are anticipated to be required as this project moves forward:

- Natural Environment Study
- Community Impact Study
- Geotechnical Report
- Initial Site Assessment
- Section 4(f) Evaluation (if federal funds are used)
- Visual Resource Analysis
- Drainage Study
- Storm Water Pollution Prevention Plan
- Floodplain Evaluation
- Noise Study
- Air Quality Study
- Paleontological Evaluation Report
- Historic Property Survey Report/ Archaeological Survey Report
- Wetlands Delineation and Assessment Report

7.0 Implementation Plan

7.1 Introduction

This chapter describes an implementation plan for the SR 113 corridor based on the potential improvements identified in the Alternative Analysis chapter. Four potential implementation phases, corresponding improvements, and cost estimates have been developed and are presented. Implementation phases will include intersection improvements, interchange improvements, existing roadway improvements, and alternative alignments of SR 113.

7.2 Project Phasing and Implementation

A project phasing and implementation plan is necessary in order to program the proposed improvements along SR 113 into logical and buildable components. Each project must demonstrate an independent utilty to satisfy environmental process. The entire project will not likely be built at once, since funding for the project will not be fully available for all of the improvements. Additionally, the need for all of the improvements will not be realized until some time in the future. Therefore, it is logical to segment independent utility projects in the order of priority and costs. The following are recommendations for project phasing divided into short-term, mid-term, long-term and longer term time horizons. It should be noted that a traffic and capacity analysis shall be conducted for the modification of existing interchanges. For proposed turning lanes it should be noted that future designs shall accommodate the need for truck turning movements. More expensive and environmentally sensitive projects are proposed for the longer term horizons.

The implementation plan, as a result of the SR 113 Major Investment Study, will depend on the final selection of the alternative alignment by the City of Dixon in coordination with Solano County, Caltrans, and the STA. Regardless of the final alternative selection, the proposed project implementation will include four general phases. Project implementation phases will include local improvements, corridor improvements, and intersection/interchange improvements. Implementation details are presented below:

7.2.1 Short-Term (1-5 years)

These are projects that could be programmed in the State Transportation Improvement Program (STIP) or State Highway Operations and Protection Program (SHOPP).

1. Baseline Transportation Management Systems, Traffic Demand Management and Intelligent Transportation Systems

   These project would include baseline Transportation Systems Management (TSM), Traffic Demand Management (TDM) and Intelligent Transportation Managementy Systems (ITS). These measure will provide incentive for carpooling, transit services and construction of Park and Ride facilities. ITS projects may include advance surve warning signs, speed feedback signs and fog detection or closed Cirucit TV. The estiamted costs of TSM, TDM and ITS projects is $4.2 million.

2. Upgrade Sharp S-Curve along SR 113

   This project will upgrade the existing sharp curves along SR 113 to standard Caltrans design speed. A curve radius of 1,700 feet and a design speed of 65 MPH.

3. Install Traffic Signal at SR 113/SR 12

   This project will install a full traffic signal at SR 113 and SR 12 to maintain a safe and efficient movement at this intersection. Widen intersection with additional auxiliary lanes (right and left-turn lanes) to accommodate the traffic signal requirements. For proposed turning lanes it should be noted that future designs shall accommodate the need for truck turning movements. Double turning lanes should be provided to accommodate turning demand traffic volumes which are 300 vehicles per hour or more. Caltrans standard signal warrants must be met in order to install a traffic signal.

4. Rehab SR 113 Roadway Pavement

   The project would also involve roadway rehabiliation and overlay to improve rideability along the corridor.

7.2.2 Mid-Term (5-10 years)

These are projects that require funding from other sources such as sales tax measures, federal/state funds, or other alternative funding.

1. Widen lanes along SR 113 to the standard 12 foot lane width to enhance safety features. Widen shoulders along SR 113 to enhance safety features.

   This project is a safety improvement project to widen SR 113 from SR 12 to Midway Road with 5-feet shoulders on both sides for the roadway. This project would also include removal of obstacles along the project corridor to maintain a clear zone along the corridor to minimize safety and accident issues.

2. Upgrade shoulders to 8-feet and 20-feet undivided median along SR 113 from SR 12 to Midway Road.

This would create additional safety enhancements that would be required as traffic volumes increase along SR 113. The median would create additional safety enhancements along the corridor. The use of divided vs. undivided median should be explored as a part of the preliminary design and environmental process.

3. Passing lanes along SR 113 between SR 12 to Midway Road (maintain a two-lane facility).

   This project would create passing lanes along SR 113 between SR 12 and Midway Road as traffic volumes increase along the project corridor. Construction of a passing lane can be considered with the 4-lane widening.

7.2.3 Long-Term

These are projects that require significant funding from other sources such as extension of sales tax measures, federal/state funds, or other alternative funding.

1. Realignment of SR 113 from Midway to I-80 (any of the options) – two-lane facility

   This option will build the selected realignment of SR 113, north of Midway to I-80, with a two-lane facility with standard shoulders and median. Construction of a four-lane facility can be postoned until traffic volumes warrant such a faciltiy. With this option, the old SR 113 alignment north of Midway Road will revert back to a local (City or County) maintained roadway.

2. Upgrade of I-80 Interchange based on the selected option.

   Depending on the option selected, this project will upgrade the existing interchange at I-80.

7.2.4 Longer-Term

These are projects that require significant funding from other sources such as extension of sales tax measures, federal/state funds, or other alternative funding.

1. Widening of SR 113 to a four-lane facility from SR 12 to I-80

   This option would widen SR 113 from a two-lane to a four-lane facility from SR 12 to I-80. This would include standard shoulders and median. Timing for a four-lane facility will be dependent on traffic volumes and demand.

2. Grade separation of SR 113 and UPRR

   Depending on the option selected, this project would build a standard grade seperation at SR 113 and UPRR crossing. Timing for this project would be dependent on both the traffic volumes on SR 12 and SR 113.

3. Grade separation of SR 12 and SR 113

This project would build a standard interchange and grade seperation at SR 12 and SR 113. Timing for this project would be dependent on both the traffic volumes on SR 12 and SR 113. A standard interchange, such as a diamond interchange may be adequate for this facility.

4. Upgrade I-80/SR 113 (Davis) interchange with direct ramp connectors

   This project would build direct freeway to freeway ramp connectors at I-80/SR 113 (Davis). Timing for this project would be dependent on traffic volumes on SR 113.

7.2.5 Other Improvments

Other safety and capacity improvements may be required as a part of the overall program, such as new traffic signals at crossing roadways or lighting improvments. These projects need to be identified as a part of Project Initiation Document (PID) process. Construction projects for each horizon phase are summarised in **Table 7.1**.

Table 7.1 SR 113 Implementation Horizon

Short-Term 1-5 Years	Mid-Term 5-10 Years	Long-Term	Longer Term
Provide TSM, TDM and ITS Enhancments			
Upgrade S-Curves along SR 113 to accommodate Caltrans design speed.	Widen to standard lane width, and upgrade shoulders	Realign SR 113 between Midway Road and I-80 via Robben Road (pending Alternative 2).	Widen SR 113 to a 4-lane facility between SR 12 and I-80.
Install a traffic signal at SR 113 and SR 12, when warranted.	Widen shoulders to standard width, construct median and add safety lighting	Realign SR 113 between Midway Road and I-80 via Robben Road (pending Alternative 3 selection).	Construct a grade separation and an interchange at SR 12/SR 113.
Rehab roadway between SR 12 and Midway Road.	Install passing lanes along SR 113 between SR 12 and Midway Road.	Realign SR 113 between Midway Road and I-80 via Midway Road (pending Alternative 4 selection)	Upgrade I-80/SR 113 (Davis) interchange with direct ramp connectors, when traffic volume warrantes the need.
		Realign SR 113 between Midway Road and I-80 via Pedrick Road (pending Alternative 5 selection).	
		Realign SR 113 between Midway Road and I-80 via Pedrick Road (pending Alternative 6 selection).	

7.3 Implementation Phase Cost Estimates

Preliminary opinions of probable costs have been developed for the SR 113 alternative alignment options. The preliminary cost estimates follow Caltrans planning level estimating format. Cost estimate worksheets are included in the appendix.

7.3.1 Phase 1 (short-term 1-5 years)

Based on the above implementation assumptions and the potential alternative alignment selection, a preliminary opinion of probable cost was developed for the SR 113 implementation improvements phase 1. The estimated 2009 cost for this improvement phase is $17.42 million dollars. A detailed breakdown of the cost items is included in **Table 7-2**.

7.3.2 Phase 2 (mid-term 5-10 years)

Based on the above implementation assumptions and the potential alternative alignment selection, a preliminary opinion of probable cost was developed for the SR 113 implementation improvements phase 2. The estimated 2009 cost for this improvement phase is $93.8 million dollars. A detailed breakdown of the cost items is included in **Table 7-2**.

7.3.3 Phase 3 (long-term)

Based on the above implementation assumptions and the potential alternative alignment selection, a preliminary opinion of probable cost was developed for the SR 113 implementation improvements phase 3. The estimated 2009 cost range for this improvement phase is $52 to $149 million dollars depending on which alternative alignment is selected. A detailed breakdown of the cost items is included in **Table 7-2**. Implementation of phase 3 requires modification to the I-80 interchange depending on the alternative alignment selected. Preliminary interchange modification figures are illustrated in **Figures 7.1 – 7.4**. It should be noted that these preliminary interchange modification figures are conceptual and additional planning and engineering would be needed to complete the final design of any of the alternative alignments.

7.3.4 Phase 4 (longer term)

Based on the above implementation assumptions and the potential alternative alignment selection, a preliminary opinion of probable cost was developed for the SR 113 implementation improvements phase 4. The estimated 2009 cost for this improvement phase is $165.1 million dollars. A detailed breakdown of the cost items is included in **Table 7-2**.

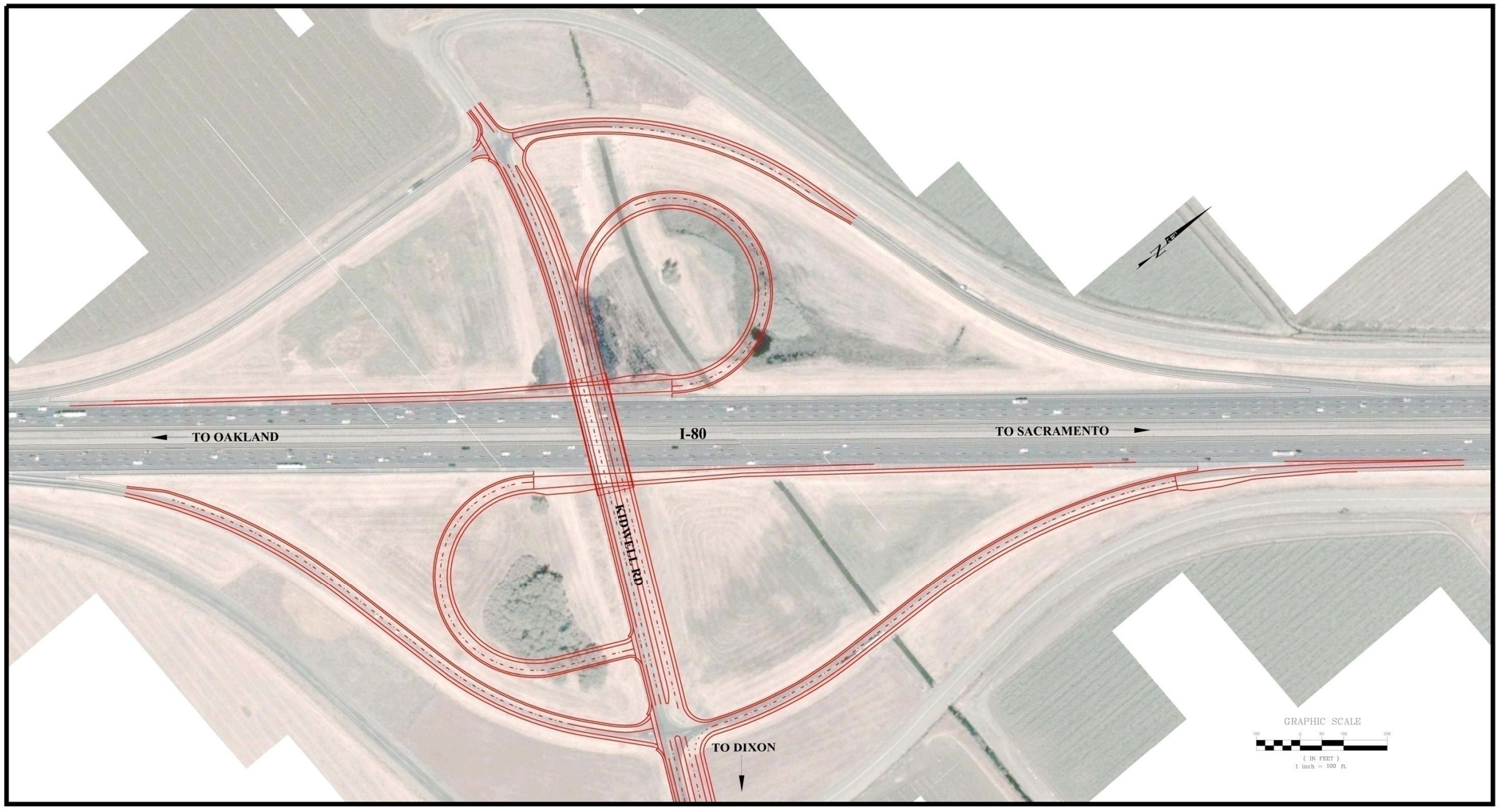
Table 7-2 SR 113 Major Investment Study Estimates of Probable Costs

Timeline	ID	Description	Construction	Right of Way	Support	Total	Notes
Short Term 1-5 Years	**Base**	TSM, TDM and ITS Enhancements	$3.24	$0.00	$0.97	$4.21	
	P1	Reconstruct S-Curves	$3.34	$1.00	$1.00	$5.34	
	P2	Signalization at SR 113/SR 12	$1.32	$0.18	$0.40	$1.90	
	P3	SR 113 rehab roadway pavement	$4.59	$0.00	$1.38	$5.97	
Mid Term 5-10 Years	P4	Widen to standard lane width, widen shoulders, add safety lighting	$21.49	$6.99	$6.45	$34.93	
	P5	Widen shoulders to 8', construct median, and install signal at Midway	$35.71	$3.93	$10.71	$50.35	
	P6	Construct Passing Lanes along SR 113 *	$5.98	$0.76	$1.79	$8.53	
Long Term	P7-2	Realign SR 113 between Midway and I-80 via Robben A	$56.02	$5.13	$16.81	$77.96	Choose One Option
	P7-3	Realign SR 113 between Midway and I-80 via Robben B	$113.91	$6.77	$34.17	$154.85	
	P7-4	Realign SR 113 between Midway and I-80 via Midway	$37.57	$2.78	$11.27	$51.62	
	P7-5	Realign SR 113 between Midway and I-80 via Pedrick A	$56.80	$2.32	$17.04	$76.16	
	P7-6	Realign SR 113 between Midway and I-80 via Pedrick B	$110.34	$5.48	$33.10	$148.92	
Longer Term	P8	Widen SR 113 to 4 lanes from SR 12 to I-80 **	$73.27	$11.09	$21.98	$106.34	
	P9	Interchange at SR 12 and SR 113 ***	$14.24	$0.25	$4.27	$18.76	
	P10	Upgrade I-80/SR 113 (Davis) interchange with direct ramp connectors	$29.99	$1.00	$9.00	$39.99	

* P6 Passing lane could be evaluated in combination with the 4-lane widening project, based on future traffic demand

** P8 Widening SR 113 to 4 lanes from SR 12 to I-80 is dependent on future traffic demand

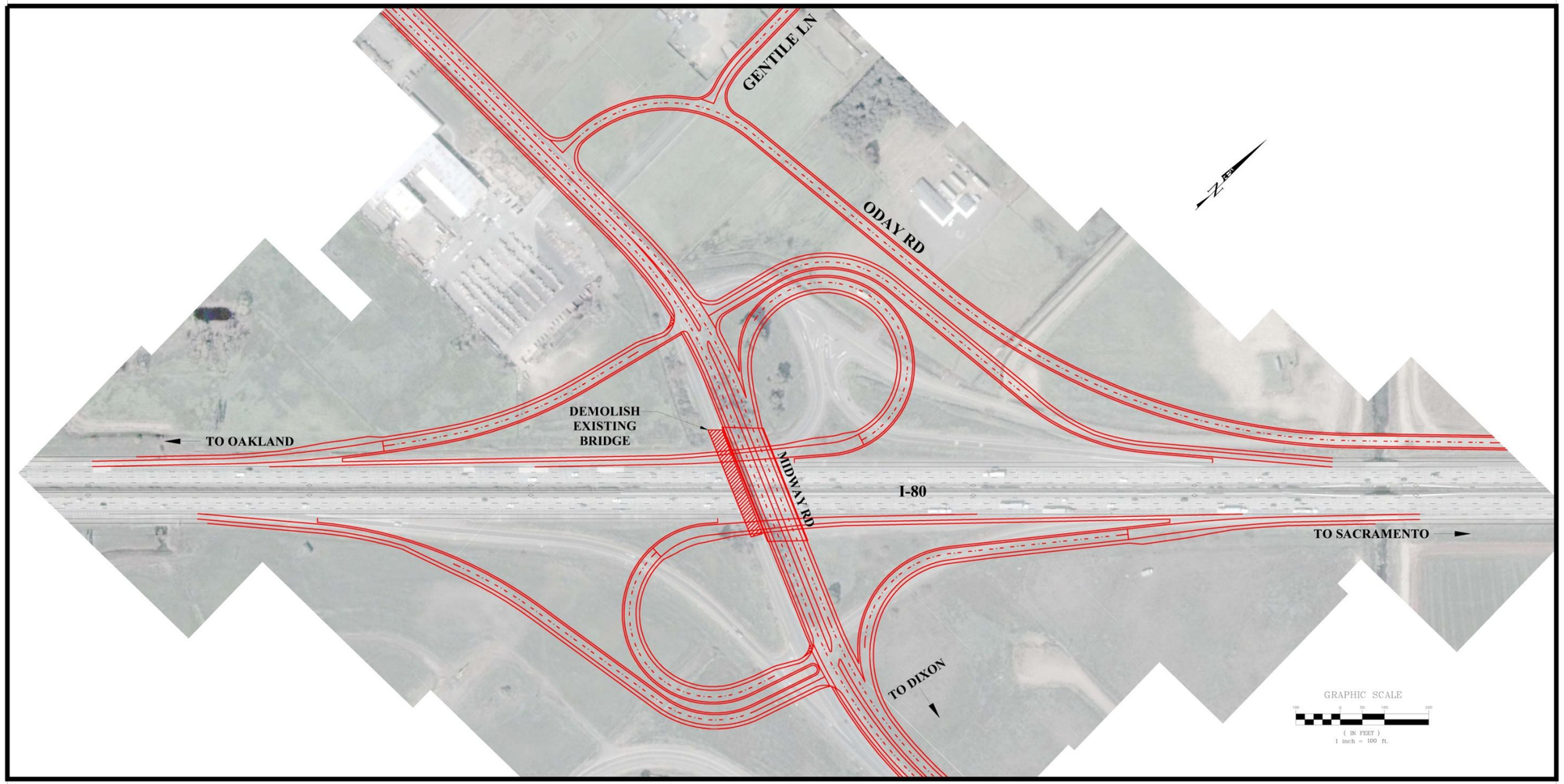
*** P9 SR 113/SR 12 interchange should be evaluated as a part of the SR 12 Corridor Study



I-80 / KIDWELL INTERCHANGE IMPROVEMENTS

Figure 7.1

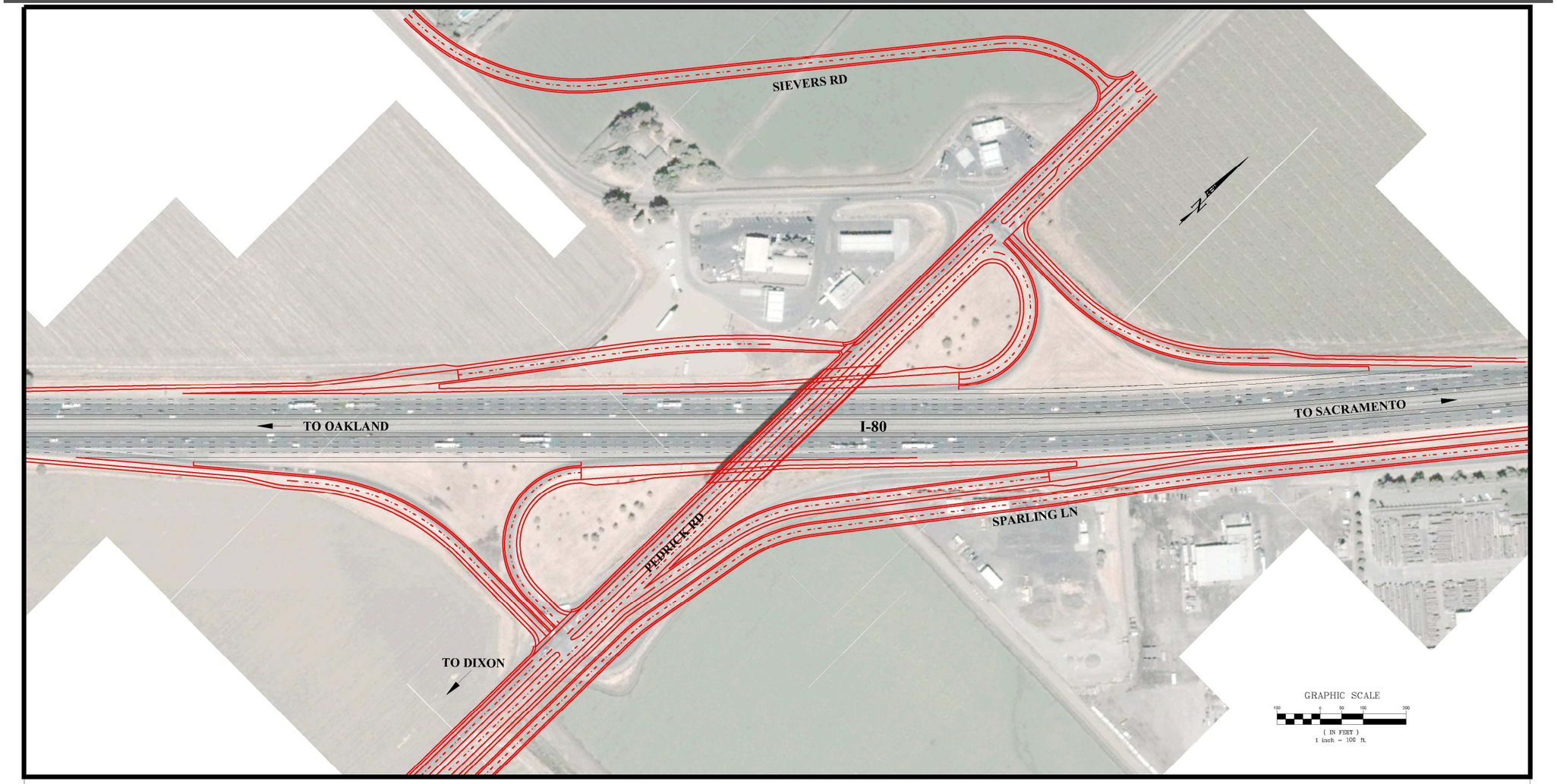
Kimley-Horn and Associates, Inc.



I-80 / MIDWAY INTERCHANGE IMPROVEMENTS

Figure 7.2

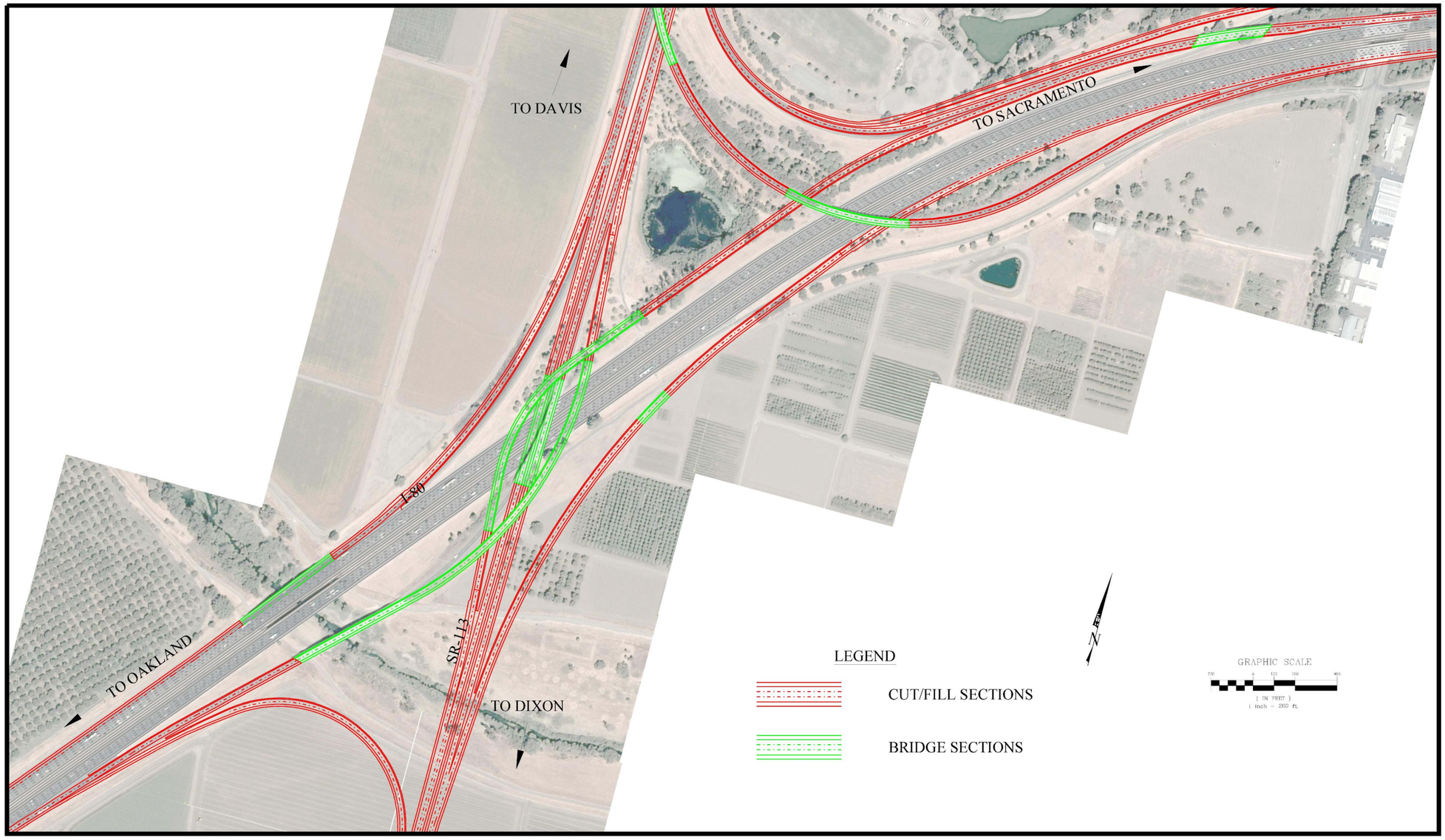
Kimley-Horn and Associates, Inc.



I-80 / PEDRICK INTERCHANGE IMPROVEMENTS

Figure 7.3

Kimley-Horn and Associates, Inc.



I-80 / SR-113 INTERCHANGE IMPROVEMENTS

Figure 7.4

Kimley-Horn and Associates, Inc.

7.4 Implementation Funding Options

Funding options for SR 113 improvements will include a variety of options, including State Highway Operation or Protection Plan (SHOPP), State Transportation Improvement Program (STIP), Local Measure K funds, local traffic impact fees, federal funding through the Safe, Accountable, Flexible and Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU), and public-private financing.

8.0 Summary and Conclusions

8.1 Project Purpose

Given the fiscal realities of today and tomorrow with demands for budget reductions at all levels of national, state, and local government, decisions on where and how to spend this money must not be taken lightly. A detailed study within each transportation corridor must be undertaken to ensure the best transportation solution, one that meets the mobility, social, and environmental needs of the corridor. These studies, referred to here as Major Investment Studies (MIS). The MIS is a valuable planning tool as well as a federal requirement. Major investment studies have been performed for many years under the names subarea studies, corridor studies, and feasibility studies. Regardless of what they have been called, their purpose has always been the same: to guide the decision-making process for planning, financing, and implementing major transportation projects.

The major investment study (MIS) is a subset of the more comprehensive metropolitan transportation system planning process. Metropolitan planning regulations require major investment studies to support decisions on significant transportation investments. While federally funded major transportation investments are being contemplated, the MIS identifies all reasonable alternative strategies for addressing the transportation demands and other problems at a corridor or subarea level of the metropolitan area. The MIS provides information to elected officials, technical staff, the business community, and the general public on the costs, benefits, and impacts of these alternatives so that an informed choice can be made.

The SR 113 Corridor study has evaluated traffic demands and needs for this important regional corridor in Solano County. It also has examined various alignment alternatives to respond to community needs and input.

8.2 Stakeholder and Public Input

During the course of the study, the Consultant team has been receiving input for the following stakeholders and groups:

- Solano Transportation Authority (STA)
- Steering Committee (Elected Officials from Davis, Dixon, Vacaville and County of Solano)
- Working Group Committee (Staff members from Dixon, County of Solano, City of Davis, Yolo County Transportation District, County of Yolo,

Metropolitan Transportation Committee, California Department of Transportation, UC Davis and Sacramento Council of Governments)

- Public (public meetings were held with various interest groups, including Dixon Chamber of Commerce, City of Dixon Transportation Advisory Commission and City Council, City of Davis City Council and Yolo County Transportation District)

Input from the elected officials, public agency staff member and public have been incorporated in this document.

8.3 Next Steps

The information presented in this report will provide a guide to the decision makers to evaluate future requirements and funding for the corridor. It would also provide technical information to the public to allow selection of preferred alternatives based on funding, community concerns, environmental impacts and other needs for the region and the community.

Next steps involved in the project are to continue with further evaluation of the alternatives in the environmental phase of the project. Since State Route 113 is a State Facility, a typical Caltrans process would include the following steps:

- **Project Study Report (PSR) –** This is a scoping document that would evaluate the "Purpose and Need" for the project.
- **Project Report and Environmental Document.** This is the alterative analysis phase for the project, where detailed environmental impacts will be evaluated and a preferred alternative will be selected. For some of the less critical projects, such as the Safety Improvements, a Project Study Report may be adequate for an environmental clearance.
- **Plans, Specifications and Estimates –** This is the phase of the project that would follow the environmental documentation and clearance and would result in detailed design of the project. Typically, funding for the project is secured prior to the commencement of preparation of the construction documents. Although, some agencies has proceeded with the preparation of the construction documents to increase the opportunity to receive either state or federal funding for the project.

The STA should consider including the projects in the Regional Transportation Improvement Program (TIP) and some of the short-term projects in either the Ten-Year State Highway Operation or Protection Plan (SHOPP) or State Transportation Improvement Program (STIP).

9.0 Appendix A

1. Cost estimate worksheets

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **TSM, TDM and ITS Project**

Limits: Entire Segment

Proposed Improvement (Scope): **Provide TSM, TDM and ITS Projects**

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$3,240,000
TOTAL STRUCTURE ITEMS	$0
SUBTOTAL CONSTRUCTION COSTS	$3,240,000
TOTAL RIGHT OF WAY ITEMS	$0
CAPITAL OUTLAY SUPPORT COSTS	$970,000
TOTAL PROJECT COSTS	$4,210,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Construct Park and Ride Lots	1	LS		$1,000,000	
Clearing and Grubbing (5% Excavation)	1	LS		$50,000	
				$0	
				$0	
Sub-Total Earthwork					$1,050,000
Section 2. Pavement Structural Section					
				$0	
				$0	
Sub-Total Pavement Structural Section					$0
Section 3. Drainage					
				$0	
				$0	
				$0	
Sub-Total Drainage					$0

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
TSM Options	1	LS		$250,000	
				Sub-Total Specialty Items	$250,000
Section 5. Traffic Items					
Speed Feedback Signs	10	EA	$35,000	$350,000	
Closed Circuit TV	5	EA	$50,000	$250,000	
Fog Detectors	5	EA	$50,000	$250,000	
Highway Advisory Radio (with EMS)	5	EA	$50,000	$250,000	
CMS Signs	2	EA	$250,000	$500,000	
Traffic Control System and TMP (5% of total items of work, excluding mobilization)	1		LS	$132,500	
				Sub-Total Traffic Items	$1,732,500
				TOTAL SECTIONS 1 thru 5	$3,032,500

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$52,500	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$154,250	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$771,250	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$3,239,250

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Bridge Widening				$0	
New Bridge				$0	
Grade Separations				$0	
Other				$0	

SUBTOTAL STRUCTURES ITEMS $0
(Sum of Total Cost for Structures)

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	

SUBTOTAL RAILROAD ITEMS $0

TOTAL STRUCTURES ITEMS $0
(Sum of Structures Items & Railroad Items)

COMMENTS:

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill				$0	
Utility Relocation				$0	
Clearance/ Demolition				$0	
TOTAL RIGHT OF WAY ITEMS					$0

Construction Contract Work

Brief Description of Work:

Install TSM, TDM and ITS elements

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$971,775	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$971,775

Estimate Prepared By	Anush Nejad	Phone #	510-625-0172
		Date	Updated 4/7/09
Estimate Checked By	Kevin Thomas	Phone #	510-625-0172
		Date	

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **Upgrade S-Curves along SR 113**

Limits: At existing S-Curves

Proposed Improvement (Scope): **Upgrade S-Curve along SR 113 for 65 mph Design Speed - 2 Curves**

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$3,090,000
TOTAL STRUCTURE ITEMS	$250,000
SUBTOTAL CONSTRUCTION COSTS	$3,340,000
TOTAL RIGHT OF WAY ITEMS	$1,000,000
CAPITAL OUTLAY SUPPORT COSTS	$1,000,000
TOTAL PROJECT COSTS	$5,340,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	13532.4	CY	$15	$202,986	
Clearing and Grubbing (5% Excavation)	1	LS		$10,149	
Remove Asphalt	108000	SF	$1	$108,000	
				$0	
Sub-Total Earthwork					$321,135
Section 2. Pavement Structural Section					
Aggregate Sub-base	9072	TON	$30	$272,160	
Aggregate Base	10692	TON	$40	$427,680	
Asphalt Concrete	6210	TON	$125	$776,250	
				$0	
				$0	
Sub-Total Pavement Structural Section					$1,476,090
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$89,861	
				$0	
				$0	
				$0	
Sub-Total Drainage					$89,861

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$56,613	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$94,354	
Environmental Mitigation (20% or Roadway Items)	1	LS		$427,417	
			Sub-Total Specialty Items		$578,384
Section 5. Traffic Items					
Roadway Lighting	10	EA	$4,000	$40,000	
Signing and Striping (10% of Roadway Items)	1		LS	$179,723	
Traffic Control System and TMP (5% of total items of work, excluding mobilization)	1		LS	$151,477	
			Sub-Total Traffic Items		$371,200
			TOTAL SECTIONS 1 thru 5		$2,836,671

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$94,354	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$159,051	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$732,756	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$3,090,076

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Bridge Widening		SF		$0	
New Bridge		SF		$0	
Grade Separations		EA		$0	
Other				$0	

SUBTOTAL STRUCTURES ITEMS (Sum of Total Cost for Structures)	$0

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Railroad Crossing Upgrade	1	LS	$250,000	$250,000	
Other				$0	

SUBTOTAL RAILROAD ITEMS	$250,000
TOTAL STRUCTURES ITEMS (Sum of Structures Items & Railroad Items)	$250,000

COMMENTS:

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	365,000	SF	$2	$730,000	
Utility Relocation	5400	LF	$50	$270,000	
Clearance/ Demolition				$0	
TOTAL RIGHT OF WAY ITEMS					$1,000,000

Construction Contract Work

Brief Description of Work:

Realign existing sharp curves along SR 113. Two curves with a total distance of approximately 5400 feet.
Remove existing roadway. Construct 2, 12-feet lanes and 2, 5-feet shoulders.
Section width - Roadway: 6" AC, 10" AB, 12" ASB; Shoulder: 4" AC, 10" AB

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$1,002,023	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$1,002,023

Estimate Prepared By	Anush Nejad	Phone #	510-625-0172
		Date	Updated 4/7/09
Estimate Checked By	Kevin Thomas	Phone #	510-625-0172
		Date	

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **Install Traffic Signal at SR 12 and SR 113**

Limits: SR 12/SR 13 Intersection

Proposed Improvement (Scope): **Install Traffic Signalization and Add Auxiliary Lanes**

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$1,320,000
TOTAL STRUCTURE ITEMS	$0
SUBTOTAL CONSTRUCTION COSTS	$1,320,000
TOTAL RIGHT OF WAY ITEMS	$180,000
CAPITAL OUTLAY SUPPORT COSTS	$400,000
TOTAL PROJECT COSTS	$1,900,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	1	LS		$100,000	
Clearing and Grubbing (2% Excavation)	1	LS		$2,000	
				$0	
				$0	
Sub-Total Earthwork					$102,000
Section 2. Pavement Structural Section					
Aggregate Sub-base	1	LS		$50,000	
Aggregate Base	1	LS		$150,000	
Asphalt Concrete	1	LS		$250,000	
				$0	
				$0	
Sub-Total Pavement Structural Section					$450,000
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$27,600	
				$0	
				$0	
				$0	
Sub-Total Drainage					$27,600

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$17,388	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$28,980	
Environmental Mitigation (10% or Roadway Items)	1	LS		$57,960	
			Sub-Total Specialty Items		$104,328
Section 5. Traffic Items					
Signalization and Lighting	1	LS		$350,000	
Signing and Striping	1		LS	$80,000	
Traffic Control System and TMP (10% of total items of work, excluding mobilization)	1		LS	$114,291	
			Sub-Total Traffic Items		$544,291
			TOTAL SECTIONS 1 thru 5		$1,228,219

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$28,980	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$62,860	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$314,300	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$1,320,059

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Bridge Widening		SF		$0	
New Bridge		SF		$0	
Grade Separations		EA		$0	
Other				$0	

SUBTOTAL STRUCTURES ITEMS
(Sum of Total Cost for Structures) $0

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Railroad Crossing Upgrade					
Other				$0	

SUBTOTAL RAILROAD ITEMS $0

TOTAL STRUCTURES ITEMS
(Sum of Structures Items & Railroad Items) $0

COMMENTS:

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	20,000	SF	$4	$80,000	
Utility Relocation	1	LS		$100,000	
Clearance/ Demolition				$0	
TOTAL RIGHT OF WAY ITEMS					$180,000

Construction Contract Work

Brief Description of Work:

Install Traffic Signal and Lighting at SR 12 and SR 13
Widen intersersection to add right and left turn lanes

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$396,018	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$396,018

Estimate Prepared By	Anush Nejad	Phone #	510-625-0172
		Date	Updated 4/7/09
Estimate Checked By		Phone #	510-625-0172
		Date	

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **SR 113 - Overlay and Rehab**

Limits: SR 12 to north of Midway (Parkway Blvd)

Proposed Improvement (Scope): **Overlay and Rehab Roadway**

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$4,590,000
TOTAL STRUCTURE ITEMS	$0
SUBTOTAL CONSTRUCTION COSTS	$4,590,000
TOTAL RIGHT OF WAY ITEMS	$0
CAPITAL OUTLAY SUPPORT COSTS	$1,380,000
TOTAL PROJECT COSTS	$5,970,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Correct Vertical Alignments	1	LS		$2,000,000	
Clearing and Grubbing (10% Excavation)					
Saw Cut					
				$0	
Sub-Total Earthwork					$2,000,000
Section 2. Pavement Structural Section					
Asphalt Concrete Overlay	6193	TON	$125	$774,180	
Fabric	219413	SY	$2.00	$438,827	
Sub-Total Pavement Structural Section					$1,213,007
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$160,650	
				$0	
				$0	
				$0	
Sub-Total Drainage					$160,650

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$101,210	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$168,683	
Environmental Mitigation (10% or Roadway Items)	1	LS		$337,366	
			Sub-Total Specialty Items		$607,258
Section 5. Traffic Items					
Signing and Striping (3% of Roadway Items)	1		LS	$96,390	
Traffic Control System and TMP (3% of total items of work, excluding mobilization)	1		LS	$127,380	
				Sub-Total Traffic Items	$223,770
			TOTAL SECTIONS 1 thru 5		$4,204,685

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$168,683	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$218,668	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$1,093,342	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$4,592,036

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Culvert Widening (Ultimate Width)				$0	
New Bridge				$0	
Grade Separations				$0	
Other				$0	
SUBTOTAL STRUCTURES ITEMS (Sum of Total Cost for Structures)					$0

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Railroad Crossing Upgrade					
Other				$0	
SUBTOTAL RAILROAD ITEMS					$0
TOTAL STRUCTURES ITEMS (Sum of Structures Items & Railroad Items)					$0

COMMENTS: _____

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill				$0	
Utility Relocation				$0	
Clearance/ Demolition				$0	
TOTAL RIGHT OF WAY ITEMS					$0

Construction Contract Work

Brief Description of Work:

Roadway Overlay and Rehab. 1/2 Overlay

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$1,377,611	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$1,377,611

Estimate Prepared By	Anush Nejad	Phone #	510-625-0172
		Date	Updated 4/7/09
Estimate Checked By	Kevin Thomas	Phone #	510-625-0172
		Date	

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA .
Program Code

Project Description: **SR 113 - Upgrade Lane Widths and Shoulder**

Limits: SR 12 to north of Midway (Parkway Blvd)

Proposed Improvement (Scope): **Widen Roadway (7-feet on either side; 2' roadway, 5' shoulder). Remove Existing shoulder areas. Add Lighting and remove obstructions.**

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$20,290,000
TOTAL STRUCTURE ITEMS	$1,200,000
SUBTOTAL CONSTRUCTION COSTS	$21,490,000
TOTAL RIGHT OF WAY ITEMS	$6,990,000
CAPITAL OUTLAY SUPPORT COSTS	$6,450,000
TOTAL PROJECT COSTS	$34,930,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	108699.4	CY	$15	$1,630,490	
Clearing and Grubbing (10% Excavation)	1	LS		$163,049	
Saw Cut	179520	LF	$1	$179,520	
Remove Asphalt	21600	SF	$1	$21,600	
Sub-Total Earthwork					$1,994,659
Section 2. Pavement Structural Section					
Aggregate Sub-base	87965	TON	$30	$2,638,944	
Aggregate Base	73334	TON	$40	$2,933,357	
Asphalt Concrete	47124	TON	$125	$5,890,500	
Sub-Total Pavement Structural Section					$11,462,801
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$672,873	
				$0	
				$0	
				$0	
Sub-Total Drainage					$672,873

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$423,910	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$706,517	
Environmental Mitigation (10% or Roadway Items)	1	LS		$1,533,033	
				Sub-Total Specialty Items	$2,663,460
Section 5. Traffic Items					
Roadway Lighting	170	EA	$4,500	$765,000	
Signing and Striping (3% of Roadway Items)	1		LS	$403,724	
Traffic Control System and TMP (3% of total items of work, excluding mobilization)	1		LS	$596,071	
				Sub-Total Traffic Items	$1,764,795
				TOTAL SECTIONS 1 thru 5	$18,558,588

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$706,517	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$1,023,255	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$4,816,276	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$20,288,360

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Culvert Widening (Ultimate Width)	4800	SF	$250	$1,200,000	
Grade Separations				$0	
Other				$0	
SUBTOTAL STRUCTURES ITEMS (Sum of Total Cost for Structures)					$1,200,000

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Railroad Crossing Upgrade					
Other				$0	
SUBTOTAL RAILROAD ITEMS					$0
TOTAL STRUCTURES ITEMS (Sum of Structures Items & Railroad Items)					$1,200,000

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	
EA	NA
Program Code	

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	1,249,500	SF	$2	$2,499,000	
Utility Relocation	89760	LF	$50	$4,488,000	
Clearance/ Demolition				$0	
TOTAL RIGHT OF WAY ITEMS					$6,987,000

Construction Contract Work

Brief Description of Work:

Widen SR 113 by 7-feet on either side. Cross section would be similar to standard roadway for future widening
Remove obstructions and add roadway safety lighting.
Section width - Roadway: 6" AC, 10" AB, 12" ASB
Roadway section will be standard 12-foot lanes and 5-feet shoulder on either side.
Widen/replace 3 culverts to the ultimate width

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$6,446,508	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$6,446,508

Estimate Prepared By	Anush Nejad	Phone #	510-625-0172
		Date	Updated 4/7/09
Estimate Checked By		Phone #	510-625-0172
		Date	

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **SR 113 - Widen Shoulders and Install Median**

Limits: SR 12 to north of Midway (Parkway Blvd)

Proposed Improvement (Scope): **Widen Shoulders to 8-feet (+3') and install 20' feet undivided median between SR 12 and Downtown Dixon (Total widening is 13' on either side)**

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$35,710,000
TOTAL STRUCTURE ITEMS	$0
SUBTOTAL CONSTRUCTION COSTS	$35,710,000
TOTAL RIGHT OF WAY ITEMS	$3,930,000
CAPITAL OUTLAY SUPPORT COSTS	$10,710,000
TOTAL PROJECT COSTS	$50,350,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	201691	CY	$15	$3,025,361	
Clearing and Grubbing (10% Excavation)	1	LS		$302,536	
Saw Cut	179520	LF	$1	$179,520	
				$0	
Sub-Total Earthwork					$3,507,417
Section 2. Pavement Structural Section					
Aggregate Sub-base	163363	TON	$30	$4,900,896	
Aggregate Base	136166	TON	$40	$5,446,637	
Asphalt Concrete	87516	TON	$125	$10,939,500	
				$0	
Sub-Total Pavement Structural Section					$21,287,033
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$1,239,722	
				$0	
				$0	
				$0	
Sub-Total Drainage					$1,239,722

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$781,025	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$1,301,709	
Environmental Mitigation (10% or Roadway Items)	1	LS		$2,603,417	
				Sub-Total Specialty Items	$4,686,151
Section 5. Traffic Items					
Traffic Signal Installation at Midway	1		LS	$250,000	
Signing and Striping (3% of Roadway Items)	1		LS	$743,833	
Traffic Control System and TMP (3% of total items of work, excluding mobilization)	1		LS	$990,476	
				Sub-Total Traffic Items	$1,984,309
				TOTAL SECTIONS 1 thru 5	$32,704,633

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$1,301,709	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$1,700,317	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$8,501,585	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$35,706,658

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Bridge Widening				$0	
New Bridge				$0	
Grade Separations				$0	
Other				$0	
SUBTOTAL STRUCTURES ITEMS (Sum of Total Cost for Structures)					$0

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Railroad Crossing Upgrade					
Other				$0	
SUBTOTAL RAILROAD ITEMS					$0
TOTAL STRUCTURES ITEMS (Sum of Structures Items & Railroad Items)					$0

COMMENTS: _____

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	1,963,500	SF	$2	$3,927,000	
Utility Relocation					
Clearance/ Demolition				$0	
TOTAL RIGHT OF WAY ITEMS					$3,927,000

Construction Contract Work

Brief Description of Work:

Widen SR 113 by 13-feet on either side. 3 feet shoulder, plus travel lane (20 feet median. Old SR 113)
Install signalization at Midway.
Section width - Roadway: 6" AC, 10" AB, 12" ASB (Same cross section).

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$10,711,997	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$10,711,997

Estimate Prepared By	Anush Nejad	Phone #	510-625-0172
		Date	Updated 4/7/09
Estimate Checked By	Kevin Thomas	Phone #	510-625-0172
		Date	

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **Construct Passing Lane along SR 113**

Limits: SR 12 to Midway

Proposed Improvement (Scope): **Construct Passing Lanes between SR 12 and Midway**

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$5,980,000
TOTAL STRUCTURE ITEMS	$0
SUBTOTAL CONSTRUCTION COSTS	$5,980,000
TOTAL RIGHT OF WAY ITEMS	$760,000
CAPITAL OUTLAY SUPPORT	$1,790,000
TOTAL PROJECT COSTS	$8,530,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	41406	CY	$15	$621,086	
Clearing and Grubbing (10% Excavation)	1	LS		$62,109	
Saw Cut	31680	LF	$1	$31,680	
Sub-Total Earthwork					$714,875
Section 2. Pavement Structural Section					
Aggregate Sub-base	26611	TON	$30	$798,336	
Aggregate Base	22176	TON	$40	$887,040	
Asphalt Concrete	14256	TON	$125	$1,782,000	
				$0	
Sub-Total Pavement Structural Section					$3,467,376
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$209,113	
				$0	
				$0	
				$0	
Sub-Total Drainage					$209,113

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$131,741	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$219,568	
Environmental Mitigation (10% or Roadway Items)	1	LS		$439,136	
			Sub-Total Specialty Items		$790,445
Section 5. Traffic Items					
Signing and Striping (3% of Roadway Items)	1		LS	$125,468	
Traffic Control System and TMP (3% of total items of work, excluding mobilization)	1		LS	$165,805	
			Sub-Total Traffic Items		$291,273
			TOTAL SECTIONS 1 thru 5		$5,473,082

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$219,568	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$284,633	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$1,423,163	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$5,977,283

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Bridge Widening		SF		$0	
New Bridge		SF		$0	
Grade Separations		EA		$0	
Other				$0	

SUBTOTAL STRUCTURES ITEMS
(Sum of Total Cost for Structures) $0

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Railroad Crossing Upgrade					
Other				$0	

SUBTOTAL RAILROAD ITEMS $0

TOTAL STRUCTURES ITEMS
(Sum of Structures Items & Railroad Items) $0

COMMENTS:

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	378,000	SF	$2	$756,000	
Utility Relocation					
Clearance/ Demolition				$0	
TOTAL RIGHT OF WAY ITEMS					$756,000

Construction Contract Work

Brief Description of Work:

Construct one passing lane every five miles. Each passing lane is one-mile in length.
Total segement length is 6-miles with 12 feet lane.
Section width - Roadway: 6" AC, 10" AB, 12" ASB

COMMENTS:

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$1,793,185	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$1,793,185

Estimate Prepared By Anush Nejad Phone # 510-625-0172
Date Updated 4/7/09

Estimate Checked By _____ Phone # 510-625-0172
Date _____

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **SR 113 Realignment from Midday to I-80 (Alternative 2)**

Limits: Midway to I-80 via Robben Road A

Proposed Improvement (Scope): **Robben Road Alternative A**
Connect SR 113 via Midday to Robben and I-80
Widen existing by 20 feet on either side
Extend a 24 feet roaday, plus 8' shoulders to Kidwell

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$41,020,000
TOTAL STRUCTURE ITEMS	$15,000,000
SUBTOTAL CONSTRUCTION COSTS	$56,020,000
TOTAL RIGHT OF WAY ITEMS	$5,130,000
CAPITAL OUTLAY SUPPORT	$16,810,000
TOTAL PROJECT COSTS	$77,960,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	149674	CY	$15	$2,245,114	
Clearing and Grubbing (10% Excavation)	1	LS		$224,511	
Saw Cut	79200	LF	$1	$79,200	
Remove Asphalt	162000	SF	$1	$162,000	
Sub-Total Earthwork					$2,710,825
Section 2. Pavement Structural Section					
Aggregate Sub-base	121229	TON	$30	$3,636,864	
Aggregate Base	105204	TON	$40	$4,208,160	
Asphalt Concrete	66792	TON	$125	$8,349,000	
Asphalt Concrete Overlay	32987	TON	$125	$4,123,350	
Fabric	88000	SY	$2.00	$176,000	
Modify Kidwell Interchange	1	LS		$5,000,000	
Sub-Total Pavement Structural Section					$25,493,374
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$1,410,210	
Relocate Drainage Ditch	29040	LF	$15	$435,600	
				$0	
				$0	
Sub-Total Drainage					$1,845,810

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$901,500	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$1,502,500	
Environmental Mitigation (5% or Roadway Items)	1	LS		$2,252,500	
			Sub-Total Specialty Items		$4,656,501
Section 5. Traffic Items					
Traffic Signal and Lighting at Midway and Robben	1		LS	$250,000	
Signing and Striping (3% of Roadway Items)	1		LS	$846,126	
Traffic Control System and TMP (2% of total items of work, excluding mobilization)	1		LS	$1,046,103	
			Sub-Total Traffic Items		$2,142,229
			TOTAL SECTIONS 1 thru 5		$36,848,739

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$1,502,500	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$2,667,562	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$9,587,810	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$41,018,802

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Bridge Widening		SF		$0	
New Bridge		SF		$0	
Grade Separations		LS			

SUBTOTAL STRUCTURES ITEMS $0
(Sum of Total Cost for Structures)

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Grade Separations	1	LS		$15,000,000	
Other				$0	

SUBTOTAL RAILROAD ITEMS $15,000,000

TOTAL STRUCTURES ITEMS
(Sum of Structures Items & Railroad Items) $15,000,000

COMMENTS:

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	1,837,440	SF	$2	$3,674,880	
Utility Relocation	29040	LF	$50	$1,452,000	
Clearance/ Demolition				$0	
TOTAL RIGHT OF WAY ITEMS					$5,126,880

Construction Contract Work

Brief Description of Work:

Construct a 2 lane roadway via Midday along Robben Road to I-80
Two 12' travel lane, 20' undivided median, and 8' shoulder on both sides
Section width - Roadway: 6" AC, 10" AB, 12" ASB
Overlay existing Midway and Robben Road: 1/2-inch
New Railroad Grade Separation on Robben
Modify Kidwell Interchange and connect to Kidwell

COMMENTS:

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$16,805,641	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$16,805,641

Estimate Prepared By: Anush Nejad Phone #: 510-625-0172
Date: Updated 4/7/09

Estimate Checked By: Kevin Thomas Phone #: 510-625-0172
Date:

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **SR 113 Realignment from Midday to I-80 (Alternative 2)**

Limits: Midway to I-80 via Robben Road B

Proposed Improvement (Scope): **Robben Road Alternative B**
Connect SR 113 via Midday to Robben and I-80
Widen existing by 20 feet on either side
Extend a 24 feet roaday, plus 8' shoulders to SR 113

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$70,410,000
TOTAL STRUCTURE ITEMS	$43,500,000
SUBTOTAL CONSTRUCTION COSTS	$113,910,000
TOTAL RIGHT OF WAY ITEMS	$6,770,000
CAPITAL OUTLAY SUPPORT	$34,170,000
TOTAL PROJECT COSTS	$154,850,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	214450	CY	$15	$3,216,748	
Clearing and Grubbing (10% Excavation)	1	LS		$321,675	
Saw Cut	79200	LF	$1	$79,200	
Remove Asphalt	162000	SF	$1	$162,000	
Sub-Total Earthwork					$3,779,622
Section 2. Pavement Structural Section					
Aggregate Sub-base	161146	TON	$30	$4,834,368	
Aggregate Base	155100	TON	$40	$6,204,000	
Asphalt Concrete	95304	TON	$125	$11,913,000	
Asphalt Concrete Overlay	2495	TON	$125	$311,850	
Fabric	88000	SY	$2.00	$176,000	
Modify I-80 Interchange	1	LS		$20,000,000	
Sub-Total Pavement Structural Section					$43,439,218
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$2,360,942	
Relocate Drainage Ditch	29040	LF	$15	$435,600	
				$0	
				$0	
Sub-Total Drainage					$2,796,542

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$1,500,461	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$2,500,769	
Environmental Mitigation (5% or Roadway Items)	1	LS		$4,675,769	
				Sub-Total Specialty Items	$8,677,000
Section 5. Traffic Items					
Traffic Signal and Lighting at Midway and Robben	1		LS	$250,000	
Signing and Striping (3% of Roadway Items)	1		LS	$1,416,565	
Traffic Control System and TMP (2% of total items of work, excluding mobilization)	1		LS	$2,127,194	
				Sub-Total Traffic Items	$3,793,760
				TOTAL SECTIONS 1 thru 5	$62,486,142

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$2,500,769	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$5,424,346	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$16,246,728	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$70,411,256

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
New Bridge (Creek Crossing)	14000	SF	$250	$3,500,000	
New Bridge (I-80 Interchange)	1	LS		$25,000,000	
Grade Separations					

SUBTOTAL STRUCTURES ITEMS
(Sum of Total Cost for Structures) $28,500,000

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Grade Separations	1	LS		$15,000,000	
Other				$0	

SUBTOTAL RAILROAD ITEMS $15,000,000

TOTAL STRUCTURES ITEMS
(Sum of Structures Items & Railroad Items) $43,500,000

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	
EA	NA
Program Code	

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	2,661,120	SF	$2	$5,322,240	
Utility Relocation	29040	LF	$50	$1,452,000	
Clearance/ Demolition				$0	
TOTAL RIGHT OF WAY ITEMS					$6,774,240

Construction Contract Work

Brief Description of Work:

Construct a 2 lane roadway via Midday along Robben Road to I-80
Two 12' travel lane, 20' undivided median, and 8' shoulder on both sides
Section width - Roadway: 6" AC, 10" AB, 12" ASB
Overlay existing Midway and Robben Road: 1/2-inch
New Railroad Grade Separation on Robben
New Bridge/Creek Crossings

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$34,173,377	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$34,173,377

Estimate Prepared By	Anush Nejad	Phone #	510-625-0172
		Date	Updated 4/7/09
Estimate Checked By	Kevin Thomas	Phone #	510-625-0172
		Date	

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **SR 113 Realignment from Midway to I-80 (Alternative 3)**

Limits: SR 113 to I-80 via Midway

Proposed Improvement (Scope): **Midway Alternative**
Connect SR 113 via Midway to I-80
Construct a 2-lane facility

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$31,440,000
TOTAL STRUCTURE ITEMS	$6,130,000
SUBTOTAL CONSTRUCTION COSTS	$37,570,000
TOTAL RIGHT OF WAY ITEMS	$2,780,000
CAPITAL OUTLAY SUPPORT	$11,270,000
TOTAL PROJECT COSTS	$51,620,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	71187	CY	$15	$1,067,798	
Clearing and Grubbing (10% Excavation)	1	LS		$106,780	
Saw Cut	41184	LF	$1	$41,184	
				$0	
Sub-Total Earthwork					$1,215,762
Section 2. Pavement Structural Section					
Aggregate Sub-base	57658	TON	$30	$1,729,728	
Aggregate Base	4798	TON	$40	$191,917	
Asphalt Concrete	30888	TON	$125	$3,861,000	
Asphalt Concrete Overlay	1297	TON	$125	$162,162	
Fabric	46229	SY	$2.00	$92,459	
Modify Midway Interchange	1	LS		$15,000,000	
Sub-Total Pavement Structural Section					$21,037,266
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$1,112,651	
				$0	
				$0	
				$0	
Sub-Total Drainage					$1,112,651

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$700,970	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$1,168,284	
Environmental Mitigation (5% or Roadway Items)	1	LS		$1,474,534	
			Sub-Total Specialty Items		$3,343,788
Section 5. Traffic Items					
Traffic Signal at Midway Interchange (Diamond)	1		LS	$400,000	
Signing and Striping (3% of Roadway Items)	1		LS	$667,591	
Traffic Control System and TMP (2% of total items of work, excluding mobilization)	1		LS	$701,407	
			Sub-Total Traffic Items		$1,768,998
			TOTAL SECTIONS 1 thru 5		$28,478,466

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$1,168,284	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$1,788,587	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$7,411,687	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$31,435,337

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Bridge Widening	3500	SF	$250	$875,000	
Widen Midway/I-80 Structure	17500	SF	$300	$5,250,000	

SUBTOTAL STRUCTURES ITEMS (Sum of Total Cost for Structures)	$6,125,000

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Railroad Crossing Upgrade					
Other				$0	

SUBTOTAL RAILROAD ITEMS	$0
TOTAL STRUCTURES ITEMS (Sum of Structures Items & Railroad Items)	$6,125,000

COMMENTS:

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	823,680	SF	$2	$1,647,360	
Utility Relocation	20592	LF	$50	$1,029,600	
Clearance/ Demolition	1	LS		$100,000	
TOTAL RIGHT OF WAY ITEMS					$2,776,960

Construction Contract Work

Brief Description of Work:

Construct a 2 lane roadway via Midday to I-80
Two 12' travel lane, 4' undivided median, and 8' shoulder
Section width - Roadway: 6" AC, 10" AB, 12" ASB
Overlay existing Midway: 2-inch
New Bridge at Channal Crossings
Modify Midway Interchange

COMMENTS:

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$11,268,101	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$11,268,101

Estimate Prepared By Anush Nejad Phone # 510-625-0172
Date Updated 4/7/09

Estimate Checked By Kevin Thomas Phone # 510-625-0172
Date

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **SR 113 realignment from Midway to I-80 (Alternative 4)**

Limits: Midway to I-80 via Pedrick Road A

Proposed Improvement (Scope): **Pedrick Road A Alignment**
Connect SR 113 via Midway to I-80
Construct a 2-lane facility

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$41,800,000
TOTAL STRUCTURE ITEMS	$15,000,000
SUBTOTAL CONSTRUCTION COSTS	$56,800,000
TOTAL RIGHT OF WAY ITEMS	$2,320,000
CAPITAL OUTLAY SUPPORT	$17,040,000
TOTAL PROJECT COSTS	$76,160,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	107692	CY	$15	$1,615,387	
Clearing and Grubbing (10% Excavation)	1	LS		$161,539	
Saw Cut	62304	LF	$1	$62,304	
Sub-Total Earthwork					$1,839,230
Section 2. Pavement Structural Section					
Aggregate Sub-base	87226	TON	$30	$2,616,768	
Aggregate Base	72584	TON	$40	$2,903,366	
Asphalt Concrete	46728	TON	$125	$5,841,000	
Asphalt Concrete Overlay	1963	TON	$125	$245,322	
Fabric	415360	SY	$1.50	$623,040	
Modify Pedrick Interchange	1	LS		$15,000,000	
Sub-Total Pavement Structural Section					$27,229,496
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$1,453,436	
				$0	
				$0	
				$0	
Sub-Total Drainage					$1,453,436

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$915,665	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$1,526,108	
Environmental Mitigation (5% or Roadway Items)	1	LS		$2,276,108	
			Sub-Total Specialty Items		$4,717,881
Section 5. Traffic Items					
Traffic Signal at Pedrick Interchange (Diamond)	1		LS	$400,000	
Signing and Striping (3% of Roadway Items)	1		LS	$872,062	
Traffic Control System and TMP (2% of total items of work, excluding mobilization)	1		LS	$1,060,764	
			Sub-Total Traffic Items		$2,332,826
			TOTAL SECTIONS 1 thru 5		$37,572,870

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$1,526,108	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$2,704,949	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$9,774,744	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$41,803,927

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Bridge Widening		SF		$0	
		SF		$0	

SUBTOTAL STRUCTURES ITEMS
(Sum of Total Cost for Structures) $0

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Grade Separation	1	LS		$15,000,000	
Other				$0	

SUBTOTAL RAILROAD ITEMS $15,000,000

TOTAL STRUCTURES ITEMS
(Sum of Structures Items & Railroad Items) $15,000,000

COMMENTS:

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	760,320	SF	$2	$1,520,640	
Utility Relocation	1	LS		$500,000	
Clearance/ Demolition	1	LS		$300,000	
TOTAL RIGHT OF WAY ITEMS					$2,320,640

Construction Contract Work

Brief Description of Work:

Construct a 2 lane roadway via Midday and Pedrick to I-80
Two 12' travel lane, 4' undivided median, and 8' shoulder
Section width - Roadway: 6" AC, 10" AB, 12" ASB
Overlay existing Pedrick Road: 2-inch
New Railraod Grade Separation
Modify Pedrick Interchange

COMMENTS:

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$17,041,178	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$17,041,178

Estimate Prepared By: Anush Nejad — Phone #: 510-625-0172
Date: Updated 4/7/09

Estimate Checked By: Kevin Thomas — Phone #: 510-625-0172
Date:

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **SR 113 Realignment - Midday to I-80 (Alternative 5)**

Limits: Midway to I-80 via Pedrick B Alignment

Proposed Improvement (Scope): **Pedrick Road B Alternative**
Connect SR 113 via Midway to I-80
Construct a 2-lane facility

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$66,840,000
TOTAL STRUCTURE ITEMS	$43,500,000
SUBTOTAL CONSTRUCTION COSTS	$110,340,000
TOTAL RIGHT OF WAY ITEMS	$5,480,000
CAPITAL OUTLAY SUPPORT	$33,100,000
TOTAL PROJECT COSTS	$148,920,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	222978	CY	$15	$3,344,667	
Clearing and Grubbing (10% Excavation)	1	LS		$334,467	
Saw Cut	48259.2	LF	$1	$48,259	
Sub-Total Earthwork					$3,727,393
Section 2. Pavement Structural Section					
Aggregate Sub-base	140596	TON	$30	$4,217,875	
Aggregate Base	147586	TON	$40	$5,903,422	
Asphalt Concrete	88361	TON	$125	$11,045,100	
Asphalt Concrete Overlay	1520	TON	$125	$190,021	
Fabric	53621	SF	$2	$107,243	
Modify I-80 Interchange	1	LS		$20,000,000	
Sub-Total Pavement Structural Section					$41,463,661
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$2,259,553	
				$0	
				$0	
				$0	
Sub-Total Drainage					$2,259,553

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$1,423,518	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$2,372,530	
Environmental Mitigation (5% or Roadway Items)	1	LS		$4,547,530	
				Sub-Total Specialty Items	$8,343,579
Section 5. Traffic Items					
Signing and Striping (3% of Roadway Items)	1		LS	$1,355,732	
Traffic Control System and TMP (2% of total items of work, excluding mobilization)	1		LS	$2,060,449	
				Sub-Total Traffic Items	$3,416,181
				TOTAL SECTIONS 1 thru 5	$59,210,365

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$2,372,530	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$5,254,145	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$15,395,724	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$66,837,040

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
New Bridge (Creek Crossing)	14000	SF	$250	$3,500,000	
New Bridge (I-80 Interchange)	1	LS		$25,000,000	

SUBTOTAL STRUCTURES ITEMS
(Sum of Total Cost for Structures) $28,500,000

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost
Grade Separation	1	LS		$15,000,000
Other				$0

SUBTOTAL RAILROAD ITEMS $15,000,000

TOTAL STRUCTURES ITEMS
(Sum of Structures Items & Railroad Items) $43,500,000

COMMENTS:

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	2,530,176	SF	$2	$5,060,352	
Utility Relocation	24130	LS	$5	$120,648	
Clearance/ Demolition	1	LS		$300,000	
TOTAL RIGHT OF WAY ITEMS					$5,481,000

Construction Contract Work

Brief Description of Work:

Construct a 2 lane roadway via Midday and Pedrick to I-80
Two 12' travel lane, 4' undivided median, and 8' shoulder
Section width - Roadway: 6" AC, 10" AB, 12" ASB
Overlay existing Pedrick Road: 2-inch
New Railraod Grade Separation
New Creek Crossing at South Fork Putah Creek

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$33,101,112	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$33,101,112

Estimate Prepared By	Anush Nejad	Phone #	510-625-0172
		Date	Updated 4/7/09
Estimate Checked By	Kevin Thomas	Phone #	510-625-0172
		Date	

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) PM 0 - 22.45
EA NA
Program Code

Project Description: **SR 113 Widening - Widen to 4 Lanes**

Limits: SOL-113 PM 0 to SOL-113 PM 22.45

Proposed Improvement (Scope): **Widen SR 113 to 4-lanes betweeen SR 12 and I-80**
(Assumed Robben Alternative - 25 miles)

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$73,270,000
TOTAL STRUCTURE ITEMS	$0
SUBTOTAL CONSTRUCTION COSTS	$73,270,000
TOTAL RIGHT OF WAY ITEMS	$11,090,000
CAPITAL OUTLAY SUPPORT	$21,980,000
TOTAL PROJECT COSTS	$106,340,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	PM 0 - 22.45
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	371480	CY	$15	$5,572,195	
Clearing and Grubbing (10% Excavation)	1	LS		$557,220	
Saw Cut	232320	LF	$1	$232,320	
Sub-Total Earthwork					$6,361,735
Section 2. Pavement Structural Section					
Aggregate Sub-base	195149	TON	$30	$5,854,464	
Aggregate Base	338839	TON	$40	$13,553,549	
Asphalt Concrete	180048	TON	$125	$22,506,000	
Asphalt Concrete Overlay	17424	TON	$125	$2,178,000	
Fabric	1085333	SF	$2	$2,170,667	
Sub-Total Pavement Structural Section					$46,262,679
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$2,631,221	
				$0	
				$0	
				$0	
Sub-Total Drainage					$2,631,221

District-County-Route	04-SOL-113
KP (PM)	PM 0 - 22.45
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$1,657,669	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$2,762,782	
Environmental Mitigation (5% or Roadway Items)	1	LS		$2,762,782	
			Sub-Total Specialty Items		$7,183,233
Section 5. Traffic Items					
Signal and Street Light Modifications	1		LS	$1,000,000	
Signing and Striping (3% of Roadway Items)	1		LS	$1,578,732	
Traffic Control System and TMP (3% of total items of work, excluding mobilization)	1		LS	$2,003,411	
			Sub-Total Traffic Items		$4,582,144
			TOTAL SECTIONS 1 thru 5		$67,021,011

District-County-Route	04-SOL-113
KP (PM)	PM 0 - 22.45
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$2,762,782	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$3,489,190	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$17,445,948	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$73,272,983

District-County-Route	04-SOL-113
KP (PM)	PM 0 - 22.45
EA	NA
Program Code	

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Bridge Widening		SF		$0	
New Bridge		SF		$0	
Grade Separations		EA		$0	
Other				$0	
SUBTOTAL STRUCTURES ITEMS (Sum of Total Cost for Structures)					$0

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Railroad Crossing Upgrade					
Other				$0	
SUBTOTAL RAILROAD ITEMS					$0
TOTAL STRUCTURES ITEMS (Sum of Structures Items & Railroad Items)					$0

COMMENTS: _____

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	5,544,000	SF	$2	$11,088,000	
Utility Relocation					
Clearance/ Demolition				$0	
TOTAL RIGHT OF WAY ITEMS					$11,088,000

Construction Contract Work

Brief Description of Work:

Widen SR 113 to 2 lanes in both directions, plus 8' shoulder and 20' undived Highway
Assumed Robben Alighment= 25 miles, less 3 miles of Passing Lanes
Section width - Roadway: 6" AC, 10" AB, 12" ASB; Shoulder: 4" AC, 10" AB (Total widening 50')
Add 10 feet extra right of way for clear zone

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	PM 0 - 22.45
EA	NA
Program Code	

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$21,981,895	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$21,981,895

Estimate Prepared By	Anush Nejad	Phone #	510-625-0172
		Date	Updated 4/7/09
Estimate Checked By	Kevin Thomas	Phone #	510-625-0172
		Date	

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **SR 113/SR 12 Grade Separation/Interchange**

Limits: SR 113/SR 12

Proposed Improvement (Scope): **Construct an interchange at SR 12 with SR 113**

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$12,240,000
TOTAL STRUCTURE ITEMS	$2,000,000
SUBTOTAL CONSTRUCTION COSTS	$14,240,000
TOTAL RIGHT OF WAY ITEMS	$250,000
CAPITAL OUTLAY SUPPORT	$4,270,000
TOTAL PROJECT COSTS	$18,760,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	1	LS	$15	$100,000	
Clearing and Grubbing (10% Excavation)	1	LS		$10,000	
				$0	
				$0	
Sub-Total Earthwork					$110,000
Section 2. Pavement Structural Section					
Interchange at SR 12	1	LS		$8,000,000	
Sub-Total Pavement Structural Section					$8,000,000
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$405,500	
				$0	
				$0	
				$0	
Sub-Total Drainage					$405,500

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$255,465	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$425,775	
Environmental Mitigation (10% or Roadway Items)	1	LS		$1,051,550	
				Sub-Total Specialty Items	$1,732,790
Section 5. Traffic Items					
Traffic Signal at Interchange (Diamond)	1		LS	$250,000	
Signing and Striping (3% of Roadway Items)	1		LS	$243,300	
Traffic Control System and TMP (3% of total items of work, excluding mobilization)	1		LS	$395,021	
				Sub-Total Traffic Items	$888,321
				TOTAL SECTIONS 1 thru 5	$11,136,611

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$425,775	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$678,119	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$2,890,596	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$12,240,505

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
New Bridge	1	LS		$2,000,000	
New Bridge		SF		$0	
Grade Separations		EA		$0	
Other				$0	

SUBTOTAL STRUCTURES ITEMS (Sum of Total Cost for Structures)	$2,000,000

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Railroad Crossing Upgrade					
Other				$0	
SUBTOTAL RAILROAD ITEMS					$0

TOTAL STRUCTURES ITEMS (Sum of Structures Items & Railroad Items)	$2,000,000

COMMENTS:

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	1	LS		$250,000	
Utility Relocation					
Clearance/ Demolition				$0	
TOTAL RIGHT OF WAY ITEMS					$250,000

Construction Contract Work

Brief Description of Work:

Contract a half-diamond interchange

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$4,272,152	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$4,272,152

Estimate Prepared By	Anush Nejad	Phone #	510-625-0172
		Date	Updated 4/7/09
Estimate Checked By	Kevin Thomas	Phone #	510-625-0172
		Date	

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **SR 13/I-80 Direct Connectors**

Limits: SR 113/SR 12

Proposed Improvement (Scope): **Construct an interchange at I-80 North and SR 113**

Alternate:

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$11,990,000
TOTAL STRUCTURE ITEMS	$18,000,000
SUBTOTAL CONSTRUCTION COSTS	$29,990,000
TOTAL RIGHT OF WAY ITEMS	$1,000,000
CAPITAL OUTLAY SUPPORT	$9,000,000
TOTAL PROJECT COSTS	$39,990,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	1	LS	$15	$750,000	
Clearing and Grubbing (10% Excavation)	1	LS		$250,000	
				$0	
				$0	
Sub-Total Earthwork					$1,000,000
Section 2. Pavement Structural Section					
Interchange Modifications	1	LS		$5,000,000	
Sub-Total Pavement Structural Section					$5,000,000
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$300,000	
				$0	
				$0	
				$0	
Sub-Total Drainage					$300,000

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$189,000	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$315,000	
Environmental Mitigation (10% or Roadway Items)	1	LS		$2,430,000	
				Sub-Total Specialty Items	$2,934,000
Section 5. Traffic Items					
Signing and Striping (3% of Roadway Items)	1		LS	$180,000	
Traffic Control System and TMP (3% of total items of work, excluding mobilization)	1		LS	$831,870	
				Sub-Total Traffic Items	$1,011,870
				TOTAL SECTIONS 1 thru 5	$10,245,870

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$315,000	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$1,428,044	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$2,640,218	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$11,988,914

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Bridge Structure	72000	SF	$250	$18,000,000	
New Bridge				$0	
Grade Separations				$0	
Other				$0	
SUBTOTAL STRUCTURES ITEMS (Sum of Total Cost for Structures)					$18,000,000

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Railroad Crossing Upgrade					
Other				$0	
SUBTOTAL RAILROAD ITEMS					$0
TOTAL STRUCTURES ITEMS (Sum of Structures Items & Railroad Items)					$18,000,000

COMMENTS:

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	1	LS		$1,000,000	
Utility Relocation					
Clearance/ Demolition				$0	
TOTAL RIGHT OF WAY ITEMS					$1,000,000

Construction Contract Work

Brief Description of Work:

Contract a half-diamond interchange

COMMENTS:

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 30%	1	LS		$8,996,674	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$8,996,674

Estimate Prepared By	Anush Nejad	Phone #	510-625-0172
		Date	Updated 4/7/09
Estimate Checked By		Phone #	510-625-0172
		Date	

PLANNING LEVEL ESTIMATES OF PROBABLE COSTS

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

Project Description: **SR 113 Widening - SR 12 to the Solano/Yolo County Line**

Limits: SOL-113 PM 0 to SOL-113 PM 22.45

Proposed Improvement (Scope): **Construct a 4 lane toll facility from SR 113/I-80 to SR 12. Total length of the proposed roadway is 25 miles and lies between SR 12 and the City of Davis**

Alternate: Option 3 (Toll)

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$177,160,000
TOTAL STRUCTURE ITEMS	$68,000,000
SUBTOTAL CONSTRUCTION COSTS	$245,160,000
TOTAL RIGHT OF WAY ITEMS	$25,590,000
CAPITAL OUTLAY SUPPORT	$61,290,000
TOTAL PROJECT COSTS	$332,040,000

Reviewed by District Program Manager _____ (Signature) _____ Date

Approved by Project Manager _____ (Signature) _____ Date

Phone No. _____

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
I. ROADWAY ITEMS					
Section 1. Earthwork					
Roadway Excavation	707256	CY	$15	$10,608,840	
Clearing and Grubbing (10% Excavation)	1	LS		$1,060,884	
				$0	
Sub-Total Earthwork					$11,669,724
Section 2. Pavement Structural Section					
Aggregate Sub-base	443520	TON	$30	$13,305,600	
Aggregate Base	585156	TON	$40	$23,406,240	
Asphalt Concrete	330000	TON	$125	$41,250,000	
Interchange at I-80	1	LS		$20,000,000	
Interchange at SR 12	1	LS		$15,000,000	
Sub-Total Pavement Structural Section					$112,961,840
Section 3. Drainage					
Drainage (5% Roadway Items)	1	LS		$6,231,578	
				$0	
				$0	
				$0	
Sub-Total Drainage					$6,231,578

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 4. Specialty Items					
Landscape & Irrigation System (3% of Roadway Items)	1	LS		$3,925,894	
Erosion Control and SWPPP (5% of Roadway Items)	1	LS		$6,543,157	
Environmental Mitigation (5% or Roadway Items)	1	LS		$9,943,157	
				Sub-Total Specialty Items	$20,412,208
Section 5. Traffic Items					
Traffic Signalization at I-80 and SR 12	2	EA	$300,000	$600,000	
Signing and Striping (2% of Roadway Items)	1		LS	$2,492,631	
Traffic Control System and TMP (2% of total items of work, excluding mobilization)	1		LS	$4,578,223	
				Sub-Total Traffic Items	$7,670,854
				TOTAL SECTIONS 1 thru 5	$158,946,205

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

	Quantity	Unit	Unit Price	Item cost	Section Cost
Section 6. Minor Items 5% Roadway Items	1	LS		$6,543,157	
Section 7. Roadway Mobilization (5% of total Items of work)	1	LS		$11,674,468	
Section 8. Roadway Additions Supplemental Work				$0	
Contingencies (25% x Section 1-6)	1	LS		$41,372,340	
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)					$177,163,830

District-County-Route	04-SOL-113
KP (PM)	-
EA	NA
Program Code	

II STRUCTURE ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
New Bridge (at 2 Creek Crossings)	32000	SF	$250	$8,000,000	
Grade Separations	10	SF	$2,000,000	$20,000,000	
New Bridge (I-80 Interchange)	1	LS		$25,000,000	

SUBTOTAL STRUCTURES ITEMS
(Sum of Total Cost for Structures) $53,000,000

Railroad Related Costs:	Quantity	Unit	Unit Price	Item cost	
Grade Separation	1	LS		$15,000,000	
Other				$0	

SUBTOTAL RAILROAD ITEMS $15,000,000

TOTAL STRUCTURES ITEMS
(Sum of Structures Items & Railroad Items) $68,000,000

COMMENTS:

District-County-Route 04-SOL-113
KP (PM)
EA NA
Program Code

III RIGHT OF WAY ITEMS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Acquisition, including excess lands, damages to remainder(s) and Goodwill	10,296,000	SF	$2	$20,592,000	
Utility Relocation	1	LS		$3,000,000	
Clearance/ Demolition	1	LS		$2,000,000	
TOTAL RIGHT OF WAY ITEMS					$25,592,000

Construction Contract Work

Brief Description of Work:

Construct a 24 feet divided roadway with access control

COMMENTS:

District-County-Route 04-SOL-113
KP (PM) -
EA NA
Program Code

IV CAPITAL OUTLAY SUPPORT COSTS

	Quantity	Unit	Unit Price	Item cost	Section Cost
Engineering, Construction Management and Administration at 25%	1	LS		$61,290,957	
TOTAL ENGINEERING/CONSTRUCTION ADMINISTRATION					$61,290,957

Estimate Prepared By Anush Nejad Phone # 510-625-0172
Date Updated 4/7/09

Estimate Checked By Kevin Thomas Phone # 510-625-0172
Date

10.0 Appendix B

1. List of funded improvement projects within the project vicinity

Tracking #	Project Name	Project Description	Lane Changes			Interchange modification?	Jurisdiction								Source	Expected Project Completion Date	Comments
			Added Lanes?	Original Lane Configuration	New Lane Configuration		Benicia	Dixon	Fairfield	Rio Vista	Suisun City	Vacaville	Vallejo	Unincorporated			
1	I-80/I-680/SR 12 Interchange Improvements	Includes connectors and auxiliary lanes between Green Valley Road and Cordelia truck weigh station (Phase A)	auxiliary lanes	varies	varies (see diagram)	yes			■						Bay Area RTP	2003	
3	SR 29/SR 37 Interchange Improvements	Upgrade SR 29 to freeway and add diamond interchange				yes							■			2005	
12	I-80/I-680 Interchange Expansion	Construct next segment of the I-80/I-680 Interchange Project description needed							■						Countywide Travel Model Runs	2030	
15	SR 12 Operations and Safety Improvements	From Rio Vista CL to Suisun City Limit (Phase 1)	No	1 EB,1 WB	1 EB, 1 WB					■	■				Bay Area RTP	2015	Not in model
20	Nut Tree Road/East Monte Vista Project	Part A: Nut Tree Rd widening from Orange Dr to north of Monte Vista Ave Part B: New I-80 Off/On-Ramp relocation Part C: Monte Vista Ave realignment and widening from Browns Valley Pkwy to Horse Creek Rd	yes	Part A: 1 NB, 1 SB Part C: 1 EB, 1 WB	Part A: 2 NB, 2 SB Part C: 2 EB, 2 WB	yes						■			City of Vacaville		2007
21	Leisure Town Overcrossing at I-80	New Overcrossing and new alignment with Vaca Valley Pkwy	yes	1 NB, 1 SB	3 NB, 3 SB	yes						■			City of Vacaville	As of 3-07 Complete	Done
23	California Drive Overcrossing at I-80	Proposed overcrossing between Cherry Glenn Road and California Drive	yes	0,0	2 NB, 2 SB							■			City of Vacaville		2015
24	Vaca Valley Overcrossing at I-505	New overcrossing with new ramps	yes	1 EB, 1 SB	2 EB, 2 WB with Slip onramps	yes						■			City of Vacaville	3-07 Vacaville DIF Funds ~2015	2015
30	Green Valley Rd Interchange Widening	Widen Green Valley Rd from 2 lanes to 4 lanes at I-80	yes	1 NB, 1 SB	2 NB, 2 SB				■						Countywide Travel Model Runs	2011	2011
31	Business Center Drive Extension	Extend Business Center Drive EAST from Mangels Blvd to SR 12. The extension will consist of 2 lanes in each direction.	yes	0, 0	2 EB, 2 WB				■					■	Countywide Travel Model Runs	2009	RM2/FF fees
32	Manual Campos Pkwy Extension East	Extend Manual Campos Pkwy east from Mystic Dr to Claybank Rd . The extension will consist of 2 lanes in each direction.	yes	0, 0	2 EB, 2 WB				■						Countywide Travel Model Runs	2010-11	Northeast Fees
140	Manual Campos Pkwy Extension West	Extend Manual Campos Pkwy west from Dover Ave to North Texas St. The extension will consist of 3 lanes in each direction.	yes	0,0	3 EB, 3 WB										Countywide Travel Model Runs	2010-11	North Texas/I-80 Interchange Project
143	New Express Bus Service	Express bus service on I-80 (capital costs for additional services beyond those in Regional Express Bus Program)													Bay Area RTP		
144	New Rail Station	Capitol Corridor Station -- Fairfield/Vacaville							■			■				2010-11	
145	New Rail Station	Capitol Corridor Station -- Dixon						■								2015	
42	Batavia Rd Widening	Widen Batavia Rd from 2 lanes to 4 lanes from A Street to city limits	yes	1 NB, 1 SB	2 NB, 2 SB			■							City of Dixon	2051	
43	Evans Road	Construct a new 2 lane road from Dixon Ave to South Pkwy	yes	0,0	1 NB, 1 SB			■							City of Dixon	2010	
55	Hume Way Widening	Widen Hume Way from two lanes to four lanes from Davis St to Peabody Rd.	yes	0 EB, 0WB	1 EB, 1WB							■			City of Vacaville	2003	Hume Way Extension complete from Davis to Hume
60	Davis St Widening	Widen Davis St from two lanes to four lanes from Mason St to I-80 Hume Way & Bella Vista/Davis Realignment.	yes	1 NB, 1 SB	2 NB, 2 SB							■			City of Vacaville	As of 3-07 Complete	
		Widen Davis Street from Hume Way to Bella vista	yes	1 NB, 1 SB	2 NB, 2 SB											3-07 In Design	
61	Depot St Widening	Widen Depot St from two lanes to four lanes from Monte Vista Ave to Mason St.	yes	1 NB, 1 SB	2 NB, 2 SB							■			City of Vacaville	As of 3-07 Complete	

Tracking #	Project Name	Project Description	Lane Changes			Interchange modification?	Jurisdiction								Source	Expected Project Completion Date	Comments
			Added Lanes?	Original Lane Configuration	New Lane Configuration		Benicia	Dixon	Fairfield	Rio Vista	Suisun City	Vacaville	Vallejo	Unincorporated			
38	Leisure Town Rd Widening	Widen Leisure Town Rd from 2 lanes to 6 lanes from Orange Drive to I-80	yes	1 NB, 1 SB	3 NB, 3 SB							■			Countywide Travel Model	As of 3-07 Complete	
39	Leisure Town Rd Widening	Widen Leisure Town Rd from 2 lanes to 4 lanes from Orange Drive to Alamo Rd	yes	1 NB, 1 SB	2 NB, 2 SB							■			Countywide Travel Model	2015	Jepson Parkway , Vacaville DIF
40	Leisure Town Rd Widening	Widen Leisure Town Rd from 2 lanes to 4 lanes at the I-80 Interchange (PROJECT COMPLETED)	yes	1 NB, 1 SB	2 NB, 2 SB							■			Countywide Travel Model Runs	As of 3-07 Complete	
44	Vanden Rd Widening	Widen Vanden Rd from 2 lanes to 4 lanes from Peabody Rd to Leisure Town Rd	yes	1 NB, 1 SB	2 NB, 2 SB									■	Countywide Travel Model	2012	Jepson Parkway
45	Benicia Bridge Widening	Widen the Benicia Bridge from 6 lanes to 9 lanes	yes	3 NB, 3 SB	5 NB, 4 SB		■							■	Countywide Travel Model	2008	
49	Midway Rd Widening	Widen Midway Rd from two lanes to four lanes from I-	yes	1 EB, 1 WB; EB 2 WB	2 EB, 1 WB							■			City of	2030	Development to add 1 EB lane from to Leisure Town Only
51	Vaca Valley Rd Extension	Extend Vaca Valley Rd from Gibson Canyon Rd to Wrentham Dr	yes	0,0	1 EB, 1WB							■			City of Vacaville	2015	DIF Funded by 2030
52	Vaca Valley Rd Widening (Part 2)	Widen Vaca Valley Rd from two lanes to six lanes from I-505 to I-80	yes	2 EB, 2 WB	3 EB, 3 WB							■			City of Vacaville	2015	
53	Elmira Rd Widening	Part A: Widen Mason St from two lanes to four lanes from McClellan St to Depot St Part B: Widen Elmira Rd from two lanes to six lanes from Depot St to Allison Part B2: Allison to Leisure Town Road Part C: Widen Elmira Rd from two lanes to four lanes just past Leisure Town Rd	yes	Part A & C 1 EB 1WB, Part B 2EB, 2WB								■			City of Vacaville	AS of 3-07 Part A Complete2 EB, 2WB; Part B1 Depot to Peabody Complete; Peabody to Allison in Construction- 3EB, 3 WB; Part C near 2030	Part A - DIF in Const; Part B- DIF; Part C- Development COA
56	Ulatis Dr Widening	Widen Ulatis Dr from two lanes to four lanes from Burton Dr to Leisure Town Rd.	yes	1 EB, 1 WB	2 EB, 2 WB							■			City of Vacaville	As of 3-07 Complete - Constructed as adjacent areas	
58	Alamo Dr Widening	Part A: Widen Alamo Dr from two lanes to six lanes from I-80 to Marshall Rd Part B: Widen Alamo Dr from two lanes to four lanes from Marshall Rd to La Cruz Ln Part C: Widen Alamo Dr from two lanes to four lanes from Foothill Dr to Hidden Glen Ct (ALL PARTS COMPLETED)	yes	1 NB, 1 SB	Part A: 3 NB, 3 SB Part B and C: 2 NB, 2 SB							■			City of Vacaville	As of 3-07 Complete - Note Alamo Drive is 2EB 2 WB from Foothill to Leisure Town Rd	
113	Mare Island Bus Service - Phase I	Project description needed	??	??	??								■		City of Vallejo	2015	
114	Mare Island Bus Service - Phase II	Project description needed	??	??	??								■		City of Vallejo	2015	
63	Browns Valley Pkwy Widening	Widen Brown Valley Pkwy from two lanes to four lanes from Wrentham Dr to Allison Dr	yes	1 NB, 1 SB	2 NB, 2 SB							■			City of Vacaville	2015	DIF Funded ~2010
63b	Browns Valley North of Wrentham Dr															2030	
66	Peabody Rd Widening	Widen Peabody Rd from two lanes to four lanes north of Alamo Dr.	yes	1 NB, 1 SB	2 NB, 2 SB							■			City of Vacaville	Exist	As of 3-07 Peabody Road generally exists as 2 SB 2 NB - General Plan designates Peabody Road as 4 lane arterial. Widening south of Alamo to 3 lanes approximately 2030.
66a	Peabody Rd Widening	Widen Peabody Rd south of Alamo Dr. from two lanes to six lanes to Vacaville City limits.	yes	2NB, 2 SB	3 NB, 3 SB							■			City of Vacaville	2030	

Tracking #	Project Name	Project Description	Lane Changes			Interchange modification?	Jurisdiction								Source	Expected Project Completion Date	Comments
			Added Lanes?	Original Lane Configuration	New Lane Configuration		Benicia	Dixon	Fairfield	Rio Vista	Suisun City	Vacaville	Vallejo	Unincorporated			
156	I-80 Interchanges at A Street, Pitt School Rd. and Pedrick Rd.	Reconstruct I-80 interchanges at A Street, Pitt School Road and Pedrick Road consistent with I-80/I-680/I-780 Major Investment and Corridor Study	yes	1 NEB, 1 SWB	As needed			■							City of Dixon	2020	
Notable undescribed projects:																	
	I-680 widening from Benicia to Cordelia																
	SR 12 from Sommerset to Rio Vista Bridge																
	I-80 HOV Lanes in Vallejo																

11.0 Summary of Comments

STA
Final MIS Report Response to Comments
Project Name: SR 113 MIS
PROJ. NO. 097398000

Consultant: Kimley-Horn & Associates

Codes
1. Added, Corrected or Resolved
2. Clarify or Evaluate
3. Additional Info Needed
4. Not Cost Effective/Pref.
5. Disagree
6. Delete Comment
7. Comment Noted

Note: Pages referenced in original comments may have been updated to reflect where the comment was addressed as part of the revised draft Final MIS report.

Item No.	Source Name	Page or Sheet	Comments	Code	Response/Clarification
1	Caltrans	Ch 4, Page 10, Table 4.6	Except for I-80-Vaughn and North Adams the no-build alternative seems to be working fine. Hence all improvements, other than rehabililitating the existing pavement and providing safety improvements (if needed), should focus on upgrading these two segments only	5	However this would not address the desire to reroute SR 113 out of the Dixon City limits.
2	Caltrans	Ch 5, Page 4, Section 5.2.2	No median barriers should be provided without first providing proper inside shoulders (5' minimum) and not clear what a three-lane facility is.	1	Section 5.2.2. was revised. Shoulder width had been adjusted and three-lane facility has been removed.
3	Caltrans	Ch 5, Page 5	If highway is to be divided should provide minimum 5' paved inside shoulders.	1	Figure 5.2 was revised to include the minimum 5' paved inside shoulders.
4	Caltrans	Ch 5, Page 4	Diagram shows median area sloping upward. If proposed median is un-surfaced it should slope at 10:1 or flatter to form a shallow valley in the center.	7	Proposed median assumed to be surfaced. Language addded to ch 5 page 4.
5	Caltrans	Ch 5, Page 7, Section 5.2.5	Access control should be obtained only if SR 113 is designated as an Expressway facility	1	Added
6	Caltrans	Ch 5, Page 10, Section 5.4	These alternatives introduce horizontal curves to an existing alignment that is on tangent. How will that help upgrade the design speed to 65mph?	1	Added note regarding horizontal design speed.
7	Caltrans	Ch 5, Page 10, Section 5.4.1	How far will the Kidwell Road Interchange be from the existing I-80/SR113 Interchange? Interchange spacing should be a minimum of 2 miles.	7	Distance between Kidwell and I-80/SR 113 (Davis) is 1.5 miles. Additional study needed if Kidwell is determined to be the preferred realignment alternative.
8	Caltrans	Ch 5, Page 13, Section 5.4.1	Why doesn't (Robben Road A, B, Pedrick A, B) also go through intersections?	2	
9	Caltrans	Ch 5, Page 36, Section 5.6	What is basis for environmental mitigation costs assumed to be 5%	1	Assumption basis is from prior studies for similar projects.
10	Caltrans	Ch 5, Page 36, Section 5.6	Mobilization costs should be 10% of work not 5%	1	
11	Caltrans	Ch 5, Page 38, Section 5.6	Are grade separations and interchanges costs included in the construction costs provided in table 5.17?	1	yes
12	Caltrans	Ch 5, Page 38, Section 5.6	Are utility relocation costs included in the R/W cost provided for each alternative?	1	Added utility relocation cost as a line item
13	Caltrans	Ch 6, Page 7, Section 6.2.16	Is Aerially Deposited Lead (ADL) present within limits of project? This potential issue should be noted in this section.	1	Added
14	Caltrans	Ch 7, Page 11	NB SR 113 to WB I-80 connector missing	1	
15	Caltrans	Ch 2	Delete "and" in Traffic Accident and Surveillance and Analysis System on all tables	1	
16	Caltrans	General	Is should be noted that any proposed improvements on State Route 113 shall conform to Caltrans Standard Design which would include and not limit to the latest edition of Caltrans HW design manual (HDM) and the California Manual on Uniform Traffic Control Devices (MUTCD)	1	This statement has been added to Ch 5, Page 3 in the first paragraph.
17	Caltrans	Ch 5, Page 5	Proposed left shoulders shall be 5' wide. See table 302.1 in section 302.1 of Caltrans Highway Design Manual (HDM).	1	
18	Caltrans	Ch 5, Page 5	Is there any proposed improvements such as sidewalk, curb ramp, crosswalk, striping and bike path etc. for the alternatives and within the City limit of Dixon?	1	Proposed Dixon sidewalks, curb ramps, crosswalks, striping and bike paths are not scoped to be a part of this study.
19	Caltrans	Ch 5, Page 5	Median width should be increased whenever possible, and where is appropriate. (see HDM section 305.1)	1	Added
20	Caltrans	Ch 5, Page 6, Section 5.2.4	Design speed of 65 mph would not conform to table 101.2 of highway design manual for conventional highway rural rolling terrain.	1	Noted and changed
21	Caltrans	Ch 7, Page 2	It should be noted that a traffic and capacity analysis shall be conducted for the modification of existing interchanges	1	Added to ch 7 page 2 section 7.2.
22	Caltrans	Ch 7, Page 8-11	For proposed turning lanes it should be noted that future designs shall accommodate the need for truck turning movements.	1	
23	Caltrans	Ch 7, Page 8-11	Double turn lanes should be provided to accommodate turning demand traffic volumes which are 300 vph or more.	1	
24	Caltrans	Ch 7, Page 8-11	Study should note that proposed improvements and changed of access points on Interstate 80 shall be reviewed by FHWA.	1	
25	Caltrans	Ch 4, Section 4.2.1	3% annual growth is on the high side of the historical traffic growth range, (this results in 2030 volumes 91% greater than 2008's). Although 3% could be used as a more cautious estimate, a median rate of 2.5% is acceptable (resulting in a 72% volume increase in 2030 from 2008).	5	Kimley-Horn and Associates recommends a more cautious estimate for the MIS given the travel demand analysis and City of Dixon growth cap of 3%.
26	Caltrans	Ch 3, Page 34	6th bullet, "…for future mixed-use residential." Comment: Suggest providing a clear definition of "mixed-use" residential.	1	
27	Caltrans	Ch 3, Page 31	9th bullet, "Future development at the I-80/Midway Road interchange will depend on infrastructure improvements." Comment: The beginning of this section states major future land use developments "proposed" in the SR 113 corridor. Is development currently planned at or around the I-80/Midway Road interchange? If not, this bullet should be removed because it does not fit the reasoning for this section.	1	

STA
Final MIS Report Response to Comments
Project Name: SR 113 MIS
PROJ. NO. 097398000

Consultant: Kimley-Horn & Associates

Codes
1. Added, Corrected or Resolved
2. Clarify or Evaluate
3. Additional Info Needed
4. Not Cost Effective/Pref.
5. Disagree
6. Delete Comment
7. Comment Noted

Note: Pages referenced in original comments may have been updated to reflect where the comment was addressed as part of the revised draft Final MIS report.

Item No.	Source Name	Page or Sheet	Comments	Code	Response/Clarification
28	Caltrans	Ch 3, Page 13	Statement, "…will contribute to a higher rate of growth in the manufacturing, wholesale, and transportation sectors than in other industry sectors." Comment: Please clarify what is meant by "transportation" sectors. Transportation meaning Goods Movement?	1	Yes. Good movement was added to clarify statement.
29	Caltrans	Ch 3, Page 13	Section 3.3, Regional Economic Trends Comment: May also want to review or cross evaluate this section with the Market Study produced for the Smarter Growth Along the I-80/Capitol Corridor Study.	1	
30	Caltrans	Ch 3, Page 14	Top paragraph, "…as goods movement from distribution centers along I-80 will continue to become less efficient." Comment: Please clarify the reasoning behind why this statement was made.	1	Clarified.
31	Caltrans	Ch 5, Page 1-35	Highway Capacity and Cross Section and Figure 2 and 3 Comment: Alternative options dealing with projected increases in traffic and resulting capacity related improvements should include the full gamut of options and associated costs including a 2- lane conventional highway, a 4-lane conventional highway and a 4-lane expressway/freeway with or without medians, shoulders and barriers.	1	
32	Caltrans	Ch 5, Page 6, Section 5.2.4	Accident Information, 2nd paragraph Comment: The Solano Transportation Authority will soon begin an SR-12 median barrier PSR. How will the barrier study possibly effect the proposed improvements at the SR-12/113 intersection?	3	Median barrier PSR will need to be taken into account durring the preliminary phases on the SR 113/SR 12 improvements. SR 12 PSR is needed.
33	Caltrans	Ch 5, Page 7, Section 5.2.5	Highway Access Control Comment: It is good to see Highway Access Control mentioned in this working paper. Any new alignments and facility upgrades may require the State to enter into Freeway Agreements between the City of Dixon and Solano County. Additional language on Freeway Agreements should be provided in this section. For more information please see Chapter 24 of the Caltrans Project Development Procedures Manual on Freeway Agreements - http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm	1	
34	Caltrans	Ch 5, Page 39	Cost Estimate Option 1 and Cost Estimate Option 2 Comment: Various improvements for either option should be listed and prioritized based on their operational benefit.	1	Improvemet listed as pro's and con's on table 5.20
35	Caltrans	General	Future No Build Traffic Conditions, 1st and 2nd paragraphs, "This analysis, referred to as the No Build Scenario, represents the existing transportation system plus the specific committed future projects in the corridor and region. These committed projects include programmed projects expected to be funded and built by 2030 in the corridor, Solano County, the Bay Area, Central Valley, and Sacramento regions. In addition, the No Build Scenario includes the widening of the existing SR-113 from SR-12 to I-80 to a four-lane facility with a new speed limit of 65 mph, raised from 55 mph, outside of Dixon city limits, with the existing facility's speed limits maintained within the City of Dixon." Comment: It is crucial that a true no-build alternative reflecting the existing SR-113 facility be included and analyzed in the Future Conditions Report. Questions concerning the validity of the study may arise as a result of the no-build alternative not being included. Comment: It is unclear why a 4-lane SR-113 between SR-12 and I-80 is being assumed when there does not seem to be any a recognized plan or commitment to do this. Additionally, justification for the 4-lane facility should be provided in the Future Conditions Report. Comment: Wording choice, "…programmed projects expected to be funded…," seems to be a contradiction. Programmed projects normally refer to projects that are approved, at least at the PID level, and have a dedicated funding source identified.	1	No Build senarios is discussed in detail in Section 4 and described briefly in Section 5.5 1. Section Section 4.2. **Wording choice, "…programmed projects expected to be built…," the word "programmed" has been removedd from 1st paragraph in last sentence of section 4.2, Ch 4, Page 3.**
36	Caltrans	Ch 2, Page 2	Section 2.1, 1st paragraph, "Figures 2.1, 2.2 and 2.3 display Daily and AM and PM peak-hour bi-directional traffic flows on SR-113 for 2008 and 2030." Comment: Peak-hour bi-direction traffic flows are missing for 2008, only 2030 figures provided.	1	2030 Daily, AM and PM data was separated from 2008 figures and is provided in Section 4.2, Pages 5-7

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5. Disagree
6. Delete Comment
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37	Caltrans	Ch 4, Page 4	Section 2.1, Future Traffic Volumes, 1st paragraph, last sentence, "…traffic volumes in the SR-113 would increase three percent annually from 2008 to 2030," and Page 2-2, 2nd paragraph, "Traffic volumes from 2008 to 2030 are expected to increase by about 100 percent on average…" Comment: Does the 3% annual increase equal the 100% average increase? If not, clarification is needed.	1	
38	Caltrans	Ch 4, Page 19	Section 2.4, Trucks, last sentence, "The proportion is lower than that of SR-12, which has 11 percent of its traffic classified as trucks." Comment: Please clarify which segment of SR-12 is being referred to.	1	
39	Caltrans	Ch 5, Page 40	Section 3.0, Preliminary Toll Analysis, 2nd paragraph, "However, the sharp turns at Hastings Road and Cook Lane were realigned and improved for alternatives analysis purposes." Comment: If the comparison is between the existing SR-113 facility and a new tolled facility, it is unclear why the sharp turns at Hastings and Cook Lane were realigned and improved for analysis purposes.	1	This paragraph was revised.
40	Caltrans	Ch 5, Page 41	Estimated Toll Free Traffic, Table 5.21 Comment: While it is understood the toll analysis involves a comparison between the existing two-lane SR-113 and a new tolled facility, Table 5.21 reflects a header of, "SR 113 No-Build," which is confusing to the reader since other sections of the report refer to the No-Build Scenario as a 4-lane SR-113 facility.	1	No Build senarios was classified in Section 4 and briefly in Section 5.5, Page 30 in the draft Final MIS document.
41	Caltrans	Ch 5, Page 41	Estimated Toll Traffic And Revenue, 1st paragraph, "Table 5.23 and Table 5.22 show the potential revenue generated by a parallel toll facility in the SR-113 corridor." Comment: Suggest adding, "…show the potential "gross" revenue generated by a parallel toll facility…" This suggested text should be added at any location where gross revenues are being discussed instead of potential net revenues where operational related costs are factored in.	1	
42	Caltrans	Ch 5, Page 42	Section 5.62, Estimated Toll Traffic And Revenue, 1st bullet, "The average household income for Solano County was obtained from the 2000 U.S. Census ($54,099) and inflated by CPI to 2008 ($69,758)." Comment: Looking at the 2006 American Community Survey (ACS) for the San Francisco Bay Area which compares data from the ACS with that from Census 2000, both of which data sources are produced by the U.S. Census Bureau, on Page 32 - Table C.4 - Mean and Median Household Income by County of Residence: 2000 & 2006, Solano County's Average (Mean) income for 2000 is shown as $64,228 while their Median income is shown as $54,099. A copy of the ACS can be provided upon request. Comment: CPI should be spelled out once before abbreviating.	1	
43	Caltrans	Ch 5, Page 43	Section 5.62, Estimated Toll Traffic And Revenue, 4th bullet, "Based on the travel demand analysis, 50 percent of 2030 estimated average weekday traffic occurs during peak periods (congested speeds), while the other 50 percent occur during nonpeak periods (uncongested speeds). Comment: Word choice, isn't the Project expected to be LOS A for all time periods? That does not suggest "congested speeds."	1	deleted "conged speeds"
44	Caltrans	Ch 5, Page 44	middle paragraph, "A toll rate of $0.18 per mile was estimated to maximize revenue potential for the toll road, and to provide additional capacity to increase tolling rates. Comment: What is meant by "additional capacity"?	1	
45	Caltrans	Ch 3, Page 5	2nd paragraph, "Assuming the revenues increase on a straight line from 2012 to 2030 from $5.9 million to $9.8 million, and also assuming a discount rate of 7 percent…" Comment: It is unclear what "discount rate" means.	1	
46	Caltrans	Ch 3, Page 5	2nd paragraph, "Based on the construction cost of $548 million, as reported in the Potential Alternative Alignments Interim Report produced for this study, the revenues generated by the toll facility are low relative to the cost of the project." Comment: Suggest adding statements concerning annual operational costs including expenses for toll equipment maintenance, roadway maintenance, communications, administration (toll processing) and enforcement.	1	

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47	Caltrans	General	General comment: At the last SR-113 Corridor Study TAC Meeting staff from Solano County requested that in addition to the estimated cost of realigning SR-113, the costs to upgrade the existing SR-113 facility, where it is understood that ownership would eventually be transferred to the county and the City of Dixon, also be shown in the study report. The Department agrees and also requests that procedures concerning the highway relinquishment process be summarized and included in the study report. Attached below is a link to the Caltrans Project Development Procedures Manual where the relinquishment process is outlined in Chapter 25 (http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm).	1	
48	Caltrans	General	It is very strange that the "no-build alternative includes widening Route 113 from two to four lanes.	1	The no-build alternative no longer includes widening.
49	Caltrans	General	This document presents the results of a traffic forecasting, but provides almost no background concerning how these forecasts were accomplished. The methods used to forecast the traffic should be documented so that the methods used can be evaluated. All steps in the forecasting process should be documented. The methods and results of the project level validation as well as any post-processing of the modeling results are two of the most critical areas that should be documented.	1	This study traffic forcast was delivered from the Solana Travel Demand Model and is noted in Ch 4, Page 3, Section 4.21
50	Caltrans	Ch 4, Page 3	Includes the statement, "The City of Dixon's traffic growth cap rate of three percent also was integrated into this analysis." The memorandum needs to summarize what the City of Dixon's traffic growth cap rate of three percent is and how it was integrated into this analysis.	1	
51	Caltrans	Ch 5, Page 43	States a vehicle operating cost of 17¢/mile was used for the toll analysis and sites the American Automobile Association's publication Your Driving Costs. This is the figure given for the average sedan cost, but does not take into account Sport Utility Vehicles or mini-vans which have a considerably higher cost per mile. It also does not take into account certain expenses that are not included operating costs which do increase with increasing mileage. Additional mileage will increase the depreciation on a vehicle so some allowance in the cost per mile should be included for increased depreciation brought about by additional miles driven. Additional miles driven can also increase insurance costs.	1	
52	Caltrans	Ch 5, Page 43	Also states that, "Based upon travel demand analysis, 50 percent of 2030 estimated average weekday traffic occurs during peak periods (congested speeds), while the other 50 percent occur during nonpeak periods (uncongested speeds). More explanation is needed about how this finding was reached.	1	
53	Caltrans	General	There are insufficient details in the Draft Technical Memorandum for us to review the Traffic Safety aspect of the proposed improvements. However, proposed improvements of Route 113 shall conform to Caltrans Standard Design. Design exception request for Nonstandard Design features shall be reviewed and approved by Office of Design or Advance Planning.	1	
54	Caltrans	General	Existing affected Interchanges as indicated in the Alternatives shall be upgraded to meet the projected traffic demand.	3	
55	Caltrans	General	If new Interchanges are proposed, it shall conform to the following Mandatory Design Standard: "The minimum interchange spacing shall be one mile in urban areas, two miles in rural areas, and two miles between freeway-to-freeway interchanges and local street interchanges". Design of Interchange not meeting the above Mandatory Design Standard shall obtain Approval for Design Exception as mentioned in note 1.	1	New interchanges are not proposed however existing freeway interchanges could become freeway to freeway conectors (Kidwell) and would then be below the mimimum spacing per the design standard. A design exception would be neeeded if this alternative is selected. Language added to Robben Road Alternative A on Ch 5, Page 13 and Pedrick Road A on Ch 5 page 24.
56	Caltrans	General	Proposed signalized intersections must meet warrants and shall be reviewed by Signal Operations when more details are available.	3	Warrant analysis needed
57	Caltrans	General	It appears that additional Right of Way will be needed for the proposed improvements.	1	R/W will be needed for widening
58	Caltrans	General	Alignment improvement for the 90 degree turns at Hastings Road and Cook Lane on Route 113 shall be included in all Alternatives.	1	Included in all but no-build alternative
59	Caltrans	Ch 7, Page 12	Two separate exits in the eastbound direction should not be allowed.	1	Removed eastbound local street exit (Figure 7.4)
60	Davis City Council	General	SR113 northern corridor concerns. Underestimated negative impacts to agricultural, habitat, and transportation facilities beyond Solano County.	7	

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61	Davis City Council	General	Providing access to the agricultural areas east of Dixon may encourage conversion to urban uses and indude growth within the Dixon/Davis greenbelt area.	7	
62	Davis City Council	General	Possible impact from reducing farming access, fragmentation of existing farming parcels or parcels becoming unsuitable for farming because of roadway changes.	7	
63	Davis City Council	General	How will the alternatives would affect traffic and noise beyond the Solano County line, such as CR 98 (Pedrick), or State Route 113 north of Interstate 80.	7	
64	Davis City Council	General	Alternative alignment 2 and its direct component to the eastern I-80/SR113 Interchange (Davis) would require extensive construction at Putah Creek, with likely impacts to sensitive species.	7	
65	Jon Fadhl	General	Concern that having high speed turns on Pedrick (if alternativce 5 or 6 is selected) and the City limit adjoining will add the potential of autos wanting to enter 113 from the north if there are any access points from the City.	7	
66	Jon Fadhl	General	How would City traffic entering Pedrick Road (if alternative 5 or 6 is selected) via High School, East 1st Street, Vaughn Road be affected and how would the pedrick road overpass be affected.	7	Access points to Pedrick Road (future SR 113 if alternative 5 or 6 is selected) would need to be examined as part of the EIR traffic analysis. Pedrick road interchange would need to be modified if Pedrick Road Alternative A is selected. See Ch 7, Page 11, Figure 7.3.
67	Jon Fadhl	General	Concern with adding two additional high speed turns to the future SR 113 corridor.	7	High speed curves will be modified to improve safety. Proposed curves are included with several alternative to satisfy the need to reroute SR 113 out of downtown Dixon.
68	Jon Fadhl	General	What other alternatives were examined and eliminated at early stages of the project.	1	Ch 5, Page 9, Figure 5.3 had been modified to include more preliminary alternatives that were eliminated at early stages of the project.
69	LSA	General	Concerned with the short term project ID 1 realignment of the "S"curves. Relocation or construction of the new road segment as shown in the MIS (realigned to the north) would: 1.) violate the terms of the conservation easement (California Department of Fish and Game) for the property; 2.) result in substantial impact/loss of wetlands/vernal pool habitat; 3.) affect federally designated critical habitat for two species (California Tiger Salamander and Delta green ground beetle); 4.) fragment/isolate a substantial portion of the bank rpm the remaining protected habitat; 5.) substantially increase land acquisition cost. Recommend that the MIS be revised to drop the new road segment and confined "S" curves realigned to the areas previously excluded from the Gridley Mitigation Bank conservation easement.	1	The S curves have been moved to the south to the areas previously excluded fron the Gridley Mitigation Bank. See figures 5.5-5.9.
70	LSA	General	MIS greatly underestimates the impacts biological resources and ultimate cost of resulting from the proposed actions, particularly the long term widening of the entire raodway to four lanes. The land bordering SR113 from the north of Brown Road south to SR12 contains a high conservation value lands for threatened and endangered species listed in Section 6.2.17 as well as numerous other species of special concern. The proposed ultimate widening to four lanes would cost substantially more than depicted just to address necessary habitat and species mitigation cost. We recomment that the MIS be revised to more provide a more accurate assessment of the true cost and viability for this project	7	A more detailed assessment of the biological cost/impact resulting from roadway widening will be examined as part of the EIR analysis.
71	LSA	Section 6.2.5	Section 6.2.5 concludes that there are no Section 4(f) resources in the study area. Calhoun Cut Wildlife Management Area is owned by the California Department of Fish and Game. The approximate boundaries of Calhoun Cut are depicted on various project alternatives maps as the green, trapezoidal open space/green belt area on the east side of the highway approximately 3 miles north of State Route 12. The green belt area shown in these same figures on the west side of the State 113 is the Jepson Prairie Preserve. The Jepson Prairie Preserve is a University of California Natural Reserve which is owned and operated by the Solano Land Trust. It should also be noted that the Burke Ranch Mitigation Bank borders the west side of SR113 just south of the Hay Road Landfill. Similar to the Gridley Mitigation Bank, the Bruke Ranch Mitigation Bank is protected byunder conservation easement and agreement with U.S. Fish and Wildlife Service. This most of the highway from Brown Road south to approximately Creed Road is bordered by designated and protected nature preserves/management areas. These need to be evaluated with respect to Section 4(f) requirements.	7	A more detailed assessment of the environmental impacts, including section 4(f), will be examined as part of the EIR traffic analysis. All alternative figures have been modified to call out the Calhoun Cut Wildlife Management Area and the Jepson Prairie Preserve.
72	Caltrans	Table 5.17	Comment: On Table 5.17, "Estimate of Probable costs for prioritized list of improvements," project P7 to Widen SR 113 to 4 lanes from SR 12 to I-80 has an estimate that looks really low. Is it correct? We realize that these are just planning level estimates, but relative to the other projects on the list, this estimate seems questionable. If the highway can be widened to 4 lanes at such a low cost, one might argue that this project could move up in priority to the mid-term category.	1	Estimate has been revised.

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73	Caltrans	Ch 5, Page 41	Comment: With regard to the Project P1 to reconstruct S-Curves and the long term realignment projects in the 10 to 15 year category (P6-2 through P6-5), 90 degree turns in the alignment are to be minimized or avoided. Also, for the realignment projects, perhaps an alternative can be considered to connect directly to SR 113 at I-80.	1	Avoiding 90 degree turns conflicts with avoiding SR 113 through downtown dixon. Comment noted. Alternatives Robben B and Pedrick B offer solutions to connect SR 113 at I-80.
74	Caltrans	General	Including a reference to the project listing in the study appendix would be also beneficial.	1	The following sentence has been added to section 4.2, Ch 4, page 3 "A list of Countywide Transportation Projects is included in Appendix B. This list of projects was included in the latest Solano Napa Travel Demand Model Update and was used to analyze current and future traffic conditions."
75	Caltrans	Ch 5, Section 5.5	Comment not yet resolved. See comment # 2 and 4. No median barriers should be provided without first providing proper inside shoulders (5' minimum).	1	Comment added to section 5.5.5, Ch5, page 4 "In addition, construction of a median barrier should include a 5' minimum inside shoulder."
76	Caltrans	Ch 7, Section 7.2	Comment not yet resolved. See comment # 21-23. It should be noted that a traffic and capacity analysis shall be conducted for the modification of existing interchanges. For proposed turning lanes it should be noted that future designs shall accommodate the need for truck turning movements. Double turn lanes should be provided to accommodate turning demand traffic volumes which are 300 vph or more.	1	Comment added to section 7.2, Ch 7, page 1 "It should be noted that a traffic and capacity analysis shall be conducted for the modification of existing interchanges." Comment added to section 7.2.1 item # 3 Ch 7, page 2 " For proposed turning lanes it should be noted that future designs shall accommodate the need for truck turning movements. Double turning lanes should be provided to accommodate turning demand traffic volumes which are 300 vehicles per hour or more."
77	Caltrans	Ch 5, Section 5.4	Follow up comment to comment 55. The Highway Design Manual (HDM) specifies in bold letters (meaning it is a mandatory requirement): "The minimum interchange spacing shall be one mile in urban areas, two miles in rural areas, and two miles between freeway-to-freeway interchanges and local street interchanges." This is found in section 501.3 of the HDM. This issue should be acknowledged or clarified in the report.	1	Comment added to section 5.4.1, Ch 5 page 14 and section 5.4.4, Ch 5, page 24.
78	Caltrans	Ch 5, Section 5.5	At the last SR-113 Corridor Study TAC Meeting staff from Solano County requested that in addition to the estimated cost of realigning SR-113, the costs to upgrade the existing SR-113 facility, where it is understood that ownership would eventually be transferred to the county and the City of Dixon, also be shown in the study report. The Department agrees and also requests that procedures concerning the highway relinquishment process be summarized and included in the study report. Attached below is a link to the Caltrans Project Development Procedures Manual where the relinquishment process is outlined in Chapter 25 (http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm).	1	Comment has been added to section 5.5.2 Ch 5 page 34, section 5.5.3 Ch 5 page 35, section 5.5.4 Ch 5 page 36, section 5.5.5 Ch 5 page 37, section 5.5.6 Ch 5 page 38.

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Flex your power!
Be energy efficient!

May 1, 2009

Mr. Daryl Halls
One Harbor Center, Suite 130
Suisun City, CA 94585

Dear Mr. Halls:

The California Department of Transportation (Department) would like to commend the Solano Transportation Authority (STA) for taking a major step towards identifying, prioritizing and developing transportation improvements through the completion of the State Route 113 Major Investment and Corridor Study. We are confident that the State Route 113 Major Investment Study - Final Report will serve as a valuable tool for the identification of future investments and operational strategies between Interstate 80 and State Route 12.

We recognize and accept this Planning study and look forward to working with you and your staff towards developing funding opportunities and advancing the prioritized projects to the next level of analysis. The Department continues to appreciate the strong working relationship we have with the STA and this study product is a result of that.

Sincerely,

BIJAN SARTIPI
District Director