

Chapter 1 Proposed Project

1.1 Introduction

The City of El Paso de Robles (City) and the surrounding San Luis Obispo County (County) area have begun to experience substantial commercial and industrial development in the southern portion of the City adjacent to the U.S. Highway 101 (US 101)/State Route 46 West interchange. The resulting growth in local traffic, combined with the increasing regional through traffic, has resulted in increasing congestion. The need for this interchange improvement project was identified in 1997 by the California Department of Transportation (Caltrans), the County, San Luis Obispo Council of Governments, and the City. At that time, the City, County, and San Luis Obispo Council of Governments entered into a Cooperative Agreement to share the responsibility of improving the interchange as the surrounding area developed. Caltrans, in cooperation with the City, the County, and San Luis Obispo Council of Governments, proposes to relieve local and regional circulation problems and reduce existing and future congestion by improving the US 101/State Route 46 West interchange.

The proposed project includes reconstruction of the US 101/State Route 46 West interchange ramp termini, and the relocation of Theatre Drive to a new intersection with State Route 46 West, west of its current location. Interchange reconstruction would convert the existing compact diamond (Type L-1), signal-controlled ramp intersections into roundabouts. Adjacent frontage roads would be either redirected into the new roundabouts or relocated away from the interchange. Figure 1-1, Regional Location, shows the regional location of the project, whereas Figure 1-2, Project Area, identifies the project area limits.

The proposed project is listed as financially constrained in the San Luis Obispo Council of Governments 2005 Regional Transportation Plan. It is also included in the cost-constrained 2007 Regional Transportation Improvement Program (RTIP). The San Luis Obispo Council of Governments will update the RTP in June 2010, and cost estimates will be updated to match the most current estimate for the full cost of the project.

Three alternatives—Build Alternative 1, Build Alternative 2, and the No-Build Alternative—are being considered for the US 101/State Route 46 West Interchange Modification Project and are described in Section 1.3 Alternatives.

Existing Facilities

US 101 is a major north-south corridor in the County and State Route 46 is a major east-west expressway serving the regional traffic of the County. US 101 is functionally classified as a Principal Arterial, and consists of a four-lane access controlled freeway with standard lanes and shoulders throughout the project limits. State Route 46 West is classified as a Minor Arterial and consists of a two-lane access controlled conventional highway with 12-foot lanes and 8-foot shoulders between US 101 and the coast within the project area. Both routes are part of the Terminal Access Route for the National Network for Surface Transportation Assistance Act trucks and are included in the California Freeway and Expressway System.

US 101 crosses over State Route 46 West on two separate overcrossing structures, and the US 101/State Route 46 West interchange is composed of single-lane on- and off-ramps in a compact diamond configuration. This interchange is the terminus of State Route 46 from the west at US 101. State Route 46 has a route break at US 101 with the westerly segment of State Route 46 West (approximately Post Mile 21.9) intersecting US 101 at Post Mile 54.1 at the southern limits of the city. The area around the interchange is commercial on the west side and light industrial and commercial on the east side.

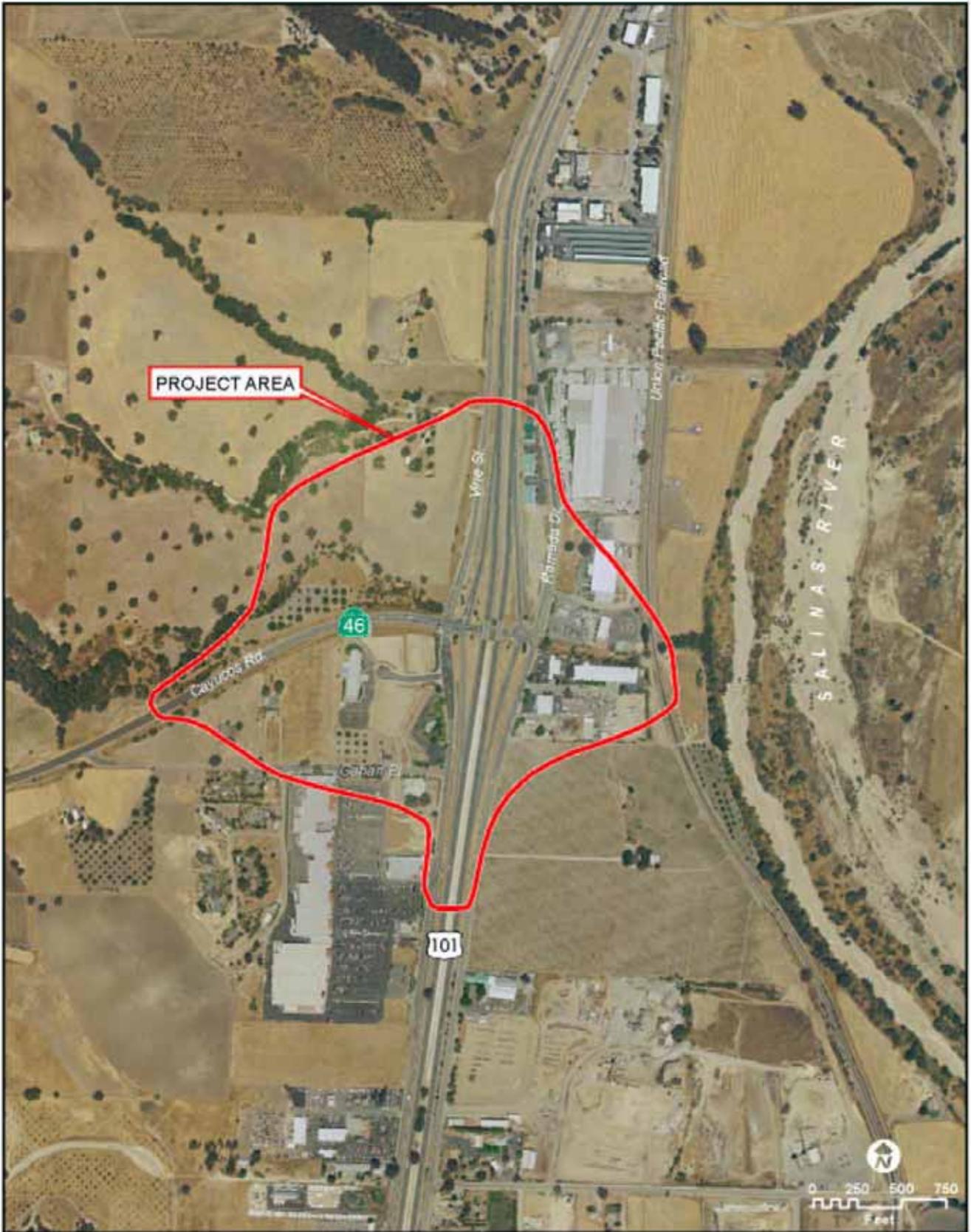
Theatre Drive and South Vine Street parallel US 101 to the west, and Ramada Drive parallels US 101 to the east. The current configuration of the interchange does not meet Caltrans design standards. The two frontage road intersections that parallel US 101, Theatre Drive/South Vine Street to the west and Ramada Drive to the east are immediately adjacent to the ramps. The result is a lack of separation between ramp intersections and frontage road intersections.



City of Paso Robles
 US-101/SR-46W Interchange Improvement Project

FIGURE 1-1
REGIONAL LOCATION

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Source: AirPhotoUSA, August 2003

City of Paso Robles
US-101/SR-46W Interchange Improvement Project

FIGURE 1-2
PROJECT AREA

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1.2 Purpose and Need

1.2.1 Purpose

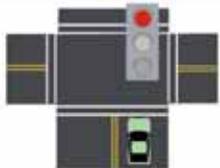
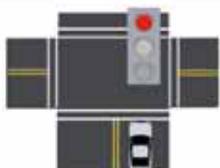
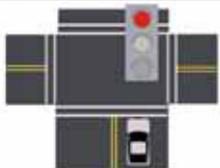
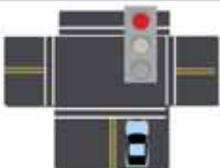
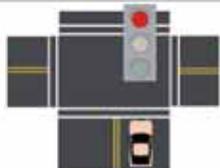
The purpose of the proposed project is to reduce existing congestion, improve traffic operations, and accommodate anticipated travel demand through the year 2038.

Specifically, the project purpose is to:

- Improve the US 101 ramp intersections with State Route 46 West to meet the Caltrans minimum level of service standard of C/D cusp, which equates to an average delay per vehicle of 35 seconds or less at an intersection.
- Improve the frontage road intersections with State Route 46 West to meet the Caltrans minimum level of service standard of C/D cusp, which equates to an average delay per vehicle of 35 seconds or less at an intersection.
- Reduce interregional, regional, and local congestion through the US 101/State Route 46 West interchange.

Levels of Service describe the operating conditions a motorist would experience while traveling on a highway or, in this case, through an intersection. This rating system ranges from “A” to “F,” with “A” being little delay and “F” being heavy congestion and considerable delay. The following graphic provides an explanation of the various levels of service and corresponding traffic delay.

Table 1.2-1 – Level of Service for Intersections with Traffic Signals

LEVELS OF SERVICE for Intersections with Traffic Signals		
Level of Service	Delay per Vehicle (seconds)	
A	 ≤ 10	
B	 11-20	
C	 21-35	
D	 36-55	
E	 56-80	
F	 > 80	

Factors Affecting LOS of Signalized Intersections

Traffic Signal Conditions:

- Signal Coordination
- Cycle Length
- Protected left turn
- Timing
- Pre-timed or traffic activated signal
- Etc.

Geometric Conditions:

- Left- and right-turn lanes
- Number of lanes
- Etc.

Traffic Conditions:

- Percent of truck traffic
- Number of pedestrians
- Etc.

Source: 2000 HCM, Exhibit 16-2, Level of Service Criteria for Signalized Intersections

1.2.2 Need

State Route 46 is a major east-west route between Interstate 5 and US 101. Interregional, regional, and local vehicle trips influence traffic operations at the US 101/State Route 46 West interchange. According to a Jurisdictional Split Study for the US 101/State Route 46 West interchange completed by SLOCOG (Omni-Means, October 29, 2002), the year 2025 traffic use splits (without traffic from the future City South River Crossing project) are approximately 44.0% for the City of Paso Robles, 23.5% for the Templeton area of San Luis Obispo County (County share), and 32.5% for the remainder of San Luis Obispo County (SLOCOG/State of California share).

The State Route 46 and the US 101/State Route 46 West interchange is heavily used for weekend travel between the Central Valley and the coast, particularly during the summer months. The general increase in traffic, coupled with the anticipated future traffic from approved projects in the area, is forecast¹ to degrade ramp intersection operations to level of service F in the years from 2010 to 2014. The existing US 101/State Route 46 West interchange portion includes the following deficiencies:

- Unacceptable Intersection Operations – Due to the lack of separation between the ramp intersections and frontage road intersections with State Route 46, the existing ramp intersections would operate at unacceptable level of service F in the design year 2038. The congestion at these intersections would result in long delays causing motorists to wait multiple signal cycles at each location, as well as vehicle queues that would back up into adjacent intersections.
- Constrained Freeway Operations – Although no improvements on US 101 are proposed as part of this project, constrained freeway operations would likely occur as a result of the congestion at the US 101/State Route 46 West interchange. Queues at the off-ramps currently extend onto US 101 and adversely impact through traffic during Friday peak hours, and this condition would worsen in the design year 2038.
- Constrained Local Area Circulation – The US 101/State Route 46 West interchange provides regional and interregional access to and within the central coastal region, the city and county, and to the Central Valley. Furthermore, a substantial amount of new development is proposed in the project area. Without the proposed project, circulation of the region would be adversely impacted. Please refer to the Traffic Report for additional detailed information on traffic volumes.

¹Traffic volumes were developed using forecasts from the traffic model developed for the San Luis Obispo Council of Governments.

- Constrained Regional Accessibility – Without the proposed project, regional east-west vehicle travel between US 101 and nearby State Route 1 (Cabrillo Highway) would be adversely affected as a result of existing and projected future traffic congestion and worsening level of service. Please refer to the Traffic Report for additional detailed information on traffic volumes.

The proposed project is needed because the interchange is currently facing traffic congestion and deteriorating level of service. Modifying the US 101/State Route 46 West interchange is necessary to improve local, regional, and interregional transportation. To improve traffic conditions in this corridor, the following needs must be addressed:

- Reduce existing and projected traffic congestion
- Improve traffic operations and reduce delay

Table 1.2-2 shows the existing 2006 and year 2038 a.m. and p.m. peak-hour traffic volumes. As indicated in the table, traffic is expected to increase, resulting in worse congestion if no improvements are made.

Table 1.2-2 – Existing and Future Year 2038 A.M. and P.M. Peak Hour Level of Service No-Build Alternative

Facility	Control	2006 Level of Service (LOS)		2038 Level of Service (LOS)	
		A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak
US 101 Southbound/State Route 46 West/Theatre Drive-South Vine Street	Signal	LOS C	LOS D	LOS F	LOS F
US 101 Northbound/State Route 46 West/Ramada Drive	Signal	LOS B	LOS B	LOS F	LOS F

Furthermore, mainline US 101 operates at level of service D-E north of the interchange and level of service C-D south of the interchange during peak periods. The proposed project would reduce queues on the off-ramps and therefore reduce the potential of ramp queues extending onto mainline US 101.

The four-lane segment of US 101 north and south of the US 101/State Route 46 West interchange is forecasted to be at level of service F during the a.m. and p.m. peak hours in year 2038.

1.3 Alternatives

This section describes the proposed action and the design alternatives that were developed by an interdisciplinary team to achieve the project purpose and need while avoiding or minimizing environmental impacts. Design criteria and technical design details may be referenced in the Project Report (2009). The preliminary roundabout design is based on Caltrans and Federal Highway Administration guidelines with independent peer review by roundabout experts and additional Caltrans district and headquarters oversight. Three alternatives—Build Alternative 1, Build Alternative 2, and the No-Build Alternative—are being considered for the proposed project and are described below.

1.3.1 Build Alternatives

1.3.1.1 Common Design Features of the Build Alternatives

The two build alternatives would include the following common design features:

- Both build alternatives would create a modified diamond interchange with roundabouts at the ramp intersections. Both roundabouts are designed to accommodate turns made by large trucks. Theatre Drive would be realigned as a 25-mile-per-hour design speed collector road as approved by the City from the existing intersection with Gahan Place to a new intersection with signals on State Route 46 West, about 900 feet west of the existing southbound ramps intersection. Existing Theatre Drive between State Route 46 West and Alexa Court would be removed, but access to Alexa Court would be maintained. Gahan Place would be modified to intersect with the new Theatre Drive.
- Both build alternatives also include construction of a 220-foot-diameter roundabout at the northbound ramps termini. The roundabout would have five legs including entrances and exits for State Route 46 West and Ramada Drive, as well as an entrance for the northbound off-ramp and an exit for the northbound on-ramp. This roundabout is identical in both alternatives.
- The proposed drainage design would include the use and extension of existing facilities where possible and construction of new facilities where necessary. Specifically, the existing concrete box culvert under the interchange would be extended approximately 140 feet on both sides to allow for construction of the roundabouts. Drainage would follow existing flow patterns. Runoff currently discharges to the unnamed creek flowing along the north side of State Route 46 West through the interchange and would need to be managed in accordance with Caltrans' Storm Water Quality requirements and guidelines.

- Pedestrian facilities would be improved with the addition of wide sidewalks, pedestrian refuges, and curb ramps. Bicycle ramps would connect new and existing bike lanes with the off-street bike paths to allow cyclists to circumnavigate the roundabouts if they choose. A shared-use path would be created between the relocated Theatre Drive and Ramada Drive along the south side of State Route 46 West.

1.3.1.2 Unique Features of Build Alternatives

Build Alternative 1

The southbound ramps roundabout would have five legs, see Figure 1.3-1.

The estimated project cost (as estimated in 2009) for Build Alternative 1 is \$25.9 million.

Build Alternative 2

The southbound ramps roundabout would include four legs. South Vine Street would be relocated as a 25-mile-per-hour design speed collector road as approved by the City so that it would align with the new Theatre Drive/State Route 46 West intersection to the west of the existing interchange. A new three-lane, approximately 190-foot-long concrete box girder bridge would be constructed over the unnamed drainage creek to connect South Vine Street to State Route 46 West. See Figure 1.3-2.

The estimated project cost (as estimated in 2009) for Build Alternative 2 is \$32.3 million.

Project Phasing

It is to be expected that total costs and funding constraints will require the improvements of the recommended alternative to be constructed in phases as funding is secured throughout the Regional Transportation Plan 20-year timeframe. The Regional Transportation Plan is scheduled to be updated in 2010, with anticipated changes being considered for the Regional Transportation Plan June 2010 update to reflect project phasing and potentially identify each project phase to occur as noted below.

While interim improvements are expected, stand alone phases of the project (i.e., not a full Build Alternative) are not expected to fully meet the Purpose and Need of the project. Major components of phases can be defined for operational benefit and independent utility but specific design features of phases within the overall project footprint will vary as a function of funding availability and the time specific construction cost market.

The American Recovery and Reinvestment Act (ARRA) of 2009 is now an identified funding source for key components and interim improvements of the Phase 1 concept. The May 6, 2008 Traffic Technical Memorandum included an analysis of the traffic operations for interim improvements at the US 101 southbound ramps intersection with SR-46 West. Specifically, the analysis focused on comparing the No-Build concept to the concept of the Theatre Drive/State Route 46 West intersection relocation to approximately 900 feet west of the current location, as discussed in the Phase 1 concept. The traffic analysis documented the operational benefit and utility of the intersection relocation in the year 2018 P.M. peak hour. The following are the key components of anticipated phases of the Build Alternative:

- Phase 1: Theatre Drive will be relocated to create a new intersection with SR-46W approximately 900 feet west of the current location at the existing interchange. This phase is anticipated to be shown as a short-term project in the June 2010 Regional Transportation Plan update. As a short-term project, this timeframe is in the range of 2010-2012. This phase has independent utility and operational benefit that will relieve traffic at the current intersection.
- Phase 2: Relocation of South Vine Street to the new Theatre Drive intersection with State Route 46 West is anticipated to be shown as a mid-term project in the June 2010 Regional Transportation Plan update. A mid-term project may be considered in the timeframe range of 2015-2019.
- Phase 3: Construction of the southbound ramp roundabout is anticipated to be shown as a mid-term project in the June 2010 Regional Transportation Plan

update. A mid-term project may be considered in the timeframe range of 2015-2019.

- Phase 4: Construction of the northbound ramps roundabout is anticipated to be shown as a long-term project in the June 2010 Regional Transportation Plan update. A long-term project may be considered in the timeframe range of 2015-2030.

1.3.2 No-Build (No-Action) Alternative

Under the No-Build Alternative, conditions along the US 101/State Route 46 West interchange would remain as they currently exist. The interchange currently experiences traffic congestion and deteriorating LOS. The general increase in traffic, coupled with the anticipated future traffic from approved projects in the area, is forecast to degrade ramp intersection operations to LOS F in the years 2010 to 2014. In the year 2038, without construction of the proposed project, the level of service will be F.

The No-Build Alternative would not involve any capital expenditure.

1.3.3 Comparison of Alternatives

The difference between Build Alternative 1 and Build Alternative 2 is the degree to which South Vine Street would be realigned at the northwest quadrant of the interchange. Furthermore, the southbound ramps roundabout would have five legs for Build Alternative 1 and four legs in Build Alternative 2 (refer to Figure 1.3-1 and Figure 1.3-2). Build Alternative 2 would result in a greater degree of realignment compared to Build Alternative 1. So, Build Alternative 2 would result in the greatest amount of ground disturbance and ultimate project footprint.

In addition, compared to Build Alternative 1, Build Alternative 2 would result in removal of more vegetation, including oak trees (refer to Section 2.3, Biological Environment, for more information regarding potential impacts to biological resources). Additionally, an increased area of ground disturbance would result in higher construction-related emissions (see Section 2.2.6 regarding potential air quality related impacts). Furthermore, Build Alternative 2 would result in visual-related impacts above those associated with Build Alternative 1, related to the degree to which South Vine Street would be realigned under Build Alternative 2 (refer to Section 2.1.7 for detailed discussion regarding potential visual/aesthetic impacts).

Table 1.3-1 compares the effects of Build Alternatives 1 and 2 and the No-Build Alternative being considered in the environmental document for the proposed project. The comparison criteria and potential impacts that have been highlighted in yellow are those that differ by alternative.

Project costs were estimated in 2009 as \$25.9 million and \$32.3 million for Build Alternatives 1 and 2, respectively. The No-Build would not involve any capital expenditure.

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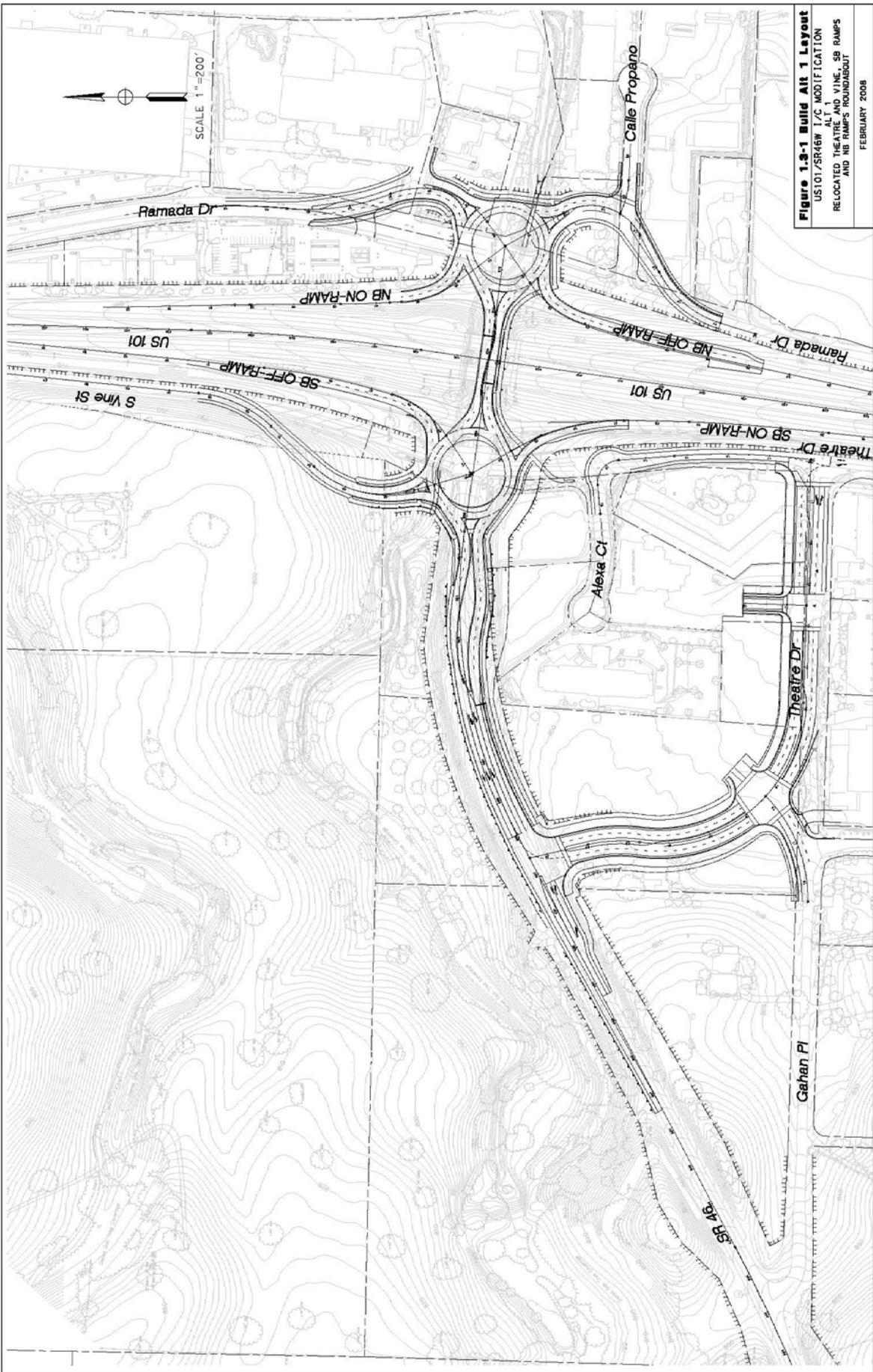


Figure 1.3-1 Build Alt 1 Layout
 US101/SR46W I/C MODIFICATION
 RELOCATED THEATRE DR, VINE, SB RAMPS
 AND NB RAMPS ROUNDABOUT
 FEBRUARY 2008

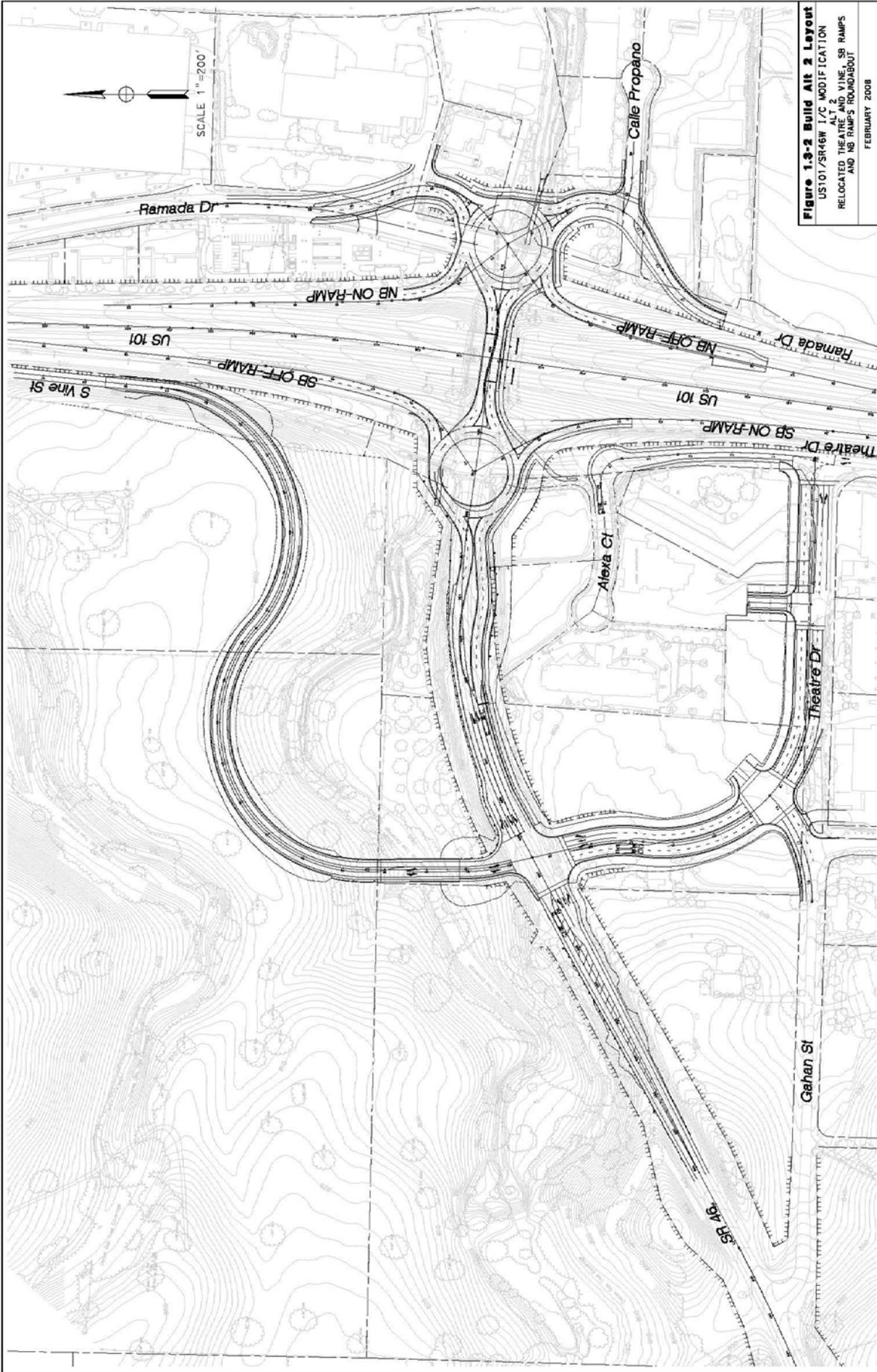


Figure 1.3-2 Build Alt. 2 Layout
 US 101/SR46W I/C MODIFICATION
 ALT. 2
 RELOCATED THEATRE AND VINE, SB RAMP
 AND NB RAMP ROUNDABOUT
 FEBRUARY 2008

Table 1.3-1 – Comparison of Project Effects by Alternative

Comparison Criteria		Build Alternative 1	Build Alternative 2	No-Build Alternative
Delay Reduction or Future Level of Service (Year 2038)		<ul style="list-style-type: none"> Delay reduction at interchange Theater Drive/State Route 46 West level of service B/C US 101 Mainline level of service F/F 	<ul style="list-style-type: none"> Greatest level of delay reduction at interchange Theater Drive/South Vine Street/State Route 46 West level of service C/C US 101 Mainline level of service F/F 	<ul style="list-style-type: none"> No delay reduction at interchange US 101 Southbound/State Route 46 West/Theater Drive/Vine Street level of service F/F US 101 Mainline level of service F/F
Design Standards		Caltrans Highway Design Manual, 6th Edition Surface Transportation Assistance Act Design Vehicle	Caltrans Highway Design Manual, 6th Edition Surface Transportation Assistance Act Design Vehicle	Not applicable
Time to Construct		24 months	24 months	Not applicable
Project Cost (2009 dollars)		\$25,900,000	\$32,300,000	Not applicable
Potential Environmental Impacts				
Land Use	City/County General Plan Consistency	Consistent with the City's and County's General Plan	Consistent with the City's and County's General Plan	Not consistent with the City's and County's General Plan
	Acres New Right of Way	4.69	7.27	None
	Relocations	Potential displacement of a maximum of four non-residential businesses. Designed to accommodate planned growth. Not anticipated to induce unplanned growth.	Potential displacement of a maximum of four non-residential businesses. Designed to accommodate planned growth. Not anticipated to induce unplanned growth.	No relocations would occur. Would not accommodate planned growth.
Growth		3.80 acres of impact to soils mapped as Prime and Unique Farmland, and 0.15 acre of soil mapped as Farmland of Statewide and Local Importance. No impacts to land currently farmed.	3.50 acres of impact to soils mapped as Prime and Unique Farmland, and 1.35 acres of impact to soils mapped as Farmland of Statewide and Local Importance. No impacts to land currently farmed.	None
Farmlands		3.80 acres of impact to soils mapped as Prime and Unique Farmland, and 0.15 acre of soil mapped as Farmland of Statewide and Local Importance. No impacts to land currently farmed.	3.50 acres of impact to soils mapped as Prime and Unique Farmland, and 1.35 acres of impact to soils mapped as Farmland of Statewide and Local Importance. No impacts to land currently farmed.	None

Comparison Criteria		Build Alternative 1	Build Alternative 2	No-Build Alternative
Traffic & Transportation	Bicycles	Provides upgraded bicycles facilities along South Vine Street and Theater Drive. A shared-use path will be created between the relocated Theatre Drive and Ramada Drive along the south side of State Route 46 West.	Provides upgraded bicycles facilities along South Vine Street and Theater Drive. A shared-use path will be created between the relocated Theatre Drive and Ramada Drive along the south side of State Route 46 West.	No change
	Transit	No change	No change	No change
	Traffic	Improve traffic operations, reduce delay.	Improve traffic operations, reduce delay.	Does not accommodate existing traffic volumes. Congestion and delay would worsen with projected planned traffic volumes.
Visual/Aesthetics	Setting would appear more landscaped, engineered, and urbanized. Mitigation proposed.	Setting would appear more landscaped, engineered, and urbanized. Mitigation proposed.	Setting would appear more landscaped, engineered, and urbanized. Mitigation proposed.	No Change
Water Quality and Storm Water Runoff	Net increase in impervious area of 2.3 acres. Upgrade existing storm water drainage system using Best Management Practices.	Net increase in impervious area of 3.5 acres. Upgrade existing storm water drainage system using Best Management Practices.	Net increase in impervious area of 3.5 acres. Upgrade existing storm water drainage system using Best Management Practices.	No Change
Natural Communities	24 oak trees would be removed. Mitigation proposed.	49 oak trees would be removed. Mitigation proposed.	49 oak trees would be removed. Mitigation proposed.	No oak tree removal
Jurisdictional Waters	0.38 acres impact to jurisdictional waters. Mitigation proposed.	0.29 acres impact to jurisdictional waters. Mitigation proposed.	0.29 acres impact to jurisdictional waters. Mitigation proposed.	None
Construction	Water Quality	Storm Water Pollution Prevention Plan	Storm Water Pollution Prevention Plan	None
	Traffic Impacts	Coordinated stage construction and traffic handling plan. No lane closures on US 101.	Coordinated stage construction and traffic handling plan. No lane closures on US 101.	None
Cumulative Impacts	No adverse cumulative impacts.	No adverse cumulative impacts.	No adverse cumulative impacts.	Traffic congestion would continue to degrade under this alternative.

After the public circulation period, all comments were considered. Caltrans selected a preferred alternative and has made the final determination of the project's effect on the environment. In accordance with the California Environmental Quality Act, Caltrans has prepared a Mitigated Negative Declaration. Caltrans, as assigned by the Federal Highway Administration, has also prepared a Finding of No Significant Impact in accordance with the National Environmental Policy Act.

1.3.4 Identification of a Preferred Alternative

Three alternatives were under consideration including the No-Build Alternative. After consideration of the comments received during the public circulation period and assessment of the environmental impacts and long-term traffic operations against the purpose and need for the project, Caltrans has identified Build Alternative 2 as the preferred alternative. In addition, the city has identified Build Alternative 2 as the locally preferred alternative. As discussed in Sections 1.3.2 and 1.3.3, the No-Build Alternative would not meet the purpose and need for the project. The No-Build Alternative does not accommodate existing or future traffic volumes. Traffic congestion and delay are expected to worsen with projected traffic volumes under the No-Build Alternative. With the future increase in traffic, the ramp intersection operations are forecast to degrade to LOS F in the years 2010 to 2014, with increased delay and worsened operations in 2038.

Both build alternatives improve traffic operations for the state and local facilities, and both have mitigation measures that reduce any environmental impacts to less than significant levels. Build Alternative 2 is the preferred alternative because it is consistent with national transportation design policies, achieves greater long-term reduction of greenhouse gas emissions and best meets the purpose and need of the project, which includes the following considerations:

- Reduce existing and projected traffic congestion
- Improve traffic operations and reduce delay
- Improve the US 101 ramp intersections with State Route 46 West to meet the Caltrans minimum LOS of C/D cusp
- Improve frontage road intersection with State Route 46 West to meet the Caltrans minimum LOS of C/D cusp
- Reduce congestion that constrains interregional, regional, and local circulation through the US 101/State Route 46 West interchange

The above purpose and need considerations are important because State Route 46 West is a major east-west route between the San Joaquin Valley and the Pacific Coast. The route, including the US 101/State Route 46 West interchange, is heavily used during Friday evenings of the summer months because it is a main corridor for traffic traveling from the valley to the coast.

In accordance with the national standards published by the American Association of State Highway Transportation Officials (AASHTO) in A Policy on the Geometric Design of Highways and Streets, transportation design is to consider the functional hierarchy of different facility types. AASHTO differentiates between higher order facilities such as US 101 and SR 46 West (which provide intrastate and regional connectivity for freight and general mobility with typically greater volumes, higher speed operations and greater access controls) from lower order facilities such as Theatre Drive and South Vine Street (local access to commercial/retails trip generators with lesser or no access controls). AASHTO guidance stresses preserving, prioritizing, and protecting the higher order facilities from risk of being negatively affected by the lower order facilities if possible. Build Alternative 2 achieves this separation of facility hierarchies by not allowing a third order facility (South Vine Street) to directly interchange traffic with a first order facility (US 101) at the westerly roundabout and thereby safeguards the operations of the first order facility.

For example, a summer Friday evening period for the US 101 southbound/State Route 46 West roundabout was assessed for both Build Alternatives 1 and 2. Because South Vine Street is not connected to the roundabout in Build Alternative 2 as it is in Build Alternative 1, the traffic operations for this Build Alternative 2 are better than that of Build Alternative 1. In Build Alternative 2, the traffic volume-to-lane capacity ratio for the different legs of the roundabout is 0.74 or less, delays are up to 12 seconds per vehicle, and the maximum queues would be accommodated by the storage on the entry legs during the peak 15 minutes of the summer Friday evening period.

Both alternatives accommodate maximum off-ramp storage needs but, during that same period, Build Alternative 1 is affected by the South Vine Street connection to the westerly roundabout as evidenced by the decreased capacity and increased delays (the volume-to-lane capacity ratio for the different legs of the roundabout is up to 0.85 and delays are up to 23 seconds per vehicle); see Section 2.1.6 (Traffic and Transportation/Pedestrian and Bicycle Facilities) regarding traffic operation conditions and analyses done for the project. Safeguarding of volume-to-lane capacity

ratios would provide more long-term reduction of risk that the off-ramp storage would affect mainline US 101 operations. The separation of traffic types at the interchange is also better achieved by Build Alternative 2 for local bicycle traffic using the frontage road system.

Consistent with the comparison of peak hour delays, Build Alternative 2 also further reduces long-term cumulative delay and emissions as shown in Table 2.5-2 (Future Greenhouse Gas Emissions). This focus on reduction of delay and implementation of improvements to achieve transportation efficiencies is consistent with national, state, Caltrans and local mandates as discussed in Section 2.5 (Climate Change under the California Environmental Quality Act).

Alternative 2 is the preferred alternative to meet the goals of the project and provide greater long-term benefit and sustainability of the proposed improvements.

1.3.5 Alternatives Considered and Withdrawn

The following alternatives, developed as part of the Draft Project Report (2007), were considered but withdrawn from further consideration.

Alternative A

This alternative includes roundabouts at the US 101 ramp for northbound and southbound traffic. This alternative was dropped from further consideration because it would affect 13 parcels. In addition, a total of 10.8 acres in acquisition and 3.43 acres in slope easements would be required for city roadway realignment. A total of 1.68 acres would also need to be acquired for realigned state facilities with this alternative.

Alternative B

Alternative B includes a roundabout at the US 101 ramp termini for southbound traffic only. This alternative was dropped from further consideration because it does not meet the purpose and need for the project.

Alternative C

Alternative C is a spread diamond interchange that meets all current design standards. This alternative proposes to relocate the South Vine Street-Theatre Drive frontage road to the west to achieve standard spacing between that frontage road and the US 101 southbound ramps. The US 101 southbound ramps would be relocated to the west, and the US 101 northbound ramps would be relocated to the east to achieve standard spacing between the ramp intersections. This alternative also proposes to relocate Ramada Drive to the east to achieve standard spacing between that frontage

road and the US 101 northbound ramps. The four intersections would be signalized. The spacing between intersections would be 525 feet or greater, meeting both the advisory and the mandatory standard per the Highway Design Manual. State Route 46 West would be widened for new turn pockets, the US 101 overpasses over State Route 46 West would be replaced and widened, and two new bridges would be necessary to carry South Vine Street and the southbound US 101 off-ramp over the unnamed creek. This alternative was withdrawn from further consideration because of excessive cost and right-of-way requirements.

Alternative D

Alternative D is a combination of Alternatives A and C, with a spread diamond configuration on the west side and a roundabout intersection on the east side of the interchange. The spread diamond configuration on the west side would have a 360-foot separation between the US 101 southbound ramps and the frontage road. The roundabout on the east side would be similar to that of Build Alternatives 1 and 2. State Route 46 West would be widened for new turn pockets, the US 101 separation structures over State Route 46 West would be replaced and widened, and two new bridges would be necessary to carry South Vine Street and the southbound US 101 off-ramp over the unnamed creek.

This alternative was withdrawn from further consideration because of excessive cost and right-of-way requirements.

Alternative E

Alternative E includes the realignment of the frontage roads on the west side of the interchange and of the US 101 southbound ramp termini to the west. This alternative was dropped from further consideration because it does not meet the purpose and need for the project.

Alternative F

This alternative is similar to Alternative A and includes roundabouts at the US 101 ramp for northbound and southbound highway traffic. This alternative and Alternative A have the least impact from a right-of-way perspective. There are 9 right-of-way parcels affected with this alternative. Three commercial buildings would be demolished due to the roadway realignments and differences in physical access. This alternative was withdrawn from further consideration because it did not include consideration of future traffic volumes from the potential future South River Crossing project.

1.4 Permits and Approvals Needed

The following resource agency permits, reviews, and approvals would be required for project construction:

Table 1.4-1 – Required Permits and Approvals

Agency	Permit/Approval	Status
U.S. Army Corps of Engineers	Section 404 Permit	Would be obtained prior to construction.
California Department of Fish and Game	1602 Streambed Alteration Agreement	Would be obtained prior to construction.
Regional Water Quality Control Board	Section 401 Water Quality Certification	Would be obtained prior to construction.
State Water Resources Control Board	National Pollutant Discharge Elimination System	Would be obtained prior to construction.
U.S. Environmental Protection Agency/San Luis Obispo County Air Pollution Control District	National Emission Standards for Hazardous Air Pollutants [Title 40, Part 61, Subpart M of the Code of Federal Regulations (40 CFR Part 61)]	Removal, monitoring, and disposal of asbestos-containing material would occur before construction/structure demolition.

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