US 101 Implementation Plan Report

Between Trimble/De La Cruz Boulevard Interchange and McKee Road Interchange

prepared for



and

Valley Transportation Authority

prepared by

TYLININTERNATIONAL

in association with

PARSONS

November 2009



TYLININTERNATIONAL

US 101 IMPLEMENTATION PLAN

QA/QC CERTIFICATION OF CONFORMANCE

IMPLEMENTATION PLAN REPORT

QA/QC STATEMENT

Upon examination of the documents of this submittal, I find that:

The Quality Control/Quality Assurance process was completed and this document meets the minimum requirements identified in our quality management plan.

Project Manager: Hatem Ahmed, PE

QA/QC Manager: Larry Taylor, PE

2/07 1

Date

12/03/2009

Date

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1. EXECUTIVE SUMMARY

The purpose of the US 101 Implementation Plan was to develop a strategy for phasing improvements in the study corridor that is compatible with and advances both near term and long range local and regional land use and transportation planning goals. It is important that the vision for the corridor accounts for both local and regional travel with respect to the development anticipated for the area. Therefore, the goals of the study include: enhancing regional mobility, improving local circulation of automobiles, trucks, bicycles, and pedestrians, improving connections across US 101, managing congestion throughout the corridor, and determining a strategy to implement long term corridor improvements.

The study area is along US 101 between the US 101/Trimble Rd/ De La Cruz Blvd interchange and the US 101/McKee Road interchange and includes the surrounding communities. The major land use and transportation elements considered as part of the study included:

- BART extension to Berryessa
- Berryessa Area Redevelopment
- Jackson/Taylor Area Redevelopment
- US 101 Express Lanes
- North 1st Street Traffic Operations
- North San Jose Redevelopment
- Mineta San Jose International Airport Expansion
- Future Reconstruction of US101/I-880 Interchange

The Implementation Plan presents findings to be used as a basis for planning and phasing the projects examined. The document includes a summary of the technical work completed in developing the alternatives at individual project locations. Information included in the Implementation Plan document provides a strong basis to seamlessly develop Caltrans Project Initiation Documents (PIDs), including the supporting technical studies related to environmental analyses, traffic operational analyses, geometrics, cost estimates, and other needed information required for approval of the PID.

The US 101 Implementation Study focuses on improvements for three specific interchange locations to achieve both regional and local transportation goals. The three interchanges are:

- US 101/Zanker Road/North 4th Street/Skyport Drive
- US 101/Old Oakland Road
- US 101/ Mabury Road/East Taylor Street

These three interchange improvement projects are included in the Santa Clara County countywide transportation plan, VTP 2035.



For the three interchange areas listed above, improvement concepts were developed, and their feasibility evaluated considering questions such as those above. The more promising alternatives were further developed to assess their ability to accommodate traffic conditions and to determine order-of-magnitude project costs.

A measure of effectiveness analysis, utilizing nine performance indicators, was applied to each of the three interchange locations. When compared empirically, with respect to projected traffic benefits, each of the three locations ranked closely in measured benefit. The proposed improvements at each interchange location could be constructed independently without negative impacts to the other locations and would result in improvements to traffic circulation.

Recommended Priority:

When the study efforts began, economic conditions were different. Consequently, the focus of our efforts has changed from an overarching technical implementation plan to a discussion of what improvement can be funded at this time and what work should come first.

In consideration of the continuing economic downturn, many of the initial assumptions related to this study have changed. This has forced us to re-examine the objectives of the study. For example, the development in North San Jose is not occurring at a pace initially considered. However, the most significant change has been in the approach of the BART project. Due to declining sales tax revenues, the BART project is now being developed in phases. Although the original commitment to build the full BART project remains, the initial phase is planned to terminate at the Berryessa Station. This has highlighted the need to construct the US 101/Mabury Road/East Taylor interchange as a first priority project.

Based on the above reasons, it is recommended that the US 101/Mabury Road/East Taylor Street interchange project be advanced to the next project development phase. Additionally, the project is ready to move to the next development phase for the following supporting reasons:

- The project has local political and community support;
- The project is included in the City's General Plan and as such has been identified as a key element for providing the needed local circulation and supporting the planned land use development in the area; and
- The project is included in the US 101/Oakland/Mabury Transportation Development Policy and associated traffic impact fee program so that it has the ability to tap into funds generated from developments in the area.



PROJECT LOCATION MAP



US 101/Zanker Road/ N 4th Street/ Skyport Drive

US 101/Old Oakland Road

US 101/Mabury Road/ E Taylor Street



2. VISION AND PURPOSE

The US 101 transportation corridor provides an increasingly important link in the economic and social lives of the community it serves. The vision for the corridor is an integrated local and regional system that includes BART, light rail, bus, air, automobiles, trucks, bicycles and pedestrians. This system needs to be enhanced to effectively serve the traveling public and goods movement within and throughout the study corridor, support municipal and regional land use visions and plans, preserve or enhance the quality of life for those living within the corridor, and should resolve the numerous identified site-specific transportation problems.

The purpose of the Study is to identify buildable, fundable projects that will improve traffic mobility; reduce congestion; support the overall vision for the corridor within the project limits; and the means to implement those projects. This study includes 1) evaluation of a range of possible highway infrastructure improvements along the corridor, 2) development of conceptual plans and order of magnitude cost estimates, and 3) determination of a logical phased approach for improvements at the following interchanges:

- 1. The new interchange at US 101/Zanker Road/N 4th Street/Skyport Drive, including possible improvements to the existing US 101/N 1st Street interchange that may be necessary to accommodate the proposed interchange. The proposed US 101/Zanker Road/N 4th Street/Skyport Drive interchange will improve access to the freeway, enhance access to the Mineta San Jose International Airport, and improve connectivity between the portions of north and central San Jose that are separated by US 101.
- 2. The US 101/Old Oakland Road interchange. This study analyzed modifications to the on/off ramps and widening the Old Oakland Road overcrossing in order to provide better access to and from US 101 at Old Oakland Road and 13th Street.
- 3. The US 101/Mabury Road/E Taylor Street interchange. The existing overcrossing at US 101/Mabury Road/E Taylor Street will be studied for conversion to a full interchange.

Additionally, all potential interchange improvements were developed in concert with potential future improvements at the US 101/I-880 interchange to ensure compatibility among the interchange improvements. Also included in the analysis are mainline and local street improvements that are necessary to support the proposed interchange improvements.



The goals for the Implementation Plan include:

- Enhance regional mobility within the study area.
- Reduce peak period congestion and delay on the local roadways without precluding future improvements to the US101/I-880 interchange.
- Provide an alternative for the N 1st Street corridor in the north-south direction by connecting Zanker Road to N 4th Street and Skyport Drive.
- Improve local circulation across US 101.
- Improve access to Mineta San Jose International Airport from northbound US 101.
- Manage congestion throughout the corridor.
- Coordinate the highway projects with alternative means of transportation.
- Design transportation facilities to complement the areas in which they are located.
- Determine a strategy to implement long term corridor improvements.
- Enhance bicycle and pedestrian facilities crossing US 101 within the project limits.



3. STUDY DESCRIPTION

The Valley Transportation Authority (VTA), in cooperation with the City of San Jose, initiated this project and has contracted with TY Lin International (TYLI) to study improvements to the US 101 Corridor between the US 101/Trimble Road/De La Cruz Boulevard Interchange and the US 101/McKee Road Interchange. This segment of US 101 is used as a major commuter route from residential areas in south and east San Jose, and from the Peninsula to the north, to employment locations in downtown San Jose and destinations in the area bounded by US 101, Route 237, and Interstate 880.

The Implementation Plan includes the results of a needs assessment, a summary of existing and projected traffic volumes, conceptual plans showing proposed roadway geometry and lane configurations, preliminary cost estimates, Caltrans approved mapping for the project, and a phasing strategy for implementing the proposed improvements.

Several possible alternatives were examined as part of the proposed interchange at US 101/Zanker Road/N 4th Street/Skyport Drive. From these conceptual drawings, five Build Alternatives were analyzed as well as a No-Build Alternative, in order to provide a baseline of future conditions. A Build Alternative was analyzed for both the US 101 / Old Oakland Road Interchange and the proposed US 101/Mabury Road/E Taylor Street Interchange. This US 101 Implementation Plan study follows as a result of the 2005 US Route 101 North Corridor Study which recommended improvements at each of these three interchange locations.

Additionally, the US 101/I-880 Interchange was reviewed and several possible alternatives for ultimate improvements to this freeway-to-freeway connection were developed and examined. Caltrans currently does not have plans to develop or improve this interchange. Each of the five build alternatives for the proposed US 101/Zanker Road/N 4th Street/Skyport Drive interchange was configured in such a way as to not preclude the possible improvements that were developed for the US 101/I-880 Interchange as part of this Implementation Plan.

A Preliminary Environmental Analysis Report (PEAR) has been prepared for the proposed projects at the three locations. Based on the findings of this analysis, it is anticipated that environmental compliance will ultimately be achieved with an Environmental Impact Report (CEQA)/Environmental Impact Study (NEPA). However, due to the localized nature of the Old Oakland Road interchange and if federal funding is not utilized, environmental approval is anticipated to require a Negative Declaration for the CEQA document.



4. PROJECT HISTORY

US 101 is a north-south freeway in the Federal Aid Primary System extending from the East Los Angeles Interchange complex in Los Angeles County to the Oregon State Line. Additionally, US 101 is classified as an Interregional Road System High Emphasis/Focus Route. The segment of US 101 within the project limits is an 8-lane facility with the inside lanes used as High Occupancy Vehicle (HOV) lanes during the commute hours between 5:00 a.m. and 9:00 a.m. and between 3:00 p.m. and 7:00 p.m. While previous studies have been performed on this segment of US 101, no formal project has been proposed. Following is a summary of previous major studies that were performed on the three interchanges studied in this implementation plan.

- As part of the original Measure 'A' US 101 Widening study in the late 1980s, potential configurations for a full interchange at US 101/Zanker Road/N 4th Street/Skyport Drive were developed. The E Taylor Street overcrossing was also studied at the time as a 4-lane facility with bridge spans designed to provide future ramp movements.
- The City of San Jose prepared a Project Study Report in 1990 for a partial cloverleaf interchange with full access to and from US 101 at Mabury Road. In 1997 the City of San Jose prepared project concept layouts and cost estimates for several projects on US 101 including the construction of a new interchange at US 101/Zanker Road/N 4th Street/Skyport Drive.
- A VTA sponsored *US Route 101 North Corridor Study* in 2005 proposed improvements at all three interchanges US 101/Zanker Road/N 4th Street/Skyport Drive; US 101/Old Oakland Road; and US 101/Mabury Road/E Taylor Street.
- The City of San Jose also sponsored the 2006 North San Jose Deficiency Plan which identified several locations and intersections which performed at LOS 'F'.

The US Route 101 North Corridor Study determined that the interchanges at US 101/Zanker Road/N 4th Street/Skyport Drive and US 101/Mabury Road/E Taylor Street would need to be constructed and the interchange at US 101/Old Oakland Road would need to be improved. Each of these projects was scheduled to move forward as a Caltrans Project Study Report (PSR). The close spacing of these projects, in addition to their proximity of the US 101/I-880 freeway-to-freeway interchange, made it clear that an area wide solution of this subset of the North Corridor Study is necessary.

VTA identified the US 101/Zanker Road/N 4th Street/Skyport Drive and the US 101/Mabury Road/E Taylor Street interchanges in their Valley Transportation Plan (VTP) 2030 as projects that were scheduled to have funds allocated for environmental approval and preliminary engineering. Furthermore, the interchange improvements at the three locations studied within this report have been submitted to the VTA as part of VTP 2035.

The City of San Jose has also identified the interchange improvements to US 101/Zanker Road/N 4th Street/Skyport Drive and US 101/Mabury Road/E Taylor Street as a necessary element of the North San Jose development in the 2005 *North San Jose Area Development Policy*. In addition, the



City of San Jose has identified the need for improvements at the US 101/Old Oakland Road and US 101/Mabury Road in the 2007 US 101/Oakland/Mabury Transportation Development Policy.

5. HIGHWAY AND LOCAL ROADWAY EXISTING FACILITIES

US 101 is an access controlled freeway consisting of three mixed-flow lanes and an HOV lane with an outside shoulder in each direction. Auxiliary lanes exist in the northbound direction between the US 101/Old Oakland Road interchange and the US 101/Old Bayshore Highway interchange, and in the southbound direction between US 101/Old Bayshore Highway interchange and the US 101/Old Oakland Road interchange to facilitate merging and weaving operations. The northbound and southbound roadways on US 101 are separated by either a concrete barrier or a thrie-beam barrier at the edge of the inside shoulder.

The mixed-flow lanes and auxiliary lanes are 12 feet wide each. The outside shoulder is 10 feet wide and the inside shoulder varies from 2 feet to a maximum width of 10 feet. There are a significant number of sign structures and minor cross drainage structures and culverts within the project limits.

Within the project limits, this portion of US 101 has the following local access interchanges:

- Trimble Road/De La Cruz Boulevard
- Brokaw Road/Airport Parkway/N 1st Street
- Old Oakland Road
- McKee Road

Within the project area, N 1st Street serves the local facilities as the primary local north-south corridor. It is two lanes in both directions with a VTA light rail line and several light rail stations in the median. The City of San Jose is planning to develop the N 1st Street corridor with mid-rise industrial offices, residential buildings and redevelopment of an existing hotel. CSJ and VTA envision N 1st Street corridor as a transit corridor. Zanker Road is currently two lanes in each direction between Old Bayshore Highway and Montague Expressway. The City of San Jose will be widening this portion of Zanker Road to a 6 lane facility in the near future.

There is also a freeway-to-freeway interchange at I-880 and a partial freeway-to-freeway interchange at Route 87. At Old Bayshore Highway, near Zanker Road, there are both off and on-ramps to US 101 in the northbound direction only. In the southbound direction, there is an on-ramp from N 4th Street. There is an overcrossing at 10th Street with no freeway access and a Union Pacific Railroad underpass, both located between the I-880 and the Old Oakland Road Interchanges. Located between the Old Oakland Road and the McKee Road Interchanges are additional overcrossings at Hedding Street and Taylor Street, both with no freeway access, and another Union Pacific Railroad underpass.



6. US 101 AND LOCAL ROADWAYS SYSTEM COORDINATION

US 101 is one of the major commuter routes through the City of San Jose and is in the California Freeway and Expressway System within study limits. It is also designated as being on the National Network for Truck Travel. Large trucks classified as Surface Transportation Assistance Act (STAA) Trucks are allowed on the National Network. US 101 is also a Focus Route per the State's Interregional Transportation Strategic Plan (ITSP) and as such, is required to meet the goals set forth. The projects identified in this Study help meet the plan by specifically meeting the following goal from the ITSP:

"Manage future travel demand to maximize capacity for interregional and major regional trip volumes by supporting wise local land use decision making and providing alternative transportation infrastructure and modes for regional trips."

The City of San Jose has a number of projects and development improvements planned or under construction that will be affected by the projects along the US 101 corridor. These projects will help improve local roadways and provide the alternative infrastructure needed.

The North San Jose area plays a vital role in the achievement of San Jose's economic goals. Current plans and forecasts show large growth and development in the northern San Jose region. Zanker Road and N 1st Street are the major predicted travel routes for this development. Zanker Road is planned to be widened from 4 to 6 lanes between Bering Drive/Remuda Lane and Tasman Drive in anticipation of this increased traffic. This widening will promote the use of Zanker Road as the primary north-south route in North San Jose and allow for N 1st Street to serve as a transit-oriented street as well as a bicycle and pedestrian friendly corridor. It is envisioned that Zanker Road, with the new overcrossing at US 101, will serve as the primary route and connection between the new development in North San Jose and the area south of US 101.

Additionally, the Mineta San Jose International Airport is currently undergoing an airport expansion. The airport intends that the ingress/egress located at Skyport Drive would become the main entrance and gateway to the airport. This would be aided by a new interchange at US 101/Zanker Road/N 4th Street/Skyport Drive. Travelers from the south along US 101 intending to go to the airport would be able to have direct access from the highway to the airport's main entrance.

Current plans call for Bay Area Rapid Transit (BART) to extend from the planned station at Warm Springs Boulevard in Fremont southward, with a station between Berryessa Road and Mabury Road. This extension would increase traffic in the area of the Mabury Road/E Taylor Street location. Neither Berryessa Road nor Mabury Road has a direct connection to US 101. Prior to completing the recommended improvements, drivers intending to go to the new BART station would have to exit at McKee Road to the south or Old Oakland Road to the north and travel surface streets to reach the station. Providing improved access to BART from US 101 would help decrease the number of vehicles trying to reach this destination from the McKee Road and Old Oakland Road interchanges via local streets.



7. DEFICIENCIES

Several studies have been completed over the last twenty years that analyzed mainline US 101 and interchanges and arterial streets within the cities of Santa Clara and San Jose. These various studies, including the 2004 and 2005 VTA Highway 101 Central and North Corridor Studies, have demonstrated that the existing interchanges and the local roads and streets in the corridor cannot provide the necessary traffic capacity and operational level of service to satisfactorily accommodate the future year demands.

Traffic forecasts and operations analyses were developed for 2035 using the FREQ Model and the traffic data available from the High Occupancy Toll (HOT) lane study that VTA is currently undertaking within the Santa Clara County limits. For consistency purposes, it was decided to use the same FREQ model that was developed for the Santa Clara County HOT Lane Feasibility Study. The results of the Implementation Plan study model match closely with the FREQ model for the HOT Lane Study and can be found in the Traffic Report completed by Parsons (see Attachment E).

The traffic analyses performed show that in the AM Peak Hours, travel speeds along northbound mainline segments will be at or below 35 mph. Between 6:00 a.m. and 8:00 a.m., a major bottleneck develops at the Old Bayshore Highway on-ramp, and traffic queues extend southerly to the US 101/I-280 interchange.

For the PM Peak Hours, there is a bottleneck that develops in the southbound direction between the I-880 interchange and the Old Oakland Road interchange. By the end of the second hour, 4:00 to 5:00 p.m., vehicle queues are expected to extend to north of the US 101/De La Cruz Boulevard interchange. The average speed in the corridor mixed lanes range from stop and go (0 mph) to 45 mph.

There are also a number of intersections in the local area that are deficient per the 2006 North San Jose Deficiency Plan. None of these intersections fall within the boundary of the Implementation Plan study area, however 8 of the 12 intersections identified within the North San Jose Deficiency Plan are on either N 1st Street or Zanker Road, both of which are expected to benefit from the proposed interchange at US 101/Zanker Road/N 4th Street/Skyport Drive.

Additionally, the concentration of employment along N 1st Street results in traffic overburdening the interchange with US 101. A lack of a parallel route crossing US 101 and the presence of the light rail traffic signal priority compounds the congestion surrounding the interchange. The incomplete roadway grid north and east of US 101 concentrates the traffic onto a limited number of facilities as few alternative routes exist to spread traffic loadings.





8. ALTERNATIVES

A. Viable Project Alternatives

A No-Build Alternative and several Build Alternatives are under consideration within the study area. The No-Build Alternative provides a basis of comparison for the Build Alternatives. Both the No-Build Alternative and the Build Alternatives are as described below:

1) No-Build Alternative

The No-Build Alternative would not satisfy the project purpose and need, but is being evaluated in accordance with NEPA and CEQA requirements. It offers a basis for assessing current conditions and for comparison with the Build Alternatives in the future analysis year of 2035. The No-Build Alternative would include all currently planned and funded projects in the US 101 corridor through the year 2035.

The No-Build Alternative includes the following related projects:

- US 101 Auxiliary Lanes in both northbound and southbound directions between McKee Road Interchange and Old Oakland Road Interchange.
- Trimble Road/De La Cruz Boulevard Interchange: modify existing spread diamond interchange to a partial-cloverleaf interchange with loop on-ramps serving both directions.
- Zanker Road improvements between Montague Expressway and US 101.
- Conversion of the High Occupancy Vehicle (HOV) lane to a HOT lane on both directions of US 101.
- Extension of the HOV lane in both directions of I-880 from Route 237 to US 101.

2) Build Alternatives

A. Zanker Road/N 4th Street/Skyport Drive Interchange

Five Build Alternatives, Z-1 through Z-5, were studied for the US 101/Zanker Road/N 4th Street/Skyport Drive interchange. Common to all five alternatives is the Zanker Road overcrossing originating at the Bering Drive/Remuda Lane intersection. Alternatives Z-2, Z-3, and Z-4 have a second overcrossing, on the Old Bayshore Highway alignment, with the two overcrossings intersecting west of US 101. The Zanker Road overcrossing is important in that it provides access and connections between north and south San Jose across US 101, between N 1st Street and Old Oakland Road which has been lacking in the past. All five alternatives satisfy this criterion. Alternatives were developed to accommodate a possible future build-out and improvement to the US 101/I-880 interchange. Possible alternatives for improving the US 101/I-880 interchange were examined as part of this Implementation Plan, even though Caltrans currently has no plans to develop these improvements to the US 101/I-880 interchange.





Each of the Build Alternatives described below assumes the projects listed under the No-Build Alternative were completed.

Build Alternative Z-1:

Build Alternative Z-1 and the lane configurations for this alternative are shown on attached Sheet Alt. Z-1. The proposed Zanker Road overcrossing would include the construction of a 6-lane bridge over with elevated "Tee"-US 101 intersections at both ends of the bridge. The Zanker Road northbound off-ramp and a single lane from Old Bayshore Highway would be elevated intersect the Zanker Road to overcrossing on the east side of US 101. N 4th Street would be elevated and the extension of Skyport Drive



from N 1st Street to N 4th Street would be elevated to intersect the Zanker Road overcrossing on the west side of US 101. The southbound US 101 on-ramp would descend from a "Tee"-intersection on Skyport Drive extension approximately 150 feet west of the Zanker Road/N 4th Street /Skyport Drive intersection, and loop under the Zanker Road overcrossing to an existing auxiliary lane on southbound US 101. The extension of Old Bayshore Highway at grade under the Zanker Road overcrossing would become the northbound US 101 on-ramp. In order to provide the northbound US 101 on-ramp from Old Bayshore Highway, the existing northbound off-ramp to Brokaw Road also allows elongating the northbound US 101 loop on-ramp from N 1st Street and increasing its taper distance.

The Zanker Road overcrossing originating at Bering Drive/Remuda Lane would have 3lanes, a bike lane and sidewalk in each direction, separated by a wide median. Both N 4th Street and Skyport Drive extension would be 2-through lanes, a bike lane and sidewalk in each direction, separated by a median of varying width. The Old Bayshore Highway northbound US 101 on-ramp is a single lane ramp. The southbound US 101 on-ramp would be two lanes, tapering to a single entrance lane and would be metered. The northbound US 101 off-ramp to Zanker Road is a 2-lane ramp.

The movements not provided in Build Alternative Z-1 are: (1) northbound US 101 onramp from Zanker Road, and (2) southbound US 101 off-ramp at Zanker Road/N 4th Street. The northbound US 101 off-ramp to Brokaw Road would be closed. The lane configurations for this alternative are shown on Sheet Alt. Z-1.



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DTAL SHEETS

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PLANNING-LEVEL COST ESTIMATES **ZANKER INTERCHANGE: Z-1**

Es	timate Item		Quantity	Unit	Unit Price	Cost
I. I	ROADWAY ITEMS					
1.	Earthwork	Roadway Excavation	16,000	CY	\$30	\$480,000
		Imported Borrow	150,000	CY	\$25	\$3,750,000
2.	Structural Section	Pavement - New	470,000	SF	\$5	\$2,350,000
		Pavement - Overlay	23,000	SF	\$2.50	\$58,000
		Sidewalk	49,000	SF	\$10	\$490,000
3.	Drainage	Storm Drainage	5%		\$510,000	\$510,000
4.	Specialty Items	Structure Demolition		LS	\$60,000	\$60,000
5.	Minor Items & Additions	Subtotal Sections 1-4	20%			\$1,540,000
6.	Roadway Mobilization	Subtotal Sections 1-5	10%			\$924,000
SU	BTOTAL ROADWAY IT	EMS				\$10,162,000
II.	STRUCTURE ITEMS					
1.	Bridge Structures		53,000	SF	\$215	\$11,395,000
2.	Retaining Walls		73,000	SF	\$75	\$5,475,000
3.	Sound Walls (Replace)		0	SF	\$50	\$0
SU	BTOTAL STRUCTURE I	TEMS				\$16,870,000
III.	TRAFFIC ITEMS					
1.	Lighting			LS	\$380,000	\$380,000
2.	Traffic Signals Major		3	EA	\$240,000	\$720,000
3.	Traffic Signals: Minor/Mod	dification	3	EA	\$100,000	\$300,000
4.	Signing & Striping			LS	\$120,000	\$120,000
5.	Traffic Control Systems			LS	\$400,000	\$400,000
6.	Traffic Management Plan			LS	\$200,000	\$200,000
SU	BTOTAL TRAFFIC ITEN	AS				\$2,120,000
SU	BTOTAL CONSTRUCTION	N				\$29,152,000
CC	DNTINGENCIES		30%			\$8,700,000
TC	DTAL CONSTRUCTION C	COSTS				\$37,852,000
IV	AGENCY COSTS					
1.	PA/ED, Design, Constr Mg	gmt & Agency Costs	40%			\$15,100,000
SU	BTOTAL AGENCY COST	rs				\$15,100,000
V.	RIGHT OF WAY ITEMS					
1.	Commercial/Industrial		294,000	SF	\$60	\$17,640,000
2.	Residential		0	SF	\$85	\$0
3.	Clearing/Removal			LS	\$100,000	\$100,000
4.	Utility Relocation Allowan	ce		LS	\$12,000,000	\$12,000,000
5.	Environmental Mitigation			LS		
SU	BTOTAL RIGHT OF WA	Y				\$29,740,000

TOTAL

\$82,700,000



Build Alternative Z-2:

Build Alternative Z-2 and the lane configurations for this alternative are shown on attached Sheet Alt. Z-2. In this alternative, the proposed Zanker would Road overcrossing be intersected by a second overcrossing originating from Old Bayshore Highway as part of a four-way elevated intersection on the west side of US 101. The other two approaches to the intersection would be N 4th Street elevated on a curve, and extension of Skyport Drive from N 1st Street to N 4th Street elevated. There would be another elevated



intersection on Zanker Road east of US 101 where the northbound US 101 off-ramp terminates and the northbound US 101 on-ramp begins. To accommodate the northbound US 101 on-ramp from Zanker Road, the existing northbound US 101 off-ramp to Brokaw Road would be increased in length, "basket weaving" over the on-ramp. There would be an intersection on the elevated Skyport Drive extension between N 1st Street and N 4th Street where the southbound US 101 off-ramp terminates and the southbound US 101 on-ramp begins. The former ramp would be parallel to N 1st Street and N 4th Street and the latter would loop under the Zanker Road overcrossing to an existing auxiliary lane on southbound US 101. Upstream of this on-ramp would be another southbound US 101 on-ramp originating from N 1st Street at the Old Bayshore Highway intersection and crossing under the southbound US 101 off-ramp.

The Zanker Road overcrossing would originate at Bering Drive / Remuda Lane, and would have 3-through lanes, a bike lane and sidewalk in each direction, separated by a median of varying width. Both N 4th Street and Skyport Drive extension would be 2-through lanes, a bike lane and sidewalk in each direction, separated by a median of varying width. The 2-lane Zanker Road northbound US 101 on-ramp and the single lane southbound US 101 on-ramp would be metered. The southbound US 101 on-ramp from N 1st Street would be a single lane ramp. The northbound US 101 off-ramp to Zanker Road would be a two lane off-ramp. The southbound US 101 off-ramp to Skyport Drive would be a single lane off-ramp that widens to three lanes at the ramp terminus. The lane configurations for this alternative are as shown on Sheet Alt. Z-2.

All on and off-ramp movements in both directions are provided in Build Alternative Z-2.



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ZANKER INTERCHANGE: Z-2

Est	timate Item		Quantity	Unit	Unit Price	Cost
I. F	ROADWAY ITEMS					
1.	Earthwork	Roadway Excavation	22,000	CY	\$30	\$660,000
		Imported Borrow	320,000	CY	\$25	\$8,000,000
2.	Structural Section	Pavement - New	1,100,000	SF	\$5	\$5,500,000
		Pavement - Overlay	12,000	SF	\$2.50	\$30,000
		Sidewalk	97,000	SF	\$10	\$970,000
3.	Drainage	Storm Drainage	5%		\$1,110,000	\$1,110,000
4.	Specialty Items	Structure Demolition		LS	\$550,000	\$550,000
5.	Minor Items & Additions	Subtotal Sections 1-4	20%			\$3,364,000
6.	Roadway Mobilization	Subtotal Sections 1-5	10%			\$2,018,000
SU	BTOTAL ROADWAY IT	EMS				\$22,202,000
II.	STRUCTURE ITEMS					
1.	Bridge Structures		130,000	SF	\$215	\$27,950,000
2.	Retaining Walls		150,000	SF	\$75	\$11,250,000
3.	Sound Walls (Replace)		0	SF	\$50	\$0
SU	BTOTAL STRUCTURE I	TEMS				\$39,200,000
III.	TRAFFIC ITEMS					
1.	Lighting			LS	\$660,000	\$660,000
2.	Traffic Signals Major		3	EA	\$240,000	\$720,000
3.	Traffic Signals: Minor/Mod	dification	3	EA	\$100,000	\$300,000
4.	Signing & Striping			LS	\$310,000	\$310,000
5.	Traffic Control Systems			LS	\$900,000	\$900,000
6.	Traffic Management Plan			LS	\$400,000	\$400,000
SU	BTOTAL TRAFFIC ITEN	AS				\$3,290,000
SU	BTOTAL CONSTRUCTION	N				\$64,692,000
CC	NTINGENCIES		30%			\$19,400,000
TC	TAL CONSTRUCTION C	COSTS				\$84,092,000
IV.	AGENCY COSTS					
1.	PA/ED, Design, Constr Mg	gmt & Agency Costs	40%			\$33,600,000
SUBTOTAL AGENCY COSTS					\$33,600,000	
V.	RIGHT OF WAY ITEMS					
1.	Commercial/Industrial		915,000	SF	\$60	\$54,900,000
2.	Residential		0	SF	\$85	\$0
3.	Clearing/Removal			LS	\$400,000	\$400,000
4.	Utility Relocation Allowan	ce		LS	\$12,000,000	\$12,000,000
5.	Environmental Mitigation			LS		
SU	BTOTAL RIGHT OF WA	Y				\$67,300,000

TOTAL

\$185,000,000



Build Alternative Z-3:

Build Alternative Z-3 and the lane configurations for this alternative are shown on attached Sheet Alt. Z-3. This alternative is similar to the Build Alternative Z-2 with the exception that the southbound US 101 off-ramp and the southbound US 101 on-ramp from Zanker Road/N 4th Street/ Skyport Drive are not included. In this alternative, the proposed Zanker Road overcrossing would be intersected by a second overcrossing originating from Old Bayshore Highway as part of a four-way elevated intersection on the west side



of US 101. The other two approaches to the intersection would be N 4th Street elevated on a curve, and extension of Skyport Drive from N 1st Street to N 4th Street elevated. There would be another elevated intersection on Zanker Road east of US 101 where the northbound US 101 off-ramp terminates and the northbound US 101 on-ramp begins. To accommodate the northbound US 101 on-ramp from Zanker Road, the existing northbound US 101 off-ramp to Brokaw Road would be increased in length, "basket weaving" over the on-ramp. There would be an intersection on the elevated Skyport Drive extension between N 1st Street and N 4th Street.

The Zanker Road overcrossing would originate at Bering Drive/Remuda Lane, and would have 3-through lanes, a bike lane and sidewalk in each direction, separated by a median of varying width. Both N 4th Street and Skyport Drive extension would be 2-through lanes, a bike lane and sidewalk in each direction, separated by a median of varying width. The 2-lane Zanker Road northbound US 101 on-ramp and the 2-lane southbound US 101 on-ramp would be metered. The northbound US 101 off-ramp to Zanker Road would be a two lane off-ramp.

The movements not provided in Build Alternative Z-3 are: (1) southbound US 101 offramp and (2) southbound US 101 on-ramp from Zanker Road/Old Bayshore Highway/ N 4^{th} Street/Skyport Drive. (The southbound US 101 on-ramp from N 1^{st} Street at the Old Bayshore Highway intersection is the same as in Build Alternative Z-2.)

There is a variation of Alternative Z-3 that was analyzed in the Traffic Report labeled as Alternative Z-3A. This variation would close the off-ramp from northbound US 101 to Brokaw Road, thus eliminating the basket weave between the off-ramp and the northbound on-ramp from Zanker Road.



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PLANNING-LEVEL COST ESTIMATES **ZANKER INTERCHANGE: Z-3**

Est	timate Item		Quantity	Unit	Unit Price	Cost
I. F	ROADWAY ITEMS					
1.	Earthwork	Roadway Excavation	19,000	CY	\$30	\$570,000
		Imported Borrow	280,000	CY	\$25	\$7,000,000
2.	Structural Section	Pavement - New	910,000	SF	\$5	\$4,550,000
		Pavement - Overlay	12,000	SF	\$2.50	\$30,000
		Sidewalk	98,000	SF	\$10	\$980,000
3.	Drainage	Storm Drainage	5%		\$970,000	\$970,000
4.	Specialty Items	Structure Demolition		LS	\$550,000	\$550,000
5.	Minor Items & Additions	Subtotal Sections 1-4	20%			\$2,930,000
6.	Roadway Mobilization	Subtotal Sections 1-5	10%			\$1,758,000
SU	BTOTAL ROADWAY ITI	EMS				\$19,338,000
II.	STRUCTURE ITEMS					
1.	Bridge Structures		130,000	SF	\$215	\$27,950,000
2.	Retaining Walls		140,000	SF	\$75	\$10,500,000
3.	Sound Walls (Replace)		0	SF	\$50	\$0
SU	BTOTAL STRUCTURE I	TEMS				\$38,450,000
III.	TRAFFIC ITEMS					
1.	Lighting			LS	\$640,000	\$640,000
2.	Traffic Signals Major		2	EA	\$240,000	\$480,000
3.	Traffic Signals: Minor/Mod	lification	3	EA	\$100,000	\$300,000
4.	Signing & Striping			LS	\$250,000	\$250,000
5.	Traffic Control Systems			LS	\$500,000	\$500,000
6.	Traffic Management Plan			LS	\$400,000	\$400,000
SU	BTOTAL TRAFFIC ITEN	AS and a second s				\$2,570,000
SU	BTOTAL CONSTRUCTION	N				\$60,358,000
CC	NTINGENCIES		30%			\$18,100,000
TC	TAL CONSTRUCTION C	COSTS				\$78,458,000
IV.	AGENCY COSTS					
1.	PA/ED, Design, Constr Mg	gmt & Agency Costs	40%			\$31,400,000
SUBTOTAL AGENCY COSTS					\$31,400,000	
V.	RIGHT OF WAY ITEMS					
1.	Commercial/Industrial		606,000	SF	\$60	\$36,360,000
2.	Residential			SF	\$85	\$0
3.	Clearing/Removal			LS	\$300,000	\$300,000
4.	Utility Relocation Allowan	ce		LS	\$12,000,000	\$12,000,000
5.	Environmental Mitigation			LS		
SU	BTOTAL RIGHT OF WA	Y				\$48,660,000

TOTAL

\$158,500,000



Build Alternative Z-4:

Build Alternative Z-4 and the lane configurations for this alternative are shown on attached Sheet Alt. Z-4. This alternative is also similar to Build Alternative Z-2 with the exception that the southbound US 101 on-ramp from Skyport Drive and the southbound US 101 on-ramp from N 1st Street are on different alignments and there is no southbound off-ramp from US 101 provided. In this alternative, the proposed Zanker Road overcrossing would be intersected by a second overcrossing originating from Old Bayshore Highway as part



of a four-way elevated intersection on the west side of US 101. The other two approaches to the intersection would be N 4th Street elevated on a curve, and extension of Skyport Drive from N 1st Street to N 4th Street elevated. To accommodate the northbound US 101 on-ramp from Zanker Road, the existing northbound US 101 offramp to Brokaw Road would be increased in length, "basket weaving" over the on-ramp. There would be an intersection on the elevated Skyport Drive extension between N 1st Street and N 4th Street. The footprint including profile, grades, and cross sections for Zanker Road overcrossing, the Old Bayshore Highway overcrossing, northbound US 101 ramps, N 4th Street, and Skyport Drive extension is the same as for Build Alternative Z-2. Though the southbound US 101 off-ramp would be parallel to N 1st Street and N 4th Street as in Build Alternative Z-2, the profile, grades, and cross sections would be different. There would be no direct southbound US 101 on-ramp from N 1st Street as in Build Alternative Z-2. Instead it would intersect with the southbound US 101 off-ramp at grade and then merge with the southbound US 101 on-ramp from Skyport Drive to go under the Zanker Road overcrossing to an auxiliary lane on southbound US 101. This southbound US 101 on-ramp would include a HOV lane.

Given the same footprint, the number of lanes on the two overcrossings, the northbound US 101 ramps, and on N 4th Street and Skyport Drive extension are the same as for Build Alternative Z-2. The intersection configurations for Zanker Road/northbound US 101 ramps and Zanker Road/Old Bayshore Highway/N 4th Street/Skyport Drive are the same as for Build Alternative Z-2. The combined single lane plus HOV lane southbound US 101 on-ramp from N 1st Street and Skyport Drive would be metered.

There is a variation of Alternative Z-4 that was analyzed in the Traffic Report labeled as Alternative Z-4A. This variation would close the off-ramp from northbound US 101 to Brokaw Road, thus eliminating the basket weave between the off-ramp and the northbound on-ramp from Zanker Road.



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PLANNING-LEVEL COST ESTIMATES **ZANKER INTERCHANGE: Z-4**

Est	timate Item		Quantity	Unit	Unit Price	Cost
I. F	ROADWAY ITEMS					
1.	Earthwork	Roadway Excavation	29,000	CY	\$30	\$870,000
		Imported Borrow	280,000	CY	\$25	\$7,000,000
2.	Structural Section	Pavement - New	1,100,000	SF	\$5	\$5,500,000
		Pavement - Overlay	47,000	SF	\$2.50	\$118,000
		Sidewalk	97,000	SF	\$10	\$970,000
3.	Drainage	Storm Drainage	5%		\$1,060,000	\$1,060,000
4.	Specialty Items	Structure Demolition		LS	\$550,000	\$550,000
5.	Minor Items & Additions	Subtotal Sections 1-4	20%			\$3,214,000
6.	Roadway Mobilization	Subtotal Sections 1-5	10%			\$1,928,000
SU	BTOTAL ROADWAY IT	EMS				\$21,210,000
II.	STRUCTURE ITEMS					
1.	Bridge Structures		130,000	SF	\$215	\$27,950,000
2.	Retaining Walls		130,000	SF	\$75	\$9,750,000
3.	Sound Walls (Replace)		0	SF	\$50	\$0
SU	BTOTAL STRUCTURE I	TEMS				\$37,700,000
III.	TRAFFIC ITEMS					
1.	Lighting			LS	\$650,000	\$650,000
2.	Traffic Signals Major		3	EA	\$240,000	\$720,000
3.	Traffic Signals: Minor/Mod	lification	3	EA	\$100,000	\$300,000
4.	Signing & Striping			LS	\$320,000	\$320,000
5.	Traffic Control Systems			LS	\$750,000	\$750,000
6.	Traffic Management Plan			LS	\$400,000	\$400,000
SU	BTOTAL TRAFFIC ITEN	AS and a second s				\$3,140,000
SU	BTOTAL CONSTRUCTION	N				\$62,050,000
CC	NTINGENCIES		30%			\$18,600,000
TC	TAL CONSTRUCTION C	COSTS				\$80,650,000
IV.	AGENCY COSTS					
1.	PA/ED, Design, Constr Mg	gmt & Agency Costs	40%			\$32,300,000
SUBTOTAL AGENCY COSTS					\$32,300,000	
V.	RIGHT OF WAY ITEMS					
1.	Commercial/Industrial		901,000	SF	\$60	\$54,060,000
2.	Residential			SF	\$85	\$0
3.	Clearing/Removal			LS	\$400,000	\$400,000
4.	Utility Relocation Allowand	ce		LS	\$12,000,000	\$12,000,000
5.	Environmental Mitigation			LS		
SU	BTOTAL RIGHT OF WA	Y				\$66,460,000

TOTAL

\$179,400,000



Build Alternative Z-5:

Build Alternative Z-5 and the lane configurations for this alternative are shown on attached Sheet Alt. Z-5. The idea for this alternative was initiated by the City of San Jose. proposed Zanker The Road overcrossing would have elevated four-way intersections on both sides of US 101. The northbound US 101 off-ramp and the northbound US 101 on-ramp would be elevated intersect the Zanker Road to overcrossing on the east side of US 101. N 4th Street would be elevated and the extension of Skyport Drive



from N 1st Street to N 4th Street would be elevated to intersect the Zanker Road overcrossing on the west side of US 101. Each of these two roadways and the overcrossing would approach the elevated intersection on a curve. The southbound US 101 on-ramp would descend from this elevated intersection and loop under the Zanker Road overcrossing to an existing auxiliary lane on southbound US 101. The southbound US 101 off-ramp would terminate at the elevated intersection alongside the entrance to the southbound US 101 on-ramp. In order to accommodate the northbound US 101 on-ramp from the Zanker Road overcrossing, the existing northbound off-ramp to Brokaw Road would be closed. The northbound off-ramp to Zanker Road and the Old Bayshore Highway east of N 1st Street would be closed for the southbound US 101 off-ramp.

The Zanker Road overcrossing and Skyport Drive extension would have 3-through lanes in each direction separated by a median and sufficient width for a bike lane and sidewalk in each direction. N 4th Street would be 2-through lanes including sufficient width for a bike lane, and sidewalk in each direction, separated by a wide median. The northbound US 101 on-ramp and the southbound US 101 on-ramp would both be metered 2-lane ramps that taper to one lane after the meter before entering the freeway. The northbound US 101 off-ramp to Zanker Road is a 2-lane ramp. The southbound US 101 off-ramp to Skyport Drive extension would be a single lane off-ramp that widens to 2 lanes. The northbound US 101 off-ramp to Brokaw Road would be closed.



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PLANNING-LEVEL COST ESTIMATES **ZANKER INTERCHANGE: Z-5**

Est	timate Item		Quantity	Unit	Unit Price	Cost
I. F	ROADWAY ITEMS					
1.	Earthwork	Roadway Excavation	16,000	CY	\$30	\$480,000
		Imported Borrow	260,000	CY	\$25	\$6,500,000
2.	Structural Section	Pavement - New	800,000	SF	\$5	\$4,000,000
		Pavement - Overlay	0	SF	\$2.50	\$0
		Sidewalk	87,000	SF	\$10	\$870,000
3.	Drainage	Storm Drainage	5%		\$870,000	\$870,000
4.	Specialty Items	Structure Demolition		LS	\$450,000	\$450,000
5.	Minor Items & Additions	Subtotal Sections 1-4	20%			\$2,634,000
6.	Roadway Mobilization	Subtotal Sections 1-5	10%			\$1,580,000
SU	BTOTAL ROADWAY IT	EMS				\$17,384,000
II.	STRUCTURE ITEMS					
1.	Bridge Structures		61,000	SF	\$215	\$13,115,000
2.	Retaining Walls		110,000	SF	\$75	\$8,250,000
3.	Sound Walls (Replace)		0	SF	\$50	\$0
SU	BTOTAL STRUCTURE I	TEMS				\$21,365,000
III.	TRAFFIC ITEMS					
1.	Lighting			LS	\$600,000	\$600,000
2.	Traffic Signals Major		2	EA	\$240,000	\$480,000
3.	Traffic Signals: Minor/Mod	dification		2	EA	\$100,000
4.	Signing & Striping			LS	\$250,000	\$250,000
5.	Traffic Control Systems			LS	\$500,000	\$500,000
6.	Traffic Management Plan			LS	\$300,000	\$300,000
SU	BTOTAL TRAFFIC ITEN	AS				\$2,330,000
SU	BTOTAL CONSTRUCTION	N				\$41,079,000
CC	NTINGENCIES		30%			\$12,300,000
TC	TAL CONSTRUCTION C	COSTS				\$53,379,000
IV.	AGENCY COSTS					
1.	PA/ED, Design, Constr Mg	gmt & Agency Costs	40%			\$21,400,000
SUBTOTAL AGENCY COSTS					\$21,400,000	
V.	RIGHT OF WAY ITEMS					
1.	Commercial/Industrial		603,000	SF	\$60	\$36,180,000
2.	Residential		0	SF	\$85	\$0
3.	Clearing/Removal			LS	\$300,000	\$300,000
4.	Utility Relocation Allowan	ce		LS	\$12,000,000	\$12,000,000
5.	Environmental Mitigation			LS		
SU	BTOTAL RIGHT OF WA	Y				\$48,480,000

TOTAL

\$123,300,000



B. Old Oakland Road Interchange

The Build Alternative O-1 was studied for the Old Oakland Road Interchange. The alternative consists of widening the Old Oakland Road bridge and approaches and various improvements to the on and off-ramps at the existing diamond interchange.

The Build Alternative described below assumes the projects listed under the No-Build Alternative as completed.

Build Alternative O-1:

Build Alternative O-1 and the lane configurations for this alternative are shown on attached Sheet Alt. O-1. The existing Old Oakland Road overcrossing would be widened on the west side and lanes shifted to add a fourth travel lane in the northbound direction, while maintaining the four travel existing lanes in the southbound direction (2 thru lanes and 2 left turn lanes). Minor modifications would be made to the median on the Old Oakland Road northbound approach to add a third travel lane in the northbound



direction north of the Boardwalk Way intersection. At the southbound US 101 ramps intersection, the northbound approach would widen to five lanes. South of Commercial Street, the Old Oakland southbound approach would be widened on the west side to five lanes, and to six lanes at the northbound US 101 ramps intersection.

Both the single lane northbound US 101 off-ramp which widens to two lanes, and the single lane southbound US 101 off-ramp which widens to three lanes would be widened to add an additional lane at the ramp intersection with Old Oakland Road. The entrance to both the northbound US 101 on-ramp and the southbound US 101 on-ramp would be widened to add an HOV lane. Both on-ramps would be metered and the ramp lengths would be extended with modifications to ramp noses.









US 101 IMPLEMENTATION PLAN US 101 / OLD OAKLAND RD IC

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PLANNING-LEVEL COST ESTIMATES OLD OAKLAND INTERCHANGE: O-1

Es	timate Item		Quantity	Unit	Unit Price	Cost
I. I	ROADWAY ITEMS					
1.	Earthwork	Roadway Excavation	26,000	CY	\$30	\$780,000
		Imported Borrow	0	CY	\$25	\$0
2.	Structural Section	Pavement - New	110,000	SF	\$5	\$550,000
		Pavement - Overlay	230,000	SF	\$2.50	\$575,000
		Sidewalk	20,000	SF	\$10	\$200,000
3.	Drainage	Storm Drainage	5%		\$150,000	\$150,000
4.	Specialty Items	Structure Demolition	0	LS	\$0	\$0
5.	Minor Items & Additions	Subtotal Sections 1-4	20%			\$451,000
6.	Roadway Mobilization	Subtotal Sections 1-5	10%			\$271,000
SU	BTOTAL ROADWAY IT	EMS				\$2,977,000
II.	STRUCTURE ITEMS					
1.	Bridge Structures		5,200	SF	\$215	\$1,118,000
2.	Retaining Walls		33,000	SF	\$75	\$2,475,000
3.	Sound Walls (Replace)		0	SF	\$50	\$0
SUBTOTAL STRUCTURE ITEMS						\$3,593,000
III.	TRAFFIC ITEMS					
1.	Lighting			LS	\$166,100	\$166,100
2.	Traffic Signals Major		0	EA	\$240,000	\$0
3.	Traffic Signals: Minor/Mod	dification	3	EA	\$100,000	\$300,000
4.	Signing & Striping			LS	\$50,000	\$50,000
5.	Traffic Control Systems			LS	\$400,000	\$400,000
6.	Traffic Management Plan			LS	\$400,000	\$400,000
SU	BTOTAL TRAFFIC ITEN	AS				\$1,316,000
SU	BTOTAL CONSTRUCTION	N				\$7,886,000
CC	DNTINGENCIES		30%			\$2,400,000
TC	TAL CONSTRUCTION C	COSTS				\$10,286,000
IV	AGENCY COSTS					
1.	PA/ED, Design, Constr Mg	gmt & Agency Costs	40%			\$4,100,000
SU	BTOTAL AGENCY COST	ΓS				\$4,100,000
V.	RIGHT OF WAY ITEMS					
1.	Commercial/Industrial		12,000	SF	\$60	\$720,000
2.	Residential		0	SF	\$85	\$0
3.	Clearing/Removal			LS	\$20,000	\$20,000
4.	Utility Relocation Allowan	ce		LS	\$50,000	\$50,000
5.	Environmental Mitigation			LS		
SU	BTOTAL RIGHT OF WA	Y				\$790,000

TOTAL

\$15,200,000



C. Mabury Road/E Taylor Street Interchange

The Build Alternative M-1 was studied for the Mabury Road/E Taylor Street Interchange. The alternative consists of providing northbound and southbound US 101 on-ramp and offramp connections to the existing Mabury Road / East Taylor Street overcrossing where none currently exists. The construction of this interchange would allow direct freeway access from US 101 for the proposed future extension of BART to San Jose on the Union Pacific Railroad alignment, which is to the east of the Mabury Road / East Taylor Street intersection.

The Build Alternative described below assumes the projects listed under the No-Build Alternative as completed.

• Build Alternative M-1:

Build Alternative M-1 and the lane configurations for this alternative are shown on attached Sheet Alt. M-1. The proposed interchange would be a two-quadrant cloverleaf with the northbound US 101 on-ramp and offramp intersecting at the Mabury Road /E Taylor Street intersection on the east side of US 101 and the southbound US 101 on-ramp and offramp intersecting at the E Taylor Street/N. 23rd Street intersection on the west side of US 101. Both loop ramps of the two-quadrant cloverleaf would be on the south side of the



overcrossing. The existing overcrossing structure is sufficiently wide to accommodate four lanes of traffic, however currently only one half of the bridge is used for single lane traffic in each direction, the other half is closed to traffic by a concrete barrier, but continues to remain open for bicycle use. Though the bridge structure over US 101 would remain the same as existing with the full width of the bridge used to provide two lanes and a bike lane with a 7 foot wide sidewalk in each direction, the bridge approaches would be widened between the intersections where the ramps intersect. Both the single lane northbound and southbound off-ramps would widen to two lanes, and then to three lanes as they approach their respective intersections. The northbound and southbound on-ramps would be three lanes wide up to the ramp meter (including an HOV bypass lane), but both ramps would be metered single lane on-ramps to US 101.



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PLANNING-LEVEL COST ESTIMATES

MABURY/E TAYLOR INTERCHANGE: M-1

Estimate Item			Quantity	Unit	Unit Price	Cost
I. I	ROADWAY ITEMS					
1.	Earthwork	Roadway Excavation	9,400	CY	\$30	\$282,000
		Imported Borrow	14,000	CY	\$25	\$350,000
2.	Structural Section	Pavement - New	370,000	SF	\$5	\$1,850,000
		Pavement - Overlay	94,000	SF	\$2.50	\$235,000
		Sidewalk	23,000	SF	\$10	\$230,000
3.	Drainage	Storm Drainage	5%		\$220,000	\$220,000
4.	Specialty Items	Structure Demolition		LS	\$200,000	\$200,000
5.	Minor Items & Additions	Subtotal Sections 1-4	20%			\$673,000
6.	Roadway Mobilization	Subtotal Sections 1-5	10%			\$404,000
SU	BTOTAL ROADWAY ITI	EMS				\$4,444,000
II.	STRUCTURE ITEMS					
1.	Bridge Structures		14,000	SF	\$215	\$3,010,000
2.	Retaining Walls		9,700	SF	\$75	\$727,500
3.	Sound Walls (Replace)		0	SF	\$50	\$0
SU	BTOTAL STRUCTURE I	TEMS				\$3,737,500
III.	TRAFFIC ITEMS					
1.	Lighting			LS	\$200,000	\$200,000
2.	Traffic Signals Major		2	EA	\$240,000	\$480,000
3.	Traffic Signals: Minor/Mod	dification	0	EA	\$100,000	\$0
4.	Signing & Striping			LS	\$200,000	\$200,000
5.	Traffic Control Systems			LS	\$200,000	\$200,000
6.	Traffic Management Plan			LS	\$300,000	\$300,000
SU	BTOTAL TRAFFIC ITEN	AS and a second s				\$1,380,000
SU	BTOTAL CONSTRUCTION	N				\$9,561,500
CC	DNTINGENCIES		30%			\$2,900,000
TC	TAL CONSTRUCTION C	COSTS				\$12,462,000
IV.	AGENCY COSTS					
1.	PA/ED, Design, Constr Mg	gmt & Agency Costs	40%			\$5,000,000
SUBTOTAL AGENCY COSTS					\$5,000,000	
V.	RIGHT OF WAY ITEMS					
1.	Commercial/Industrial		373,000	SF	\$60	\$22,380,000
2.	Residential		33,000	SF	\$85	\$2,805,000
3.	Clearing/Removal			LS	\$200,000	\$200,000
4.	Utility Relocation Allowand	ce		LS	\$1,600,000	\$1,600,000
5.	Environmental Mitigation			LS	\$500,000	\$500,000
SU	BTOTAL RIGHT OF WA	Y				\$26,985,000

TOTAL

\$44,400,000



9. PREFERRED ALTERNATIVES

The study locations at US 101/Old Oakland Road and US 101/Mabury Road/E Taylor Street each had only one alternative identified as feasible. US 101/Old Oakland Road, Alternative O-1, includes widening of the existing Old Oakland Road overcrossing and all four ramps at this interchange. Alternative M-1 at US 101/Mabury Road/E Taylor Street involves converting the existing overcrossing into a full interchange with US 101.

There were five alternatives at the project location US 101/Zanker Road/N 4th St/Skyport Drive that were deemed feasible by the Implementation Plan team and were developed from single-line concept drawings into full alternatives for this study.

- Alternative Z-1 was the preferred alternative from the 2005 US Route 101 North Corridor Study.
- Alternative Z-2 examined a full interchange with all freeway connections in both north and south directions as well as an elevated connection between Skyport Drive and Old Bayshore Highway.
- Alternative Z-3 is similar to Z-2, however the connections to southbound US 101 included in Z-2 are not present in Z-3.
- Alternative Z-4 is also similar to Z-2, but removes the southbound US 101 off-ramp from the interchange. It also has a modified southbound US 101 on-ramp which is different from the loop on-ramp presented in Alternative Z-2.
- Alternative Z-5 makes the primary Zanker Road overcrossing a connection between Zanker Road and Skyport Drive with intersections at Old Bayshore Highway and N 4th Street on the north and south sides of US 101 respectively. This alternative includes connections to US 101, both on and off-ramps, in both the northbound and southbound directions.

Parsons performed a traffic analysis for the future Build conditions for the alternatives. The traffic analysis indicates that US 101 mainline speeds and ramp operations would perform at levels equal to No-Build conditions due to the congestion on US 101. By virtue of improved local street connectivity and the addition of ramps to and from Zanker Road and Mabury Road/E. Taylor Street, plus widened ramps at Old Oakland Road, the number of intersections operating at Level of service F will be significantly reduced.

For the five Build Alternatives at US 101/Zanker Road/N 4th St/Skyport Drive interchange, the intersection level of service analysis did not clearly differentiate between the performances benefits of one Build Alternative versus another. To provide additional insights, the VTA Regional Travel Forecast Model was used to measure the following performance indicators:

- Vehicle miles of travel
- Vehicle hours of travel
- Number of roadway links operating with volume to capacity ratios of 0.80 or higher (LOS D)
- Number of roadway links operating with congested speeds of 20 mph or less


- Number of vehicles operating on links having volume to capacity ratios of 0.80 or higher
- Percentage of links operating with volume to capacity ratios of 0.80 or higher
- Percentage of links operating with congested speeds of 20 mph or less
- Weighted average of volume to capacity ratios on links operating at V/C ratios of 0.80 or higher
- Vehicle trips assigned (being serviced) within a subregional study area.

These nine performance indicators were measured for each of the Build Alternatives for the subregional study area. Model simulation results were than compared to Build Alternative Z-1, which was assigned an index value (or reference point) of 1.0. Better performance achieved a value greater than 1.0, while worse performance compared to Build Alternative Z-1 earned a value less than 1.0.

Table 9-1 presents the absolute values measured by the travel forecast model, while Table 9-2 presents the relative performance. Assuming that all performance measures are weighted equally, and ignoring overlaps between similar measurements, Table 9-2 indicates that Build Alternative Z-1 achieves a score of 18.00. Alternatives 3 and 3A achieve the highest score, 18.28, followed closely by Alternatives 4 and 4A, which earned 18.21 points. Alternatives Z-2 and Z-5 earned the lowest scores of 18.116 and 18.165, respectively. Table 9-3 summarizes the advantages and disadvantages of the Build Alternatives



Table 9-1: U.S. 101/Zanker Road Interchange Options—Measures of Effectiveness

		2005	OPTION 1	OPTION 2	OPTION 3	OPTION 3A	OPTION 4	OPTION 4A	OPTION 5
		2005	(Alt Z-1)	(Alt Z-2)	(Alt Z-3)	$(Alt Z-3)^*$	(Alt Z-4)	$(Alt Z-4)^*$	(Alt Z-5)
Vehicle Miles of Travel	All	241,055	1,046,640	1,051,949	1,053,951	1,053,082	1,049,410	1,048,590	1,045,909
AM Peak Hour	Drive alone	215,711	879,010	883,868	885,662	884,904	881,294	880,585	878,223
	Shared ride	19,709	126,927	127,279	127,446	127,362	127,346	127,263	127,022
	Shared ride	5,173	36,733	36,838	36,826	36,800	36,818	36,792	36,721
	Trucks	463	3,969	3,964	4,016	4,015	3,952	3,951	3,942
PM Peak Hour	All	255,584	1,443,325`	1,425,170	1,438,797	1,438,360	1,432,847	1,432,461	1,427,744
	Drive alone	232,488	1,228,608	1,209,701	1,223,885	1,223,511	1,217,725	1,217,396	1,213,283
	Shared ride	17,817	159,284	160,015	159,053	159,461	159,717	159,678	159,223
	Shared ride	4,738	51,291	51,372	51,319	51,300	51,330	51,312	51,175
	Trucks	541	4,142	4,081	4,090	4,088	4,075	4,073	4,062
Vehicle Hours of Travel	All	11,336	36,548	37,026	36,895	36,864	35,838	35,809	35,693
AM Peak Hour	Drive alone	10,374	31,779	32,190	32,197	32,170	31,166	31,142	31,040
	Shared ride	747	3,600	3,658	3,547	3,544	3,532	3,529	3,518
	Shared ride	197	1,051	1,058	1,031	1,030	1,023	1,022	1,019
	Trucks	18	117	120	121	121	116	116	116
PM Peak Hour	All	9,239	71,316	70,679	70,503	70,488	77,385	77,372	76,702
	Drive alone	8,556	63,245	62,745	62,398	62,385	68,617	68,606	68,025
	Shared ride	526	5,969	5,862	5,994	5,992	6,491	6,489	6,422
	Shared ride	139	1,896	1,867	1,915	1,914	2,064	2,063	2,043
	Trucks	18	206	205	197	197	214	213	212
Number of Links—V/C Ratios	AM peak hour	199	224	226	219	219	221	221	220
V/C > 0.80	PM peak hour	186	507	484	498	498	489	489	486
Number of Links—Congested	AM peak hour	367	525	518	531	531	527	527	526
Speed < 20 mph	PM peak hour	352	626	630	621	621	628	628	626
No. of Vehicles—V/C Ratios	AM peak hour	549,940	2,248,446	2,260,835	2,163,365	2,163,365	2,200,417	2,200,417	2,197,239
V/C > 0.80	PM peak hour	526,325	4,281,191	4,146,853	4,195,325	4,195,325	4,161,706	4,161,706	4,143,955
Percent of Links—V/C Ratios	AM peak hour	0.16	0.16	0.16	0.15	0.15	0.15	0.15	0.16
V/C > 0.80	PM peak hour	0.15	0.36	0.34	0.35	0.35	0.34	0.34	0.34
Percent of Links—Congested	AM peak hour	0.28	0.35	0.35	0.36	0.36	0.35	0.35	0.35
Speed < 20 mph	PM peak hour	0.27	0.42	0.42	0.42	0.420	.42	0.42	0.42
Weighted Average—V/C Ratios	AM peak hour	0.56	0.59	0.59	0.57	0.57	0.58	0.58	0.58
V.C > 0.80	PM peak hour	0.52	0.71	0.71	0.7	0.7	0.7	0.7	0.7
Trips in Project Limits	AM peak hour	1,308,122	5,064,586	5,108,097	5,095,052	5,090,738	5,084,366	5,080,300	5,061,420
	PM peak hour	1,378,448	7,060,375	6,959,791	7,044,642	7,042,474	7,027,863	7,025,948	6,992,906

*Options 3A and 4A are the same as Options 3 and 4, respectively, but with the removal of the existing Northbound off-ramp to Brokaw Road.

V/C: volume to capacity

This table was extracted from the Parsons November 2009 Traffic Report.

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Table 9-2: U.S. 101 Interchange Options—Relative Performance

	OPTION 1 (Alt Z-1)	OPTION 2 (Alt Z-2)	OPTION 3 (Alt Z-3)	OPTION 3A (Alt Z-3)	OPTION 4 (Alt Z-4)	OPTION 4A (Alt 7-4)	OPTION 5 (Alt Z-5)
Vehicle Miles of Travel	(()					(1111 21 0)
AM peak hour	1.000	0 995	0 993	0 994	0 997	0 998	1 001
PM peak hour	1.000	1.013	1.003	1.003	1.007	1.008	1.011
Vehicle Hours of Travel							
AM peak hour	1.000	0.987	0.991	0.991	1.020	1.021	1.024
PM peak hour	1.000	1.009	1.012	1.012	0.922	0.922	0.930
No. of Links—V/C Ratios > 0.80							
AM peak hour	1.000	0.991	1.023	1.023	1.014	1.014	1.018
PM peak hour	1.000	1.048	1.018	1.018	1.037	1.037	1.043
No. of Links—Congested Speeds < 20 mph							
AM peak hour	1.000	0.987	1.011	1.011	1.004	1.004	1.002
PM peak hour	1.000	1.006	0.992	0.992	1.003	1.003	1.000
No. of Vehicles—V/C Ratios > 0.80							
AM peak hour	1.000	0.995	1.039	1.039	1.022	1.022	1.023
PM peak hour	1.000	1.032	1.020	1.020	1.029	1.029	1.033
Percent of Links—V/C Ratios > 0.80							
AM peak hour	1.000	1.000	1.067	1.067	1.067	1.067	1.000
PM peak hour	1.000	1.059	1.029	1.029	1.059	1.059	1.059
Percent of Links—Congested Speeds < 20 mph							
AM peak hour	1.000	1.000	1.029	1.029	1.000	1.000	1.000
PM peak hour	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Weighted Average—V/C Ratios > 0.80							
AM peak hour	1.000	1.000	1.035	1.035	1.017	1.017	1.017
PM peak hour	1.000	1.000	1.014	1.014	1.014	1.014	1.014
Trips in Project Limits							
AM peak hour	1.000	1.009	1.005	1.005	1.004	1.003	0.999
PM peak hour	1.000	0.986	0.997	0.997	0.995	0.995	0.990
Composite Score	18.000	18.116	18.278	18.280	18.210	18.211	18.165



	Alternative Z-1	Alternative Z-2	Alternative Z-3	Alternative Z-4	Alternative Z-5
Advantages	• Provides direct access from northbound U.S. 101 to Zanker Road, Skyport Drive, and the Mineta San Jose International Airport.	• Replaces substandard hook ramps to Old Bayshore Highway with direct access to Zanker Road and Skyport Drive from northbound U.S. 101.	• Replaces substandard northbound hook ramps to Old Bayshore Highway with direct access to Zanker Road and Skyport Drive.	• Replaces substandard northbound hook ramps to Old Bayshore Highway with direct access to Zanker Road and Skyport Drive.	• Replaces substandard northbound hook ramps to Old Bayshore Highway with direct access to Zanker Road and Skyport Drive.
	 Provides direct access to northbound U.S. 101 from Old Bayshore Highway and connecting access from southbound I-880. 	 Retains the existing northbound off-ramp to Brokaw Road. 	 Retains the existing northbound off-ramp to Brokaw Road. Provides direct access to Mineta San Jose 	• Improves local traffic circulation between Old Bayshore Highway, Zanker Road, Skyport Drive, Fourth Street and First Street.	 Provides direct access from northbound U.S. 101 to Zanker Road, Skyport Drive and Mineta San Jose International Airport.
		• Provides direct access to Mineta San Jose International Airport from northbound U.S. 101 and southbound I-880.	International Airport from northbound U.S. 101 and southbound I-880.Improves local traffic circulation between	• Provides direct access to Mineta San Jose International Airport from northbound U.S. 101 and southbound I-880.	• Provides direct access to northbound U.S. 101 from Old Bayshore Highway and connection access from southbound I-880.
		 Provides traffic relief to North First Street. Provides southbound U.S. 101 access to both North First Street and Skyport Drive/Zenker Bood 	Old Bayshore Highway, Zanker Road, Skyport Drive, Fourth Street and First Street.	 Provides traffic relief to North First Street. Utilizes the existing Old Bayshore Highway to access southbound U.S. 101. 	• Requires only one bridge over U.S. 101 to connect Zanker Road and Fourth Street as compared to Options 2, 3 and 4.
		 Improves local traffic circulation between Old Bayshore Highway, Zanker Road, Skyport Drive, Fourth Street and First 	 Utilizes the existing Old Bayshore Highway to access southbound U.S. 101. 	• Retains the existing weaving distance between the North First Street on-ramp to southbound U.S. 101 and the I-880 off-ramp.	 Allows two-way traffic movements from Zanker Road to Old Bayshore Highway. Eliminates the inadequate intersection
		Street.	• Increases the weaving distance between the North First Street on-ramp to southbound U.S. 101 and the I-880 off-ramp.	• Increases vehicle storage capacity on the North First Street on-ramp to southbound U.S. 101.	spacing on the Skyport Drive connection to Fourth Street (Fourth Street/Zanker Road and Skyport Drive/U.S.101 on-ramp).
Disadvantages	• Reduces capacity and provides indirect routing for heavy left turn volumes from southbound North First Street to the southbound U.S. 101 on-ramp.	• Adds several consecutive off-/on-ramps in the northbound direction along U.S. 101 from I-880 to SR 87.	• Adds several consecutive off-/on-ramps in the northbound direction along U.S. 101 from I-880 to SR 87.	• Adds several consecutive off-/on-ramps in the northbound direction along U.S. 101 from I-880 to SR 87.	• Reduces capacity and provides indirect routing for heavy left turn volumes from southbound north First Street to the southbound U.S. 101 on-ramp.
	 Provides inadequate intersection spacing on the Skyport Drive connection to Fourth Street (Fourth Street/Zanker Road and Skyport Drive/U.S. 101 on-ramp). 	• In the southbound direction, provides two consecutive off-ramps (Airport Parkway and Skyport Drive) and two on-ramps (First Street and Skyport Drive).	• Motorists traveling on Zanker Road and Skyport Drive must use North First Street to access southbound U.S. 101.	• Merging issue at southbound U.S. 101 on- ramp.	• Reduces the existing weave length on southbound U.S. 101 between the Skyport Drive on-ramp and the I-880 off-ramp.
	• Slightly reduces the existing weave length on southbound U.S. 101 between the Skyport Drive on-ramp and the I-880 off-ramp	• Slightly reduces weaving distance between the Skyport Drive on-ramp and the I-880 off-ramp in the southbound direction along U.S. 101.			• Provides inadequate storage length along the southbound U.S. 101 on-ramp.
	 Provides inadequate storage length along the southbound U.S. 101 on-ramp. 	• Provides inadequate intersection spacing on the Skyport Drive connection to Fourth Street.			
	• Does not allow two-way traffic movements from Zanker Road to Bayshore Highway.				

Table 9-3: Traffic Related	Advantages and I	Disadvantages of Z	anker Road Intercl	nange Design Options





This information leads the Project Team to the following recommendations:

- Alternative 4 or 4A is the recommended design solution from a traffic operations perspective pending the acquisition of right-of-way to allow for the connecting roadway between Skyport Drive and the Old Bayshore Highway on-ramp to southbound US 101.
- Alternative Z-3 or Z-3A would be an acceptable design solution if right-of-way cannot be acquired to implement Alternative Z- 4 or Z- 4A.
- Alternative Z-1 is not recommended.
- Alternative Z-2 is not recommended.
- Alternative Z-5 is not recommended.

10. DESIGN EXCEPTIONS & PROJECT APPROVALS

A. Existing Conditions

There are a number of existing exceptions to design standards, both mandatory and advisory, throughout the project limits. These exceptions include lack of decision sight distance, stopping sight distance, vertical clearance and substandard weaving distances. Additionally, there is only 0.5 miles between the interchanges located at US 101/I-880, US 101/Old Bayshore Highway, and US 101/Brokaw Road successively. The mandatory standard spacing for local interchanges is 1 mile, while the standard spacing between freeway-to-freeway interchanges and local interchanges is 2 miles. See Attachment A for entire list and location for existing design exceptions.

B. Build Alternatives

The Zanker Road alternatives, which will create a new interchange at the location of the current US 101/Old Bayshore Road interchange, will perpetuate the design exception of 0.5 miles between a freeway-to-freeway interchange and a local street interchange instead of the 2.0 mile standard spacing. The Mabury Road/East Taylor Street project will likewise require a design exception for the interchange spacing between it and its neighboring interchanges. The new proposed US 101/Mabury Road interchange will be approximately 0.78 miles from both the US 101/Old Oakland Road and the US 101/McKee Road interchanges. Additionally, each of the build alternatives for the Zanker Road interchange and the Build Alternative for the Mabury Road interchange propose 11' widths for travel lanes on the bridges crossing US 101 (see Attachment A).

During the PSR phase of each of the interchange improvement locations, the Caltrans document *Fact Sheet Exceptions to Design Standards* for both mandatory and advisory standards will need to be completed in order to achieve project approval.

Caltrans has stated concerns regarding these exceptions. In order to obtain approval, it will need to be shown that the projects will provide improvement to the overall system. This could include providing auxiliary lanes, ramp meters and other improvements which would increase overall project cost.





Exceptions to interchange spacing standards involve more detailed and rigorous scrutiny than normal Caltrans approval procedure (per Caltrans Design Information Bulletin (DIB) 77 and Project Development Procedures Manual requirements).

11. TRAFFIC

Freeway Traffic Volumes and Analysis

In parallel with this study, the VTA has initiated a HOT lane study for US 101 within the Santa Clara County limits. The HOT lane study team has developed a FREQ operational model that includes US 101 from Tennant Avenue in Morgan Hill to Holly Street in San Carlos. This FREQ simulation model uses the same 2004 mainline and ramp data which has been used by the Implementation Plan team. This model uses peak period volumes, i.e., four-hour volumes from 5:00 to 9:00 AM in the morning and 3:00 to 7:00 PM in the evening. These peak analysis periods match the current HOV lane hours of operation. For consistency purposes, the Implementation Plan team decided to use the same FREQ model that was developed for the Santa Clara County HOT Lane Feasibility Study¹. Because the HOT lane study covers the entire area of Santa Clara County, the Implementation Plan team decided to refine the model to reflect the project limits of this project, i.e., the McKee Road interchange to the De La Cruz Boulevard interchange. The results from the shorter version of this FREQ model match closely with the results of the HOT lane project in this area.

Based on the FREQ four-hour analyses developed for existing traffic for this study, the following conclusions were made.

AM Peak Period Operational Issues

Northbound US 101

- In the US 101 northbound direction, a small bottleneck develops north of the McKee Road interchange in the first peak hour (5:00 to 6:00 AM). Traffic queues on US 101 extend from the McKee Road interchange to the I-280 interchange. The traffic speeds in the mixed-flow lanes range from 25 to 35 mph.
- In the second hour (6:00 to 7:00 AM) and third hour (7:00 to 8:00 AM), a major bottleneck develops at the Old Bayshore Highway on-ramp, and traffic queues on US 101 extend all the way to the I-280 interchange, overlapping the first bottleneck. Traffic speeds in the mixed-flow lanes range from stop and go (0 mph) to 35 mph.
- During the final fourth hour of the simulation (8:00 to 9:00 AM), several bottlenecks develop along US 101 within and outside of the project limits. In addition to the major bottleneck at the Old Bayshore Highway on-ramp, minor bottlenecks develop to the north of the SR 87 on-ramp and north of the De La Cruz Boulevard on-ramp, both of which are outside of the limits of this project.

¹ Santa Clara County HOT Lane Feasibility Study, T.Y. Lin International and Wilbur Smith Associates for the Santa Clara Valley Transportation Authority, dated December 6, 2005.



Southbound US 101

• There are no major AM peak period bottlenecks in the US 101 southbound direction within the limits of this project.

PM Peak Period Operational Issues

Northbound US 101

• The FREQ simulation indicates that there are no major PM peak period bottlenecks in the US 101 northbound direction within the project limits.

Southbound US 101

- During the first hour (3:00 to 4:00 PM), a major bottleneck develops between the I-880 interchange and the Old Oakland Road interchange in the US 101 southbound direction. Traffic queues on US 101 extend to just north of the I-880 interchange.
- In the second hour of the simulation (4:00 to 5:00 PM), a major bottleneck develops between the I-880 interchange and the Old Oakland Road interchange in the US 101 southbound direction. By the end of the second hour, traffic queues on US 101 extend to north of the De La Cruz Boulevard interchange. Traffic speeds in the mixed-flow lanes range from stop and go (0 mph) to 45 mph.
- During the third hour (5:00 to 6:00 PM) and fourth hour (6:00 to 7:00 PM), a second bottleneck develops south of the limits of this project (just south of the I-280 interchange at the outside lane drop). Queues from the bottleneck (which is outside of the project limits) extend all the way north to the I-880 interchange by the end of the peak period. This spillback then connects and overlaps with the first bottleneck. By the end of fourth hour, the traffic flow speeds over the entire limits of the project range from stop and go (0 mph) to 25 mph.

Intersection Traffic Volumes and Analysis

Data for the study intersections were obtained from the City of San Jose in the form of TRAFFIX files. Most of the intersection turning movements was collected in 2007. Only a few of the intersection turning movement counts are more than two years old. After discussions with City of San Jose and VTA, the Implementation Plan team collected new intersection data at several locations.

To evaluate the existing traffic operation conditions at the study intersections, levels of service (LOS) were evaluated using TRAFFIX Version 7.9 computer software. The analysis uses procedures from the HCM "Operations Method." Intersection level of service and performance data are presented in Table 11-1.



For City of San Jose intersections, an acceptable level of service is defined as LOS D or better. According to these standards, all local street intersections and freeway ramp terminals operate at acceptable levels of service except for the following intersections:

- No. 29. East Hedding Street/North Bayshore Road (AM and PM LOS E)
- No. 34. East Taylor Street/Mabury Road (PM LOS F)
- No. 38. N 1st Street/Taylor Street (PM LOS E)

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Table 11-1: Existing Intersection Level of Service Summary

					AM PEA	K			PM PEAK			
			COUNT		AVERAGE DELAY	AVERAGE CRITICAL	CRITICAL	COUNT		AVERAGE DELAY	AVERAGE CRITICAL	CRITICAL
NO.	CSJ ID	INTERSECTION	DATE	LOS	(sec/veh)	DELAY (sec/veh)	V/C	DATE	LOS	(sec/veh)	DELAY (sec/veh)	V/C
1	4069	U.S. 101 NB off-/on-ramp/Trimble Road	3/6/2007	С	24.9	29.5	0.905	3/6/2007	В	15.7	16.9	0.706
2		U.S. 101 SB off-/on-ramp/Trimble Road			Futu	re Intersection				Future	e Intersection	
3	3393	North First Street/Charcot Avenue	11/29/2007	C-	33.8	33.9	0.541	11/29/2007	C-	34.1	33.2	0.622
4	3225	Airport Parkway/Technology Drive	3/10/2005	C	26.2	31.1	0.420	3/10/2005	С	30.9	34.3	0.428
5	3222	U.S. 101 SB off-ramp/Airport Parkway	3/31/2005	C	28.7	26.3	0.493	3/31/2005	С	30.9	32.8	0.342
6	3083	North First Street/East Brokaw Road	10/2/2007	D	42.4	48.3	0.746	10/2/2007	D	42.0	44.7	0.713
7	3020	U.S. 101 NB off-ramp/East Brokaw Road	10/3/2007	C	23.2	24.3	0.442	10/3/2007	D+	36.5	43.4	0.623
8	3291	Brokaw Road/Bering Road	12/4/2007	C+	20.4	20.9	0.396	12/4/2007	С	32.0	31.9	0.508
9	3085	Brokaw Road/Zanker Road	10/2/2007	С	26.5	29.1	0.544	10/2/2007	D+	38.6	44.0	0.637
10		Zanker Road/Bering Road (NB and SB stop)	12/6/2007	С	21.5	_		12/6/2007	D	27.5		
11		Old Bayshore Highway/U.S. 101 NB off-/on-ramp	12/7/2007	А	9.6	_		12/7/2007	В	14.5	_	_
12	3288	Old Bayshore Highway/I-880 SB off-/on-ramp	12/6/2007	С	30.4	29.8	0.696	12/6/2007	С	30.6	25.3	0.501
13	3289	Old Bayshore Highway/I-880 NB off-/on-ramp	2/15/2005	C-	33.2	36.7	0.761	2/15/2005	C+	20.6	20.6	0.537
14	3287	Old Bayshore Highway/N. First Street	4/17/2007	C–	32.3	32.9	0.438	4/17/2007	D+	37.2	46.0	0.654
15	_	Old Bayshore Highway/Fourth Street (NB and SB stop)	11/28/2007	В	12.7			11/28/2007	С	24.3		
16	3501	North First Street/Metro Drive	10/3/2007	В	12.8	7.7	0.375	10/3/2007	С	24.4	24.1	0.498
17	4039	State Route 87/Skyport Drive	3/30/2005	C-	34.1	39.9	0.830	3/30/2005	С	26.3	35.3	0.623
18	3922	Skyport Drive/Technology Drive	5/24/2007	С	31.0	37.1	0.431	5/24/2007	D	40.0	40.2	0.429
19	3515	Skyport Drive/North First Street	3/17/2005	C+	22.6	27.8	0.494	3/17/2005	С	23.7	25.8	0.573
20		Skyport Drive/Fourth Street		Future Intersection (Build Case) Future Intersection (Build Case)					section (Build Case)			
21	3533	Fourth Street/Archer Street (EB stop)	12/4/2007	В	12.0	-	-	12/4/2007	В	12.6	_	
22	3054	North First Street/I-880 SB off-/on-ramp	10/2/2007	C+	22.7	26.9	0.807	10/2/2007	B–	18.2	19.2	0.537
23	3055	North First Street/I-880 NB off-/on-ramp	10/2/2007	B-	19.1	22.0	0.541	10/2/2007	В	16.0	13.2	0.486
24	3554	Old Oakland Road/East Gish Road	12/4/2007	B+	10.9	16.2	0.506	12/4/2007	В	12.3	14.5	0.530
25	3421	Old Oakland Road/Commercial Street	11/7/2006	D+	38.1	39.1	0.727	10/25/2006	D	45.1	50.4	0.679
26	3021	Old Oakland Road/U.S. 101 NB off-/on-ramp	11/8/2007	D-	54.7	89.7	1.042	10/3/2007	B-	19.9	25.7	0.804
27	3022	Old Oakland Road/U.S. 101 SB off-/on-ramp	10/11/2007	С	23.3	27.1	0.542	10/11/2007	С	31.8	45.7	0.932
28	3576	Old Oakland Road/Hedding Street	4/4/2007	D	48.5	49.6	0.672	4/4/2007	D	43.7	51.1	0.561
29		East Hedding Street/North Old Bayshore Highway (NB and SB stop)	12/4/2007	E	37.8	_	—	12/4/2007	Е	37.9	<u> </u>	
30	3574	East Hedding Street/Mabury Road	10/31/2006	C+	21.9	20.3	0.461	10/31/2006	B-	18.5	16.6	0.383
31	3294	Commercial Street/Berryessa Road	10/24/2006	C	24.0	33.1	0.831	10/24/2006	С	23.4	24.9	0.485
32	3823	13th Street/Taylor Street	11/9/2006	В	13.4	14.8	0.658	11/9/2006	В	13.8	15.6	0.664
33	—	East Taylor Road/North Old Bayshore Highway (NB and SB stop)	11/28/2007	C	20.7	—		11/28/2007	С	23.1	_	
34	—	East Taylor Road/Mabury Road (NB and SB stop)	11/27/2007	D	34.3	—	—	11/27/2007	F	329.3	<u> </u>	—
35	3210	McKee Road/U.S. 101 SB off-/on-ramp	11/16/2005	B-	19.8	32.4	0.525	11/16/2005	C+	20.1	33.4	0.590
36	3211	McKee Road/U.S. 101 NB off-/on-ramp	11/17/2005	C+	20.3	23.9	0.483	11/17/2005	C	23.5	31.5	0.501
37	3496	First Street/Hedding Street	3/10/2005	C-	34.9	34.2	0.473	3/10/2005	D+	35.5	39.4	0.480
38	3519	First Street/Taylor Road	4/4/2007	D	47.9	52.0	0.668	4/4/2007	Е	62.9	59.4	0.786
39	3625	King Road/McKee Road	3/29/2007	D	44.9	49.0	0.726	3/29/2007	D	47.0	53.1	0.816
40	3665	Mabury Road/Mabury Yard	3/9/2005	Α	8.2	6.5	0.594	3/9/2005	А	7.8	9.7	0.554
41	3623	King Road/Mabury Road	11/17/2005	D	39.5	43.7	0.488	11/17/2005	D+	38.1	36.4	0.513





The quantitative analysis of future No-Build conditions indicates that US 101 mainline speeds can be maintained provided that ramp meters are deployed and activated at all on-ramps, in both directions, during both AM and PM peak periods. The downside of this strategy is that traffic queues will extend upstream from the ramp meters for several blocks and will impede traffic flows on local streets. Under these No-Build conditions, more than 60 percent of the local street intersections adjacent to US 101 will operate at LOS F during AM, PM, or both peak periods.

Beyond these quantitative findings, the No-Build highway network does not address the circulation and access goals of the project. Limitations of the No-Build condition are:

- Does not provide direct access to Mineta San Jose International Airport from northbound US 101 and southbound I-880
- Does not relieve traffic congestion on the N 1st Street corridor, which impedes access to the airport and adjacent office/research and development campuses, as well as fixed guideway transit operations
- Does not improve traffic operations at the Old Oakland Road interchange
- Does not provide access to the planned BART station at Mabury Road



The intersection turning movement volumes were developed as explained in Section 3 of this report. The intersection analysis of the 2035 No-Build scenario was completed a presented in Table 11-2, show that most (25 of 40) of the study intersections would fail without any improvements.

			AM PEAK					PM PEAK					
				AVERAGE DELAY	AVERAGE CRITICAL			AVERAGE DELAY	AVERAGE CRITICAL				
NO.	CSJ ID	INTERSECTIONS	LOS	(sec/veh)	DELAY (sec/veh)	CRITICAL V/C	LOS	(sec/veh)	DELAY (sec/veh)	CRITICAL V/C			
1	4069	U.S. 101 NB off-/on-ramp/Trimble Road	D	47.3	54.9	1.036	B-	19.5	20.4	0.875			
2		U.S. 101 SB off-/on-ramp/Trimble Road	B-	19.9	25.2	0.875	C+	21.9	42.0	1.144			
3	3393	North First Street/Charcot Avenue	Е	60.1	74.5	1.002	F	97.5	127.9	1.133			
4	3225	Airport Parkway/Technology Drive	С	26.3	31.9	0.672	C	29.4	33.9	0.729			
5	3222	U.S. 101 SB off-ramp/Airport Parkway	E+	55.2	66.7	1.008	D	49.9	65.7	0.995			
6	3083	North First Street/East Brokaw Road	F	122.5	184.7	1.313	F	102.0	161.8	1.255			
7	3020	U.S. 101 NB off-ramp/East Brokaw Road	F	129.9	182.6	1.073	B-	19.5	21.8	0.592			
8	3291	Brokaw Road/Bering Road	F	247.0	286.3	1.526	F	249.1	330.3	1.617			
9	3085	Brokaw Road/Zanker Road	E	71.9	101.1	1.111	E-	77.0	129.4	1.176			
10	—	Zanker Road/Bering Road (NB and SB stop)	F	—		—	F	—		—			
11	—	Old Bayshore Highway/U.S. 101 NB off/on-ramp	F	—		—	F	—		—			
12	3288	Old Bayshore Highway/I-880 SB off/on-ramp	F	276.2	345.6	1.520	D	43.2	59.2	0.888			
13	3289	Old Bayshore Highway/I-880 NB off/on-ramp	E+	56.1	74.5	1.060	F	149.7	105.7	1.152			
14	3287	Old Bayshore Highway/North First Street	F	166.7	270.5	1.512	F	160.3	285.8	1.531			
15		Old Bayshore Highway/Fourth Street (NB and SB stop)	F	622.6			F	382.8	_				
16	3501	North First Street/Metro Drive	C+	21.1	20.9	0.785	C-	33.1	39.5	0.947			
17	4039	SR-87/Skyport Drive	D	44.0	62.9	0.955	D	44.8	65.5	1.026			
18	3922	Skyport Drive/Technology Drive	D+	38.3	52.3	0.806	С	27.5	30.7	0.676			
19	3515	Skyport Drive/North First Street	D-	53.5	97.3	0.955	F	157.9	233.3	1.261			
20		Skyport Drive/Fourth Street	Future Intersection (Build Case)					Future	e Intersection (Build Case)				
21	3533	Fourth Street/Archer Street (EB stop)	F	—		—	F	—		—			
22	3054	North First Street/I-880 SB off-/on-ramp	E+	56.1	83.9	1.106	F	97.5	121.6	1.194			
23	3055	North First Street/I-880 NB off-/on-ramp	B-	18.8	18.3	0.773	D-	53.1	71.4	1.085			
24	3554	Old Oakland Road/East Gish Road	D	48.5	72.3	1.064	E	71.0	103.6	1.121			
25	3421	Old Oakland Road/Commercial Street	F	147.0	201.4	1.327	E-	76.4	130.1	1.169			
26	3021	Old Oakland Road/U.S. 101 NB off-/on-ramp	F	83.8	166.0	1.278	C	23.8	35.0	0.946			
27	3022	Old Oakland Road/U.S. 101 SB off-/on-ramp	C-	33.0	49.2	0.969	F	110.8	166.2	1.284			
28	3576	Old Oakland Road/Hedding Street	Е	66.4	94.5	1.072	F	136.7	222.0	1.411			
29		East Hedding Street/North Bayshore Road (NB and SB stop)	F				F						
30	3574	East Hedding Street/Mabury Road	F	121.1	184.6	1.323	С	26.4	29.4	0.832			
31	3294	Commercial Street/Berryessa Road	D	41.9	88.8	0.988	Е	67.5	86.9	0.881			
32	3823	13th Street/Taylor Street	С	31.4	43.4	0.953	F	96.6	145.4	1.249			
33		East Taylor Road/North Bayshore Road (NB and SB stop)	F		_		F	—	_				
34		East Taylor Road/Mabury Road (NB and SB stop)	F	_			F	_	_	_			
35	3210	McKee Road/U.S. 101 SB off-/on-ramp	D	47.4	78.0	1.030	D	40.1	71.4	1.041			
36	3211	McKee Road/U.S. 101 NB off-/on-ramp	C	30.3	41.9	0.945	C	30.3	41.1	0.956			
37	3496	First Street/Hedding Street	D	43.9	58.7	0.964	С	31.4	33.2	0.793			
38	3519	First Street/Taylor Road	Е	61.5	73.2	1.003	F	131.9	184.7	1.294			
39	3625	King Road/McKee Road	F	211.5	297.7	1.532	F	325.8	414.5	1.797			
40	3665	Mabury Road/Mabury Yard	D-	54.4	73.9	1.071	D+	38.6	61.0	0.971			
41	3623	King Road/Mabury Road	D	41.1	52.0	0.952	F	112.4	168.0	1.275			

Table 11-2: Year 2035 No-Build Intersection Level of Service Summary





An analysis of the US 101 mainline and ramps was undertaken to determine if the change of access control proposals discussed previously in this study would negatively impact US 101 compared to No-Build conditions. Similar to the existing condition and 2035 No-Build condition, FREQ software was utilized for the analysis.

In the US 101 northbound direction, all the proposed options at Zanker Road interchange are similar, except for Alternative Z-1. In Alternative Z-1, there is no off-ramp to Brokaw Road and no on-ramp from Zanker Road. For the traffic analysis, these access points were retained or added, as the Project Development Team determined that these ramps could be braided.

Based on these FREQ performance measures of effectiveness, the following was observed under all N 4th Street/Zanker Road interchange alternatives, or as otherwise noted.

All North 4th Street / Zanker Road Interchange Alternatives, except as noted.

AM Peak Period

Northbound US 101

- During the morning peak period, HOV volumes would reach the capacity of the HOV lane by the end of the 6:00 to 7:00 AM period.
- Even with the implementation of ramp meters, a bottleneck would develop between the McKee Road and Mabury Road interchanges and a second bottleneck would develop north of De La Cruz Boulevard interchange by the end of the second hour.
- By the third and fourth hours, speeds along US 101 within the project study area would drop to below 10 mph, similar to existing conditions.
- Some of the off-/on-ramps would serve 60 to 90 percent of their demand volumes.

Southbound US 101

• No queues or bottlenecks were observed in the southbound direction during the morning peak period.

PM Peak Period

Northbound US 101

- In the northbound direction, by the end of the first hour, a major bottleneck would develop north of the project limits. Queues from this bottleneck would spill back to the project study limits, similar to No-Build conditions.
- Most of the off-/on-ramps would serve 85 percent or more of the demand volumes.

Southbound US 101

• In the southbound direction, a bottleneck would develop between Mabury Road and McKee Road, and a second major bottleneck would develop south of Alum Rock Avenue. By the end of the second hour, speeds would drop below 20 mph and would worsen by the end of the peak period.



- During the evening peak, HOV volumes would reach the capacity of the HOV lane by the end of the 4:00 to 5:00 PM time period.
- Some of the off-/on-ramps would serve about 60 to 90 percent of their demand volume during the peak periods.
- With Alternative 2 (at N 1st Street/Zanker Road), southbound traffic operations along US 101 would worsen earlier than the other options due to the additional on-ramp at the Zanker Road interchange. By the end of the peak period, Alternative 2 performance is similar to the other options.

The VTA Regional Travel Model was used to prepare forecasts of traffic demand volumes using the US 101 North Corridor Build alternative network. Five sets of forecasts were prepared to test the interchange ramp configuration options. In the northbound direction, all forecasts were similar, within five percent of one another. In the southbound direction, N 1st Street interchange alternatives 1, 3, 4 and 5 were within five percent of one another. Alternative 2 produced different ramp volumes due to the addition of an on- and off-ramp on southbound US 101. Four-hour "peak period" traffic demand volumes for the "No-Build" are listed in Table 11-3 while the volumes for the "Build" alternatives are shown in tables 11-4 and 11-5.



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		А	M PEA	К		PM PEAK				
RAMP LOCATION	5:00- 6:00	6:00- 7:00	7:00- 8:00	8:00- 9:00	TOTAL	3:00- 4:00	4:00- 5:00	5:00- 6:00	6:00- 7:00	TOTAL
NORTHBOUND DIRECTION										
MAINLINE	9,057	10,136	8,174	8,901	36,268	7,819	7,762	7,267	6,585	29,433
Alum Rock Avenue off-ramp	201	489	886	1,231	2,806	1,234	1,473	1,482	1,283	5,472
McKee Road off-ramp	340	643	965	1,063	3,011	1,338	1,363	1,408	1,328	5,437
Alum Rock Avenue on-ramp	634	1,037	1,117	791	3,580	928	921	965	774	3,588
McKee Road on-ramp	722	933	968	769	3,393	905	762	757	540	2,964
Old Oakland Road off-ramp	901	1,161	1,083	1,134	4,280	688	624	556	388	2,255
Old Oakland Road on-ramp	856	1,652	1,964	2,142	6,614	833	812	853	693	3,191
I-880 interchange off-ramp (direct)	974	943	724	758	3,400	1,169	853	803	697	3,521
I-880 interchange on-ramp (loop)	323	689	962	888	2,862	786	645	712	567	2,710
I-880 interchange off-ramp (loop)	396	745	1,031	1,143	3,315	782	727	751	656	2,915
Old Bayshore Highway off-ramp	875	866	904	1,006	3,651	1,069	850	615	422	2,957
Old Bayshore Highway on-ramp	351	950	1,427	1,576	4,303	1,058	900	912	581	3,451
North First Street off-ramp	563	652	743	845	2,804	570	496	524	364	1,955
North First Street on-ramp (loop)	156	513	1,032	991	2,692	657	850	989	641	3,137
Brokaw Road on-ramp	399	567	583	657	2,205	651	745	926	826	3,149
De La Cruz Boulevard off-ramp	1,522	2,294	1,752	1,496	7,064	1,466	1,160	1,151	898	4,676
SR 87 on-ramp	757	973	836	1,116	3,682	859	849	1,044	769	3,522
De La Cruz Boulevard on-ramp (loop)	20	77	260	531	888	274	262	267	308	1,111
De La Cruz Boulevard on-ramp (direct)	143	270	584	1,239	2,236	993	1,108	1,108	1,315	4,525
MAINLINE	8,274	10,451	9,892	10,737	39,355	7,229	7,828	8,210	7,369	30,636
SOUTHBOUND DIRECTION										
MAINLINE	2,241	5,819	9,256	7,389	24,704	9,084	9,252	9,626	9,189	37,150
De La Cruz Boulevard off-ramp (direct)	542	877	1,021	1,066	3,506	1,468	1,463	1,409	1,209	5,549
De La Cruz Boulevard on-ramp (loop)	121	238	363	478	1,200	1,446	1,536	1,222	885	5,088
De La Cruz Boulevard on-ramp (direct)	163	456	939	1,424	2,982	1,185	1,519	1,395	1,482	5,580
SR 87 off-ramp	932	1,793	1,972	1,735	6,432	1,620	1,466	2,171	1,344	6,601
Airport Parkway off-ramp	714	1,547	2,159	1,902	6,322	1,380	1,454	1,152	915	4,901
Fourth Street/Old Bayshore Highway on-ramp	639	936	1,111	1,216	3,902	1,368	1,707	1,229	762	5,066
I-880 interchange off-ramp (direct)	119	363	596	762	1,840	692	732	675	740	2,838
I-880 interchange on-ramp (loop)	1,036	1,683	1,426	1,382	5,527	1,714	1,714	1,714	1,714	6,856
I-880 interchange off-ramp (loop)	229	396	624	780	2,029	1,260	1,011	916	1,069	4,257
I-880 interchange on-ramp (direct)	187	493	538	500	1,718	940	1,010	1,133	693	3,775
Old Oakland Road off-ramp	988	1,189	1,186	1,418	4,781	1,302	1,211	891	642	4,046
Old Oakland Road on-ramp	467	790	989	1,095	3,342	1,844	2,139	2,191	1,441	7,615
McKee Road off-ramp	167	420	623	499	1,709	1,253	1,223	1,095	1,001	4,572
Alum Rock Avenue off-ramp	71	175	232	275	753	661	682	646	599	2,588
McKee Road on-ramp	290	803	1,244	1,067	3,404	1,076	1,113	1,226	1,129	4,545
Alum Rock Avenue on-ramp	1,142	954	885	1,018	3,999	1,330	880	782	692	3,683
MAINLINE	2,714	5,953	8,423	6,610	23,699	10,000	11,341	11,147	10,087	42,575



Table 11-4:	Year 2035 Build North First Street Options 1, 3, 4 and 5 Peak Period (4-Hour) Traffic
	Demand Volumes

		A	M PEA	K		PM PEAK				
RAMP LOCATION	5:00- 6:00	6:00- 7:00	7:00- 8:00	8:00- 9:00	TOTAL	3:00- 4:00	4:00- 5:00	5:00- 6:00	6:00- 7:00	TOTAL
NORTHBOUND DIRECTION	<u> </u>									
MAINLINE	9,465	10,592	8,542	9,302	37,902	7,846	7,788	7,292	6,607	29,532
Alum Rock Avenue off-ramp	136	332	835	601	1,905	883	1,055	1,062	919	3,919
McKee Road off-ramp	596	950	925	1,040	3,511	1,094	1,114	1,150	1,085	4,443
Alum Rock Avenue on-ramp	997	1,204	1,205	1,095	4,501	591	586	614	492	2,283
McKee Road on-ramp	919	959	999	973	3,849	1,017	856	850	607	3,330
Mabury Road off-ramp	663	797	854	834	3,148	346	496	613	556	2,011
Mabury Road on-ramp	377	728	943	865	2,914	543	529	556	451	2,079
Old Oakland Road off-ramp	712	857	918	897	3,384	415	595	736	668	2,415
Old Oakland Road on-ramp	611	1,178	1,527	1,401	4,716	870	848	892	724	3,334
I-880 interchange off-ramp (direct)	1,315	1,212	1,301	1,491	5,319	1,325	1,062	1,038	873	4,298
I-880 interchange on-ramp (loop)	655	794	704	839	2,992	710	579	587	473	2,349
I-880 interchange off-ramp (loop)	460	818	759	695	2,732	827	761	725	593	2,906
Skyport Drive/Zanker Road off-ramp	1,357	1,343	1,559	1,399	5,657	1,386	1,102	797	547	3,832
Skyport Drive/Zanker Road on-ramp	476	748	1,041	1,124	3,389	991	843	853	544	3,231
North First Street off-ramp	570	660	752	854	2,836	570	496	524	364	1,955
North First Street on-ramp (loop)	115	376	758	728	1,977	649	841	978	634	3,102
Brokaw Road on-ramp	393	559	647	574	2,173	707	808	1,005	896	3,416
De La Cruz Boulevard off-ramp	1,368	1,393	2,551	1,619	6,932	893	1,154	1,457	1,144	4,648
SR 87 on-ramp	793	876	1,170	1,020	3,859	859	849	1,044	769	3,522
De La Cruz Boulevard on-ramp (loop)	21	81	558	274	934	275	287	323	280	1,165
De La Cruz Boulevard on-ramp (direct)	141	265	1,217	573	2,196	925	1,033	1,226	1,033	4,217
MAINLINE	8,357	10,556	9,991	10,844	39,748	7,338	7,946	8,334	7,480	31,098
SOUTHBOUND DIRECTION										
MAINLINE	2,229	5,789	9,208	7,350	24,576	8,933	9,098	9,466	9,036	36,533
De La Cruz Boulevard off-ramp (direct)	684	1,034	1,490	1,218	4,427	1,071	1,111	1,116	918	4,216
De La Cruz Boulevard on-ramp (loop)	147	289	580	441	1,457	815	1,124	1,413	1,329	4,681
De La Cruz Boulevard on-ramp (direct)	570	585	691	847	2,693	1,179	1,512	1,476	1,389	5,556
SR 87 off-ramp	947	1,821	2,003	1,762	6,533	1,533	1,388	2,056	1,272	6,249
Airport Parkway off-ramp	1,307	1,534	1,740	1,685	6,267	1,064	1,126	972	971	4,133
Fourth Street/Old Bayshore Highway on-ramp	611	749	889	873	3,123	1,217	1,327	1,318	1,237	5,098
I-880 interchange off-ramp (direct)	225	427	496	522	1,670	670	667	718	740	2,795
I-880 interchange on-ramp (loop)	1,661	1,532	1,400	1,560	6,153	1,646	1,479	1,388	1,445	5,958
I-880 interchange off-ramp (loop)	248	418	453	441	1,560	714	540	513	533	2,300
I-880 interchange on-ramp (direct)	584	757	604	648	2,593	1,389	1,486	1,467	1,048	5,390
Old Oakland Road off-ramp	734	883	881	1,053	3,551	808	1,524	1,639	1,122	5,093
Old Oakland Road on-ramp	311	525	657	728	2,221	947	1,406	1,440	1,212	5,005
Mabury Road off-ramp	327	394	393	470	1,584	512	965	1,037	710	3,224
Mabury Road on-ramp	279	471	590	653	1,992	655	972	995	838	3,460
McKee Road off-ramp	173	435	646	518	1,772	1,399	1,366	1,223	1,118	5,106
Alum Rock Avenue off-ramp	71	175	232	275	753	616	636	603	559	2,414
McKee Road on-ramp	232	643	996	854	2,724	961	994	1,095	1,009	4,060
Alum Rock Avenue on-ramp	905	977	1,169	1,042	4,093	836	818	1,027	743	3,424
MAINLINE	2,805	6,153	8,705	6,831	24,494	10,038	11,384	11,189	10,125	42,736

Note: Options 1, 3, 4, and 5 equal Alternatives Z-1, Z-3, Z-4, and Z-5, respectively.



Table 11-5: Year 2035 Build North First Street Option 2 Peak Period (4-Hour) Traffic Demand Volumes

			AM PEA	K		PM PEAK				
	5:00-	6:00-	7:00-	8:00-		3:00-	4:00-	5:00-	6:00-	
RAMP LOCATION	6:00	7:00	8:00	9:00	TOTAL	4:00	5:00	6:00	7:00	TOTAL
NORTHBOUND DIRECTION										
MAINLINE	9,320	10,431	8,412	9,160	37,323	7,850	7,793	7,296	6,611	29,550
Alum Rock Avenue off-ramp	150	365	917	660	2,092	867	1,036	1,042	902	3,847
McKee Road off-ramp	590	939	908	1,021	3,458	1,102	1,123	1,160	1,094	4,479
Alum Rock Avenue on-ramp	988	1,189	1,189	1,083	4,449	561	556	583	467	2,166
McKee Road on-ramp	890	921	960	942	3,713	1,049	883	877	627	3,436
Mabury Road off-ramp	663	797	854	834	3,148	346	496	613	556	2,011
Mabury Road on-ramp	377	728	943	865	2,914	543	529	556	451	2,079
Old Oakland Road off-ramp	622	748	801	783	2,954	359	514	636	577	2,085
Old Oakland Road on-ramp	636	1,227	1,590	1,459	4,912	873	851	895	726	3,345
I-880 interchange off-ramp (direct)	1,315	1,212	1,301	1,491	5,319	1,325	1,062	1,038	873	4,298
I-880 interchange on-ramp (loop)	655	794	704	839	2,992	710	579	587	473	2,349
I-880 interchange off-ramp (loop)	460	818	759	695	2,732	827	761	725	593	2,906
Skyport Drive/Zanker Road off-ramp	1,344	1,330	1,544	1,385	5,603	1,315	1,045	756	519	3,635
Skyport Drive/Zanker Road on-ramp	448	672	914	1,009	3,043	1,017	865	876	558	3,317
North First Street off-ramp	563	652	743	845	2,804	570	496	524	364	1,955
North First Street on-ramp (loop)	148	485	976	938	2,546	650	842	980	634	3,106
Brokaw Road on-ramp	371	527	611	542	2,051	651	745	926	826	3,149
De La Cruz Boulevard off-ramp	1,368	1,393	2,551	1,619	6,932	893	1,154	1,457	1,144	4,648
SR 87 on-ramp	775	856	1,144	997	3,772	859	849	1,044	769	3,522
De La Cruz Boulevard on-ramp (loop)	21	81	558	274	934	275	287	323	280	1,165
De La Cruz Boulevard on-ramp (direct)	141	265	1,217	573	2,196	925	1,033	1,226	1,033	4,217
MAINLINE	8,180	10,332	9,779	10,614	38,905	7,276	7,879	8,264	7,416	30,835
SOUTHBOUND DIRECTION										
MAINLINE	3,749	5.841	9,291	7,416	26.297	8.824	8,988	9,351	8.926	36.089
De La Cruz Boulevard off-ramp (direct)	684	1.034	1.490	1.218	4.427	1.071	1,111	1,116	918	4.216
De La Cruz Boulevard on-ramp (loop)	147	289	580	441	1.457	815	1,124	1.413	1.329	4.681
De La Cruz Boulevard on-ramp (direct)	570	585	691	847	2.693	1.179	1.512	1,476	1.389	5.556
SR 87 off-ramp	933	1.794	1.973	1.736	6.436	1.492	1.350	2.000	1.238	6.080
Airport Parkway off-ramp	1.307	1.533	1,739	1,684	6.262	990	1.048	910	922	3.870
Fourth Street/Old Bayshore Highway on-ramp	519	614	729	698	2.560	1.079	1,079	1.008	1.014	4,180
Skyport Drive/Fourth Street off-ramp	126	272	380	335	1.112	429	452	358	284	1.524
Skyport Drive/Fourth Street on-ramp	342	500	594	650	2.086	534	959	1.197	862	3,553
I-880 interchange off-ramp (direct)	225	427	496	522	1.670	670	667	718	740	2,795
I-880 interchange on-ramp (loop)	1.661	1.532	1.400	1.560	6.153	1.646	1.479	1.388	1.445	5.958
I-880 interchange off-ramp (loop)	248	418	453	441	1.560	714	540	513	533	2.300
I-880 interchange on-ramp (direct)	584	757	604	648	2,593	1.389	1.486	1 467	1.048	5,390
Old Oakland Road off-ramp	755	909	906	1.083	3.653	776	1,100	1,107	1,077	4.892
Old Oakland Road on-ramp	298	503	630	698	2,129	948	1,101	1,441	1,017	5.008
Mabury Road off-ramp	327	394	393	470	1.584	512	965	1.037	710	3.224
Mabury Road on-ramp	279	471	590	653	1.992	655	972	995	838	3.460
McKee Road off-ramp	176	441	655	525	1.796	1,292	1.261	1.129	1.032	4.714
Alum Rock off-ramp	71	175	232	275	753	694	716	679	630	2.720
McKee Road on-ramp	234	649	1,006	863	2 753	877	907	999	920	3 702
Alum Rock Avenue on-ramp	921	994	1,189	1.060	4.164	896	857	1.062	774	3.590
MAINLINE	4,316	6,177	8,740	6,859	26,092	10,146	11,506	11,310	10,234	43,196

Note: Option 2 equals Alternative Z-2.



Intersection turning movement volumes were developed for each of the five 2035 Build Alternatives as explained above. A summary of intersection analysis results are presented in Table 11-7.

Intersections projected to operate at LOS F are highlighted on Table 11-7. Under the 2035 No-Build condition, 25 of 40 study intersections (62.5 percent) will operate at LOS F during the AM peak hour, the PM peak hour, or both time periods. The Build Alternatives reduce the number of LOS F intersections as indicated in Table 11-6 below.

Alternatives	Number of Intersections	Percentage
No Build	25	62.5%
Build Alternative Z-1	18	44.0%
Build Alternative Z-2	19	46.0%
Build Alternative Z-3	18	44.0%
Build Alternative Z-4	18	44.0%
Build Alternative Z-5	16	40.0%

Table 11-6: Intersections Projected at LOS F (2035)



Table 11-7: Year 2035 Build Intersection Level of Service Summary

		YE	AR 2035	NO-BUILI	D CONDI	TION		YEA	AR 2035 B	UILD ALT	ERNATI	VE Z-1		YEA	R 2035 B	UILD ALT	ERNATI	VE Z-2		YE	AR 2035 B	BUILD AL	TERNATI	VE Z-3		YEA	AR 2035 I	BUILD AL	TERNAT	IVE Z-4		YEA	R 2035 B	UILD AL'	FERNATI	VE Z-5	
		AM	PEAK		PM	PEAK		AM	PEAK		PM	PEAK		AM	PEAK		PM	PEAK		AN	I PEAK		PM	PEAK		AM	PEAK		PM	I PEAK		AM	PEAK		PM	PEAK	
		ANG	AVG		ANG	AVG		ANG	AVG		ANG	AVG		ANG	AVG		ANG	AVG		ANG	AVG		ANG	AVG		AVC	AVG		ANG	AVG		ANG	AVG			AVG	
	1	AVG DELAY	DELAY		AVG DELAY	DELAY	r	AVG DELAY	DELAY		AVG DELAY	DELAY		AVG DELAY	DELAY		AVG DELAY	DELAY		AVG DELA	Y DELAY		DELAY	DELAY	2	DELAY	DELAY	7	DELA	Y DELAY		AVG DELAY	DELAY		AVG DELAY	DELAY	Γ
NO. INTERSECTION LOCATION	LOS	, sec/veh	, sec/veh	V/C S	, sec/veh	, sec/veh	CRIT V/C LO	, S sec/veh	, sec/veh	V/C LOS	, sec/veh	, sec/veh	CRIT V/C LO	, S sec/veh	, sec/veh	V/C LOS	, sec/veh	, sec/veh	CRIT V/C LO	, S sec/vel	, sec/veh	CRIT V/C LC	,)S sec/veh	, sec/veh	CRIT V/C L	, DS sec/veh	, sec/veh	CRIT V/C LC	, S sec/vel	, h sec/veh	CRIT V/C LO	, S sec/veh	, sec/veh	CRIT V/C LC	, S sec/veh	, sec/veh	CRIT V/C
1 US 101 NB off-/on-ramp/Trimble Road	D	47.3	54.9	1.036 B-	19.5	20.4	0.875 C+	21.6	23.3	0.731 B-	20.0	20.9	0.836 C+	21.6	23.3	0.731 B-	20.0	20.9	0.836 C-	+ 21.6	23.3	0.731 B	- 20.0	20.9	0.836	+ 21.6	23.3	0.731 B-	- 20.0	20.9	0.836 C+	21.6	23.3	0.731 B-	- 20.0	20.9	0.836
2 US 101 SB off-/on-ramp/Trimble Road	B-	19.9	25.2	0.875 C+	21.9	42.0	1.144 B-	19.9	25.2	0.875 C+	21.9	42.0	1.144 B-	19.9	25.2	0.875 C+	21.9	42.0	1.144 B-	- 19.9	25.2	0.875 C	+ 21.9	42.0	1.144 H	- 19.9	25.2	0.875 C-	+ 21.9	42.0	1.144 B-	19.9	25.2	0.875 C-	+ 21.9	42.0	1.144
3 North First Street/Charcot Avenue	Е	60.1	74.5	1.002 F	97.5	127.9	1.133 F	84.5	109.8	1.110 F	204.2	275.0	1.468 F	86.9	117.6	1.138 F	187.6	262.8	1.438 F	84.5	109.8	1.110 F	204.2	275.0	1.468	F 84.5	109.8	1.110 F	204.2	275.0	1.468 F	84.5	109.8	1.110 F	204.2	275.0	1.468
4 Airport Parkway/Technology Drive	С	26.3	31.9	0.672 C	29.4	33.9	0.729 C	27.9	31.9	0.697 C-	32.5	35.5	0.733 C-	34.1	43.0	0.868 D+	35.9	41.9	0.884 C	28.3	32.5	0.742 D	+ 36.9	41.2	0.875	28.3	32.5	0.742 D	+ 36.9	41.2	0.875 C	27.9	31.9	0.697 C-	- 32.5	35.5	0.733
5 US 101 SB off-ramp/Airport Parkway	E+	55.2	66.7	1.008 D	49.9	65.7	0.995 C	30.3	34.9	0.776 D	45.6	62.2	0.952 C	29.2	31.7	0.780 C	30.1	41.6	0.862 C	29.8	34.9	0.776 E	44.4	62.2	0.952	29.8	34.9	0.776 D	44.4	62.2	0.952 D-	- 52.2	71.3	0.994 C	29.2	38.4	0.812
6 North First Street/East Brokaw Road	F	122.5	184.7	1.313 F	102.0	161.8	1.255 D	44.0	66.1	1.028 F	91.8	130.8	1.179 E	71.2	113.5	1.146 F	86.3	151.7	1.279 D	39.1	53.2	0.936 F	92.1	130.8	1.179	39.5	51.3	0.964 F	91.4	130.8	1.179 E-	77.9	127.6	1.181 F	92.6	135.0	1.190
7 US 101 NB off-ramp/East Brokaw Road	F	129.9	182.6	1.073 B-	19.5	21.8	0.592 C	26.9	29.8	0.626 B-	19.9	17.4	0.569 E	65.6	95.5	0.903 B-	19.5	17.4	0.655 C	27.3	32.7	0.695 B	- 18.8	21.2	0.546	26.8	31.0	0.661 B-	- 19.2	21.4	0.504 —		-	- -		_	_
8 Brokaw Road/Bering Road	F	247.0	286.3	1.526 F	249.1	330.3	1.617 F	149.2	183.9	1.291 F	209.3	268.4	1.475 F	141.3	173.8	1.271 F	233.5	304.8	1.561 F	164.1	183.9	1.291 F	204.3	268.4	1.475	F 155.2	183.9	1.291 F	206.4	268.4	1.475 F	172.4	234.2	1.407 F	203.0	260.9	1.462
9 Brokaw Road/Zanker Road	Е	71.9	101.1	1.111 E-	77.0	129.4	1.176 E	68.9	102.5	1.111 D	48.4	61.8	0.993 F	84.2	118.8	1.163 D-	54.0	72.1	1.026 E	63.1	102.5	1.111 E	39.8	45.9	0.915	E 65.2	102.5	1.111 D	47.0	59.3	0.984 E	61.1	102.7	1.112 D	43.7	53.9	0.959
10 Zanker Road/Bering Road* (NB and SB stop)	F	_	_	F	-	-	— F	-	—	— F	_		— F	-	—	— F	_	_	— F	_	-	— F		_	_	F —	_	F	-	-	— F	-	_	— F	-		-
11 US 101 NB off-/on-ramp/Zanker Road	F	—	_	— F	—	—	— C+	22.8	26.0	0.796 C	26.9	34.7	0.914 C	23.4	25.4	0.763 C	24.1	32.0	0.859 C-	+ 22.2	26.0	0.796 C	24.2	31.4	0.849	22.4	26.0	0.796 C	25.6	33.1	0.890 D	41.6	48.3	0.947 D	42.2	52.3	0.958
12 Old Bayshore Highway/I-880 SB off-/on-ramp	F	276.2	345.6	1.520 D	43.2	59.2	0.888 F	172.7	229.6	1.287 E+	56.7	64.6	0.931 F	152.9	215.6	1.257 E+	55.4	70.1	0.953 F	172.7	229.6	1.287 E	+ 56.7	64.6	0.931	F 172.7	229.6	1.287 E-	⊦ 56.7	64.6	0.931 F	132.4	180.2	1.183 D-	+ 37.7	35.3	0.716
13 Old Bayshore Highway/I-880 NB off-/on-ramp	E+	56.1	74.5	1.060 F	149.7	105.7	1.152 D-	51.5	66.2	1.034 F	287.6	87.1	1.107 D	48.1	58.3	1.003 F	278.2	87.1	1.107 D-	- 51.5	66.2	1.034 F	287.6	87.1	1.107 I)- 51.5	66.2	1.034 F	287.6	87.1	1.107 D	42.4	52.5	0.988 D	49.7	62.5	1.025
14 Old Bayshore Highway/North First Street	F	166.7	270.5	1.512 F	160.3	285.8	1.531 D+	38.3	51.1	0.977 D	46.5	77.7	1.072 D	40.3	46.0	0.944 E+	58.4	88.2	1.098 D	50.9	71.5	1.049 E	62.0	80.7	1.050 I	9+ 38.8	50.9	0.977 D	50.1	69.3	1.041 B-	- 18.1	16.1	0.740 D-	+ 35.9	56.5	1.005
15 Old Bayshore Highway/Fourth Street (NB and SB stop)	F	_	—	— F	—	—		_	—		_	—		—	_		—	—			—			—			—			-		_	—		- —	—	—
16 North First Street/Metro Drive	C+	21.1	20.9	0.785 C-	33.1	39.5	0.947 D	39.3	55.1	0.976 E+	56.1	77.6	1.137 D	44.5	62.6	1.009 C	30.5	36.7	0.926 C-	- 32.6	42.2	0.890 C	- 34.8	45.6	1.030	2- 32.2	42.2	0.890 C	- 34.2	44.6	1.030 C	23.8	25.7	0.811 D-	+ 36.2	47.4	1.025
17 SR 87/Skyport Drive	D	44.0	62.9	0.955 D	44.8	65.5	1.026 D	45.7	49.4	1.022 C	30.6	37.1	0.848 D	45.7	49.4	1.022 C	30.6	37.1	0.848 D	45.7	49.4	1.022 C	30.6	37.1	0.848	45.7	49.4	1.022 C	30.6	37.1	0.848 D	45.7	49.4	1.022 C	30.6	37.1	0.848
18 Skyport Drive/Technology Drive	D+	38.3	52.3	0.806 C	27.5	30.7	0.676 C	27.8	37.6	0.782 D+	39.0	52.9	0.934 C	28.9	40.3	0.762 C	29.5	38.5	0.827 C	25.2	33.7	0.700 C	29.8	38.5	0.827	25.2	33.7	0.700 C	29.8	38.5	0.827 C	27.0	34.5	0.749 C-	- 34.8	48.8	0.925
19 Skyport Drive/North First Street	D-	53.5	97.3	0.955 F	157.9	233.3	1.261 E+	59.2	78.4	1.031 F	191.4	280.6	1.527 E	60.7	75.9	1.013 F	138.0	214.0	1.375 F	83.2	146.9	1.235 F	131.7	181.1	1.303	F 80.5	146.4	1.220 F	136.8	201.6	1.347 D	46.7	64.6	0.960 E-	- 75.2	97.4	1.083
20 Skyport Drive/Fourth Street			Future In	ntersection ((Build Cas	se)	D	41.0	54.3	0.934 D	44.1	49.8	0.907 D+	37.0	43.7	0.854 D	41.6	44.7	0.903 C-	- 34.8	40.9	0.794 E	44.7	49.8	0.907 I	9+ 35.7	41.7	0.819 D	44.1	49.8	0.907 D	45.1	55.2	0.933 C-	- 32.2	31.4	0.794
21 Fourth Street/Archer Street (EB stop)	F	_	_	— F	—	—	— F	-	—	— F	—	—	— F	—	—	— F	—	—	— F	_	-	— F	-	—	_ 1	F —	—	— F	-	-	— F	—	—	— F			_
22 North First Street/I-880 SB off-/on-ramp	E+	56.1	83.9	1.106 F	97.5	121.6	1.194 D	50.5	76.2	1.085 F	84.2	110.6	1.174 D	50.5	76.2	1.085 F	84.2	110.6	1.174 D	50.5	76.2	1.085 F	84.2	110.6	1.174	50.5	76.2	1.085 F	84.2	110.6	1.174 D	50.5	76.2	1.085 F	84.2	110.6	1.174
23 North First Street/I-880 NB off-/on-ramp	B-	18.8	18.3	0.773 D-	- 53.1	71.4	1.085 C	24.9	30.3	0.869 C-	32.2	42.9	0.972 C	24.9	30.3	0.869 C-	32.2	42.9	0.972 C	24.9	30.3	0.869 C	- 32.2	42.9	0.972	24.9	30.3	0.869 C-	- 32.2	42.9	0.972 C	24.9	30.3	0.869 C-	- 32.2	42.9	0.972
24 Old Oakland Road/East Gish Road	D	48.5	72.3	1.064 E	71.0	103.6	1.121 D	42.9	63.4	1.034 F	87.6	123.2	1.165 D	42.9	63.4	1.034 F	87.6	123.2	1.165 D	42.9	63.4	1.034 F	87.6	123.2	1.165	42.9	63.4	1.034 F	87.6	123.2	1.165 D	42.9	63.4	1.034 F	87.6	123.2	1.165
25 Old Oakland Road/Commercial Road	F	147.0	201.4	1.327 E-	76.4	130.1	1.169 E-	79.8	118.8	1.145 E	65.6	106.0	1.114 E-	79.8	118.8	1.145 E	65.6	106.0	1.114 E-	- 79.8	118.8	1.145 E	65.6	106.0	1.114 I	- 79.8	118.8	1.145 E	65.6	106.0	1.114 E-	- 79.8	118.8	1.145 E	65.6	106.0	1.114
26 Old Oakland Road/US 101 NB off-/on-ramp	F	83.8	166.0	1.278 C	23.8	35.0	0.946 D	40.2	74.6	1.044 C+	21.3	32.1	0.890 D	40.2	74.6	1.044 C+	21.3	32.1	0.890 D	40.2	74.6	1.044 C	+ 21.3	32.1	0.890	D 40.2	74.6	1.044 C-	+ 21.3	32.1	0.890 D	40.2	74.6	1.044 C+	- 21.3	32.1	0.890
27 Old Oakland Road/US 101 SB off-/on-ramp	C	33.0	49.2	0.969 F	110.8	166.2	1.284 C	23.3	30.9	0.820 D-	54.4	70.7	1.048 C	23.3	30.9	0.820 D-	54.4	70.7	1.048 C	23.3	30.9	0.820 D	- 54.4	70.7	1.048	23.3	30.9	0.820 D-	- 54.4	70.7	1.048 C	23.3	30.9	0.820 D-	- 54.4	70.7	1.048
28 Old Oakland Road/Hedding Street	Е	66.4	94.5	1.072 F	136.7	222.0	1.411 F	90.0	132.2	1.179 D-	54.2	67.0	1.005 F	90.0	132.2	1.179 D-	54.2	67.0	1.005 F	90.0	132.2	1.179 D	- 54.2	67.0	1.005	F 90.0	132.2	1.179 D-	- 54.2	67.0	1.005 F	90.0	132.2	1.179 D-	- 54.2	67.0	1.005
29 E. Hedding St/N. Old Bayshore Hwy (NB and SB stop)	F	_	—	— F	-	-	— F	-	—	— F	—	—	— F	_	_	— F	-	—	— F	-	—	— F	· _	-		F —	_	— F		-	— F	—	—	— F		'	
30 East Hedding Street/Mabury Road	F	121.1	184.6	1.323 C	26.4	29.4	0.832 D	42.2	59.5	1.014 D	40.6	52.2	0.986 D	42.2	59.5	1.014 D	40.6	52.2	0.986 D	42.2	59.5	1.014 E	40.6	52.2	0.986	5 42.2	59.5	1.014 D	40.6	52.2	0.986 D	42.2	59.5	1.014 D	40.6	52.2	0.986
31 Commercial Road/Berryessa Road	D	41.9	88.8	0.988 E	67.5	86.9	0.881 D	45.6	97.7	1.011 F	82.6	118.8	0.945 D	45.6	97.7	1.011 F	82.6	118.8	0.945 D	45.6	97.7	1.011 F	82.6	118.8	0.945	5 45.6	97.7	1.011 F	82.6	118.8	0.945 D	45.6	97.7	1.011 F	82.6	118.8	0.945
32 13th Street/Taylor Street	C	31.4	43.4	0.953 F	96.6	145.4	1.249 F	196.6	251.5	1.499 F	193.5	303.1	1.609 F	196.6	251.5	1.499 F	193.5	303.1	1.609 F	196.6	251.5	1.499 F	193.5	303.1	1.609	F 196.6	251.5	1.499 F	193.5	303.1	1.609 F	196.6	251.5	1.499 F	193.5	303.1	1.609
33 US 101 SB off-ramp/Mabury Road	F	_	_	- F	-	-	— C	24.9	27.3	0.704 D	39.9	51.8	0.931 C	24.9	27.3	0.704 D	39.9	51.8	0.931 C	24.9	27.3	0.704 E	39.9	51.8	0.931	C 24.9	27.3	0.704 D	39.9	51.8	0.931 C	24.9	27.3	0.704 D	43.2	51.8	0.931
34 US 101 NB off-ramp/Mabury Road	F		_	— F	-	-	— C	28.7	32.2	0.755 C-	32.9	41.7	0.884 C	28.7	32.2	0.755 C-	32.9	41.7	0.884 C	28.7	32.2	0.755 C	- 32.9	41.7	0.884	28.7	32.2	0.755 C-	- 32.9	41.7	0.884 C	28.7	32.2	0.755 C-	- 32.9	41.7	0.884
35 McKee Road/US SB off-/on-ramp	D	47.4	78.0	1.030 D	40.1	71.4	1.041 C	29.7	49.9	0.960 E+	58.0	96.7	1.105 C	29.7	49.9	0.960 E+	58.0	96.7	1.105 C	29.7	49.9	0.960 E	+ 58.0	96.7	1.105	29.7	49.9	0.960 E-	⊦ 58.0	96.7	1.105 C	29.7	49.9	0.960 E+	. 58.0	96.7	1.105
36 McKee Road/US NB off-/on-ramp*	C	30.3	41.9	0.945 C	30.3	41.1	0.956 D	39.5	57.6	1.005 C	23.5	29.3	0.806 D	39.5	57.6	1.005 C	23.5	29.3	0.806 D	39.5	57.6	1.005 C	23.5	29.3	0.806	39.5	57.6	1.005 C	23.5	29.3	0.806 D	39.5	57.6	1.005 C	23.5	29.3	0.806
37 First Street/Hedding Street	D	43.9	58.7	0.964 C	31.4	33.2	0.793 D	46.1	56.9	0.950 D	45.4	58.6	0.978 D	46.1	56.9	0.950 D	45.4	58.6	0.978 D	46.1	56.9	0.950 E	45.4	58.6	0.978	46.1	56.9	0.950 D	45.4	58.6	0.978 D	46.1	56.9	0.950 D	45.4	58.6	0.978
58 First Street/Taylor Road	E	61.5	73.2	1.003 F	131.9	184.7	1.294 E	/0.4	89.2	1.060 F	143.9	150.7	1.144 E	70.4	89.2	1.060 F	143.9	150.7	1.144 E	70.4	89.2	1.060 F	143.9	150.7	1.144	2 70.4	89.2	1.060 F	143.9	150.7	1.144 E	/0.4	89.2	1.060 F	143.9	150.7	1.144
39 King Road/McKee Road	F	211.5	297.7	1.532 F	325.8	414.5	1.797 F	155.5	230.9	1.388 F	334.7	423.3	1.828 F	155.5	230.9	1.388 F	334.7	423.3	1.828 F	155.5	230.9	1.388 F	334.7	423.3	1.828	F 155.5	230.9	1.388 F	334.7	423.3	1.828 F	155.5	230.9	1.388 F	334.7	423.3	1.828
40 Mabury Road/Mabury Yard	D-	54.4	73.9	1.071 D+	38.6	61.0	0.971 F	111.6	171.4	1.310 F	135.9	221.0	1.313 F	111.6	171.4	1.310 F	135.9	221.0	1.313 F	111.6	171.4	1.310 F	135.9	221.0	1.313	111.6	171.4	1.310 F	135.9	221.0	1.313 F	111.6	171.4	1.310 F	135.9	221.0	1.313
41 King Road/Mabury Road	D	41.1	52.0	0.952 F	112.4	168.0	1.275 D+	36.6	41.1	0.902 F	109.8	162.9	1.268 D+	36.6	41.1	0.902 F	109.8	162.9	1.268 D-	+ 36.6	41.1	0.902 F	109.8	162.9	1.268 I	9+ 36.6	41.1	0.902 F	109.8	162.9	1.268 D-	- 36.6	41.1	0.902 F	109.8	162.9	1.268
42 U.S. 101 SB off-ramp/Skyport Drive	-	—	—		—	—	— B+	11.9	16.0	0.686 B	13.2	20.3	0.641 C	24.1	30.8	0.773 B-	19.5	28.9	0.645 —		—	- -			-	a 3.1	4.2	0.528 A	6.0	11.3	0.405 —		-		· -		-





12. SURVEY AND MAPPING

An important part of any highway and interchange project is the survey and mapping portion of the project. It is necessary to complete this work early in the process to ensure agreement with existing conditions and any other improvement projects near the project area.

Aerial Base Mapping was prepared over a larger area than the interchanges to assist studies for several future projects. Originally the mapping limits were determined solely for the study of the Zanker Overcrossing, but were expanded to encompass the existing Flea Market parcels to support future BART Station concepts, as well as the US 101/Mabury Road/E Taylor Street interchange. Cost savings were made through survey coordination with the overlapping I-880 HOV project by coordinating mapping efforts between the two projects. Further survey coordination with the US 101/Trimble Road/De La Cruz Boulevard Interchange consultant engineer took place to ensure that the mapping results are consistent between the two projects. The aerial topographic mapping was processed and accepted using the Caltrans "A, B, C" checklist procedures.

The other survey element the TYLI team provided was a land-network made up of freeway right of way, control lines, and adjoining property lines. These efforts ensured that the engineering staff had accurate information to provide realistic geometric alternatives. Due to the level of effort required for these studies, and the complexities of the freeway right of way and surrounding private properties, local geographic information systems (GIS) parcel line data was added to the land-network. This approach helped to efficiently and cost effectively compute future right of way needs and document those costs as required. For more information, see Attachment F.

13. ENVIRONMENTAL EVALUATION

A Preliminary Environmental Analysis Report (PEAR) has been prepared for the project (see Attachment B). The PEAR indicates that it is unknown at this time if all potential impacts could be mitigated to a less-than-significant level. Preliminary environmental study areas include noise, air quality, right of way acquisition, socioeconomic impacts, biological resources, floodplains, visual, cultural resources, water quality, and hazardous materials. More detailed studies will be needed to confirm these initial findings.

The PEAR considers the two new interchanges at US 101/Mabury Rd/ E Taylor Street and US 101/Zanker Road/ N 4th Street/Skyport Drive, and the modification of the existing interchange at US 101/Old Oakland Road as a single project. The level of environmental documentation will be reassessed when these interchange projects are implemented separately. Based on the findings of these studies, environmental compliance is anticipated to be ultimately achieved with an either Environmental Impact Report (CEQA) or Environmental Impact Statement (NEPA.)

The following detailed technical studies are anticipated as a part of the Project Approval/Environmental Document (PA/ED) phase of the project:

• Community Impacts



- Section 4(f) Evaluation
- Water Quality Analysis
- Cultural Resources Analysis
- Floodplain Evaluation
- Noise Analysis
- Air Quality and Climate Change Study
- Visual Resources Analysis
- Paleontology Study
- Archaeological Survey Report
- Historic Properties Survey Report
- Native American Coordination
- Historic Resources Evaluation Report
- Biological Resources Study
- Hazardous Materials

A Preliminary Phase 1 Initial Site Assessment (ISA) (see Attachment D) was prepared for the project, which identified potential sources of soil or underground contamination. Underground contamination is possible due to the fact that the study area was built on farmland and is potentially contaminated with pesticides and herbicides. Soil contamination resulting from vehicle aerial lead deposits in the unpaved areas may be present within the project limits. Further testing for aerially deposited lead shall be completed during the PA/ED phase of the project.

Approvals, permits, concurrence, or agreements are expected to be required from the following agencies:

- Bay Area Air Quality Management Board
- California Department of Fish and Game
- State Regional Water Quality Control Board
- U.S. Army Corps of Engineers



14. GEOTECHNICAL EVALUATION

General geologic features pertaining to the site were evaluated and documented in the Attachment C, *Preliminary Geotechnical Report, Highway 101 Implementation Plan / PSRs, Trimble Road / De La Cruz Boulevard IC to McKee Road OC*, prepared by Parikh Consultants, Inc. as a member of the TY Lin team.

The project site subsoil mainly consists of Basin Deposits (Qhb), Levee Deposits (Qhl), Flood Plain Deposits (Qhfp), and Stream Terrace Deposits (Qht) of the Holocene age.

Based on the as-built plans, the subsurface soil conditions at Silver Creek, Coyote Creek and Guadalupe River consists of moderate to well-sorted and moderate to well-bedded sand, gravel, and silt with minor clay. The subsurface soil conditions at Guadalupe Parkway Overcrossing, Oakland Road Overcrossing, East Taylor Street Overcrossing, and McKee Road Overcrossing consists of dark colored clay and very fine sandy silt and clay. The subsurface soil conditions at Brokaw Road Undercrossing, US 101 / I-880 Interchange and North San Jose underpass consists of dense sandy to silty clay with lenses of sand, gravel and silt.

Groundwater depth varies along the project corridor. Encountering groundwater and dewatering is anticipated during construction. However, groundwater conditions can be mitigated by using Caltrans design and construction techniques.

Foundation conditions are generally reasonable for the project corridor. Caltrans design and construction methods can accommodate geotechnical and geological considerations at the site. The subgrade soil along the project corridor will vary. In general it is anticipated to be of reasonable quality and a preliminary R-value estimate of 15 has been used to develop typical structural pavement sections.

The Hayward Fault is the controlling fault within the project area. Liquefaction potential, in general, along the corridor is moderate.

The preliminary geotechnical report does not indicate any unusual conditions or costs in regards to the projects studied in this report.

15. RIGHT OF WAY

Due to the developed and built out nature of this segment of San Jose, right of way will need to be acquired for all of the five Zanker Road alternatives as well as for the Mabury Road/E Taylor Street interchange and the Old Oakland Road interchange. Right of way impacts will be investigated further in the PSR phase of these projects, including a Right of Way Data Sheet, as is required by Caltrans. Possible right of way costs have been included in the Project Cost Estimates in order to ensure that right of way is not neglected.

There are no residential units that would need to be acquired as part of the improvements identified in this Implementation Plan, but partial takes are required for the US 101/Mabury Road/E Taylor Street interchange. There will, however, be a number of commercial and



industrial parcels that will be affected. Also, the Mabury Road/E Taylor Street interchange will impact Watson Park and a medical facility near the project location. The number of parcels is undetermined at this time, however an estimate has been provided at each location based upon similar projects in the past and engineering judgment. The businesses affected by these partial and full acquisitions may need to be compensated for relocation and loss of business.

Right of way impacts in the Zanker Road area of the project are primarily due to circulation and local access that will be revised to correspond to new freeway access requirements due to the need for Zanker Road, Skyport Drive, and N 4th Street requiring a change in elevation in order to accommodate the proposed freeway crossing.

The following table shows the potential right of way acquisitions and the costs associated with those acquisitions.



Table 15-1: Potential Right of Way Impacts

ALTERNATIVE	E ISSUES ELEMENT ACCESS MITIGATION ¹		NET ROADWAV ²	г Г	FOTAL RIGH	HT OF WA	Y	DEN	MOLITION	UTIL	JTIES			
			IMPACT	FRONTAGE RD AREA (SF)	ROW AREA (SF)		NUMBER OF FULL TAKES	NUMBER OF PARTIAL TAKES	TOTAL ROW AREA ³ (SF)	EXCESS ROW (SF)	Number of Buildings	Area (SF)	Utility Impacts	COST
Alt Z-1	Old Bayshore/Zanker intersection does not appear to be buildable unless it is all structure. N 4th St and Old Bayshore will not connect. Old Bayshore (South) will become excess ROW.	Zanker Rd	Access control on Zanker requires cul-de-sac at Regatta Ln (1) and modification to Roberson Ln (2).	11,300	6,000	10,000		2	16,000				Fill impacts to RCP	\$8,867,600
		Old Bayshore Hwy (North)	Conflict at SB 101 with Zanker off-ramp, Old Bayshore on-ramp and Zanker/Old Bayshore traffic. Requires new	46,800	120,000)	1	5	120,000		1	30,000		
		N 4th St	Access to area east of N 4th requires a cul-de-sac.	15,300	20,000	40,000	1	7	60,000		1	15,000	Fill impacts to	\$2,364,000
		Skyport Dr	Access to east side assumed from N. 1st St.		0	98,000		2	98,000	170,000			Use protective slab	\$25,000
TOTAL				73,400	146,000	148,000	2	16	294,000	170,000	2	45,000)	\$11,256,600
Alt Z-2	Braided ramps don't appear to have adequate clearance. Major impact to hotel parcel. Old Bayshore will not connect to Zanker unless a major frontage road is	Zanker Rd	Access control on Zanker requires section of frontage road.	36,500	60,000	105,000		8	165,000		2	20.000	Fill impacts to RCP	\$8,867,600
	constructed.	Old Bayshore Hwy (North)	Cul-de-sacs at Terminal Ave and Zanker.	187,600	210,000	15,000	2	8	225,000	16,800	3	65,000	Fill impacts to	\$169,400
		N 4th St	Same as Z-1	36,500	60,000	95,000	4	13	155,000		4	75,000	Fill impacts to RCP	\$2,364,000
		Skyport Dr	Same as Z-1		0	370,000	0	4	370,000	170,000	2	100,000	Use protective slab	\$250,000
TOTAL				260,600	330,000	585,000	6	33	915,000	186,800	11	260,000)	\$11,651,00

1. ACCESS MITIGATION covers the ancillary road network necessary to maintain access to properties that would be severed with the proposed improvements. This is quantified in terms of roadway pavement area, and the amount of additional ROW acquisition needed to provide for the access. 2. NET ROADWAY ROW covers the additional ROW needed to construct the proposed major improvements, not accounting for access mitigation. 3. TOTAL ROW AREA is the sum of the two ROW requirements. It is not adjusted for any excess ROW that is made available for resale.

TYLININTERNATIONAL



Table 15-1: Potential Right of Way Impacts (Continued)

ALTERNATIVE	ISSUES	ELEMENT	ACCESS N	AITIGATION		NET ROADWAY]	FOTAL RIGH	T OF WA	Y	DEN	IOLITION	UTIL	ITIES
			IMPACT	FRONTAGE RD AREA (SF)	ROW AREA (SF)	RIGHT OF WAY AREA (SF)	NUMBER OF FULL TAKES	NUMBER OF PARTIAL TAKES	TOTAL ROW AREA (SF)	EXCESS ROW (SF)	Number of Buildings	Area (SF)	Utility Impacts	COST
Alt Z-3	SB 101 braided ramp doesn't appear to have adequate clearance	Zanker Rd	Same as Z-2	36,500	60,000	106,000		8	166,000		2	17,000	Fill impacts to RCP	\$8,867,600
		Old Bayshor Hwy (North)	e Same as Z-2	187,600	210,000	15,000	2	8	225,000	16,800	3	65,000	Fill impacts to RCP	\$169,400
		N 4th St	Same as Z-1	36,500	60,000	95,000	4	13	155,000		4	75,000	Fill impacts to RCP	\$2,364,000
		Skyport Dr	Same as Z-1		0	60,000		4	60,000	195,000	1	20,000	Use protective slab	\$250,000
TOTAL				260,600	330,000	276,000	6	33	606,000	211,800	10	177,000		\$11,651,00
Alt Z-4	SB 101 braided ramp doesn't appear to have adequate clearance. NB 101 on and off ramps intersect. Major impact to hotel parcel	Zanker Rd	Same as Z-2	36,500	60,000	106,000		8	166,000		2	20,000	Fill impacts to RCP	\$8,867,600
		Old Bayshor Hwy (North)	e Same as Z-2	187,600	210,000	15,000	2	8	225,000	16,800	3	65,000	Fill impacts to RCP	\$169,400
		N 4th St	Same as Z-1	36,500	60,000	95,000	4	13	155,000		4	75,000	Fill impacts to RCP	\$2,364,000
		Skyport Dr	Same as Z-1		0	355,000		4	355,000	50,000	2	100,000	Use protective slab	\$250,000
TOTAL				260,600	330,000	571,000	6	33	901,000	66,800	11	260,000		\$11,651,00
Alt Z-5		Zanker Rd	Same as Z-2	7,200	8,000	80,000	3	5	88,000		3	170,000	Fill impacts to RCP	\$8,867,600
		Old Bayshore Hwy (North)	New cul-de-sac on Old Bayshore	34,700	90,000	160,000	1		250,000		3	40,000		
		N 4th St	New frontage road on the north side between Archer St and Skyport.	14,900	25,000	40,000	3	5	65,000		2	15,000	Fill impacts to RCP	\$2,364,000



Table 15-1: Potential Right of Way Impacts (Continued)

ALTERNATIVE	ISSUES	ELEMENT	ACCESS	NET	,	TOTAL RIGI	HT OF WA	Y		
						ROADWAY				1
			IMPACT	FRONTAGE	ROW AREA		NUMBER	NUMBER	TOTAL	EXCES
				RD	(SF)		OF	OF	ROW	ROW (S
				AREA (SF)			FULL	PARTIAL	AREA	
							TAKES	TAKES	(SF)	
		Skyport Dr	Same as Z-1		0)	1	3	200,000	82,5
						200,0				
						00				
TOTAL				113,600	123,000	480,000	8	13	603,000	82,5

Alt M-1	Interchange spacing	North side	Loop ramp has major impacts to properties. Will require access road for isolated parcels.	32300	42,000	244,000	5	4	286,000	
	4f - impact on city park	South side	Access to park can be via Jackson St to avoid impacts to houses at Houghton Ct.		3,000	117,000	3	3	120,000	
TOTAL				32300	45,000	361,000	8	7	406,000	

Alt O-1	North side	Minor impacts			6,000		1	6,000			0 Minor	
Alt 0-1											impacts	
	South side	Minor impacts			6,000		2	6,000			0 Minor	
		-									impacts	
TOTAL			0	0	12,000	0	3	12,000	0	0	0	\$0

	DEM	IOLITION	UTIL	ITIES
ESS (SF)	Number of Buildings	Area (SF)	Utility Impacts	COST
2,500	2	50,000	Use protective slab	\$250,000
2,500	10	275,000		\$11,481,60
	7	80,000		\$550,400
	1	5,600		\$984,000
0	8	85,600		\$1,534,400



Utilities

Zanker Road serves as a main utility corridor for the City in the North San Jose area. The main sanitary sewer trunk line travels beneath US 101 near the proposed Zanker Road interchange. Due to the potentially significant impacts to city streets, impacts to utilities should be anticipated. Verification of utilities will be required for subsequent design development and potholing is anticipated for development of PS&E. A utility relocation allowance has been included in the Project Cost Estimates as determined below

Ex & Fill Unit Unit Location Utility Size (in) Length Total Cost (cy) Cost Zanker Rd SS 90 600 \$646 7,500 \$300 \$2,637,600 SS \$1,950,000 66 600 \$500 5,500 \$300 SS \$500 5,500 \$1,950,000 600 \$300 66 \$450 SS \$1,920,000 54 600 5,500 \$300 SS \$50,000 MH 1 \$50,000 SS Sm MH 1 \$100,000 \$100,000 1 \$200,000 Lg MH \$200,000 1200 SD 8 \$50 \$60,000 Total \$8,867,600 SS Old Bayshore Hwy (North) 30 350 \$87 463 \$300 \$169,400 Total \$169,400 N 4th St SS 90 800 \$646 3,576 \$300 \$1,589,600 SD 1,059 \$300 \$387,200 30 800 \$87 SS \$300 30 800 \$87 1,059 \$387,200 Total \$2,364,000 Skyport Dr Protective 100 \$2,500 \$250,000 Slab

UTILITY RELOCATIONS

\$11,651,000

USE \$12,000,000

E Taylor - Mabury	SS	10" VCP	650	\$16	1800	\$300	\$550,400
	SS	30"VCP	2000	\$87	2700	\$300	\$984,000
							\$1,534,400
						US	SE \$1,600,000
Oakland Rd	SD	Assume SD i	s reconstruc	ted as part	of the OC w	ork	

16. FUNDING

The Valley Transportation Authority periodically updates its 25-year countywide long-range transportation plan know as the Valley Transportation Plan. The schedule for these updates coincides with the Metropolitan Transportation Commission's update of the development of the Regional Transportation Plan (RTP). The last plan, VTP 2030, was adopted by the VTA Board of Directors in February 2005. Efforts related to the current update, VTP 2035, have been under development since May 2007, generally tracking on schedule slightly in advance of development of the RTP. All three of the projects identified in this report have been submitted to the VTA to be included in VTP 2035.

The projected local share to fund the improvements at US 101/Old Oakland interchange and the new interchanges at US 101/Mabury Rd and at US 101/Zanker Rd/N 4th St/Skyport Dr are anticipated to originate from development traffic impact fees. Funding could also originate from regional, state or federal sources.

17. IMPLEMENTATION STRATEGY

As part of their Traffic Report, Parsons completed a measure of effectiveness based upon 9 separate performance indicators, such as vehicle miles traveled and vehicle hours traveled. Parsons evaluated each of the alternatives for the four hour peak period that exists within the corridor. The results are available in the following Table 17-1. Table 17-1 gives a number based upon relative performance between the No-Build (Baseline) conditions and each of the proposed projects. Zanker Road Alternative Z-4A produced the greatest performance number with 18.519 compared to the No-Build (Baseline) of 18.00, Old Oakland (O-1) follows with 18.127, with Mabury showing the smallest improvement system wide with 18.084.

The relative benefits of each of the projects are not significantly different from a traffic perspective due to the amount of congestion on US 101. The differences in cost between the build alternatives are significant however; therefore it is recommended that the projects be implemented as funding becomes identified for each project location. Each of the Zanker Road alternatives may be phased as overcrossings only first, with the full interchange improvements coming at a later time as funds become available.

The Project Team makes to the following recommendations for the Zanker Road/ N 4th St/ Skyport Drive Interchange:

- Alternative 4 or 4A is the recommended design solution from a traffic operations perspective pending the acquisition of right-of-way to allow for the connecting roadway between Skyport Drive and the Old Bayshore Highway on-ramp to southbound US 101.
- Alternative Z-3 or Z-3A would be an acceptable design solution if right-of-way cannot be acquired to implement Alternative Z- 4 or Z- 4A.

When the study efforts began, economic conditions were different. Consequently, the focus of our efforts has changed from an overarching technical implementation plan to a discussion of what improvement can be funded at this time and what work should come first.



In consideration of the continuing economic downturn, many of the initial assumptions related to this study have changed. This has forced us to re-examine the objectives of the study. For example, the development in North San Jose is not occurring at a pace initially considered. However, the most significant change has been in the approach of the BART project. Due to declining sales tax revenues, the BART project is now being developed in phases. Although the original commitment to build the full BART project remains, the initial phase is planned to terminate at the Berryessa Station. This has highlighted the need to construct the US 101/Mabury Road/E Taylor interchange as a first priority project.

Based on the above reasons, it is recommended that the US 101/Mabury Road/E Taylor Street interchange project be advanced to the next project development phase. Additionally, the project is ready to move to the next development phase for the following supporting reasons:

- The project has local political and community support;
- The project is included in the City's General Plan and as such has been identified as a key element for providing the needed local circulation and supporting the planned land use development in the area; and
- The project is included in the US 101/Oakland/Mabury Transportation Development Policy and associated traffic impact fee program so that it has the ability to tap into funds generated from developments in the area.



Table 17-1: US 101 Interchange Options—Relative Performance (Four-Hour Peak Performance)

	NO-BUILD	MABURY (Alt M-1)	OAKLAND (Alt O-1)	OPTION 4 (Alt Z-4)	OPTION 4A (Alt Z-4)
Vehicle Miles of Travel					
AM peak hour	1.000	1.006	1.004	1.001	0.999
PM peak hour	1.000	1.005	1.000	1.008	1.011
Vehicle Hours of Travel					
AM peak hour	1.000	1.000	1.008	0.958	0.883
PM peak hour	1.000	0.936	0.937	1.020	1.120
No. of Links—V/C Ratios > 0.80					
AM peak hour	1.000	1.017	1.031	1.063	1.068
PM peak hour	1.000	1.010	1.010	1.024	1.075
No. of Links—Congested Speeds < 20 mph					
AM peak hour	1.000	0.979	1.011	1.009	1.011
PM peak hour	1.000	0.991	0.992	0.984	0.984
No. of Vehicles—V/C Ratios > 0.80					
AM peak hour	1.000	1.038	1.041	1.056	1.066
PM peak hour	1.000	0.991	0.982	1.017	1.056
Percent of Links—V/C Ratios > 0.80					
AM peak hour	1.000	1.063	1.063	1.063	1.063
PM peak hour	1.000	1.029	1.029	1.029	1.091
Percent of Links—Congested Speeds < 20 mph					
AM peak hour	1.000	1.029	1.000	1.000	1.000
PM peak hour	1.000	1.000	1.000	1.024	1.024
Weighted Average—V/C Ratios > 0.80					
AM peak hour	1.000	1.017	1.034	1.034	1.053
PM peak hour	1.000	0.986	0.986	1.000	1.029
Trips in Project Limits					
AM peak hour	1.000	0.990	0.997	0.994	0.998
PM peak hour	1.000	0.998	1.000	0.987	0.987
Composite Score	18.000	18.084	18.127	18.272	18.519

V/C: volume to capacity



18. CONTACT INFORMATION

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19. ATTACHMENTS

- A. DESIGN EXCEPTION EXHIBITS
- B. PRELIMINARY ENVIRONMENTAL ANALYSIS REPORT
- C. GEOTECHNICAL MEMORANDUM
- D. PRELIMINARY PHASE 1 INITIAL SITE ASSESSMENT
- E. TRAFFIC REPORT
- F. SURVEYING REPORT

ATTACHMENT A

DESIGN EXCEPTION EXHIBITS



STANDARDS	FOR DECISION SIGHT DISTANCE - INDEX 201.7	STANDARDS FOR	R PAVEMENT REDUCTION - INDEX 206.3		
Ala	ADVISORY STANDARD: 1050 FT	450	ADVISORY STANDARD: L = 780 FT		
<u>N</u>	EXISTING CONDITION: 840 FT		EXISTING CONDITION: L = 480 FT (40 MPH)		
A1b	ADVISORY STANDARD: 1050 FT	(A5b)	ADVISORY STANDARD: L = 780 FT		
K ^I	EXISTING CONDITION: 960 FT	I ROD	EXISTING CONDITION: L = 610 FT (50 MPH)		
	ADVISORY STANDARD: 1050 FT		ADVISORY STANDARD: L = 780 FT		
R19	EXISTING CONDITION: 850 FT	ASC	EXISTING CONDITION: L = 470 FT (39 MPH)		
STANDARDS	S FOR COMPOUND CURVES - INDEX 203.5	(A5d)	ADVISORY STANDARD: L = 780 FT EXISTING CONDITION: L = 660ET (54 MPH)		
(120)	ADVISORY STANDARD: R2 > R1 ≥ 0.67 * R2	$\neg \Join$		-	
AZU)	EXISTING CONDITION: R1 = 1.88 * R2	(A5e)	EXISTING CONDITION: L = 625 ET (52 MPH)		
A26	ADVISORY STANDARD: R1 ≥ 0.67 * R2	$\neg \Join$		-	
AZD	EXISTING CONDITION: R1 = 0.53 * R2	(A5f)	EXISTING CONDITION: L = 650FT (54 MPH)		
STANDARDS	S FOR GRADE - INDEX 204.3	45-0	ADVISORY STANDARD: L = 780 FT		
A30	ADVISORY STANDARD: 0.30%		EXISTING CONDITION: L = 690 FT (57 MPH)		
ASU	EXISTING CONDITION: 0.19%			-	
AZh	ADVISORY STANDARD: 0.30%			-	
N ³	EXISTING CONDITION: 0.06%	(A6a)	EXISTING CONDITION: 14 92 ET		
(130)	ADVISORY STANDARD: 0.30%		EXISTING CONDITION: 14:8511]	
N ³ U	EXISTING CONDITION: 0.25%	STANDARDS FOR	R OUTER SEPARATION - INDEX 310.2	STANDARDS FO	R METERED RAMP TAPERS - INDEX 504.3
STANDARD			ADVISORY STANDARD: L = 26 FT	490	ADVISORY STANDARD: L = 30:1
STANDARDO		-100	EXISTING CONDITION: L = 16 FT	A30	EXISTING CONDITION: L = 26:1
(A4a)	EXISTING CONDITION L = 520 ET (52 MPH)	(A.7b)	ADVISORY STANDARD: L = 26 FT		
\succ		-100	EXISTING CONDITION: L = 14 FT		
(A4b)	EXISTING CONDITION: L = 500 FT (50 MPH)	470	ADVISORY STANDARD: L = 26 FT	(A10a)	EVISTING CONDITION: 660 ET
\succ		-100	EXISTING CONDITION: L = 18 FT		EXISTING CONDITION: 000 FT
(A4c)	EXISTING CONDITION: L = 600 FT (60 MPH)	AZd	ADVISORY STANDARD: L = 26 FT	STANDARDS FO	R WEAVING SECTIONS - INDEX 504.7
	ADVISORY STANDARD: L = 650 FT	$\neg \square$	EXISTING CONDITION: L = 12 FT	A110	ADVISORY STANDARD: 1600 FT
(A4d)	EXISTING CONDITION: L = 300 FT (40 MPH)	STANDARDS FOR	R LOCAL STREET INTERCHANGES - INDEX 502.2	18	EXISTING CONDITION: 900 FT
	ADVISORY STANDARD: L = 650 FT		ADVISORY STANDARD: NO ISOLATED RAMPS	(A11b)(A11c)	ADVISORY STANDARD: 1600 FT
(^{A4e})	EXISTING CONDITION: L = 540 FT (54 MPH)	[ASa/ASp/ASc)	OR PARTIAL INTERCHANGES		EXISTING CONDITION: 1200 FT

NO.	REVISION	DATE/APPROVAL	SHEETS	DRAWN	DESIGNED	HORIZONTAL SCALE		
						1" = 500'		
				CHECKED	DATE CHECKED	VERTICAL SCALE	SANTA CLARA VALLEY	
					4/30/09		JANTA CLANA VALLET	
				APPROVED				IMF
							TRANSPORTATION AUTHORITY	
						CONTRACT NO.		MANDAT(
				ENGINEER	DATE			





STOPPING SIGHT DISTANCE AT GRADE CRESTS - INDEX 201.4	STANDARDS FOR MEDIAN WIDTH - INDEX 305.1				
MANDATORY STANDARD: 660 FT (65 MPH)	MANDATORY STANDARD: 22 FT				
EXISTING CONDITION: 575 FT (55 MPH)	EXISTING CONDITION: 18.1 FT TO 22 FT				
MANDATORY STANDARD: 660 FT (65 MPH)					
EXISTING CONDITION: 515 FT (55 MPH)					
MANDATORY STANDARD: 250 FT (35 MPH)	(M8a) (M8a) (M8a)				
EXISTING CONDITION: 197 FT (25 MPH)	EXISTING CONDITION: 1.75 FT TO 4 FT				
	STANDARDS FOR VERTICAL CLEARANCE - INDEX 309.2				
STOPPING SIGHT DISTANCE AT GRADE SAGS - INDEX 201.5	MANDATORY STANDARD: 16.5 FT				
MANDATORY STANDARD: 250 FT (35 MPH)	EXISTING CONDITION: 16.4 FT				
EXISTING CONDITION: 218 FT (30 MPH)	MANDATORY STANDARD: 16.5 FT				
MANDATORY STANDARD: 250 FT (35 MPH)	EXISTING CONDITION: 15.1 FT				
EXISTING CONDITION: 213 FT (30 MPH)	MANDATORY STANDARD: 15 FT				
MANDATORY STANDARD: 250 FT (35 MPH)	M9c EXISTING CONDITION: 14.83 FT				
EXISTING CONDITION: 144 FT (20 MPH)					
STOPPING SIGHT DISTANCE ON HORIZONTAL CURVES - INDEX 201.6	STANDARDS FOR INTERCHANGE SPACING - INDEX 501.3				
MANDATORY STANDARD: 660 FT (65 MPH)	MANDATORY STANDARD: 1.0 MI				
(M3a) EXISTING CONDITION: 640 FT (64 MPH)	EXISTING CONDITION: 0.58 MI				
	MANDATORY STANDARD: 1.0 MI				
STANDARDS FOR BRIDGE WIDTH - INDEX 208.1	EXISTING CONDITION: 0.5 MI				
MANDATORY STANDARD: OUTER OFFSET = 4 FT	MANDATORY STANDARD: 1.0 MI				
EXISTING CONDITION: OUTER OFFSET = 2 FT	EXISTING CONDITION: 0.5 MI				
	MANDATORY STANDARD: 1.0 MI				
MANDATORY STANDARD: 425 ET (25 MPH)	EXISTING CONDITION: 0.5 MI				
	MANDATORY STANDARD: 1.0 MI				
	EXISTING CONDITION: 0.79 MI				
EXISTING CONDITION: 60 FT (< 20 MPH)	STANDARDS FOR RAMP WIDENING FOR TRUCKS - INDEX 504.3				
STANDARDS FOR SHOULDER WIDTH - INDEX 302.1	MANDATORY STANDARD: 18 FT				
MANDATORY STANDARD: 10 FT	EXISTING CONDITION: 12 FT				
(M6a) EXISTING CONDITION: 3.0 FT TO 10 FT	MANDATORY STANDARD: 18 FT				
	EXISTING CONDITION: 12 FT TO 15.81 FT				

F						-						
L	NO	REVISION		SHEETS		DRAWN	DESIGNED	HORIZONTAL SCALE				
F	110.	TLEVISION	DATEATIONAL	OTILETO				1" = 500'				
L						OVERVER		1 000				
F						CHECKED	UKIE CHECKED	VERTICAL SCALE	CANTA CLADA VALLEV			
F					TYLININTERNATIONAL		4/30/09		JANTA ULANA VALLET			
L						APPROVED						
F												
F								_				
L								CONTRACT NO.		ΜΑΝΠΑΤΩ		
F					1	ENGINEER	DATE					
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ATTACHMENT B

PRELIMINARY ENVIRONMENTAL ANALYSIS REPORT



Integrated Environmental & Communication Solutions

Preliminary Environmental Analysis Report

US-101 Interchange Implementation Project

QA/QC CERTIFICATION OF CONFORMANCE

STUDY SUBMITTAL

(Preliminary Environmental Analysis Report)

QA/QC STATEMENT

Upon examination of the documents of this submittal, I find that:

The Quality Control/Quality Assurance process was completed and this document meets the minimum requirements identified in our quality management plan.

Herni

Hatem Ahmed, PE, PMP T.Y.Lin International

Scott Steinwert, President

CirclePoint

30/0

PRELIMINARY ENVIRONMENTAL ANALYSIS REPORT

1. PROJECT INFORMATION

District: 4	County: Santa Clara	Route: 101	PM: Multiple Interchanges	EA: Not Yet Assigned				
Project Title:	Project Title: U.S. 101 Implementation Project							
Project Mana	Project Manager: Darrell Vice, Santa Clara Valley Transportation Authority							
Project Engineer: Hatem Ahmed, T.Y.Lin International								
Local Agency Project Manager: Liza Gonzalez, City of San Jose								
Environmental Project Manager: Scott Steinwert, CirclePoint								
Environmental Planner: Jennifer Gallerani, CirclePoint								

EXECUTIVE SUMMARY

This Preliminary Environmental Assessment Report (PEAR) evaluates the potential environmental impacts of the following:

- Construction of a new interchange at U.S.-101/Mabury Road
- Modification of the existing U.S.-101/Old Oakland interchange
- Construction of a new interchange at U.S.-101/Zanker Road

There are five design alternatives being considered for the new Zanker Interchange and a single design option for the new Mabury Road Interchange and the existing Old Oakland Road Interchange. **Figures 2** through **8** depict the interchange designs evaluated in this PEAR.

The project area contains many environmental constraints and the project (including all design alternatives) has the potential to cause significant impacts. The areas of particular environmental concern include:

- the presence of contaminated soils, groundwater, and building materials;
- potential impacts to low income and minority populations;
- commercial displacements or relocations (associated with Zanker Road and Mabury Road Interchanges);
- potential subsurface unrecorded paleontological or Native American cultural resources;
- access and circulation changes that could result in lost business revenue and/or increased commute times (associated with Zanker Road and Mabury Road Interchanges);
- riparian areas along Coyote Creek that may provide habitat for endangered species (Mabury Road Interchange only); and
- temporary or permanent use of portions of Watson Park, a public park maintained by the City of San Jose (Mabury Road Interchange only).

With regard to community impact issues, such as impacts to private properties and business displacements, the Zanker Road Interchange would result in the most substantial effects. All alternatives for the Zanker Road Interchange would result in numerous partial takes of private property and several full takes that would result in the displacement of existing buildings and/or structures.

2. PROJECT DESCRIPTION

PROJECT NEED

The study area consists of a freeway corridor (U.S.-101), located within a largely urbanized, mixed residential, commercial, and industrial area of San Jose, California (see **Figure 1**). U.S.-101 and the connecting local roadway system currently experience heavy traffic congestion due to very high traffic volumes and a number of roadway deficiencies within the project vicinity. This congestion is expected to worsen over time, as land uses in the surrounding areas continue to develop with higher density housing and from general increases in population and job growth in San Jose. The most prominent roadway deficiencies include the following:

- There are few places for local traffic to cross U.S.-101. In the study area, only two underpasses (at First Street and Brokaw Road) connect areas on the north and south sides of the freeway. Even on these underpasses, traffic is congested and widening of First Street is limited to two lanes in each direction due to the narrow right-of-way (ROW) and the VTA Light Rail corridor in the median.
- The existing First Street interchange lacks an on-ramp to southbound U.S.-101. As such, traffic must travel south on Fourth Street for approximately 0.5 mile in order to gain access to the next U.S.-101 southbound on-ramp.
- The freeway system within the study area lacks a direct connection from southbound Interstate 880 (I-880) to northbound U.S.-101. Motorists wishing to make this connection currently exit onto Old Bayshore Road and then travel on the 'buttonhook' ramp to northbound U.S.-101.

PROJECT OBJECTIVES

The construction and/or modification of interchanges within the study area would improve traffic mobility and reduce congestion within the project limits. The project is intended to addresses these issues through achieving the following objectives:

- Reduce peak period congestion and delay on the local interchanges and roadways in such a way as to not preclude future improvements to the U.S.-101/I-880 interchange.
- Provide vehicular access to the proposed Berryessa station of the Bay Area Rapid Transit (BART) system so as to encourage the use of transit.
- Provide direct access to Mineta San Jose International Airport from northbound U.S.-101 and southbound I-880.

- Relieve traffic congestion on the North First Street Corridor, which impedes access to the airport and adjacent office/research and development campuses, as well as fixed guideway¹ transit operations.
- Improve local circulation across U.S. 101.
- Improve traffic operations at the Old Oakland Road interchange.

DESCRIPTION OF WORK

The project would include the construction of two new interchanges and the modification of an existing interchange:

- Construction of Mabury Road interchange connecting East Taylor Street and Mabury Road to U.S.-101. This component of the project would also include the modification of the existing East Taylor Street and Mabury Road.
- Modification of the existing overcrossing and interchange of Old Oakland Road with U.S.-101 (Old Oakland Interchange).
- Construction of Zanker Road interchange over U.S.-101, connecting Zanker Road to Fourth Street, and Skyport Drive to Old Bayshore Highway and providing access between all these roads and U.S.-101.

ALTERNATIVES

Below is a description of the design elements incorporated into each of the project alternative(s).

Mabury Road Interchange: Construction of a new interchange at the current overpass of East Taylor Street/Mabury Road would connect to U.S.-101. There is only one design considered for this new interchange and would include the following elements:

- U.S.-101 southbound off-ramp to East Taylor Street
- U.S.-101 southbound on-ramp from East Taylor Street
- U.S.-101 northbound off-ramp to Mabury Road, including a bridge over Coyote Creek
- U.S.-101 northbound on-ramp from Mabury Road

The proposed lane configurations at the East Taylor Street/U.S.-101 ramps/North 23rd Street intersection and the East Taylor Street/Mabury Road intersection are depicted in **Figure 2**.

Old Oakland Interchange: The current overpass of Old Oakland Road at U.S.-101 would be modified. There is only one design considered for this interchange modification. On- and off-ramps from northbound and southbound U.S.-101 to Old Oakland Road would be widened. The proposed lane configurations of the Old Oakland Interchange are depicted in **Figure 3**.

Zanker Road Interchange:

A new interchange would be constructed at U.S.-101 and Zanker Road. There are five design alternatives being considered for this new interchange. All of the alternative would include a new

¹ A "fixed guideway" refers to any transit service that uses exclusive or controlled rights-of-way or rails, including heavy rail, commuter rail, and light rail service.

overpass(s) of U.S.-101 to connect Zanker Road and Old Bayshore Highway to 4th Street and Skyport Drive. On- and off-ramps from these proposed overpasses would connect to U.S.-101. Zanker Road would be modified into a six-lane roadway with bike lanes and sidewalks. **Figures 4** through **8** depict the proposed lane configurations of the five different Zanker Road Interchange build alternatives.

Alternative Z-1

In addition to the features common to all build alternatives, Alternative Z-1 would include the following elements:

- The proposed Zanker Road overcrossing would entail the construction of a 6-lane bridge over U.S.-101 with elevated T-intersections on both sides of the bridge. The Zanker Road overcrossing would originate at Bering Drive/Remuda Lane, and would have 3-lanes, a bike lane, and sidewalks in each direction; separated by a 16-foot median.
- The Zanker Road northbound off-ramp and a single lane from Old Bayshore Highway would be elevated to intersect the Zanker Road overcrossing on the east side of U.S.-101. The Old Bayshore Highway northbound U.S.-101 on-ramp would be a single-lane ramp.
- Fourth Street and the extension of Skyport Drive from First Street to Fourth Street would be elevated to intersect the Zanker Road overcrossing on the west side of U.S.-101. Both Fourth Street and Skyport Drive extensions would be two through lanes, a bike lane and sidewalk in each direction, separated by a median of varying width.
- The southbound U.S.-101 on-ramp would descend from a T-intersection on the Skyport Drive extension, approximately 150 feet west of the Zanker Road/Fourth Street/Skyport Drive intersection, and loop under the Zanker Road overcrossing to an auxiliary lane on southbound U.S.-101. The two-lane southbound U.S.-101 on-ramp would be metered.
- The extension of Old Bayshore Highway under the Zanker Road overcrossing would become the northbound U.S.-101 on-ramp. In order to create the northbound U.S.-101 on-ramp from Old Bayshore Highway, the existing northbound U.S.-101 off-ramp to Brokaw Road would be closed. The northbound U.S.-101 off-ramp to Zanker Road would be a two-lane ramp. The closure of the northbound U.S.-101 off-ramp to Brokaw Road would also allow for the elongation the northbound U.S.-101 loop on-ramp from First Street, increasing its taper distance.

Traffic movements not provided under Alternative Z-1 include: (1) a northbound U.S.-101 onramp from Zanker Road, and (2) a southbound U.S.-101 off-ramp.

Alternative Z-2

In addition to the features common to all build alternatives, Alternative Z-2 would include the following elements:

• The proposed Zanker Road overcrossing would be intersected by a second overcrossing originating from Old Bayshore Highway as part of a four-way elevated intersection on the west side of U.S.-101. The remaining two approaches to the intersection would be Fourth Street, elevated on a curve, and an elevated extension of Skyport Drive from First Street to Fourth Street. The Zanker Road overcrossing would originate at Bering Drive/Remuda Lane, and would have three through lanes, a bike lane, and sidewalk in each direction; separated by a median. Both the Fourth Street and Skyport Drive

extensions would be two through lanes, a bike lane, and sidewalk in each direction; separated by a median.

- There would be an additional elevated intersection on Zanker Road, east of U.S.-101, where a northbound U.S.-101 off-ramp would terminate and a northbound U.S.-101 on-ramp would begin. To accommodate the northbound U.S.-101 on-ramp from Zanker Road, the existing northbound U.S.-101 off-ramp to Brokaw Road would be increased in length, bridging over the on-ramp. The two-lane Zanker Road northbound U.S.-101 on-ramp and the two-lane southbound U.S.-101 on-ramp would be metered.
- There would be an elevated intersection at the Skyport Drive extension between First Street and Fourth Street where a southbound U.S.-101 off-ramp would terminate and a southbound U.S.-101 on-ramp would begin. The southbound U.S.-101 off-ramp would run parallel to First Street and Fourth Street and the southbound U.S.-101 on-ramp would loop under the Zanker Road overcrossing to an auxiliary lane on southbound U.S.-101. A second southbound U.S.-101 on-ramp would originate from First Street, at the Old Bayshore Highway intersection. The southbound U.S.-101 on-ramp from First Street would be a single lane ramp. The northbound U.S.-101 off-ramp to Zanker Road and the southbound U.S.-101 off-ramp to Skyport Drive would be single-lane off-ramps that widen to two lanes and three lanes at the ramp terminus, respectively.

All on- and off-ramp movements in both directions are provided under Alternative Z-2.

Alternative Z-3

The footprint of Alternative Z-3, including profile, grades, and cross-sections for the Zanker Road overcrossing, the Old Bayshore Highway overcrossing, the northbound U.S.-101 ramps, and the Fourth Street and Skyport Drive extensions, would be the same as for Alternative Z-2. Alternative Z-3 would include identical improvements to Alternative Z-2, with the exception of the following elements:

• The southbound U.S.-101 off-ramp and the southbound U.S.-101 on-ramp from the Zanker Road/Fourth Street/Skyport Drive would not be included under Alternative Z-3.

Traffic movements not provided under Alternative Z-3 include: (1) a southbound U.S.-101 offramp, and (2) a southbound U.S.-101 on-ramp from the Zanker Road/Old Bayshore Highway/Fourth Street/Skyport Drive.

Alternative Z-4

The footprint of Alternative Z-4, including profile, grades, and cross-sections for the Zanker Road overcrossing, the Old Bayshore Highway overcrossing, the northbound U.S.-101 ramps, and the Fourth Street and Skyport Drive extensions, would be the same as for Alternative Z-2. Alternative Z-4 would include identical improvements to Alternative Z-2, with the exception of the following elements:

• The southbound U.S.-101 on-ramp from Skyport Drive, and the southbound U.S.-101 on-ramp from First Street would have different alignments, profile, grades, and cross-sections than compared to Alternative Z-2. There would be no direct southbound U.S.-101 on-ramp from First Street. Instead, the ramp would intersect with a southbound U.S.-101 off-ramp at grade, and then merge with a southbound U.S.-101 on-ramp from Skyport Drive to go under the Zanker Road overcrossing to an auxiliary lane on southbound U.S.-101. This southbound U.S.-101 on-ramp would include a HOV lane.

• The Skyport Drive/southbound U.S.-101 ramps intersection geometry would differ slightly when compared to Alternative Z-2. The southbound U.S.-101 off-ramp would be a single-lane off ramp that widens to two lanes and finally to three lanes at the Skyport Drive intersection. The U.S.-101 on-ramp from First Street and Skyport would be three lanes including HOV.

All on- and off-ramp movements in both directions are provided under Alternative Z-4.

Alternative Z-5

In addition to the features common to all build alternatives, Alternative 5 would include the following elements:

- The proposed Zanker Road overcrossing would have elevated four-way intersections on both sides of U.S.-101. The northbound U.S.-101 off-ramp and the northbound U.S.-101 on-ramp would be elevated to intersect the Zanker Road overcrossing on the east side of U.S.-101. In order to accommodate the northbound U.S.-101 on-ramp from the Zanker Road overcrossing, the existing northbound off-ramp to Brokaw Road would be closed. The northbound U.S.-101 on-ramp and the southbound U.S.-101 on-ramp would be two-lane ramps. The northbound U.S.-101 off-ramp to Zanker Road would be a two-lane ramp.
- Fourth Street and the extension of Skyport Drive from First Street to Fourth Street would be elevated to intersect the Zanker Road overcrossing on the west side of U.S.-101. Each of these two roadways and the overcrossing would approach the elevated intersection on a curve. The southbound U.S.-101 on-ramp would descend from this elevated intersection and loop under the Zanker Road overcrossing to an auxiliary lane on southbound U.S.-101. The southbound U.S.-101 off-ramp would terminate at the elevated intersection alongside the entrance to the southbound U.S.-101 on-ramp. The Zanker Road overcrossing and Skyport Drive extension would have three through lanes, including sufficient width for a bike lane, and sidewalk in each direction, separated by a median. Fourth Street would be two through lanes including sufficient width for a bike lane, and sidewalk in each direction, separated by a wide median. The southbound U.S.-101 off-ramp to the Skyport Drive extension would be a single-lane off-ramp that widens to two lanes.
- The northbound U.S.-101 off-ramp to Old Bayshore Highway would be closed to make way for a northbound U.S.-101 off-ramp to Zanker Road, and Old Bayshore Highway east of First Street would be closed for the southbound U.S.-101 off-ramp. The northbound U.S.-101 on-ramp from Old Bayshore Highway would be maintained.

The traffic movement not provided under Alternative Z-5 would be a northbound U.S.-101 offramp to Old Bayshore Highway. The northbound U.S.-101 off-ramp to Brokaw Road would be closed.

No-Build Alternative

Under this alternative, no new interchanges with U.S.-101 would be constructed and the existing of Old Oakland Road interchange would not be modified. Traffic improvements along local routes may be implemented by local agencies or under other projects. The No-Build alternative is considered the environmental baseline and potential environmental affects of the Build Alternative(s) are compared to the No-Build Alternative.

3. ANTICIPATED ENVIRONMENTAL APPROVAL

CEQA		NEPA		
Environmental Determination				
Statutory Exemption				
Categorical Exemption		Categorical Exe	clusion	
Environmental Document ²				
Initial Study or Focused Initial Study with Negative Declaration or Mitigated ND	Environmental of No Significa		Assessment with Finding nt Impact	
Environmental Impact Report	\square	Environmental Impact Statement		\square
CEQA Lead Agency (if determined):				
Estimated length of time (months) to obtain environmental approval:			18 months, not including permitting	
Estimated person hours to complete identified tasks:			Extensive technical reports	required

 $^{^2}$ This PEAR considers the two new interchanges at US 101/Mabury Rd and US 101/Zanker Road, and the modification of the existing interchange at US 101/Old Oakland Road as a single project. The level of environmental documentation will be reassessed when these interchange projects are implemented separately.

4. SPECIAL ENVIRONMENTAL CONSIDERATIONS

To protect sensitive resources and meet CEQA/NEPA requirements, other project design features and environmental monitoring would be required prior to and/or during the implementation of the project. These measures would address the following issues:

- Existing drainage facilities in the study area are generally older and do not sufficiently protect local waterways from contaminated runoff. As a matter of law, implementation of the project would require upgrading these facilities to incorporate permanent pollution prevention Best Management Practices (BMPs), as well as incorporation of construction BMPs to prevent impacts to water quality during construction (such as excessive erosion or sedimentation). These BMPs are outlined in the Caltrans statewide Stormwater Management Plan (SWMP). Additionally, the project engineer or construction contractor would be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) in compliance with the San Francisco Basin Plan and the SWMP. Incorporation of these BMPs and any measures outlined in the SWPPP would ensure that the project would not adversely affect the quality of any stormwater flowing to the San Francisco Bay or to local stormwater treatment facilities.
- There is a possibility that unrecorded Native American cultural resources exist in the study area. Consultation and coordination with Native American tribal representatives during preparation of the CEQA/NEPA document, and monitoring for Native American artifacts during construction, may be required.
- There is a high likelihood that Pleistocene-age fossils exist in the study area. Construction monitoring by a qualified paleontologist may be required, and a curation program prepared for the project to create protocols for how to protect any resources discovered during construction.
- Because of the urban nature of the study area, substantial relocations to existing utilities may be required. No additional technical report would be required for the environmental document, but the document itself would need to graphically show the existing utility lines and poles that would be relocated and where they would be relocated to.

5. ANTICIPATED ENVIRONMENTAL COMMITMENTS

This PEAR considers the construction of two new interchanges and the modification of an existing interchange as a single project. It is unknown at this time if all potential impacts, particularly impacts to the human environment, could be mitigated to a less-than-significant level for all three interchanges. Therefore, it is anticipated that the appropriate level of environmental documentation to be prepared during the Project Approval and Environmental Document (PA&ED) phase of project development would be an Environmental Impact Report/Environmental Impact Statement (EIR/EIS) to satisfy both CEQA and NEPA requirements. It is expected that the environmental technical reports and EIR/EIS would take approximately 18 months to prepare and process for final certification/approval, including time for substantive review by the environmental division staff within the Department. This 18-month timeline does not include permitting by federal or state resource agencies.

The source of funding for the design and construction phases of this project is expected to come from various sources. Funding is anticipated to originate from a combination of development traffic impact fees, local, regional, state and federal sources.

It may be possible that certain project elements may proceed as a separate project(s). If a project element such as a single interchange, is determined to have independent utility and logical termini a separate or supplemental Project Study Report, including a separate or supplemental PEAR would need to be prepared before continuing the project development process. In preparing a separate or supplemental PEAR, the level of environmental documentation would also be reassessed.

In the event federal funds are not utilized in the design or construction of the project, and the project would not require modification to I-880 (a federal facility), NEPA documentation would not be required. In this case, some of the technical studies discussed below (e.g. Section 4(f), Community Impact Assessment, and environmental justice assessment) would not apply.

Table 1 below summarizes the anticipated impacts identified in this PEAR and details the subsequent studies that will be required during the PA&ED phase if all components were pursued as a single project requiring CEQA and NEPA documentation. Attachment A, PEAR **Environmental Studies Checklist**, identifies the areas of the environmental document that require special studies, memoranda to file, or that need no further evaluation.

Summary of Fotential Impacts by Resource Area	reennear Review Required	
Land Use		
The Project could potentially impact cultural resources that would qualify as Section 4(f) resources under NEPA. As presently designed, construction of the Mabury Road Interchange would result in permanent and temporary use of land from Watson Park (a community park) a Section 4(f) resource.	If NEPA documentation is required, a Section 4(f) Evaluation should be prepared. Avoidance alternatives should be evaluated for any direct and indirect impacts to Section 4(f) resources.	
Community Impacts		
Implementation of the project would result in the displacement of several commercial and industrial properties, primarily at the Mabury and Zanker interchanges. Changes in local access, construction impacts, and/or residential and business relocations could disproportionately affect communities that have a potential to be classified as federal environmental justice communities because of the high population of low- income and minority residents in the project area	A Community Impact Assessment (CIA) is required to determine how the project will affect people, institutions, neighborhoods, communities, organizations, and larger social and economic systems. An Environmental Justice Evaluation should be included in the CIA in order to determine if these sensitive populations would be disproportionately exposed to project-related impacts.	
Visual Resources		
Scenic features in the study area include large trees near First Street, Watson Park, and other areas throughout the project area which could be considered scenic resources. The project would result in tree removal and other changes to the visual environment.	An abbreviated Visual Impacts Assessment (VIA) should be prepared for this project. The VIA should describe project features, impacts, and mitigation requirements, including aesthetic treatments and landscaping and vegetation replacement (especially near affected areas of Watson Park). For the interchange features likely to be seen by the sensitive viewer groups, visual simulations may be required.	

Table 1: Technical Reviews Anticipated as Part of the Environmental Document Preparation Summary of Potential Impacts by Posaurea Area

Tachnical Paviaw Paguirad

November 2009

Summary of Potential Impacts by Resource Area	Technical Review Required
Cultural Resources	
The study area does encompass many historic architectural resources that would require inventory and evaluation if they are ultimately included within the project area of potential effect (APE). However it is anticipated that the APE will be drawn to exclude much if not all of these areas.	If project limits are later defined such that potentially historic resources fall within the APE for historic resources, an inventory and evaluation of potential resources would be required. The study of these resources would be conducted by a professionally qualified historian in accordance with Caltrans guidance and findings would be presented in a Historical Resources Evaluation Report (HRER), accompanied by an APE/study area map, DPR523 forms, and letters to interested parties.
There is a high likelihood that unrecorded Native American Resources exist in the project area that could be damaged during project construction.	An archaeological area of potential effect (APE) map should be prepared that includes all work areas and temporary construction staging areas. An Archeological Survey Report (ASR) should be prepared for the project and consultation and coordination with the Native American Heritage Commission (NAHC) should be conducted during preparation of the environmental document. During project construction, a tribal monitor may be required.
Hydrology and Floodplain	
The majority of the project area is located within FEMA high-risk flood zone designation areas. These areas are classified as having a 1 percent or greater chance of shallow flooding each year (at depths ranging from 1 to 3 feet of water), and a 26 percent chance of shallow flooding over a 30-year period. Constructing new interchange structures within these flood hazard areas could impede or redirect flood flows or put motorists in areas that could experience flooding.	A Floodplain Evaluation Report (FER) should be prepared in order to identify any potential effects the proposed interchanges would have in redirecting flood flows towards other land uses. The FER should also provide mitigation (design) measures to ensure that project improvements were constructed in a manner that could withstand the typical shallow flood levels that periodically inundate the area.
Geology, Soils and Seismic Conditions	
The project is located in a seismically active area, with several major fault lines running through or near the project area, including the Hayward Fault. Soils in the southern portion of the San Francisco Bay, in which the project is located, soils are generally comprised of a mixture of silt, gravel and clay and are subject to liquefaction, expansion and differential settlement. New interchange structures constructed as part of the project would be subject to strong ground shaking which would put construction workers (construction period) and motorists at risk of harm during a major earthquake.	The project would be designed to withstand structural collapse or major damage in the event of a major earthquake in the region and built in accordance with Caltrans standard specifications. A preliminary geotechnical site investigation should be prepared to better characterize the surface and subsurface soils in the project area. This will serve to provide guidance regarding the materials, type of foundations, and structure design that should be used.

Summary of Potential Impacts by Resource Area	Technical Review Required		
Paleontology			
Because significant Pleistocene-age fossils have been found in the project vicinity, damage to fossil resources could occur during project grading and construction.	Construction monitoring should be required and conducted by a qualified paleontologist. The presence of known or reasonably anticipated resources that may be impacted by the project indicates that a Paleontological Evaluation Report (PER) will be needed. A curation program should also be prepared for the project to create protocols for how to protect any resources discovered during construction.		
Hazards and Hazardous Materials			
Construction activities would disturb soils likely containing existing hazardous materials including aerially deposited lead, solvents, petroleum hydrocarbons, metals, and other hazardous chemicals. Modification or demolition of existing freeway structures could also release particles of lead-based paint or asbestos. Untreated, these substances could endanger construction workers, nearby residents and employees through direct exposure or inhalation, and could adversely affect the environment if they were released and transported by air or water during construction.	A Phase II subsurface investigation should be conducted prior to project development to better determine the extent that hazardous materials are present in soils and groundwater in the project area. If concentrations of hazardous materials are found in excess of established state and federal standards, a remedial action plan would be required to establish a mitigation program to protect human and environmental health. As part of this investigation or as a separate study, roadway structures such as bridges and interchanges that would be modified or removed by the project should be identified for future analysis for asbestos- containing materials and lead-based paint applications.		
Air Quality			
Implementation of the project could result in substantial changes in vehicle emissions along U.S101 and nearby local roadways.	An Air Quality Study should be prepared which evaluates air quality impacts at the regional level as well as the potential for localized impacts, such as carbon monoxide hot spots.		
Noise and Vibration			
Noise-sensitive land uses are located at various areas throughout the project area and could be adversely affected by changes in local traffic patterns. For example, the modification and addition of on- and off- ramps in the project area could bring some traffic physically nearer to noise-sensitive land uses.	A Noise Study Report should be prepared to model existing and future noise levels in these areas. The project should also evaluate the feasibility of noise abatement measures for noise-sensitive land uses predicted to experience higher-than-acceptable noise levels.		
Noise and Vibration			
Because implementation of this project is likely to require substantial construction activity over a period of many months, and would be in very close proximity to noise-sensitive land uses, construction could result in significant noise and vibration impacts.	A detailed construction noise assessment should be prepared to provide adequate detail on potential noise and vibration effects and propose appropriate mitigation measures.		

Summary of Potential Impacts by Resource Area	Technical Review Required	
Energy and Climate Change		
Analysis of a project's contribution of greenhouse gas (GHG) emissions and climate change impacts is now required with passage of AB32 and to reflect recent court rulings.	An evaluation of GHG emissions should be incorporated into the Air Quality Study or analyzed in a separate technical report. A quantitative GHG emissions analysis with a determination of the significance of these emissions should be prepared. As Caltrans analysis methodology for GHG impacts is currently being revised, some preliminary discussion would be required to ensure that the interim approach used for this project is acceptable to the Department's specialists.	
Biological Resources		
There are several portions of the project area that could contain sensitive biological resources, particularly the potential for nesting birds in large trees in the project area.	A Natural Environment Study (NES) should be prepared to determine the presence of special status species in the study area and potential project impacts. The NES should also include an inventory of noxious weeds in the undeveloped portions of the project area. If special status species are potentially impacted by the project submission of a Biological Assessment (BA) to the US Fish and Wildlife Service to initiate consultation under Section 7 of the Endangered Species Act would also be required	
Coyote Creek, at the Mabury Interchange site, falls under several regulatory jurisdictions that require certain consultation and permitting depending on the classification of the creek within the project area.	Prior to any activities affecting Coyote Creek and its associated riparian vegetation, a Jurisdictional Delineation Report/Wetland Delineation Report should be prepared.	

6. PERMITS AND APPROVALS

<u>Water Quality Permits:</u> The project is likely to utilize the Caltrans' National Pollutant Discharge Elimination System (NPDES) permit during construction. The Caltrans NPDES permit includes measures that would be taken by the project to reduce or avoid runoff that would affect local stormwater quality. Consistent with the NPDES permit, the project would require a Regional Water Quality Control Board permit (401), which would require preparation and adoption of a SWPPP. Additionally, the project would be required to file a Notice of Intent (NOI) to be covered under the State NPDES General Construction Permit for discharges of stormwater associated with construction activity.

<u>Biological Resources Permits</u>: A Section 1601 permit from the California Department of Fish and Game may be required for construction activities in and near Coyote Creek and its surrounding riparian area. If it is determined in later design phases that construction work would occur in stream banks or channel, additional biological permits would be required, including a streambed alteration agreement from the California Department of Fish and Game. An individual Section 404 Permit may be required from the U. S. Army Corps of Engineers if such work would impact wetlands or waters of the U.S. Additional permits for the material site and disposal site may also be required.

There is a potential that state and/or federally-listed species will be encountered in the study area. If it is found during the preliminary biological evaluation that these species are likely to occur in the study area, consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act would be required.

7. LEVEL OF EFFORT: RISKS AND ASSUMPTIONS

Risk management is the systematic process of identifying and planning for issues that, were they to occur, could have a positive or negative effect on the project objectives, including the timeline and/or budget for project implementation. Initial phases of project development include developing and regularly reviewing a risk management matrix prepared for the project. This project is designed to improve local circulation over a large area by improving or adding access at several interchanges – as such, the project defined in this PEAR could be implemented in part or in whole, and/or in multiple phases, as resources are available. This PEAR is designed to provide an initial evaluation of the level of technical study and environmental documentation that would be required for the different alternatives in the entire project area.

The discussion of *PEAR Technical Studies* below is based on an extensive windshield survey of the study area, existing public data, and several technical memoranda that were prepared to evaluate the potential biological, cultural, and hazardous waste risks associated with the project. Based on this information the process of attaining full project approval would take approximately 18 months to complete, and potentially longer depending on what reviews were required by different local, regional, state and federal agencies. A risk management matrix is recommended as part of the project development documentation prepared for subsequent phases of project development.

In order to maintain an 18 month timeline for preparation and approval of the environment document, the following assumptions were made:

- No community outreach has been conducted at this phase in project development. The schedule assumes that the community would be generally supportive of the need for the project.
- If project limits are later defined such that potentially historic resources fall within the area of potential impact, an inventory and evaluation of potential resources would be required. Classification and verification of these resources can be time consuming and require lengthy review by the State Historic Preservation Officers (SHPO).
- Hazardous materials would not be encountered during Phase II soil sampling in such high concentrations that such that extensive remediation and re-testing would be required before project approvals could be obtained.
- Biological protocol studies would not be required for any special status species, and particularly for California tiger salamander, which requires two years of consecutive surveys to determine presence/absence of the species.

8. PEAR TECHNICAL SUMMARIES

8.1 LAND USE

Existing Conditions

The study area consists of a freeway corridor (U.S.-101), located within a largely urbanized, mixed residential, commercial, and industrial area of San Jose, California. Open space within the study area is limited to Watson Park, a 35-acre public park operated by the City of San Jose that is located adjacent to and north of U.S.-101 in the vicinity of the proposed Mabury Road Interchange. Most of the park has been closed since 2005 after lead and other contaminants were found in soils encountered during construction of a skate park. Since then, the City of San Jose has initiated activities to clean up the park site and has prepared a new Master Plan for Watson Park (August 2008). Portions of the park (recently a dog walking area) are reopening as the cleanup progresses. Even though much of the park remains closed (as of December 2008) there are plans in process to reopen and improve the park. As such, the park would qualify as a 4(f) park or recreational facility under NEPA.

In February 2005, the Valley Transportation Authority (VTA) Board of Directors adopted the Valley Transportation Plan 2030 (Plan). Furthermore, interchange improvements at these three locations have been submitted to VTA as part of the Valley Transportation Plan 2035. The Plan included 40 highway projects anticipated to be funded through the State Transportation Improvement Program (STIP) over the next 25 years. As part of this plan, the VTA Board of directors has approved a short-term implementation plan of ten high-priority projects to initiate the first phases of project development. This short-term implementation plan includes the Zanker Road Interchange and Mabury Road Interchange improvements.³ As such, the project would be consistent with local transportation plans but has not yet been programmed into regional or state transportation improvement programs.

Potential Effects from Project Operation and Construction

The on- and off-ramps from the Mabury Road Interchange would result in the permanent use of a strip of land immediately adjacent to the west side of Watson Park, as well as a small portion of the park itself. Construction and operation of the on- and off-ramps could also result in indirect (or the constructive use) of portions of this park due to increased noise and air pollution. Therefore, implementation of the project is expected to create both temporary and permanent impacts to this Section 4(f) resource.

If NEPA documentation is required, a Section 4(f) Evaluation should be prepared to address the potential impacts of the project to Watson Park. If only CEQA documentation is required, the impacts would be addressed in the CEQA document and no separate technical report would be required. Under either approach, it may be necessary to examine possible avoidance alternatives as part of the evaluation.

The study area may also contain cultural resources that qualify from protection under Section 4(f) (see Section 8.6, Cultural Resources below).

³ VTA Board Memorandum (2005). Cooperative agreement with the City of San Jose for funding four VTP 2030 Highway Projects. Available at <u>http://www.vta.org/inside/boards/packets/2005/06_jun/19.pdf;</u> Last accessed May 2, 2009.

8.2 GROWTH

The growth inducement discussion is required under CEQA, which states that growth must not be assumed in any area to be necessarily detrimental, beneficial, or of no significance to the environment. In general, a project could be considered growth inducing if it directly or indirectly affects the ability of agencies to provide needed public service, or if it can be demonstrated that the potential growth significantly affects the environment in some other way. CEQA does not require separate mitigation for growth inducement as it is assumed that these impacts are already captured in the analysis of environmental impacts.

Highway improvements in general have the ability to enhance accessibility within local communities and the proposed interchange improvements would enhance access and local circulation along the existing U.S.-101 corridor. The project would not provide access to areas previously inaccessible but it may improve access in ways that would foster local development or redevelopment beyond that which is presently possible in the area. The environmental document would include an evaluation of the potential for growth inducement in the project area and vicinity.

8.3 FARMLANDS/TIMBERLANDS

There is no farmland within the study area.

8.4 COMMUNITY IMPACTS

Existing Conditions

According to the 2000 U.S. Census, the study area (calculated using Census block groups) contains a large number of low-income and minority people. The percentage of low-income and minority populations in the study area is higher than either the City of San Jose or in Santa Clara County as a whole. As depicted in **Table 2**, the percentage of low-income residents in the study area is 3.8 to 5.2 percent higher than the poverty levels reported for San Jose and Santa Clara County, respectively. Similarly, the percentage of minority residents in the study area is 7.8 to 16 percent higher than the percentage of minority residents living in San Jose and Santa Clara County, respectively.

	Study Area	City of San Jose	Santa Clara County
	Block Groups	(Compared to Study Area)	(Compared to Study Area)
Percent Below	12.7%	8.8%	7.5%
Poverty Level		(-3.8%)	(-5.2)
Percent Minority	72.0%	64.2% (-7.8%)	56.0% (-16.0%)

Table 2: Comparison of Poverty and Minority Levels within the Study Area and Region

Source: 2000 U.S. Census.

Potential Effects from Project Operation

The new interchanges and road connections proposed as part of the project could result in adverse effects to members of the local community in regards to noise, air quality, and visual effects (discussed below in each relevant topic area). However, because the project primarily involves improvements and expansion of the existing transportation system, it would not create new

physical barriers within an existing established community and would resolve some existing physical barriers by providing additional north-south access across U.S.-101. This would be a benefit to the larger community.

In order to provide sufficient right of way for the project, there would be impacts to private properties in the study area. This would include full takes of some properties, which in some cases would require the removal of existing land uses and buildings, which would result in the displacement of businesses. No residences would be displaced by the project alternatives. In addition, partial takes of land from other properties would be required but would not result in the removal of the existing land use or structures.

Table 3 identifies the number of properties that would be impacted at the Mabury Road and Old Oakland Road Interchanges. The property impacts and potential displacements shown below were determined by comparing preliminary engineering drawings to information about existing land uses gathered from County assessor's records and from a windshield survey of the study area in December 2008. Estimates of property impacts and displacements are preliminary and based on data available as of March 2009 and may not represent the exact number that would occur under each alternative. Therefore, the number of impacted properties and displacements could go up or down in future phases of project design. The number of displaced businesses is based on businesses that were visible during the windshield survey in December 2008. Because many of the impacted structures contain multiple businesses, the information regarding business displacements is only an estimate intended to provide a general sense of the potential displacements under each alternative.

Project Alternatives	Design Element	Full Property Takes	Partial Property Takes	Approximate Number of Structures Displaced	Approximate Number of Businesses Displaced
Mabury Road Interchange	North Side	5	4	7	17
	South Side	3	3	1	1
	Interchange Total	8	7	8	18
Old Oakland Interchange	North Side	0	1	0	0
	South Side	0	2	0	0
	Interchange Total	0	3	0	0

Table 3: Potentially Impacted Properties Common to All Alternatives

Source: TY Lin, Parsons, 2009.

All project alternatives would have the same impacts at the Mabury Road and Old Oakland Interchanges. These could include full or partial takes of private property which would result in the displacement of existing businesses as described below:

• Construction of the Mabury Road Interchange would result in up to eight full property takes and seven partial property takes, which could include the displacement of approximately 18 businesses.

• Improvements to the Old Oakland Road overpass are not expected to result in the displacement of any existing businesses. However, temporary staging areas may need to extend outside of the existing right-of-way during construction activities near the Old Oakland Road overpass, resulting in up to three partial takes of the adjacent properties.

There are significant differences in the design of the alternatives for the Zanker Road Interchange between the proposed new intersections connecting Zanker Road to Fourth Street, Skyport Drive to U.S.-101, and Skyport Drive to Old Bayshore Highway. As each alternative features a different design, the property impacts would be different under each alternative. The approximate number of parcels and businesses affected under each Zanker Road Interchange alternative are shown below in **Table 4**.

- Alternative 2-1 could result in up to 16 partial property takes and 2 full property takes that would displace approximately 2 businesses.
- Alternatives 2-2 and 2-4 could result in up to 33 partial property takes and 6 full property takes that would displace approximately 13 businesses.
- Alternative 2-3 could result in up to 33 partial property takes, and 6 full takes that would displace approximately 12 businesses.
- Alternative 2-5 could result in up to 13 partial property takes, and 8 full property takes that would displace approximately 37 businesses. The majority of the businesses affected are located within three large multi-tenant commercial/light industrial buildings along Reynolds Circle.

The different designs for the Zanker Road Interchange would result in a substantially different circulation pattern in the area. These changes could adversely affect local residents and businesses, as well as change the number of vehicles driving past businesses. Overall, this could result in adverse economic impacts as a result of lost business and/or increased commute times for some residents and businesses. The actual levels of circulation disruption should be determined in a traffic impact analysis that would be prepared during the PA&ED phase of the project. It should be noted that Alternative 1 would remove the existing connection between southbound Zanker Road and eastbound Old Bayshore Highway, which is presently heavily used by local businesses. Similarly, Alternative 5 would eliminate access to the some of the commercial businesses along Old Bayshore Highway, without directly displacing the properties.

Community impacts resulting from the project, including the need for relocations of businesses and potential adverse effects to businesses and residents from changes in access should be studied in a Community Impact Analysis (CIA) prepared during the PA&ED phase of the project. The CIA should identify if any of the displaced businesses represent key community uses (i.e., major employers, critical neighborhood uses, etc.) and should also evaluate the likelihood of the displaced services being relocated or replaced within the impacted community.

Because the residents of the project study area are more likely to be minority or low-income populations, it is possible that business relocations and other effects of the project may be considered to disproportionately burden federal environmental justice communities. Therefore, if the project is subject to NEPA, the CIA should evaluate whether impacts may be more onerous to minority communities which meet the criteria for being environmental justice communities, as defined in Executive Order 12898 (1994).

Potential Effects from Project Construction

Although project construction would be temporary, it would take place over a period of months or years and would be disruptive to the local area. Lane closures, detours, and other construction

over extended periods could significantly impact local residents and businesses and result in adverse economic impacts as a result of lost business and/or increase commute times. The Community Impact Assessment (CIA) should further evaluate the temporary construction-period impacts on the local community. Particular attention should be paid to evaluating whether these temporary effects would disproportionately affect environmental justice communities.

Project Alternatives	Design Element	Full Property Takes	Partial Property Takes	Approximate Number of Structures Displaced	Approximate Number of Businesses Displaced
	Zanker Road	0	2	0	0
Zanker Road Interchange	Old Bayshore Hwy	1	5	1	1
Alternative Z-1	N 4 th Street	1	7	1	1
	Skyport Drive	0	2	0	0
	Interchange Total	2	16	2	2
	Zanker Road	0	8	2	2 ^B
Zanker Road Interchange	Old Bayshore Hwy	2	8	3	4
Alternative Z-2	N 4 th Street	4	13	4	5
	Skyport Drive	0	4	2	2
Interchange Total		6	33	11	13
	Zanker Road	0	8	2	2^{A}
Zanker Road Interchange	Old Bayshore Hwy	2	8	3	4
Alternative Z-3	N 4 th Street	4	13	4	5
	Skyport Drive		4	1	1
Interchange Total		6	33	10	12
	Zanker Road	0	8	2	2 ^B
Zanker Road Interchange	Old Bayshore Hwy	2	8	3	4
Alternative Z-4	N 4 th Street	4	13	4	5
	Skyport Drive		4	2	2
Interchange Total		6	33	11	13
	Zanker Road	3	5	3	1
Zanker Road Interchange	Old Bayshore Hwy	1	0	3	33
Alternative Z-5	N 4 th Street	3	5	2	2
	Skyport Drive	1	3	2	1
	Interchange Total	8	13	10	37

Table 4: Potentially Impacted Properties – Zanker Interchange Alternatives

Source: TY Lin, Parsons, 2009. Preliminary engineering plans indicate that a partial take of two multi-tenant commercial buildings would be required but that other tenants in the structure could remain in place.

8.5 VISUAL/AESTHETICS

Existing Conditions

Neither U.S.-101 nor I-880 is designated as a scenic highway. The study area consists of a busy freeway corridor surrounded by a highly urbanized, mixed residential, commercial, and industrial area. As a result, there are no designated scenic views or vistas present in the study area. Scenic features in the study area include large trees near First Street and near Watson Park. Viewer groups within the study area consist of residents, business owners and employees, and motorists. In the future, once a larger portion of Watson Park is reopened, recreational users would also be a viewer group within the study area.

Potential Effects from Project Operation

Because the project would primarily involve improvements to existing roadways, it would not introduce significant new structures into the visual environment nor dramatically change the existing features of the visual environment. While widening roadways and adding on- and off-ramps would increase the bulk of the existing structures, these changes would not substantially alter existing views. The displacement of businesses as part of the project would not create an adverse visual effect on the study area because the displacements would be relatively isolated and not result in large portions of the community being displaced. Overall, the visual character of the surrounding areas would remain largely intact.

All build alternatives would remove some trees. In particular, trees would be removed along Old Bayshore Road and U.S.-101, and the Mabury Road Interchange would result in tree removal from the northern and western portions of Watson Park.

A preliminary screening was conducted using the Federal Highway Administration's (FHWA) Visual Impact Assessment Guide. Based on the scoring sheet provided in this guide, an abbreviated Visual Impacts Assessment (VIA) should be prepared for this project. The VIA should describe project features, impacts, and mitigation requirements, including aesthetic treatments on project features and landscape replacement (particularly in and near affected areas of Watson Park). Visual simulation(s) should be prepared for interchange features likely to be seen by the sensitive viewer groups. To reduce the visual effects of the removal of trees and vegetation, landscape replacement should occur in accordance with Caltrans Landscape Standards.

Potential Effects from Project Construction

Construction activities would also result in temporary visual effects (e.g., construction equipment, signage, dust, etc.) within the study area. However, these would be temporary and generally short in duration. It is not expected that these short-term effects would require separate evaluation in the VIA.

8.6 CULTURAL RESOURCES

Historic Resources

Existing Conditions

A literature review and preliminary survey⁴ of the study area was conducted by a historical resources specialist in May and June 2008.—A historical resources records search at the Northwest Information Center was also conducted in May 2008. The review determined that there are many historic architectural resources in the surrounding areas but that there are no known resources within the study area.

Potential Effects from Project Construction

The literature review and preliminary survey did not identify any known historic resources within the immediate construction area for the project (including all five alternatives for the Zanker Road Interchange). The study area does encompass many historic architectural resources that would require inventory and evaluation if they are ultimately included within the project area of potential effect (APE). However it is anticipated that the APE will be drawn to exclude much if not all of these areas. If project limits are later defined such that potentially historic resources fall within the APE for historic resources, an inventory and evaluation of potential resources would be required. The study of these resources would be conducted by a professionally qualified historian in accordance with Caltrans guidance and findings would be presented in a Historical Resources Evaluation Report (HRER), accompanied by an APE/study area map, DPR523 forms, and letters to interested parties.

An impacts analysis would be conducted if the HRER identified historically significant resources and the State Historic Preservation Office (SHPO) concurs with these findings. Mitigation to address any adverse effects/impacts from construction of the project would be identified and presented in a Memorandum of Agreement or Mitigation Monitoring Plan, and in a Finding of Effect (FOE) memorandum.

Archaeological Resources (Including Native American Coordination)

Existing Conditions

The Native American group known as the Costanoan is the closest known native group to the study area. While no Native American resources have been identified in the study area, such resources have been found near intermittent and perennial watercourses in this part of Santa Clara County, such as Coyote Creek and the Guadalupe River.

An initial archaeological screening for the study area, including a review of existing environmental documents and a records search at the Northwest Information Center, determined that there are no recorded prehistoric or historic archaeological sites in the study area. However, due to the presence of many historic-period buildings within the project vicinity, there is a high possibility of identifying associated historic-period archeological resources. Researchers consider the area sensitive for both pre-historic and historic resources.

⁴ The survey consisted of a visual inspection of the study area.

Potential Effects from Project Construction

Project construction could adversely affect previously undocumented subsurface Native American or historic-era archaeological resources. To further determine the potential for presence of archaeological resources in the study area, an archaeological Area of Potential Effect (APE) map would be prepared that would include all work areas and temporary construction staging areas. An Archeological Survey Report (ASR) should be required for the project and consultation and coordination with the Native American Heritage Commission (NAHC) should be conducted during preparation of the environmental document. During project construction, a tribal monitor may be required.

8.7 HYDROLOGY AND FLOODPLAIN

Existing Conditions

The elevation of the study area varies from approximately 35 feet above mean sea level (MSL) in the western portion of the study area (at the De La Cruz Interchange) to 95 feet above MSL in the eastern portion (at the Julian Street/McKee Road overpass).⁵ In general, drainage in the study area is to the north-northwest, towards the San Francisco Bay. A preliminary geotechnical report for the project⁶ has estimated that the depth to shallow groundwater ranges between 10 and 20 feet below ground surface along the project corridor. However, it should be noted that groundwater condition estimates were based on Caltrans data from the 1950s, and groundwater depth may vary with the passage of time.

Coyote Creek is the primary water resource in the study area, which traverses north as it crosses under U.S.-101 south of Watson Park. The Guadalupe River also crosses U.S.-101 just west of Guadalupe Parkway and the San Jose Airport.

The Federal Emergency Management Agency (FEMA) flood insurance rate maps (FIRMs) indicate that the majority of the study area is located within high-risk flood zone designations. High-risk areas require communities to participate in the National Flood Insurance Program, which mandates the purchase of flood insurance for homes and businesses. All flood designations within the project area are classified as having a 1 percent or greater chance of shallow flooding each year (at depths ranging from 1 to 3 feet of water), and a 26 percent chance of shallow flooding over a 30-year period. **Table 5** summarizes the associated risks of the FEMA designations for the project area.

Potential Effects from Project Operation and Construction

Since the project area is subject to potential flooding and designated by FEMA as being within a high-risk flood zone, there is the potential for project features to be exposed to flood hazards and/or for project structures to redirect flood flows. As such, a Floodplain Evaluation Report (FER) should be prepared in order to determine the project's effects on local flooding and identify appropriate mitigation measures if necessary.

⁵ Based on a review of United States Geological Survey topographic maps.

⁶ Parikh Consultants, Inc. (2008) Preliminary geotechnical report: Highway 101 implementation plan.

Interchange	FEMA Designation	Associated Risk	Project Area Flood Elevation
Zanker Road Interchange	Zone AO	Areas having river or stream flood hazards, or areas with a 1% or greater chance of shallow flooding each year, and a 26% chance of flooding over 30 years	Flood depths range 1-3 feet
Old Oakland Interchange	Zone D and Zone AH	Zone D is defined as areas which have not undergone flood hazard analysis;	Flood depths range 1-3 feet
		Zone AH designates areas with a 1% annual chance of shallow flooding each year, and a 26% chance of flooding over 30 years	
Mabury Road Interchange	Zone A11	Areas with a 1% annual chance of flooding each year, and a 26% chance of flooding over 30 years	Flood depths range 1-3 feet

Table 5: FEMA Designations for the Project Area

Source: FEMA Map Service Center, 2008.

8.8 WATER QUALITY AND STORM WATER RUNOFF

Existing Conditions

The study area consists primarily of impermeable pavement and buildings, with the exception of the few small areas of undeveloped parcels and park land that have open soil, grass, or other vegetation to capture or filter rainfall. Stormwater runoff within the study area drains to local storm drains which convey the runoff to flood control channels and creeks with minimal treatment. Coyote Creek, a non-channelized creek that runs north-south through the project area, is located within the proposed improvement area of the Mabury Road Interchange and is a major local stormwater channel, carrying stormwater to the San Francisco Bay.

The study area is located within the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (RWQCB), which implements water quality protection through the issuance of permits for projects found to be in compliance with the San Francisco Basin Plan (Basin Plan). Water runoff quality is regulated by the federal National Pollution Discharge Elimination System (NPDES) program (established by the Clean Water Act of 1972). The NPDES objective is to control and reduce pollutants to water bodies from non-point discharges. The program is administered by RWQCBs throughout the State. The RWQCB issues NPDES point source permits for discharges from major industries and non-point source permits from different local municipalities. Additionally, improvement projects disturbing more than 1 acre of land during construction are required to file a Notice of Intent (NOI) to be covered under the State NPDES General Construction Permit for discharges of stormwater associated with construction activity.

Potential Effects from Project Operation and Construction

The existing drainage facilities in the study area are generally older and do not incorporate Design Pollution Prevention Best Management Practices (BMPs). As a matter of law, implementation of the project would require upgrading these facilities to incorporate design BMPs, as well as incorporation of construction BMPs to prevent impacts to water quality during construction (such as excessive erosion or sedimentation). These BMPs are outlined in the Caltrans statewide Stormwater Management Plan (SWMP). Additionally, the project engineer or construction contractor would be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) in compliance with the Basin Plan and the SWMP. Incorporation of these BMPs and any measures outlined in the SWPPP would ensure that the project would not adversely affect the quality of any stormwater flowing to the San Francisco Bay or to local stormwater treatment facilities. It is anticipated that these measures would improve runoff quality to some extent as these facilities are upgraded.

Construction activities related to the Mabury Road Interchange could have an adverse affect on the water quality of Coyote Creek if stormwater runoff from the improvement areas is allowed to enter the surface waters of the creek untreated. Additionally, the development of the project may require the temporary disturbance of surface soils and removal of vegetative cover within Coyote Creek, potentially causing sediment mobilization. Under the guidance of the RWQCB, the developer must propose control measures that are consistent with the State NPDES General Construction Permit as part of the SWPPP. The SWPPP must include BMPs designed to reduce potential impacts to surface water quality (i.e., Coyote Creek) through the construction and life of the project. As noted above, the project will be required to file a NOI to be covered under the State NPDES General Construction Permit.

8.9 GEOLOGY, SOILS, SEISMIC AND TOPOGRAPHY

Existing Conditions

Geology and Soils

General geologic features within the study area were identified using the Preliminary Geologic Map of San Jose 30 x 60 Minute Quadrangle, California (1999). According to this map, the study area subsoil generally consists of basin deposits, levee deposits, flood plain deposits, and stream terrace deposits that were formed during the Holocene period.

As the study area is located in a highly urbanized area of San Jose, it is highly unlikely that the project would result in the loss of availability of any important mineral resources.

Seismic Considerations

The study area is located within the Santa Clara Valley, a broad alluvial-covered plain lying between the Santa Cruz Mountains to the west and the Diablo Range to the east. The Valley and the entire San Francisco Bay region are within an area known as the Coast Range Geomorphic Province, where the geology is dominated by the deformation of the earth's surface due to the movement of the Pacific and the North American tectonic plates. The San Andreas Fault system lies along the intersection of these two plates.

Santa Clara Valley is classified as one of the most seismically active zones in the United States. The region is subject to strong ground shaking resulting from earthquakes occurring along the San Andreas Fault system. The Hayward Fault and Calaveras Fault are located 6.5 miles and 10.5 miles east of the study area, respectively. The Monte Vista/E Fault and the Monte Vista/W Fault are located approximately 9.5 miles and 11 miles west of the study area, respectively.

Potential Effects from Project Operation and Construction

The project would be designed to withstand structural collapse or major damage in the event of a major earthquake in the region and built in accordance with Caltrans standard specifications. A preliminary geotechnical site investigation should be prepared to better characterize the surface and subsurface soils in the project area. This will serve to provide guidance regarding the materials, type of foundations, and structure design that should be used. The findings of the geotechnical site investigations would be incorporated into the environmental document for the project.

In depth geotechnical investigations would also be required as part of the planning, specifications, and estimate (PS & E) phase of the project. Additional field explorations will be required to verify the subsoil conditions and groundwater conditions, and to develop site-specific-foundation recommendations

8.10 PALEONTOLOGY

Existing Conditions

An initial paleontological screening of the project vicinity was prepared in May 2008, which determined that the area is sensitive for paleontological resources. Near-surface sediments in the project vicinity are mapped as Holocene basin, floodplain, and levee deposits, and significant Pleistocene-age fossils have been recovered from similar sediments in the San Jose area, including freshwater mollusks and the bones of horses, pigs, bison, mammoths, and camels. A leg bone, shoulder or pelvic bones, two tusks, and part of the skull belonging to a Columbian Mammoth (*Mammuthus columbi*) were discovered and salvaged in 2005 from levee deposits (mapped as Holocene) along the Guadalupe River just north of the San Jose International Airport, within 1 mile to the southwest of the study area.

Potential Effects from Project Construction

Because significant Pleistocene-age fossils have been found in the project vicinity, damage to fossil resources could occur during project grading and construction. The presence of known or reasonably anticipated resources that may be impacted by the project indicates that a Paleontological Evaluation Report (PER) will be needed. Construction monitoring should be required and conducted by a qualified paleontologist. A curation program may also be prepared for the project to create protocols for how to protect any resources discovered during construction.

8.11 HAZARDOUS WASTE/MATERIALS

Existing Conditions

A Phase I Initial Site Assessment (ISA) was prepared for the project in April 2008. The ISA included review of Environmental Database Resources, Inc. (EDR) records, historical aerial photographs, United States Geological Services (USGS) maps, government records search of hazardous waste sites within 1.0 mile of the project corridor, hydrology patterns, agency records, and a field visit to visual inspect the project vicinity.

According to the ISA, there is potential that subsurface soils in the study area have been impacted by past industrial uses, contamination from aerially deposited lead, pesticides and/or herbicides from past agricultural uses, and by the off-site migration of contaminated groundwater from nearby release sites. Furthermore, due to the age of surrounding structures, the presence of asbestos-containing materials (ACM) and lead-based paint is likely.

The ISA identified 21 sites adjacent to and/or upgradient from the study area which could pose an adverse environmental impact. The review also identified six sites adjacent to the U.S.-101 right-of-way that are reported as impacted with various contaminants. If the U.S.-101 right-of-way is to expand onto these properties, the soil and groundwater that will fall within the obtained property are likely to be impacted. Refer to the attached Phase I ISA for a complete list and summary of these identified sites.

Watson Park is one of the six adjacent sites reported as impacted with various contaminants. As discussed previously under Section 4(f) resources, the park was closed in 2005 due to the

discovery of contaminated soils (containing burn ash/dump debris) during excavation activities for a new skate park. Construction was halted and the City sampled the soil to determine the type of contaminants present and the extent of the affected area. In 2006, the City of San Jose conducted a Preliminary Waste Characterization Study (PWCS) to evaluate and characterize the site. The PWCS included extensive sampling of soil, groundwater and stormwater. Lead was the primary contaminant found in the burn ash/dump debris; however, other contaminants collected with the lead included other metals and organic compounds such as polynuclear aromatic compounds (PNAs), organochlorine pesticides (OCPs) – due to past agricultural use, polychlorinated biphenyls (PCBs) and dioxins and furans. The results indicate that these contaminants have not affected groundwater or stormwater quality at the park. The Department of Toxic Substances Control (DTSC) is currently overseeing the clean-up activities under a Voluntary Cleanup Agreement with the City. A Draft Remedial Action Plan is currently under review by the DTSC, which is evaluating several clean-up alternatives.

Potential Effects from Project Construction

Construction activities would disturb soils likely containing existing hazardous materials including aerially deposited lead, solvents, petroleum hydrocarbons, metals, and other hazardous chemicals. Modification or demolition of existing freeway structures and/or the demolition of displaced commercial, industrial, or residential buildings could also release particles of lead-based paint or asbestos. Untreated, these substances could endanger construction workers, nearby residents, and employees through direct exposure or inhalation, and could adversely affect the environment if they were released and transported by air or water during construction. Prior to project development, Phase II subsurface investigations would be required that included soil testing to better determine the extent that hazardous materials are present in soils and groundwater in the study area. If concentrations of hazardous materials are found in excess of established state and federal standards, a remedial action plan would be required to establish a mitigation program to protect human and environmental health.

As part of the Phase II investigation or as a separate study, roadway structures such as bridges and interchanges that would be modified or removed by the project should be analyzed for ACM and lead-based paint applications. Collection and analysis of ACM would be performed during the project design phase, while collection and analysis of lead-based paint applications would be conducted prior to the demolition of the structures within the Caltrans right-of-way. ACM and lead-based paint would need to be abated by using contractors certified to perform such work in accordance with state and federal regulations.

8.12 AIR QUALITY

Existing Conditions

The study area is located in the Bay Area Air Quality Management District (BAAQMD), an area with generally good air quality that is in attainment for most criteria (state and/or federally regulated) air pollutants. The BAAQMD is considered non-attainment for ground level ozone and for particulate matter. Inefficient traffic operations within the project vicinity is one of the most substantial sources of air pollutant emissions, as vehicle idling and substantial congestion generally lead to increased harmful emissions.

In an effort to improve ozone levels in the region, BAAQMD staff, Metropolitan Transportation Commission (MTC), and Association of Bay Area Governments (ABAG) have collaborated to prepare the 2005 Ozone Strategy. The plan includes regulations, mitigation measures, and control strategies to help bring the Bay Area into attainment with state and federal ozone level standards.

Particulate matter (PM) standards were strengthened in 2002 and 2006 and the District has been given until 2009 to meet the more stringent standards. The District is preparing a PM Implementation Schedule to meet the new standards through appropriate control measures.

The closest BAAQMD air quality monitoring station to the project area is the San Jose Central station. According to the 2008 monitoring data, San Jose has had one daily exceedance of ozone levels over the past year, but has maintained attainment for PM standards.

Potential Effects from Project Operation

The project would result in changes in traffic patterns and volumes within the study area. In general, the project (all build alternatives) is intended to reduce existing and future traffic congestion which should result in an overall improvement in local and regional air quality. However, localized shifts in traffic patterns and congestion can result in localized air quality impacts. At present, a detailed traffic operations report has not been prepared for the project build alternatives.

Given the potential for the project to result in substantial changes in traffic operations, an Air Quality Study should be prepared to evaluate the air quality impacts of project operation both in the near term and over the project planning horizon (typically year 2035). As part of this analysis, the study should include a mobile source air toxics (MSAT) screening evaluation as well as a carbon monoxide hotspot analysis.

The Air Quality Study should provide documentation of the project's conformity with the BAAQMD Air Basin Plan, including the 2005 Ozone Strategy and the new PM standards. A project is considered to be in conformity with air quality plans if the project is part of the regional transportation improvement program (RTIP) in effect at the time the environmental document is prepared. Currently, the project is not included in the RTIP (2008) and at this time would be considered to be non-conforming with the Air Basin Plan.

Potential Effects from Project Construction

Construction of the project would require the use of diesel powered equipment that would result in increases of pollutant emissions. Particulate matter would be emitted by diesel emissions and especially by dust and soil created during construction activities. Construction emissions are considered temporary by the BAAQMD and are controlled by the implementation of standard BAAQMD particulate matter containment practices (such as covering open soil piles and using water to reduce blowing dust and wash vehicles leaving the site). As these measures would be required as a matter of law, construction emissions would not be considered to adversely affect attainment of regional air quality goals and no additional quantitative analysis would be required. It should be noted, however, that the BAAQMD is currently considering quantitative thresholds for construction emissions. If these thresholds are adopted before the draft environmental document is issued, analysis of construction emissions would likely be required.

8.13 NOISE AND VIBRATION

Existing Conditions

The study area is highly urbanized and currently experiences substantial noise related to heavy traffic on U.S.-101 and other roadways within the study area. A survey of the study area was conducted in February 2008 in order to identify the location(s) of noise-sensitive land uses in and/or directly adjacent to the study area. Noise-sensitive land uses located within the study area include:

- Multi-family housing development (Fourth Street and Archer Street)
- Senior Living Center (Fourth Street and I-880)
- Single-family residences (I-880 and First Street)
- Newer multi-family residential complex (Old Oakland Road and U.S.-101)
- Life Choices Treatment Services (1157 East Taylor Street)
- RV storage with live-on caretaker (1354 East Taylor Street)
- Watson Park (East Taylor Street and U.S.-101)

Potential Effects from Project Operation

New interchanges, modification of existing on- and off-ramps, and connecting local streets associated with the project could result in greater traffic volumes and changes in traffic circulation and could alter the noise environment both within and outside the project area. In some cases, this could result in localized noise levels that are substantially higher than existing noise levels and could adversely affect noise-sensitive land uses in the study area. Even if the project would not increase noise levels substantially, it appears that existing ambient noise levels may already exceed state and local standards in some locations.

To evaluate potential noise-related effects of the build alternatives, a noise study should be prepared. The Noise Study Report should model existing and future noise levels for noise-sensitive land uses for all alternatives as well as evaluate noise-reduction measures, such as the use of sound walls. Other types of noise-reduction measures, such as improving sound insulation of some structures, should also be considered.

Potential Effects from Project Construction

In most environments, construction noise is generally considered to be temporary in nature and not considered to be a significant adverse impact. However, because implementation of this project is likely to require substantial construction activity over a period of many months and would be in very close proximity to many noise-sensitive land uses, construction could result in significant noise and vibration impacts. Construction will likely require the demolition of several commercial and industrial businesses, some existing sound walls and roadway features, and will likely include pile driving and other noise-and vibration-producing activities.

The Noise Study Report should include a detailed construction noise assessment that evaluates potential noise and vibration effects and proposes appropriate mitigation measures.

8.14 ENERGY AND CLIMATE CHANGE

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy have increased dramatically in recent years. In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. AB 1493 requires the Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions; these regulations will apply to automobiles and light trucks beginning with the 2009 model year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990

levels by the 2020 and 3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

With Executive Order S-01-07, Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Senate Bill 375 (SB 375) was signed into law on September 29, 2008. This bill requires metropolitan planning organizations (such as MTC) to incorporate a "Sustainable Communities Strategy" (SCS) into their next RTP (beginning in 2011). The SCS would require an evaluation of land use practices and appropriate rezoning to encourage smart growth planning and to demonstrate how the emissions reduction goals related to vehicle emissions and vehicle miles travelled (VMT) would be achieved. This may have substantial effects in changing land development patterns in the region and may serve to further concentrate development around major transportation corridors. MTC will develop its SCS in coordination with the California Air Resources Board, which would consider the project's role in meeting SB 375 requirements.

An appropriate energy technical report and GHG emissions analysis should be prepared as part of the cumulative impacts analysis for this project. The analysis would be prepared in accordance with the most current available Caltrans guidance at the time the environmental document is prepared.

8.15 **BIOLOGICAL ENVIRONMENT**

Special-Status Species

Existing Conditions

Given the urban and developed nature of the study area, there are few sensitive biological resources within the study area. However, there are several portions of the study area that are undeveloped that could contain sensitive biological resources and/or habitat for sensitive species. A Preliminary Biological Constraints Evaluation was prepared in June 2008 to identify which portions of the study area could contain sensitive biological resources.

The following areas within the project limits were identified to contain wildlife habitat potentially suitable for special status plant and animal species (see **Figure 9**).

- An undeveloped parcel located in the western portion of the study area is suitable for burrowing owl (a California Species of Special Concern and a Federal Bird of Conservation Concern) habitat and contains a recorded occurrence of the species.
- Coyote Creek and associated riparian habitat was identified to provide potential habitat for special-status animal species including Western pond turtle, California red-legged frog, Cooper's hawk, white-tailed kite, great blue heron, steelhead trout, pallid bat, hoary bat, *yuma myotis*, and special-status plant species.
- The existing bridges, overpasses, and trees located in the riparian area could contain active bat maternity roosts.

Potential Effects from Project Construction

The construction of the Mabury Road Interchange would include a new on-ramp from East Taylor Street to southbound U.S.-101 and an off-ramp from northbound U.S.-101 to Mabury Road, both of which would include a new bridge crossing over Coyote Creek, which could result in adverse effects to the creek and associated riparian habitat.

Due to of the sensitive species potentially present in the Coyote Creek corridor, any construction activities within Coyote Creek will require consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act for the potential take of California red-legged frog. Interagency consultation with the National Marine Fisheries Service (NMFS) will also have to occur for the potential take of steelhead. A Natural Environmental Study (NES) should be prepared to evaluate these potential impacts. If protected species are potentially affected by the project, a Biological Assessment (BA) for purposes of consulting with the USFWS and NMFS under Section 7 shall be prepared. In addition, a Fish Passage Assessment should also be prepared to address potential impacts to steelhead.

The disturbance of undeveloped property within the study area could have adverse impacts on the identified species listed above. Habitat assessments (HAs) for the burrowing owl, special-status bird species, special-status bat species, and special-status plant species that exist within the study area should be prepared in accordance with the California Department of Fish and Game (CDFG) requirements in order to determine whether project-related improvements would have adverse effects on these animals. The HAs should be incorporated into the BA and NES provided to the USFWS.

Wetlands and Waters of the U.S.

Existing Conditions

Coyote Creek is subject to the jurisdiction of the Army Corps of Engineers (ACOE) under Section 404 of the federal Clean Water Act. The ACOE has jurisdiction up to the "ordinary high water mark" of rivers, creeks, and streams that are considered "waters of the U.S." as defined by the Clean Water Act. If adjacent wetlands occur, the limits of jurisdiction extend beyond the ordinary high water mark to the outer edge of the wetlands.

Potential Effects from Project Construction

Construction of the Mabury Road Interchange would include two new bridge crossings of Coyote Creek. As a result, a Wetland and Waters of the U.S. Delineation Report should be prepared and submitted to the ACOE for verification. If the project would result in a direct impact to "waters of the U.S." or wetlands, the impact should be documented in the NES.

Invasive Pest Plant Species

As part of the BA and/or NES report, an inventory of noxious weeds existing in the undeveloped portions of the study area should be conducted. Executive Order 13112 requires that any federal action may not cause or promote the spread or introduction of invasive species. Should any high-priority noxious weeds be found within the study area, Caltrans BMPs should be implemented to prevent the spread of these species into any other areas.

Introduction of invasive species can be avoided by designating a Caltrans-approved plant list for any landscaping required of the project and through other Best Management Practices to prevent the introduction of species. Such practices should be documented.

8.16 CUMULATIVE IMPACTS

Cumulative impacts occur as a result of the combined actions of multiple projects. Even when an individual project does not have significant impacts, in combination with other related projects, these cumulative effects may be considerable. At this time, the only other project known to be occurring in the immediate project area is the Master Plan for Watson Park, although it is likely that smaller residential and commercial development projects will occur in the future within and nearby the project area.

Potential cumulative impacts for this project would generally be related to traffic, noise and air quality issues including climate change resulting from regional growth. These cumulative impacts are therefore generally accounted for in the long-term scenarios of the noise, air quality and greenhouse gas technical reports, which would be based on the regional growth projected in the traffic operation analysis. No other cumulative impacts would be anticipated to occur to which the project would contribute.

8.17 CONTEXT SENSITIVE SOLUTIONS

Caltrans uses Context Sensitive Solutions (CSS) to integrate and balance community, aesthetic, historic, and environmental values with transportation safety, maintenance, and performance goals. CSS are reached through a collaborative, interdisciplinary approach involving all stakeholders, engaged through early coordination with agencies as well as early outreach to the community. As this project is still in the early design phase, no community outreach or discussions with regulatory agencies have taken place. In designing the project, efforts have been made to avoid resources or other areas that would be sensitive to the surrounding community, including publicly used areas of Watson Park, residential structures and property, and Coyote Creek. As the project becomes more defined, and well before publication of a draft environmental document, it is recommended that public outreach and early agency coordination occur.

9. SUMMARY STATEMENT FOR PSR OR PSR-PDS

This Preliminary Environmental Assessment Report (PEAR) evaluates the potential environmental impacts of the following:

- Construction of a new interchange at U.S.-101/Mabury Road
- Modification of the existing U.S.-101/Old Oakland interchange
- Construction of a new interchange at U.S.-101/Zanker Road

There are five design alternatives being considered for the new Zanker Road Interchange and a single design option for the new Mabury Road Interchange and the existing Old Oakland Road Interchange. **Figures 2** through **8** depict the interchange designs evaluated in this PEAR.

The project area contains many environmental constraints and the project (including all design options) has the potential to cause significant impacts. The areas of particular environmental concern include:

- the presence of contaminated soils, groundwater, and building materials;
- potential impacts to low income and minority populations;
- commercial displacements or relocations (associated with Zanker Road and Mabury Road Interchanges);

- potential subsurface unrecorded paleontological or Native American cultural resources;
- access and circulation changes that could result in lost business revenue and/or increased commute times (associated with Zanker Road and Mabury Road Interchanges);
- riparian areas along Coyote Creek that may provide habitat for endangered species (Mabury Road Interchange only); and
- temporary or permanent use of portions of Watson Park, a public park maintained by the City of San Jose (Mabury Road Interchange only).

With regard to community impact issues, such as impacts to private properties and business displacements, the Zanker Road Interchange would result in the most substantial effects. All alternatives for the Zanker Road Interchange would result in numerous partial takes of private property and several full takes that would result in the displacement of existing buildings and/or structures.

Refer to Section 5, Anticipated Environmental Commitments, and Table 1, Technical Reviews Anticipated as Part of the Environmental Document Preparation, for a summary of the anticipated impacts identified in this PEAR and details the subsequent studies that will be required during the PA&ED phase as part of CEQA (and potentially, NEPA) document preparation. Attachment A, PEAR Environmental Studies Checklist, provides guidance for the environmental document, indicating for each environmental topic whether special studies will be required, whether they can be addressed through a memorandum to the project file, or whether they are not relevant to the project.

10. DISCLAIMER

This Preliminary Environmental Analysis Report (PEAR) provides information to support programming of the proposed project. It is not an environmental determination or document. Preliminary analysis, determinations, and estimates of mitigation costs are based on the project description provided in the PEAR. The estimates and conclusions in the PEAR are approximate and are based on cursory analyses of probable effects. A reevaluation of the PEAR will be needed for changes in project scope or alternatives, or in environmental laws, regulations, or guidelines.

11. LIST OF PEAR PREPARERS

DOCUMENT AUTHORS

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ATTACHMENT C

GEOTECHNICAL MEMORANDUM
PRELIMINARY GEOTECHNICAL REPORT HIGHWAY 101 IMPLEMENTATION PLAN/PSRs TRIMBLE ROAD / DE LA CRUZ BOULEVARD IC TO MCKEE ROAD OC PM 40.7 to PM 36.12 SAN JOSE, SANTA CLARA COUNTY, CA

For

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Job No. 207133.PGR

June 2008

PARIKH Consultants, Inc.

PRELIMINARY GEOTECHNICAL REPORT

HIGHWAY 101 IMPLEMENTATION PLAN/PSRs

QA/QC CERTIFICATION OF CONFORMANCE

STUDY SUBMITTAL

(Preliminary Geotechnical Report)

QA/QC STATEMENT

Upon examination of the documents of this submittal, I find that:

The Quality Control/Quality Assurance process was completed and this document meets the minimum requirements identified in our quality management plan.

y Parikh, PM

6/11/2008

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PRELIMINARY GEOTECHNICAL REPORT HIGHWAY 101 IMPLEMENTATION PLAN/PSRs TRIMBLE ROAD/DE LA CRUZ BOULEVARD INTERCHANGE TO MCKEE ROAD OVERCROSSING (PM 40.7-36.12) SAN JOSE, SANTA CLARA COUNTY, CA

1. SUMMARY OF FINDINGS

The proposed Highway 101 Implementation Plan/PSRs from Trimble Road/De La Cruz Boulevard Interchange to McKee Road overcrossing is located within the City of San Jose, Santa Clara County (Plates 1 and 2). The proposed project is to improve traffic mobility and reduce congestion, evaluate a range of possible highway infrastructure improvements along the corridor, develop conceptual plans, and determine logical phased approaches.

General geologic features pertaining to the site were evaluated by reference to the Preliminary Geologic Map of San Jose 30 x 60 Minute Quadrangle, California, by Carl M. Wentworth, M. Clark Blake, Robert J. McLaughlin & Russell W. Graymer; 1999 (Plate 3). The project site subsoil mainly consists of Basin Deposits (Qhb), Levee Deposits (Qhl), Flood Plain Deposits (Qhfp) & Stream Terrace Deposits (Qht) of the Holocene age.

Based on the as-built LOTB (Appendix A) reviewed the subsurface soil conditions at Silver Creek, Coyote Creek and Guadalupe River consists of moderately to well-sorted and moderately to well-bedded sand, gravel, silt, with minor clay. The subsurface soil conditions at Guadalupe Parkway OC, Oakland Rd OC, East Taylor St OC, East San Jose underpass & McKee Rd OC; consists of dark colored clay and very fine sandy silt and clay. The subsurface soil conditions at Brokaw Rd UC, Route 880/Route 101 separation and North San Jose underpass consists of dense sandy to silty clay with lenses of sand, gravel and silt.

Groundwater depth varies along the project corridor and is dependent on the local geology, influence from local streams and creeks and the topography. The groundwater depth at different locations is discussed under Subsurface Conditions (Section 8.0). These groundwater data were

obtained from Caltrans as-built Log of Test Borings (Appendix A). Groundwater conditions can be mitigated by using Caltrans design and construction techniques.

Foundation conditions are generally reasonable for the project corridor (Section 9.1). Caltrans construction standards for roadway embankments and cuts should be followed. Caltrans design and construction methods can accommodate geotechnical and geological considerations at the site. The subgrade soil along the project corridor will vary. In general the subgrade soil is anticipated to be of reasonable quality and a preliminary R-value estimate of 15 has been used to develop typical structural pavement sections (Section 9.7). New pavement structural sections should meet the current Caltrans Design Standards in accordance with the Highway Design Manual.

Based on the Fault Map (Plate 4), the Hayward Fault is the controlling fault within the project area. Based on the Liquefaction Susceptibility Map (Plate 5), liquefaction potential, in general, along the corridor is moderate.

2. INTRODUCTION

This report presents the results of a preliminary geotechnical investigation for the proposed Highway 101 Implementation Plan/PSRs (Trimble Road/De La Cruz Boulevard Interchange to the McKee Road overcrossing), hereinafter referred to as "Project" in the City of San Jose, California. The work was performed in general accordance with the scope of work outlined in our scope and proposal. The general locations of the project vicinity & site plan are shown on Plates 1 & 2 respectively.

3. PURPOSE AND SCOPE

The purpose of this report is to provide a preliminary evaluation of potential geotechnical and seismic impacts on the project and reasonable mitigation measures. This information should assist in the preparation of various documents including the Environmental Documents and Project Study Reports. The scope of work for this investigation included research and review of readily available geological/geotechnical data pertaining to the project site including available as-built Log of Test Borings (LOTB) and site reconnaissance, evaluating the data from the key geotechnical and seismic aspects and providing a report.

4. EXISTING FACILITIES

Route 101 is one of the longest U.S. highways between northern and southern California through the City of San Jose in the San Francisco Bay area. The total length of the project segment is about 4.6 miles between Trimble Road/De La Cruz Boulevard overcrossing (PM 40.7) & McKee Road overcrossing (PM 36.12).

Existing Route 101, within the project limits, is a four-lane facility with one mixed flow lane in each direction. Concrete median barrier or Metal Beam Guard Rail (MBGR) exists in the median of the highway. There are seven overcrossing structures (McKee Rd OC, Taylor St. OC, East Hedding St. OC, Oakland Rd OC, Tenth St. OC, Guadalupe Parkway OC & De La Cruz Boulevard OC); two undercrossing structures (North First St. UC & Brokaw Road UC); two underpass structures (East San Jose underpass & North San Jose underpass), two separation structures (I-880/Route 101 Separation & I-87/Route 101 Separation) and three bridge structures (Silver Creek Bridge, Coyote Creek Bridge & Guadalupe River Bridge) within the project limits.

Minor cross drainage structures and culverts exist within the project limits. There are significant numbers of sign structures along the project corridor. Based on the as-built plans and our site

observations, the alignment profile generally follows the existing terrain. The roadway approaches at overcrossing, undercrossing, grade separation and river and creek crossings are generally built on embankments.

5. **PROJECT DESCRIPTION**

The purpose of the Route 101 Implementation Plan/PSRs (Trimble Road/De La Cruz Boulevard Interchange to the McKee Road overcrossing) in San Jose is to determine buildable, fundable projects that will improve traffic mobility and reduce congestion, evaluate a range of possible highway infrastructure improvements along the corridor, develop conceptual plans, and determine a logical phased approach for improvements at the following interchanges:

- New interchange at Route 101/Zanker Road/Skyport Drive/ N. 4th Street
- I-880/ Route 101 Interchange (conceptual plan only)
- Improvements at Route 101/Old Oakland Road Interchange/ 13th Street Interchange
- Improvements at Route 101/Mabury Road/Taylor Street Interchange

This project will begin with an overall analysis of the Route 101 corridor from the Trimble Road/De La Cruz Boulevard overcrossing to the McKee Road overcrossing and progress to more focused look at the interchanges, identifying the ultimate improvements necessary. The implementation plan will include a traffic analysis of the project area including the local street system within the corridor area. TYLIN International will prepare preliminary plans, quantities, estimates, and reports and provide engineering support for the Preliminary Environmental Assessment Report (PEAR). This project will be designed to Caltrans standards.

6. CLIMATE AND DRAINAGE

The climate in the project area is characterized by moderate climatic conditions. This consists of mild winters, mild summers, small daily and seasonal temperature ranges, and high relative

humidity. Based on the statistical data from National Oceanic & Atmospheric Administration, average total annual precipitation in the project area is around 14.66 inches. Most of the rainfall is recorded in January with the average total precipitation of 2.96 inches. July is the month with the least average rainfall precipitation of 0.03 inch. Extreme temperature ranges from average minimum temperature of 41.8°F in January to average maximum temperature of 82.2°F in July. The project is located southeast of San Francisco Bay area. The overall regional terrain trends towards north to the San Francisco Bay. Guadalupe River, Coyote Creek and Silver Creek are the major water bodies that generally drain surface runoff from the area. It appears that the site drainage generally flows towards the San Francisco Bay.

7. **REGIONAL GEOLOGY**

The proposed project is located in the City of San Jose; which is located within the Santa Clara Valley, a broad alluvial-covered plain lying between the Santa Cruz Mountains to the west and the Diablo Range to the east. The Valley and the entire San Francisco Bay region are within an area known as the Coast Range Geomorphic Province, where the geology is dominated by the deformation of the earth's surface due to the movement of the Pacific and North American tectonic plates. The San Andreas Fault system lies along the intersection of these two plates.

Santa Clara Valley is classified as one of the most seismically-active seismic zones in the United States. The region is subject to strong ground shaking resulting from earthquakes occurring along the San Andreas Fault System, which includes the Sargeant and Calaveras fault zones. The Hayward fault (7.5 M), Calaveras fault (7.5 M) are located 6.5 miles and 10.5 miles east to the project area respectively, while the Monte Vista/E fault (6.5 M) and Monte Vista/W fault (6.5 M) are located approximately 9.5 miles and 11.0 miles to the west of the project corridor respectively (Plate 4).

7.1 Geologic Units

General geologic features pertaining to the site were evaluated by reference to the Preliminary Geologic Map of San Jose 30 x 60 Minute Quadrangle, California, by Carl Wentworth, M. Clark Blake, Robert J. McLaughlin & Russell W. Graymer; 1999 (Plate 3). The project site subsoil mainly consists of Basin Deposits (Qhb), Levee Deposits (Qhl), Flood Plain Deposits (Qhfp) & Stream Terrace Deposits (Qht) that were formed during Holocene period. Descriptions of the main geologic units are as follows:

- Qhb: Basin Deposits (Holocene) -- dark colored clay and very fine silty clay, rich in organic material, deposited beyond the levees and flood plains in the flood basins where stilling flood water drop their finest sediment.
- Qhl: Levee deposits (Holocene) -- sandy/clayey silt ranging to sandy/silty clay, loose to moderately well shorted, coarser along the Coyote Creek than along the smaller streams and are generally well drained, deposited adjacent to the stream courses.
- Qhfp: Flood Plain Deposits (Holocene) -- gray, dense, sandy to silty clay may locally contain lenses of silt and fine gravel.
- Qht: Stream Terrace Deposits (Holocene) largely along the Coyote Creek, where strath terraces are cut in levee deposits and bear thin deposits, includes sand, gravel, silt, with minor clay, moderately to well-sorted, and moderately to well-bedded.

8. SUBSURFACE CONDITIONS

Based on the as-built LOTB (Appendix A) reviewed the subsurface soil at Silver Creek, Coyote Creek and Guadalupe River consists of moderately to well-sorted and moderately to well-bedded sand, gravel, silt, with minor clay. The subsurface soil conditions at Guadalupe Parkway OC, Oakland Rd OC, E Taylor St OC, East San Jose underpass & McKee Rd OC; consist of dark colored clay and very fine sandy silt and clay. The subsurface soil at Brokaw Rd UC, Route 880/Route 101 separation and North San Jose underpass consist of dense sandy to silty clay with lenses of sand, gravel and silt.



Groundwater:

Groundwater depth varies along the project corridor and is dependent on the local geology, influence from local streams and creeks and the topography. The groundwater data were obtained from Caltrans as-built Log of Test Borings (Appendix A). Groundwater conditions could be mitigated by using Caltrans design and construction techniques; however some of these mitigation measures may have significant cost impacts. Based on the as-built (LOTB) data, groundwater was encountered as shown in the table below:

Location	Elevation (as j	Reference date of	
Location	Ground	Groundwater	measurement
De La Cruz Boulevard Overcrossing	35'7"	21'3"	February 1952
Guadalupe River/Creek Bridge	63'4"	50'3"	May 1957
North First Street Undercrossing	60'1"	29'4"	March 1955
Route 880/101 Separation	57'2"	47'10"	May 1953
Tenth Street Overcrossing	60'9"	50'8"	April 1958
Berryessa Road Overcrossing	75'8"	62'3"	June 1953
Taylor Street Overcrossing	87'5"	79'2"	April 1958
East San Jose Underpass	89'8"	75'0"	April 1953
North Fourth Street Undercrossing	59'4"	50'9"	February 1953
Coyote Creek Bridge Widening	72'0"	52"0"	November 1988
Silver Creek Bridge Widening	91'0"	76'0"	November 1962

Various USGS maps encompassing several locations from the project area were reviewed. Based on review of USGS maps (San Jose West, 7.5 Minute) the elevation of the project varies from 95 feet on the eastern perimeter of the Route 101/E. Julian Road interchange to 35 feet on the western side, i.e. Trimble Road/De La Cruz Boulevard interchange. General area drainage direction is to the north/northwest towards the San Francisco Bay.

Coyote Creek traverses north as it crosses under Route 101 south of Watson Park. The Creek then traverses in a northwesterly direction and travels towards the San Francisco Bay. Guadalupe River crosses Route101 just north of the Guadalupe Parkway & the San Jose Airport.

Based on review of USGS map it appears that groundwater gradient in the shallow water bearing zone is towards the north/northwest. Review of information from several sites nearby confirms the northerly gradient with a trend towards the northeast. Depth to shallow groundwater depth ranges between 10-20 feet along the corridor.

Groundwater depth may vary with the passage of time due to seasonal groundwater fluctuation, surface and subsurface flows, ground surface run-off, water level in adjacent creeks, and other factors that may not have been present at the time of the reference investigations. It is our opinion that the subsurface soil conditions and groundwater conditions within the project limits should be verified during the Plans Specifications and Estimate (P S & E) phase.

9. POTENTIAL GEOTECHNICAL, GEOLOGIC AND SEISMIC IMPACTS WITH PROPOSED MITIGATION MEASURES

9.1 Foundation Conditions

Foundation conditions are generally reasonable for the project corridor. Caltrans design and construction methods can accommodate geotechnical and geological considerations at the site. Proposed study corridor will include interchange improvements at several locations as discussed below.

Route 101/Zanker Road/Skyport Drive/N. 4th Street: As per the project description, construction of new interchange at Route 101/Zanker Road/Skyport Drive/N. 4th Street has been proposed. Based on the as-built LOTB and geologic map, the soil conditions at Route 101/Zanker Road/Skyport Drive/N. 4th Street are Holocene aged, gray, dense sandy / silty clay with

lenses of silt and fine gravel. Groundwater was encountered at 9 to 10 feet below ground surface (February 1953). For new interchange construction at Route 101/Zanker Road/Skyport Drive/N. 4th Street either prestressed cast-in-place concrete piles or cast-in-drilled-hole (CIDH) piles can be used. However groundwater should be considered in the CIDH option. Construction dewatering may be required for any shallow foundation elements.

I-880/ Route 101 Separation: Based on the as-built LOTB and geologic map, the soil conditions at I-880/ Route 101 Separation is Holocene aged, gray, dense sandy / silty clay with lenses of silt and fine gravel. Groundwater was encountered at about 10 feet below the ground surface (May 1953). Based on the as-built plans, the existing bridge at I-880/ Route 101 Separation is a five-span structure, approximately 112.8 feet in length and is supported by prestressed cast-in-place concrete piles (Class 45 & Class 70). For improvement work at I-880/ Route 101 interchange either prestressed cast-in-place concrete piles or CIDH piles can be used. However groundwater should be considered in the CIDH option and for any shallow foundation elements.

Route 101/Mabury Road/Taylor Street overcrossing: Based on the as-built LOTB and geologic map, the soil conditions at Route 101/Mabury Road/Taylor Street overcrossing is Holocene aged, loose to moderately well sorted sandy/clayey silt to sandy/silty clay. Groundwater was encountered at about 8 to 10 feet below the ground surface (April 1958). Based on the as-built plans, Route 101/Mabury Road/Taylor Street overcrossing is a two-span structure, approximately 83.8 feet in length and is supported by prestessed cast-in-place concrete piles (Class 45 & Class 70). For improvement work at Route 101/Mabury Road/Taylor Street interchange, either prestressed cast-in-place concrete piles or CIDH piles can be used. However groundwater should be considered in the CIDH option and for any shallow foundation elements.

Route 101/Old Oakland Road Overcrossing: Based on the as-built LOTB and geologic map, the soil conditions at Route 101/Old Oakland Road overcrossing is Holocene aged gray, dense

sandy/silty clay with lenses of silt and fine gravel to moderately well sorted sandy/clayey silt and sandy/silty clay. Route 101/Old Oakland Road overcrossing is a two-span structure, approximately 70.4 feet in length and is supported on spread footings. Groundwater data and asbuilt plans are not available for Route 101/Old Oakland Road interchange project. Groundwater was encountered at about 10 feet below the ground surface (May 1953) at the Route 101/I-880 interchange. For the improvement of the structure for this interchange, either prestressed cast-in-place concrete piles (Class 45 & Class 70) or CIDH piles can be used. However groundwater should be considered in the CIDH option and for any shallow foundation elements.

Our evaluation is based on the as-built data and our understanding of the site conditions, and is for preliminary design discussions only. Additional field explorations will be required to verify the subsoil conditions and groundwater conditions and to develop site-specific foundation recommendations. The foundation design criteria should also consider structural design requirements, seismic demands, corrosion, liquefaction potential of on-site soils and any environmental considerations.

9.2 Embankments

Embankments are generally required for the overcrossing and undercrossing bridge approaches and interchange modifications. Based on the regional geology and the as-built plans conventional construction methods are expected to be used for embankments. Settlement resulting from placement of embankment fill will depend upon the specific site location and the height of the embankment. The soil conditions could require Caltrans standard embankment settlement waiting period (30 days) or more time for locations having creek environment or soft soil conditions. To reduce settlement period specific design and construction program may be required including wick drains, surcharge loading, light weight fill placement, dynamic compaction or other means as deemed appropriate during the PS&E phase. The roadway embankment shall be placed in accordance with the guidelines provided in the Caltrans Highway Design Manual. These guidelines require structure approach embankment material to be

compacted to minimum 95% of relative compaction. This also reduces the potential for earthquake-induced settlement or slippage to occur.

9.3 Retaining Walls

New retaining walls may be required for the new interchange construction at Route 101/Zanker Road/Skyport Drive/N. 4th Street and for interchange improvements at I-880/Route 101 Separation, Route 101/Mabury Road/Taylor Street overcrossing and Route 101/Old Oakland Road overcrossing. The wall foundations can be designed in accordance with Caltrans standard retaining wall plans. Based on the soil and groundwater conditions along the corridor, CIDH piles may be used for the foundation. The specific foundation design will depend on the local soil conditions, ground elevation and wall height and should be determined during the PS & E phase. Retaining walls that are 5-6 feet high could be designed using Caltrans standard wall types. Taller walls may require special foundation such as piles. Embankments may also be designed using Mechanically Stabilized Embankment walls which are more tolerant to settlement and are generally more cost effective. In cut excavations, generally soil nail walls are reasonable provided there is right of way or easements available for the soil nails. As a guideline the nail lengths are equal to the height of the wall. Tie back walls may be required for excavation that require little or no movement at the top (restrained condition) and where the excavations are within the load influence line of an existing bridge foundation. Retaining walls supporting new soundwalls are generally designed as per the Caltrans standard plans. Depending upon the soil conditions, special pile system may be required.

9.4 Soundwalls

New soundwalls may be required for the new interchange construction at Route 101/Zanker Road/Skyport Drive/N. 4th Street and for interchange improvements at I-880/Route 101 Separation, Route 101/Mabury Road/Taylor Street overcrossing and Route 101/Old Oakland Road overcrossing. This will be determined subsequent to the noise study for the projects. The wall foundations can be designed in accordance with Caltrans standard soundwall plans. Based

on the soil and groundwater conditions along the corridor, CIDH piles may be used for the foundation. Trench footings or spread footings are also feasible on a case-by-case basis. The specific foundation design will depend on the local soil conditions, the ground elevation and the wall height and should be determined during the P S & E phase.

9.5 Sign Structures

New sign structure may be required for new interchange construction at Route 101/Zanker Road/Skyport Drive/N. 4th Street. Existing sign structures may also be replaced for improvements at I-880/Route 101 interchange, Route 101/Old Oakland Road interchange and Route 101/Mabury Road/Taylor Street. Caltrans standard sign structure design plans may be used for most of the conventional sign structure foundations. These foundations will have to be confirmed through a design process per Caltrans current guidelines. Generally, the foundation system consists of large diameter CIDH piles. Special design will be required where the sign structures and their foundations cannot adapt the standard design.

9.6 Drainage Structures/Minor Culverts

New drainage structures and minor culverts are expected at Route 101/Zanker Road Skyport Drive/N. 4th Street interchange. Existing drainage structures and minor culverts may be required to replace with improvement of existing I-880/Route 101 interchange, Route 101/Old Oakland Road interchange and Route 101/Mabury Road/Taylor Street interchange. Drainage structures and minor culverts may be designed in accordance with Caltrans standard plans. Design of these structures should be finalized during the P S & E phase.

9.7 Preliminary Pavement Design Recommendations

Based on the available as-built plans, the flexible pavement section was originally constructed with 0.06 ft Open Graded Asphalt Concrete (OGAC), 0.42 ft Asphalt Concrete (AC; Class A), 0.70 ft Cement Treated Base (CTB; Class A) and 1.0 ft Aggregate Subbase (AS; Class 4). Rigid pavement section was originally constructed with 0.67 ft Plain Cement Concrete (PCC), 0.33 ft

Cement Treated Base (CTB; Class A) and 1.33 ft Aggregate Subbase (AS; Class 4) before 1958 within the project limits. The roadway has been widened & overlaid at different events; therefore the existing pavement section thickness may be different than what is currently shown on the asbuilt plans.

New pavement section should meet the current Caltrans Design Standards in accordance with the Highway Design Manual. The basement soil along the site is anticipated to vary. According to Caltrans requirement, fill material placed within 4 ft (1.2 meters) of finish pavement subgrade should have a minimum R-value of 15. Traffic Index (TI) is not available at this stage of the project development; however we have assumed TI of 10.0, 13.5, 14.5 and 15.5 for ramp, left lane, middle lanes and truck lanes respectively. Using these assumptions in the design criteria we have provided some typical pavement sections for preliminary concepts and estimates.

Flexible 1 avement Section (1 mexicss)					
Devement Section	TI – Value				
Pavement Section	10.0	13.5	14.5	15.5	
Hot Mix Asphalt Type A (HMA-A)	0.50 ft	0.70 ft	0.75 ft	0.75 ft	
Aggregate Base Class 2 (AB)	0.85 ft				
Lean Concrete Base (LCB)		0.65 ft	0.70 ft	0.80 ft	
Aggregate Subbase Class 4 (AS)	0.90 ft	1.30 ft	1.40 ft	1.50 ft	
Total	2.25 ft	2.65 ft	2.85 ft	3.05 ft	

Flexible Pavement Section (Thickness)

Rigid Pavement Section (Thickness)

Devement Section	TI - Value			
ravement Section	10.0	13.5	14.5	15.5
Jointed Plain Concrete pavement (JPCP)	0.75 ft	0.95 ft	1.00 ft	1.05 ft
Lean Concrete Base (LCB)	0.35 ft	0.50 ft	0.50 ft	0.50 ft
Aggregate Subbase, Class 4 (AS)	0.50 ft	0.70 ft	0.70 ft	0.70 ft
Total Thickness	1.60 ft	2.15 ft	2.20 ft	2.05 ft

South coast/Central Coast, Type II Subgrade Soil

Final pavement design will depend on the site-specific R-values and the design TI values that are developed during the P S & E phase. Higher TI values and long life pavement design criteria may also necessitate a Portland Cement Concrete pavement section. Recent design update (Caltrans Highway Design Manual June, 2006) provides for standard Plain Concrete Pavement sections based on the TI values, basement soil R-values and the climate region. Caltrans also recommends using LCB when the TI is greater than 12. Caltrans also recommends using Open Graded Rubberized HMA (OG-RHMA) and RHMA for the upper layers of the flexible pavement.

9.8 Slopes

Generally, undercrossing or overcrossing bridge construction may require embankments and/or cut slopes. Embankments/fill slopes constructed in accordance with Caltrans standards are expected to be stable at 1V: 2H. Cut slopes are expected to be relatively stable at 1V:2H slope. Slopes protected by asphalt or concrete pavement should be stable at 1V:1.5H. However, Caltrans guidelines generally require new embankments that are not protected from potential erosion and scour to be constructed at 1V:4H. These slopes should be planted with erosion control landscaping.

Drainage provisions and erosion control measures should be implemented to reduce localized failures during the initial years after the construction. Based on the as-built LOTB, soil condition at Route 101 corridor within project limits consist of sandy/silty clay with lenses of silt and fine gravel to moderately well shorted sandy/clayey silt and sandy/silty clay. However, groundcover and other appropriate measures may be required to protect the surface.

9.9 Seismic Consideration

The project is located in a seismically active area of California. Many faults existing in this area are capable of producing earthquakes that may cause strong ground shaking within the project limits. The attached Fault Map (Plate 4) presents the locations of the fault systems relative to the

project site. Hayward Fault (7.50 M) is the controlling fault for the project area. Maximum Credible Earthquake (MCE) magnitudes for some of the major faults in the area determined by Mualchin (California Seismic Hazard Map 1996) are summarized below.

Fault	Estimated Closest Distance to the Middle* of the Project Area (Km)	Maximum Credible Earthquake	PBA (Sadigh 1997)
Hayward Fault (HWD)	6.5	7.50	0.45g
Calaveras Pacines San Benito (CPS)	12.5	7.50	0.42g
Monte Vista/E (MVE)	9.5	6.50	0.38g
Monte Vista/W (MVW)	11.0	6.50	0.35g

* Nearest perpendicular distance to the project limit to calculate peak bedrock acceleration. Ref: Fault map by Mualchin (California Seismic Hazard Map 1996)

Caltrans generally uses a single decimal number, therefore a 0.45g should be rounded up to 0.5g. It is also our understanding that Caltrans is in the process of updating the reference maps and the evaluation guidelines. These should be available before the end of the year or sooner.

9.10 Erosion & Sedimentation

Based on the readily available data, Log of Test Borings, geologic information and site observation; erosion potential is considered relatively low. The upper soil zone within the project corridor appears to have been prepared during construction operations. The existing conditions suggest that there is a high possibility that the highway was constructed in the native upper soil. Generally, the upper pavement section consists of import material (Base & Subbase). The improved areas within the project corridor should have low erosion potential. Normal maintenance of surface drainage and slope protection are important and should be incorporated in the project plans. Landscaping should be planned to protect new slopes formed with new interchange construction work.

9.11 Liquefaction Susceptibility

Liquefaction is a phenomenon in which saturated cohesionless soils are subject to a temporary but essentially total loss of shear strength under the reversing, cyclic shear stresses associated with earthquake shaking. Submerged cohesionless sands and silts of low relative density are the types of soils, which usually are susceptible to liquefaction. Clays are generally not susceptible to liquefaction. Based on various Log of Test Borings (Appendix A) and geologic unit information (Plate 3), the subsoil consists of well-bedded sand, gravel, silt, with minor clay to dense sandy/silty clay. Therefore, liquefaction potential within the project limits is considered to be moderate.

A liquefaction susceptibility map using the database prepared from Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California by Keith L. Knudsen, Janet M. Sowers, Robert C. Witter, Carl M. Wentworth, and Edward J. Helley, 2000 (USGS Open-File Report 00-444) is presented on Plate 5. Based on the map, the project area is located in a moderate liquefaction susceptibility zone.

Detail studies should be conducted during design phase to verify the conditions for the bridge foundations. Liquefaction should not have significant impact on pavement surfaces since the resulting settlements are generally aerial type and localized.

10. STUDY LIMITATIONS

Our services consist of professional opinions based on our site reconnaissance, researched data, and the assumption that the subsurface information does not deviate from observed/researched conditions. All work done is in accordance with generally accepted geotechnical engineering principles and practices. No warranty, expressed or implied, of merchantability or fitness, is made or intended in connection with our work or by the furnishing of oral or written reports or findings.

The geotechnical evaluation provided in this report is intended for project design planning documents such as Environmental Document and Project Study Report. The contents of this report are not intended for design input, nor directly form the basis in preparation of construction cost estimates for bidding purposes.

The scope of our services did not include any detail geotechnical investigations such as bridge foundation report or geotechnical design and materials report, or any environmental assessment/investigation for the presence or absence of hazardous or toxic materials in structures, soil, surface water, groundwater, or air, below or around this site. Unanticipated subsurface conditions are commonly encountered and cannot be fully determined without taking soil samples and drilling/excavating test borings. Additional expenditures should be allowed during the design phase for investigation services so that a properly designed project can be attained.

The findings in this report are valid as of the present date. However, changes in environmental conditions in the project area can occur with the passage of time, whether they are due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control.

Very truly yours,

PARIKH CONSULTANTS, INC.

PROFE **Ph.** P.E., G.E. 666 No. 666 Project Manager



REFERENCES

GEOLOGIC REFERENCES

- 1. Earthquake Probabilities in the San Francisco Bay Region: 2000 to 2030 A summary of findings, by Working Group on California Earthquake Probabilities, 1999, USGS Open-File Report 99-517
- 2. Geologic Map of San Jose 30 x 60 Minute Quadrangle, California, by Carl Wentworth, M. Clark Blake, Robert J. McLaughlin & Russell W. Graymer; 1999
- 3. Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California by Keith L. Knudsen, Janet M. Sowers, Robert C. Witter, Carl M. Wentworth and Edward J. Helley, 2000 (USGS Open-File Report 00-444)
- 4. California Seismic Hazard 1996, by L. Mualchin, California Department of Transportation, 1996, Scale 1:500,000, Revision 1

GEOTECHNICAL REFERENCES

Log of Test Borings

- 1 As-Built LOTB for De la Cruz Boulevard Overcrossing (Bridge No. 37-0180) by Caltrans; 1952
- 2 As-Built LOTB for Guadalupe Parkway Overcrossing (Bridge No. 37-0182) by Caltrans; 1953 & 1957
- 3 As-Built LOTB for Brokaw Road Undercrossing (Bridge No. 37-0490) by Caltrans; 1988
- 4 As-Built LOTB for North First Street Undercrossing (Bridge No. 37-0116) by Caltrans; 1953 & 1955
- 5 As-Built LOTB for North Fourth Street Undercrossing (Bridge No. 37-0141) by Caltrans, 1953
- 6 As-Built LOTB for Route 880/101 Separation (Bridge No. 37-0119) by Caltrans; 1953, 1988 & 1989
- 7 As-Built LOTB for North Tenth Street Overcrossing (Bridge No. 37-0118) by Caltrans; 1955
- 8 As-Built LOTB for North San Jose Underpass (Bridge No. 37-0115) by Caltrans; 1955
- 9 As-Built LOTB for Berryessa Road Undercrossing (Bridge No. 37-0113) by Caltrans; 1953
- 10 As-Built LOTB for Taylor Street Overcrossing (Bridge No. 37-0121) by Caltrans; 1955 & 1989
- 11 As-Built LOTB for North Fourth Street Undercrossing (Bridge No. 37-0141) by Caltrans; 1953
- 12 As-Built LOTB for Coyote Creek Bridge (Bridge No. 37-0039) by Caltrans; 1953, 1968 & 1988
- 13 As-Built LOTB for East San Jose Underpass (Bridge No. 37-0122) by Caltrans; 1953 & 1989
- 14 As-Built LOTB for Silver Creek Bridge (Bridge No. 37-0097) by Caltrans; 1968 & 1988

Typical Cross Sections

- As-Built Typical Cross Sections for Morse Ave to Brokaw Rd OC, Santa Clara County, by Caltrans; 1960
- 2 As-Built Typical Cross Sections for 0.5 mile north of Brokaw Rd to Tailor St, Santa Clara County, by Caltrans; 1961
- 3 As-Built Typical Cross Sections for 0.1 mile north of Santa Clara St to 0.5 mile north of Guadalupe PKY, Santa Clara County, by Caltrans; 1968
- 4 As-Built Typical Cross Sections for McKee Rd IC, Santa Clara County, by Caltrans; 1961
- 5 As-Built Typical Cross Sections for De La Cruz Blvd OC to 0.4 Km north of Mathilda Ave OC, Santa Clara County, by Caltrans; 1999
- 6 As-Built Typical Cross Sections for McKee Rd IC, Santa Clara County, by Caltrans; 1961
- 7 As-Built Typical Cross Sections from Bayshore UC to Montague Expressway OC, Santa Clara County, by Caltrans; 1992
- 8 As-Built Typical Cross Sections from 0.2 mile south of Guadalupe River Bridge to Embarcadero Rd OC Santa Clara County, by Caltrans; 1992
- 9 As-Built Typical Cross Sections for 101 from 0.4 mile south to 0.2 mile north of Route 880/101 Separation Santa Clara County, by Caltrans; 1992
- 10 As-Built Typical Cross Sections for 101 from 0.1 mile north of Route 880 to 0.1 mile south of De La Cruz Blvd OC, Santa Clara County, by Caltrans; 1988
- 11 As-Built Typical Cross Sections for 101 from 0.1 mile north of McKee Road OC to 0.1 mile south of East San Jose Underpass, Santa Clara County, by Caltrans; 1988
- 12 As-Built Typical Cross Sections for 101 from McKee Rd OC to 0.2 mile south of East Hedding St OC, Santa Clara County, by Caltrans; 1988

ATTACHMENT D

PRELIMINARY PHASE 1 INITIAL SITE ASSESSMENT

PRELIMINARY PHASE I INITIAL SITE ASSESSMENT ROUTE 101 IMPLEMENTATION PLAN/PSRs ROUTE 101/TRIMBLE ROAD/DE LA CRUZ BOULEVARD INTERCHANGE TO THE MCKEE ROAD OVERCROSSING SAN JOSE, SANTA CLARA COUNTY, CALIFORNIA

SUMMARY OF CONCLUSIONS

This Preliminary Phase I Initial Site Assessment (ISA) was performed by PARIKH Consultants, Inc. to evaluate whether potential sources or indications of hazardous substance contamination are present in the areas of right-of-way and construction for the Route 101 Implementation Plan in San Jose, Santa Clara County, California. The Plan study area includes the Route 101 corridor from the Route 101/Trimble Road/De La Cruz Boulevard Interchange to the McKee Road overcrossing. The purpose of the Plan is to determine buildable, fundable projects that will improve traffic mobility and reduce congestion, evaluate a range of possible highway infrastructure improvements, develop conceptual plans, and determine a logical phased approach at the following interchanges:

- 1. New interchange at Route 101/Zanker Road/N. 4th Street
- 2. Improvements at Route 101/Oakland Road/13th Street Interchange
- 3. New interchange at Route 101/E. Taylor Street/Mabury Road Interchange

The Plan will begin with an overall analysis of the Route 101 corridor from the Route 101/Trimble Road/De La Cruz Boulevard Interchange to the McKee Road Overcrossing and progress to a more focused look at the three interchange areas, identifying the ultimate improvements necessary.

This ISA includes a review of previous land uses in the area through review of historical aerial photographs, the results of a site reconnaissance of the study area, and a review of listings of Federal and State regulatory agencies that are responsible for recording incidents of spills, and soil and ground water contamination and transfer, storage, or disposal facilities that handle hazardous materials.

Previous land uses within the study area were primarily limited to residential and commercial usage. A site reconnaissance of the area was conducted to identify nearby sites or land uses that

might adversely affect the corridor due to environmental hazards. The site reconnaissance was combined with review of regulatory information and used to identify areas of concern.

Review of previous land uses, aerial photographs, and the site reconnaissance indicates that the Route 101 corridor has supported vehicular activity since the 1950s. The current use indicates there are vehicles and the aerial photographs indicate vehicle usage. It is highly likely that the surface soils along the corridor are affected by deposition of aerial lead. Therefore it is recommended that surface samples of soil be collected and analyzed for total lead.

Review of historical information indicates that the study area is built on farmland. It is likely that the soils are impacted with pesticides and herbicides, including arsenic, mercury, and DDT, as a result of historical farming operations. It is therefore recommended that soil samples be collected to the depth of the proposed excavation areas (if any) and analyzed for these constituents.

There are structures (including overhead bridges) within the proposed right-of-way expansion. Due to the age of these structures there is a potential for presence of asbestos containing materials (ACM) and lead based paint. An ACM investigation should be performed by an inspector certified by Asbestos Hazardous Emergency Response Act (AHERA) under Toxic Substances Control Act (TSCA) Title II and certified by Cal OSHA under State of California rules and regulations (California Code of Regulations, Section 1529). This work should be performed during the design phase.

Surveys for lead based paint should be conducted prior to demolition of the structures within the right-of-way. Lead based paint and ACM should be abated by a contractor certified to perform such work.

In general, the areas surrounding the proposed Route 101/Zanker Road/N. 4th Street Interchange should be investigated due to historical industrial activities associated with this area. In addition, the groundwater along the right-of-way from Zanker Road to the Route 101/Oakland Road/13th

Street Interchange could be impacted as a result of historical operations from upgradient sources. Also because the groundwater in these areas is relatively shallow, Caltrans has installed dewatering/extraction pumps to prevent groundwater from entering the freeway and these extraction points may have acted as a groundwater sink modifying the localized groundwater gradient towards these extraction points. Also, the areas along the right-of-way for the on ramp from westbound I-880 to southbound Route 101 and northbound Route 101 to eastbound I-880 should be investigated. Further east, the groundwater downgradient of Watson Park and the Route 101/McKee Road Overcrossing should be investigated.

Specific review of Environmental Data Resources (EDR) Site Regulatory Report and other regulatory reports identified 21 sites adjacent to and/or upgradient of the Route 101 corridor that could pose an adverse environmental impact to the proposed projects included in the Plan. These sites are:

- Penske Truck Leasing Co., 1691 and 1695 N. 4th Street
- Cascade Computer Coatings, 1615 Terminal Avenue
- All Brand Forklift, 1481 Terminal Avenue
- Pony Express 1533 Terminal Avenue
- All Auto, 1539 Terminal Avenue
- Allis Chamber, 1521 Terminal Avenue
- Computer & Electronic Finishing, 1509 Terminal Avenue
- Jim's Body Shop 1481 Terminal Avenue
- Action Forklift, 1441 Terminal Avenue
- Piercy Toyota, 1744 N. 4th Street
- Pinnacle Truck Leasing, 1744 N. 4th Street
- Coast Counties Truck and Equipment, 1740 N. 4th Street
- The Koll Company, 1420 Koll Circle
- Consolidated Freightways, 390 Commercial Street
- Santa Clara County Office of Education, 1245 N. 5th Street and other businesses on the north side of N. 5th Street
- Dahl's Equipment Rentals, 1091 N. 10th Street,
- Soares & Son Lumber, 1133 N. 10th Street
- George Bianchi Construction, 775-A Mabury Road
- Watson Park, Disposal Site, 520 N. 22nd Street
- San Jose Steel Company/Monarch Truck Center, 195 N. 30th Street
- Gas and Shop, 1590 McKee Road

The review also identified six sites adjacent to the right-of-way that are impacted with various contaminants, such as petroleum hydrocarbons, and based on historical land use, if the right-of-way is to expand onto these properties, the soil and groundwater within the right-of-way may be impacted. These sites are:

- 1736 Old Bayshore Highway
- Mohawk Packing/Recycling/Western Standard Transport, 1720 Old Bayshore Highway
- Rollins Trucking/Leasing/ Penske Trucking, 1691 Old Bayshore Highway
- Mohawk Packing, 1660 Old Bayshore Highway
- Pacific National Lease/Easy Fuel Inc., 1346 E. Taylor Street
- Industrial Landscape, 1199 E. Taylor Street

Other than noted above during the site reconnaissance, environmental areas of concern were not readily identified or apparent based on the scope of work performed for the ISA.

This conclusion, and any and all conclusions, recommendations, and information included in this report are based upon the information that was readily available to PARIKH Consultants, Inc. at the time of the site visit, and on PARIKH Consultants, Inc.'s professional judgment and reviews using accepted environmental site assessment practices pursuant to the scope of work.

1.0 INTRODUCTION

This Preliminary Phase I Initial Site Assessment (ISA) was performed for the proposed Route 101 Implementation Plan in San Jose, Santa Clara County, California. The Plan Area Map and Study Area Map are presented in Figure 1 and Figure 1A, respectively.

The purpose of this investigation was to identify and evaluate potential hazardous waste sites and update the evaluation of environmental factors that may have affected the soil and groundwater quality in the project vicinity due to past and present industrial, agricultural, environmental (mitigation) and commercial activities.

The ISA was performed between March 15 and April 10, 2008 and included the following scope of work:

- Site visit and visual inspection of properties in the study area
- Review of previous environmental reports for the study area
- Review of project background information including aerial photographs
- Review of computer database government record search of hazardous waste sites within a 1mile-wide band along the Route 101 corridor
- Review of area hydrogeology
- Review of available agency records for the study area
- Preparation of a written report summarizing the results

The following sections present the details and findings of the ISA:

- Section 2.0 Project Description and Historic Information
- Section 3.0 Physical Site Inspection
- Section 4.0 Regulatory Review
- Section 5.0 Conclusions and Recommendations
- Section 6.0 Limitations

2.0 PROJECT DESCRIPTION AND HISTORIC INFORMATION

2.1 PROJECT DESCRIPTION

This ISA was performed by PARIKH Consultants, Inc. to evaluate whether potential sources or indications of hazardous substance contamination are present in the areas of right-of-way and construction for the Route 101 Implementation Plan in San Jose, Santa Clara County, California.

The Plan study area includes the Route 101 corridor from the Route 101/Trimble Road/De La Cruz Boulevard Interchange to the McKee Road Overcrossing. The purpose of the Plan is to determine buildable, fundable projects that will improve traffic mobility and reduce congestion, evaluate a range of possible highway infrastructure improvements, develop conceptual plans, and determine a logical phased approach for the following interchanges:

- 1. New interchange at Route 101/Zanker Road/N. 4th Street
- 2. Improvements at Route 101/Oakland Road/13th Street Interchange
- 3. New interchange at Route 101/E. Taylor Street/Mabury Road Interchange

This project will begin with an overall analysis of the Route 101 corridor from the Route 101/Trimble Road/De La Cruz Boulevard Interchange to the McKee Road overcrossing and progress to more a focused look at the three interchange areas, identifying the ultimate improvements necessary.

2.2 U.S. GEOLOGICAL SURVEY MAP REVIEW

Various U. S. Geological Survey (USGS) maps encompassing several locations from the project area were reviewed. The map is included in Appendix A. Based on review of USGS maps (San Jose West, 7.5 Minute) the elevation of the project varies from 95 feet on the eastern perimeter of the Route 101/ McKee Road Overcrossing to 35 feet on the western side, i.e. Route 101/Trimble Road/De La Cruz Boulevard Interchange. General area drainage is to the north/northwest towards the San Francisco Bay.

Coyote Creek traverses north as it crosses under Route 101 south of Watson Park. The creek then traverses in a northwesterly direction and travels towards the San Francisco Bay. Guadalupe River crosses Route 101 just north of the Guadalupe Parkway and the San Jose International Airport.

Based on review of the USGS map (and some of the existing reference documents) it appears that the groundwater gradient in the shallow water bearing zone is towards the north/northwest. Review of information from several sites nearby confirms the northerly gradient with a trend

towards the northeast. Depth to groundwater ranges from 10 to 20 feet below ground surface along the corridor.

2.3 HISTORICAL AERIAL PHOTOGRAPH REVIEW

Based on a review of historical aerial photographs, it appears that the project vicinity was in commercial, agricultural, and residential use since the early 1950's. Agricultural properties in San Jose slowly turned into residential and commercial properties.

3.0 PHYSICAL SITE INSPECTION

Observations made during the site reconnaissance of the project vicinity are described in the following paragraphs. The site reconnaissance was performed on Saturday March 30, 2008.

3.1 SITE VISIT

The site visit consisted of walk/drive-through of the study area and observation of problem sites or visual contamination.

Route 101/Trimble Road/De La Cruz Boulevard Interchange to Zanker Road

To the northeast of the interchange along Seaboard and Channing avenues are a number of commercial properties. Further east is a vacant lot followed by open fields, the Guadalupe River, and a soccer field past Guadalupe Parkway. After the soccer field are two commercial properties before Karina Court. Further east is a parking lot for rental cars and a Union 76 Service Station at the intersection of East Brokaw Road and N. 1st Street. East of East Brokaw Road are more vacant properties followed by a restaurant and a property being developed as a fitness center just west of Zanker Road.

To the southeast of the Route 101/Trimble Road/De La Cruz Boulevard Interchange are the San Jose International Airport runways. Further east along the south side of Route 101 are parking lots for airport vehicles and rental car services such as Avis, Thrifty, Dollar, and Enterprise. Further east past the Guadalupe River is a parking lot just west of Guadalupe Parkway. To the

east of Guadalupe Parkway are a business park and the Doubletree Hotel just west of East Brokaw Road. To the east of East Brokaw Road are a couple of commercial business buildings followed by a restaurant center west of N. 1st Street. Further to the east is a Holiday Inn Hotel that extends to the N. 4th Street approach to Route 101.

On the southwest of the Route 101/Trimble Road/De la Cruz Boulevard Interchange is an open field. To the northwest are several commercial buildings.

Zanker Road/N. 4th Street to I-880 Interchange

East of Zanker Road and north of Route 101 is an office building followed by a couple of industrial facilities including a packing company on north side of Old Bayshore Highway. Terminal Avenue intersects with Old Bayshore Highway and traverses southeast 0.1 miles from the Zanker Road exit from the freeway. Terminal Avenue ends at Gish Road. Gish Road travels northeast and north until it intersects Old Bayshore Highway again. This area consists mostly of light industrial and manufacturing facilities. Coca Cola Company occupies a majority of the area bordered by Terminal Avenue to the west, north of Gish Avenue, and south of East Bayshore Highway. Several facilities also exist between Terminal Avenue and Route 101. They include Cascade Computer Coatings at 1615, Western Exterminator at 1611, Asphalt Maintenance Systems Inc. at 1607, a lumber shop, an auto body shop at 1539, a towing company, and a floor covering company. Review of aerial photographs for these properties showed some staining on the ground in the parking areas near the freeway.

East of Gish Road, several other industrial buildings were visible, including a truck tire center at the northern intersection with Old Bayshore Highway. Railroad tracks were visible along on the south side of Old Bayshore Highway from Queens Lane to the west to where the tracks and Old Bayshore Highway pass underneath I-880. The tracks also follow along Old Bayshore Highway on the east side of I-880 and travel across N. 10th Street. The tracks separate from Old Bayshore Highway where N. 10th Street takes a turn toward northeast.

To the south of Route 101, N. 4th Street approaches the freeway from the southeast. North 4th Street intersects at Old Bayshore Highway on the south side of the freeway near the southbound onramp to Route 101. East of N. 4th Street just south of Route 101 is occupied by Coast Counties Truck and Equipment at 1740 N. 4th Street. Across the street are a vacant lot and a Hertz Equipment Rental facility at 1695 N. 4th Street. Elsewhere in the document this address is shown to be occupied by Penske Truck Leasing which may be the previous occupant. Further south is a residential apartment complex. The area between N. 4th Street and Route 101 is occupied by a number of commercial buildings and light industrial facilities. These facilities are scattered through the Gish Technology Center and other facilities along Koll Circle, which traverses parallel to Route 101.

I-880 Interchange to Route 101/Oakland Road/13th Street Interchange

The north and south sides of Route 101 from the I-880 Interchange to Route 101/Oakland Road/13th Street Interchange are occupied by a variety of industrial facilities. They include Cupertino Electric at 1132 N. 7th Street, several tire shops, a transportation company, Safety Kleen Systems at 1147 N. 10th Street, etc.

On the north side of Route 101, N. 10th street departs from it's intersection with Old Bayshore Highway, traverses to the southeast, and passes over Route 101 0.1 miles east of the 101/I-880 Interchange. Industrial facilities are located on both sides of N. 10th street including tire centers, solvent recycling facilities, sheet metal shops, tire shops, auto body paint shops, cabinet manufacturers, and fuel suppliers.

From underneath I-880 to the north of the interchange, Old Bayshore Highway also traverses to the southeast where it then turns northeast near Route 101. When it turns northeast, the street changes name to Commercial Street. On both sides of Old Bayshore Highway, northeast of the I-880/101 Interchange are industrial facilities. Bridgestone Tires on Old Bayshore Highway is adjacent to the freeway. At the intersection of Commercial Street and Oakland Road is a Chevron Service Station.

On the south side, as indicated previously, properties adjacent to Route 101 include several industrial facilities, including Safety Kleen Systems, an auto glass shop, a trucking company, an electrical contracting firm, HVAC companies, etc.

Oakland Road to the proposed Route 101/E. Taylor Street/Mabury Road Interchange

On the northeast side of the Route 101/Oakland Road/13th Street Interchange is an A-1 Lumber distribution center. Mabury Road departs eastward and traverses parallel to Route 101 until in crosses Berryessa Road. On the north side of Mabury Road are several business parks and industrial and commercial facilities. There are no facilities between Mabury Road and Route 101. The property immediately northeast of Berryessa Road and Mabury Road intersection is Valley Crest Landscape Maintenance/Tree Care Services and the Chevron San Jose Terminal. The Chevron San Jose Terminal is a fuel storage facility for the San Jose International Airport. Further east of Berryessa Road on north side of Mabury Road are commercial and industrial facilities. Mabury Road turns northeast at the proposed Route 101/E. Taylor Street/Mabury Road Interchange. At the proposed interchange, the property to the northwest is occupied by Pacific Truck and Equipment Sales and Globe-Pacific, Inc.

Southeast of the Route 101/Oakland Road/13th Street Interchange is a residential development. Properties further to the east until E. Taylor Street are a mixture of single family homes or multifamily apartment complexes. A U.S. Marine Corps Training Center is located west of E. Taylor Street.

Proposed Route 101/E. Taylor Street/Mabury Road Interchange to Route 101 McKee Road Overcrossing.

Route 101 takes a turn towards the southeast past the proposed interchange. E. Taylor Street traverses in a southwest to northeast direction, and past Route 101 it merges with Mabury Road. To the east of the proposed interchange and north of Route 101, there are several light industrial facilities located on E. Taylor Street including machine shops, a landscaping company, Easy Fuel, a facility with underground fuel storage tanks and fuel dispensers. Further towards the southeast, adjacent to Route 101 is a California Department of Transportation storage yard and

Therma Corporation. Therma is located on the north side of Las Plumas Avenue (at 1601) adjacent to Route 101. On the south side of Las Plumas Avenue adjacent to Route 101 is Computer Recycling at 550 Las Plumas Avenue. Groundwater monitoring wells were observed on Las Plumas adjacent to both of these facilities. Union Pacific Railroad tracks cross over Route 101 north of Las Plumas. Further south, east of the freeway, and south of Lower Silver Creek is a lot used for storage of construction equipment. Further to the south adjacent to McKee Road is a property occupied by a residential complex. Properties on south side of McKee Road are also residential, however two service stations were observed on the McKee Road in the downgradient direction from these stations, which infer a northwesterly groundwater gradient.

On the south of the proposed Route 101/E. Taylor Street/Mabury Road Interchange is Watson Park. Further to the south, south of Coyote Creek is the Kellogg Company facility. Further south adjacent and to the west of the freeway to E. Julian Street are residential properties. South of E. Julian Street on the west side of the freeway are facilities that are occupied by Monarch Trucking. During the site visit, several groundwater monitoring wells were observed on the south side of the cloverleaf at the intersection of N. 30th Street and East St. James Street. Also three groundwater monitoring wells were observed on N. 30th Street in the middle of the block south of the intersection with East St. James Street.

On E. Julian Street, west of Route 101 were also several light industrial facilities and truck shops including Unlimited Foam Designs located at 260 N 28th Street.

3.2 AERIAL LEAD DEPOSITION

Historical aerial photographs show that the Route 101 corridor has supported vehicular traffic from the early 1950s. Due to this vehicular activity, the soils along the corridor are likely contaminated with lead from the exhaust of cars burning leaded gasoline. The lead levels in surface soils along highways can reach concentrations in excess of the hazardous waste threshold, requiring disposal at either a Class I landfill or onsite stabilization. Special health and safety

procedures should be in effect for the workers working near lead contaminated areas. A work plan for investigation of the aerially deposited lead (ADL) should be submitted and work should be performed according to an approved work plan. This work should be performed during the design phase.

3.3 ASBESTOS CONTAINING MATERIALS AND LEAD BASED PAINT

There are road overcrossings and interchange structures within the proposed right-of-way. Due to the age of these structures there is a potential for presence of asbestos containing materials (ACM) and lead based paint. An ACM investigation should be performed by an inspector certified by Asbestos Hazardous Emergency Response Act (AHERA) under Toxic Substances Control Act (TSCA) Title II and certified by Cal OSHA under State of California rules and regulations (California Code of Regulations, Section 1529). This work should be performed during the design phase.

Surveys for lead based paint should be conducted prior to demolition of the structures within the right-of-way. Lead based paint and ACM should be abated by using contractors certified to perform such work, and in accordance with state and federal regulations.

3.4 IMPACTS FROM RAILROAD OPERATIONS

Railroad track lines cross under the freeway and run parallel with Old Bayshore Highway. Two other lines cross the freeway: one east of N. 10th Street and another south of Coyote Creek near Las Plumas Avenue.. Soils adjacent to railroad tracks have typically been impacted with heavy metals, TPH as diesel, fuel oil, and PCBs. Soils along railroad tracks may be impacted from locomotives (TPH as diesel, i.e. TPH-D), railroad ties (polynuclear aromatics) or slag ballast used to set the ties (heavy metals). If the project involves installation of support structures adjacent to railroad tracks, it is recommended that the surface soils in the areas adjacent to the tracks be sampled and analyzed for TPH-D, heavy metals, and polynuclear aromatic hydrocarbons. A workplan should be prepared and sampling and analytical program should be developed prior to initiation of the work.



3.5 IMPACTS FROM FARM OPERATIONS

Review of historical photographs and USGS maps show that prior to the 1960s the area surrounding the study area, especially areas east of Watson Park and west of Zanker Road, were occupied by orchards and farmland. It is likely that the soils are impacted with pesticides and herbicides, including arsenic, as a result of historical farming operations. It is therefore recommended that soil samples be collected to the depth of the proposed excavation areas (if any) and analyzed for these constituents.

4.0 REGULATORY REVIEW

4.1 DATABASE AND REGULATORY REVIEWS

A search of environmental regulatory databases was conducted for the Route 101 corridor and surrounding properties. The database search was conducted by Environmental Data Resources, Inc. (EDR) to determine whether documentation exists related to environmental incidents along the corridor or surrounding properties. The databases searched and respective search distances from the corridor specified by ASTM guidelines are as follows:

- Federal Databases
 - National Priority List (NPL) 1 mile
 - Proposed National Priority List (Proposed NPL) 1 mile
 - Comprehensive Environmental Response Compensation, and Liability Information System (CERCLIS) – ¹/₂ mile
 - CERCLIS No Further Remedial Action Planned (CERCLIS NFRAP) ¹/₄ mile
 - Corrective Action Report (CORRACTS) 1 mile
 - Resource Conservation and Recovery Information System treatment, storage disposal facility (RCRIS-TSD) – ¹/₂ mile
 - \circ RCRIS Large quantity generator ¹/₄ mile
 - \circ RCRIS small quantity generator ¹/₄ mile
 - Emergency Response Notification System (ERNS) study area
 - Superfund (CERCLA) Consent Decrees (CONSENT) 1 mile
 - Records of Decision (ROD) 1 mile
 - \circ Delisted NPL 1 mile
 - Facility Index System/Facility Identification Initiative Program Summary Report (FINDS) – study area
 - o Hazardous Material Reporting System (HMIRS) study area
 - Material Licensing Tracking System (MLTS) study area
 - Mines master index file (MINES) $\frac{1}{4}$ mile

- o Federal Superfund liens (NPL liens) study area
- PCB Activity Database System (PADS) study area
- o RCRA Administration Action Tracking System
- o Toxic Chemical Release Inventory System (TRIS) study area
- Toxic Substance Control Act (TSCA) study area
- Section 7 Tracking System (SSTS) study area
- o FIFRA/TSCA Tracking System (FTTS) study area
- State of California, Regional and County Databases
 - Annual Workplan Sites (AWP) 1 mile
 - Cal sites Databases (CAL-SITES) 1 mile
 - California Hazardous Material Incident Report System (CHMIRS) 1 mile
 - "Cortese" Hazardous Waste and Substance Sites List (CORTESE) 1 mile
 - Proposition 65 Records (NOTIFY 65) 1 mile
 - Toxic Pits Cleanup Act Sites (TOXIC PITS) 1 mile
 - \circ State Landfill $\frac{1}{2}$ mile
 - Waste Management Unit Database (WMUDS/SWAT) $\frac{1}{2}$ mile
 - Leaking Underground Storage Tank Information System (LUST) ¹/₂ mile
 - Bond expenditure Plan (CA BOND EXP. PLAN) 1mile
 - Active UST Facilities (UST) $-\frac{1}{4}$ mile
 - Facility Inventory Database (CA FID UST) ¹/₄ mile
 - Hazardous Substance Storage Container Database (HIST UST) ¹/₄ mile
 - Aboveground Petroleum Storage Tank Facilities (AST) study area
 - Cleaner Facilities (CLEANERS) ¹/₄ mile
 - Waste Discharge System (CA WDS) study area
 - List of Deed Restrictions (DEED) study area
 - Spills, Leaks, Investigation and Cleanup Cost Recovery Listing (CAL SLIC) ¹/₂ mile
 - Hazardous Waste Information System (HAZNET) ¹/₄ mile

The results of the EDR database search and descriptions of the environmental databases are provided in Appendix B. The sites identified in the EDR search were evaluated with respect to their potential to adversely impact proposed projects included in the Plan. Three main criteria were used to evaluate whether the EDR listed sites warranted further consideration: (1) proximity to the Route 101 corridor (less than 150 feet from edge of proposed right-of-way); (2) hydraulically upgradient with respect to groundwater flow; and (3) hydraulically upgradient with respect to surface water flow/stormwater runoff.

Due to the commercial history of the study area, review of databases identified mostly sites listed on the HAZNET and LUST databases. The majority of these sites are downgradient and should
not pose an adverse environmental impact. Only sites or areas with potential impact and upgradient (to the south) of the study area are further discussed. These sites are discussed from west to east along the corridor and are as follows:

1. Esrey Supply Company, 2578 Seaboard Avenue, San Jose, CA

Listed with map ID 51 in the EDR report, the site is listed on the LUST and Cortese databases for historical release of gasoline to soil and groundwater in 1990. Based on the EDR, the site was closed under direction of the Regional Water Quality Control Board (RWQCB) in 1996.

Assessment: Because this site is in the apparent downgradient direction and a "No Further Action" (NFA) or closure letter has been issued by the RWQCB, this site should not pose an adverse environmental impact.

2. San Jose International Airport, San Jose, CA

Listed with map ID 124, various entities associated with the airport are located upgradient of the project area south of Route 101. These include companies such as Reno Air/Federal Express, American Airlines, which use the facility for repair and maintenance of their airplanes. These sites are separated from Route 101 by Airport Boulevard, and there are no records of releases to soil and groundwater based on review of the EDR.

Assessment: This site is upgradient and separated from Route 101 by Airport Boulevard. There are no records of releases from the various entities that operate at the airport; therefore, this site should not pose an adverse environmental concern.

3. Businesses on Gateway Place, San Jose, CA

Listed with map ID 138, 145, 152, and 158, these sites are listed on the HAZNET database for disposal of various wastes associated with operations. These sites are upgradient and the quantity of waste generated is typical of site operations associated with office buildings. In some cases, the waste is generated in other facilities and the address provided was the facilities listed here.

Assessment: These sites should not pose an adverse environmental impact.

4. Capital Towers, Arco Station 2010, ConocoPhillips 2101 N. 1st Street, BP West Coast Products 25 E. Brokaw, San Jose, CA

Listed with map ID 111, 115, and 121, these sites are listed on the LUST and Cortese databases for gasoline and diesel impacts to soil and groundwater. The BP West Coast Products (Arco) site is active and undergoing groundwater monitoring. A copy of the groundwater monitoring report for the site is included in Appendix C. The report indicates that the groundwater is impacted with low levels of gasoline and diesel range petroleum hydrocarbons. However the groundwater gradient for all these sites is towards the northwest and away from the right-of-way.

Assessment: The groundwater at these sites is impacted; however, the sites are downgradient of Route 101 and many years of groundwater monitoring have confirmed a gradient that is towards northwest. They should not pose an adverse environmental impact.

5. Cal Air Conditioning, 1775 S. 1st Street, San Jose, CA Listed as map ID 162, this site is upgradient and listed on the LUST database. Review of file data indicated that the site is actually located at 1175 S. 1st Street and it is closed. A "No Further Action" letter was issued in 1995 (See Appendix C).

Assessment: This site is closed and it is too far upgradient to pose an adverse environmental impact.

6. Chevron, 1747 N. 1st Street, San Jose, CA

Listed as map ID 177, the site is listed on a number of databases (LUST and Cortese) for release of petroleum hydrocarbons to the soil and groundwater. The site is upgradient and was closed in 2005. The closure letter is included in Appendix C. Review of site information indicates that residual petroleum hydrocarbons remain onsite, however the contamination is contained. This site is upgradient of the study area, and monitoring wells between this site and Route 101 show no detectable levels of petroleum hydrocarbons.

Assessment: This site is upgradient and residual petroleum hydrocarbons remain in groundwater in the central portion of the site, however the contamination appears to be contained in the local area. Downgradient wells show non detectable levels. This site should not pose an adverse environmental impact.

7. 1736 Old Bayshore Highway, San Jose CA

Listed as map ID 180 and 184, this site are listed on the Historical UST list and historical LUST for presence of several USTs ranging in size from 500 to 5,000 gallons. File review indicated that the site was a former Chevron Service Station located north of Route 101 west of Root Trucking at 1680 Old Bayshore Highway. The site was closed in 1999 following removal of fuel storage tanks in 1995. The closure letter is included in Appendix C.

Assessment: This site is downgradient of the study area; however, it may fall within the footprint of the proposed Route 101/Zanker Road/N. 4th Street Interchange. The site has been issued a closure letter; however, residual soil impacts may remain onsite. In the event this site is within the project right-of-way, soil and groundwater samples should be collected to ensure that there are no residual petroleum hydrocarbons left onsite.

8. Mohawk Packing/Recycling/Western Standard Transport, 1720 Old Bayshore Highway, San Jose, CA

Listed as map ID 184, this site is listed on a number of databases including the LUST and Cortese lists for release of petroleum hydrocarbons to soil and groundwater discovered during removal of a 10,000 gallon gasoline UST and a 10,000 gallon diesel UST in 1992 The site has undergone assessment and a closure letter (included in Appendix C) has been issued for the site.

Assessment: This site is downgradient of the Route 101 corridor and has been issued a closure letter. Similar to the Chevron case above (1736 Old Bayshore Hwy), residual contaminants may remain onsite. If the site is to be located within the right-of-way for the proposed Route 101/Zanker Road/N. 4th Street Interchange, it should be further investigated and residual soil and groundwater impacts characterized.

9. Rollins Trucking/Leasing/ Penske Trucking, 1691 Old Bayshore Highway, San Jose, CA

Listed with map ID 190, the site is listed on the LUST and several other databases for discovery of release of petroleum hydrocarbons during removal of an UST. A site assessment report is included in Appendix C. The report indicates that soil and groundwater have been impacted as a result of site operations. The oversight agency has requested additional investigation of the site.

Assessment: This site is adjacent to the north side of the Route 101 right-of-way. The groundwater gradient in this area has shown to be towards the north; therefore, this site is downgradient of the right-of-way and should not pose an environmental concern. However, in the event the right-of-way extends to this site, soil and groundwater may be found to have been impacted.

10. Mohawk Packing, 1660 Old Bayshore Highway, San Jose, CA

Listed with map ID 191, the site is listed on several databases including the LUST for discovery of petroleum hydrocarbons during UST removal. The site was closed in 1999 and a copy of the closure letter is included in Appendix C.

Assessment: This site is located downgradient and should not pose an adverse environmental impact. However if this site is to be located within the right-of-way for the proposed Route 101/Zanker Road/N. 4th Street Interchange additional investigation is warranted to address potential for residual soil and groundwater impacts.

11. Penske Truck Leasing Co., 1691 and 1695 N. 4th Street, San Jose, CA

Listed with map ID 201, and 221, the site is located between 4th Street and Route 101. The site is bounded to the north by Route 101 and the south by N. 4th Street. The site is listed on the LUST database for discovery of release of petroleum hydrocarbons to soil and groundwater in the early 1990's. A closure letter was provided by the oversight agencies in 1997 (Appendix C). Subsequently, three additional USTs and fuel conveyance piping were removed prior to 2001. Additional investigation was performed through 2004 to demonstrate that soil and groundwater have not been impacted.

Assessment: The Santa Clara Valley Water District (SCVWD) is about to issue a closure letter for the recent removal. The facility is an active truck maintenance facility. Review of the closure letter indicates that levels of petroleum hydrocarbons as diesel (up to 32,000 ug/l) were allowed to be left in the groundwater based on the assessment that they will not pose an adverse human health impact. This site is upgradient of the Route 101 proposed right-of-way and the operational activities since 1997 may have posed environmental impacts to the right-of-way. It

is recommended that soil and groundwater downgradient of this site be investigated. Also, in the event portions of this site are to be added to the right-of-way, soil and groundwater should be investigated to assess residual contamination.

12. Cascade Computer Coatings, 1615 Terminal Avenue, San Jose, CA

Listed as map ID 206, this site is listed on a number of databases including LUST and Cortese for releases from USTs discovered during tank closure. The closure report is included in Appendix C.

Assessment: This site is adjacent and to the northeast and downgradient of Route 101. Review of closure letter indicates low levels of petroleum hydrocarbons in the groundwater adjacent to the closed UST. This site should not pose an adverse environmental impact. However, due to history of industrial activities on Terminal Avenue, in the event the vacant land between the property and the right-of-way is to be utilized as right-of-way, it should be investigated for petroleum hydrocarbons to assess potential impact from historical operations.

13. S&W and Western Exterminator, 1607 and 1611 Terminal Avenue, San Jose, CA

Listed as map ID 206, these sites are listed on a number of databases including LUST and Cortese for releases of petroleum hydrocarbons to soil and groundwater. Site assessment and remediation is ongoing, and based on the review of groundwater data, it appears that the groundwater plumes have been adequately characterized. A groundwater monitoring report is included in Appendix C.

Assessment: The groundwater contamination in the first and second water bearing zone at this site has been characterized. The reports indicate that the groundwater travels parallel to the right-of-way most of the time, however gradient maps in a few of the quarterly groundwater monitoring reports for a few quarters; the groundwater in the deeper zone may have a southwesterly gradient. This site should not pose an adverse environmental impact.

14. Accurate Metal, 1460 Terminal Avenue, San Jose, CA

Listed as map ID 206, this site is located on the east side of Terminal Avenue adjacent to the Coca Cola Facility. The groundwater was impacted with petroleum hydrocarbons as a result of removal of an UST. In 2005, a no further action letter was issued for the site (included in Appendix C).

Assessment: Review of groundwater reports indicate that the site is cross gradient, and the contamination has been adequately characterized and contained within site boundaries. This site should not pose an adverse environmental impact.

15. All Brand Forklift, 1481 Terminal Avenue, San Jose, CA

Listed as map ID 206, this site is located on the west side of Terminal Avenue, and is listed in the LUST site for impacts to soil discovered during closure of a 2,000 gallon gasoline UST. The site was issued closure by SCVWD in 1992. Review of closure documentation (included in Appendix C) indicates that extent of contamination extends to 11 feet below ground surface, and

levels of TPH as high as 7.6 mg/kg and benzene as high as 0.044 mg/kg were detected in the soil. The figure in the closure letter also shows that the tank location was on the western end of the site near the Route 101 right-of-way.

Assessment: Even though a closure letter has been issued, the letter documents presence of soil impacts at 11 feet below grade (near the groundwater table) with elevated TPH as gasoline and benzene. The location of the UST was also on the western end of the site near the right-of-way. This warrants further investigation of the soil and groundwater at the right-of-way adjacent to this site to ensure that groundwater has not been impacted.

16. Pony Express 1533 Terminal Avenue, All Auto, 1539 Terminal Avenue, Allis Chamber, 1521 Terminal Avenue, Computer & Electronic Finishing, 1509 Terminal Avenue, Jim's Body Shop 1481 Terminal Avenue, San Jose, CA

Adjacent to each other and listed with map ID 206, these sites are listed either on the HAZNET directory or as small quantity waste generators due to the historical operations and nature of the waste generated at these facilities, which may consist of solvents and metals.

Assessment: Waste inventory records indicate that these facilities have generated hazardous wastes. Historical practices may not have been as documented as recent activities; therefore, there may be impacts to the right-of-way as a result of historical operations at these facilities. Soil and groundwater within the right-of-way adjacent to these facilities should be investigated.

17. Action Forklift, 1441 Terminal Avenue, San Jose CA

Listed as map ID 206 on the map, this is the southern most parcel on Terminal Avenue, before the street ends at Gish Road. The most recent groundwater monitoring report, included in Appendix C, indicates that groundwater at the site is impacted with elevated levels of gasoline as high as 37,000 ug/l and benzene as high as 3,400 ug/l, which were detected in groundwater at a monitoring well adjacent to the Route 101 right-of-way.

Assessment: Groundwater gradient maps at this site indicate that groundwater gradient varies, and Route 101 may be at times downgradient of this site. MW3, the well closest to Route 101, has the highest benzene concentrations. It is therefore likely that the groundwater at the right-of-way adjacent to this site is impacted. Additional groundwater investigation is warranted.

18. Piercy Toyota, 1744 N. 4th Street, Pinnacle Truck Leasing, 1744 N. 4th Street, San Jose, CA Listed with map ID 211, these sites are listed in the HAZNET database and/or listed as a small quantity generator.

Assessment: These sites have a history of generating hazardous waste and are upgradient of the Route 101 right-of-way. Historical operations may have impacted the site soils and groundwater, and may pose an adverse impact on the groundwater at the right-of-way. Additional assessment is recommended.

19. Coast Counties Truck and Equipment, 1740 N. 4th Street, San Jose, CA

Listed as map ID 211, this site is located on the LUST and Cortese lists, and other databases for release of petroleum hydrocarbons to soil and groundwater. Review of the most recent groundwater monitoring report, included in Appendix C, indicates monitoring of groundwater at three separate locations where USTs were removed. The report indicates that groundwater is impacted with petroleum hydrocarbons adjacent to Route 101.

Assessment: This site is adjacent and upgradient of Route 101. Groundwater at the right-of-way is likely impacted as a result of this site's historical operations. Additional assessment is recommended.

20. TCI 1610 N. 4th Street, San Jose, CA

Listed as map ID 221, this site is listed on the LUST database for contamination discovered during removal of USTs. The closure letter was issued in 1999 (included in Appendix C).

Assessment: This site is upgradient of the right-of-way; however, review of the closure documents indicates minimal impact to groundwater. This site should not pose an adverse environmental impact.

21. Clark Pest Control, 1500 N. 4th Street, San Jose, CA

Listed as map ID 221, the site is listed on the LUST database for groundwater impacts discovered during closure of an UST. The site was issued a closure letter in 2005, which is included in Appendix C.

Assessment: This site is located upgradient of the right-of-way. Review of the closure report indicates that the groundwater from this site has been adequately characterized; therefore, it should not pose an adverse environmental impact.

22. The Koll Company, 1420 Koll Circle, San Jose, CA

Listed with map ID 232, this site is listed on the LUST database for impacts to soil and groundwater associated with removal of an UST. Review of the closure report, included in Appendix C, and other site information indicates that the UST was a few feet from the Route 101 right-of-way. The site was closed in 1991.

Assessment: The site was closed in 1991; however, it is directly upgradient of the right-of-way. Review of the closure report indicated presence of petroleum hydrocarbons in groundwater below the UST. Groundwater at the right-of-way downgradient of this site should be investigated.

23. Consolidated Freightways, 390 Commercial Street, San Jose, CA

Listed with map ID 314, this site is listed in the LUST database for presence of petroleum hydrocarbons. Also chlorinated solvents have been detected in the site groundwater. The most recent quarterly monitoring report, included in Appendix C, indicates that the groundwater gradient is towards the north. This site is upgradient of the Route 101 corridor. The report also

indicates that offsite wells across Commercial Street have been impacted with solvents such as tetrachloroethylene (PCE) above the Maximum Contaminant Level values.

Assessment: This site is upgradient of Route 101; however, it is buffered by another property at 385 Commercial Street. It is recommended that groundwater downgradient of the 385 Commercial Street property be tested within the right-of-way.

24. Marriot Airline Food Service, 385 Commercial Street, San Jose, CA

Listed with map ID 314, this site is upgradient of the Route 101. The site is listed in the LUST database for a release discovered during closure of the UST. The site was closed in 1997.

Assessment: The closure report indicates minimal impact to site soil and groundwater. However, this site is downgradient from 390 Commercial Street and upgradient of the Route 101 right-of-way. Reports from 390 Commercial Street indicate groundwater upgradient of this site has been impacted with up to 16 ug/L of PCE. There is potential for the PCE impacts to have traveled across this site and reached the right-of-way. It is therefore recommended that the right-of-way downgradient of this site be investigated for presence of volatile organic compounds.

25. Santa Clara County Office of Education, 1245 N. 5th Street, San Jose, CA (and other businesses on the north side of N. 5^{th} Street)

Listed with map ID 317, this site is listed for presence of petroleum hydrocarbons in groundwater along N. 5th Street. The site is located upgradient of the north I-880 on ramp to south 101. This site is closed; however, review of the closure report indicates that soil gas is prevalent in the soils along N. 5th Street. The closure report also identifies a number of businesses on 5th Street adjacent to the Route 101 right-of-way with historical impacts of petroleum hydrocarbons to groundwater.

Assessment: Based on review of the closure report, the right-of-way for the southbound exit from northbound I-880 to Route 101 should be investigated for presence of petroleum hydrocarbons in groundwater.

26. Roof Structures, 1145 N. 13th Street, San Jose, CA

Listed as map ID 297, this site is listed on the Cortese database for soil and groundwater impacts from removal of an UST. The site was closed in 1996, and the closure report is included in Appendix C.

Assessment: This site is upgradient of the right-of-way; however, review of the closure report indicates that the petroleum hydrocarbons in the groundwater in the monitoring wells downgradient of the source area is below regulatory thresholds. This site should not pose an environmental concern.

27. Dahl's Equipment Rentals, 1091 N. 10th Street, Soares and Son Lumber, 1133 N. 10th Street, San Jose, CA

Listed as map ID 292, these sites and a number of other sites at N. 10th Street appear to have groundwater impacted with petroleum hydrocarbons. These sites are upgradient of the project right-of-way. The most recent quarterly groundwater monitoring report for Dahl's Equipment Rentals, included in Appendix C, indicates levels of benzene as high as 51 ug/l in the wells within 150 feet of the right-of-way.

Assessment: These sites are upgradient of the right-of-way and the groundwater is impacted with petroleum hydrocarbons. Additional assessment of the groundwater within the right-of-way is required to determine the actual groundwater impacts.

28. Golden State Car and Truck Wash, 955 Oakland Rd, San Jose, CA

Listed as map ID 325, this site is listed on the LUST database, as groundwater at the site has been impacted as a result of site operations. The most recent quarterly monitoring report, included in Appendix C, indicates that groundwater has been impacted and its gradient is towards the northwest.

Assessment: This site is upgradient; however, the most recent downgradient well onsite indicates that the groundwater plume is contained and will not reach the Route 101 right-of-way. Therefore, this site should not pose an adverse environmental impact.

29. San Jose Fire Station No. 5, 1380 N. 10th Street, San Jose, CA

Listed as map ID 239, this site is listed on the LUST and Cortese databases for release of petroleum hydrocarbons to the groundwater. The most recent quarterly monitoring report is included in Appendix C. Results indicate that the groundwater plume is contained onsite.

Assessment: This site is downgradient and the groundwater plume appears to be contained onsite. It should not pose an adverse environmental impact.

30. George Bianchi Construction, 775-A Mabury Road, San Jose CA

Listed as map ID 280, this site is listed on the LUST and Cortese databases for release discovered during closure of a UST. A closure letter was issued for the site and is included in Appendix C.

Assessment: This site is downgradient; however, the closure letter indicates that groundwater may be impacted by the pumping of groundwater in the depressed section of Route 101 to avoid groundwater from entering the freeway. This site may pose an adverse environmental impact and the groundwater within the right-of-way adjacent to this site should be further assessed.

31. Environmental Care Inc. 825 Mabury Road, San Jose, CA

Listed as map ID 287, this site is listed on the LUST database for presence of petroleum hydrocarbons in the groundwater. The site is closed and a copy of the closure letter is included in Appendix C.

Assessment: Review of groundwater gradient at this site indicates that the gradient moves parallel to the Route 101 right-of-way. This site is closed and based on the groundwater gradient and chemistry it should not pose an adverse environmental impact.

32. San Jose Naval Reserve Center, 995 Mission, San Jose, CA

Listed as map ID 326, this site is listed on the LUST database for releases to groundwater discovered during closure of a diesel UST. The site is closed and a copy of the closure letter is included in Appendix C. Review of the closure letter indicates that residual diesel contamination remains in soil and groundwater at the site.

Assessment: Even though this site is upgradient, and the groundwater is impacted, it should not pose an adverse environmental impact because the groundwater is only impacted with TPH as diesel, a slow moving contaminant in a silty environment, and the SCVWD has issued a closure certificate for the site.

33. Clarklift 875 Mabury, San Jose, CA

Listed as map ID 306, this site is listed on the LUST database. The site was closed in 2004 and the closure letter is enclosed in Appendix C. The closure letter indicates that a residual level of petroleum hydrocarbons is left in soil and groundwater and the gradient is towards the west and parallel to Route 101.

Assessment: This site is cross gradient and closed. Based on the review of the closure report, it should not pose an adverse environmental impact.

34. Pacific National Lease/Easy Fuel Inc., 1346 E. Taylor Street, San Jose, CA

Listed as map ID 309, this site is on the LUST and UST databases. The site was closed in 2005 and a copy of the closure letter is included in Appendix C. Review of the letter indicates that the groundwater gradient is towards the east southeast or Coyote Creek. The closure report confirms that residual levels of petroleum hydrocarbons remain in the soil and groundwater at the site.

Assessment: Review of groundwater data indicates that petroleum hydrocarbons as diesel is the only constituent present. This site is adjacent and north of the Route 101 right-of-way, and should not pose an adverse environmental impact. In the event the right-of-way is to be expanded to include portions of this site, those areas should be tested for petroleum hydrocarbons.

35. Industrial Landscape, 1199 E. Taylor Street, San Jose, CA

Listed as map ID 324, the site is listed on the LUST database. The site was closed in 1995 and the closure letter is included in Appendix C. The closure letter indicates that minor soil impact was observed during the UST removal, and was remediated.

Assessment: This site should not pose an adverse environmental impact. However this site is adjacent to the right-of-way and if the right-of-way is to be expanded to include portions of this

site, additional soil investigation may be warranted, since this is an unpaved site used for storage of construction equipment.

36. DAP Inc., 520 and 530 Marburg Way, San Jose, CA

Listed as map ID 358, the site is listed on the LUST database and was closed in late 1990's. A copy of the closure letter is included in Appendix C.

Assessment: Review of closure letter indicates that the groundwater monitoring wells located to the north and west of this property ,which are closest to the right-of-way, are not impacted with petroleum hydrocarbons. This site should not pose an adverse environmental impact.

37. Andrade Trucking, 350 Marburg Way, San Jose, CA

Listed as map ID 363, this site is listed on the LUST database and was closed in late 1990s. A copy of the closure letter is enclosed in Appendix C. Review of the closure letter indicates that residual petroleum hydrocarbons were left in an upgradient well; however, the downgradient well closest to the right-of-way was not impacted.

Assessment: Review of groundwater data indicates that this site is upgradient of the right-ofway; however, since the monitoring well nearest the right-of-way did not have any measurable levels of petroleum hydrocarbons at time of closure, this site is not likely to pose an adverse environmental impact.

38. Watson Park, Disposal Site, 520 N. 22nd Street, San Jose, CA

Listed as map ID 379, this site is listed on the SWLF database as a closed landfill. Site assessment reports are currently underway (Appendix C) and it appears that the soil and groundwater are impacted as a result of historical dumping and burning operations dating back to the 1950s.

Assessment: Groundwater at this site is impacted, and this site is adjacent to the right-of-way. The site is currently under assessment and the groundwater impacts may extend to the right-of-way. Groundwater and soil within the right-of-way adjacent to this site should be characterized to ensure that there are no impacts.

39. Security Contractor Services, Inc. 170 N. 28th Street, San Jose, CA.

Listed as map ID 417, this site is listed on the LUST database and is closed. Review of the closure letter, included in Appendix C, indicates that no residual petroleum hydrocarbons were left in the groundwater at the time of closure.

Assessment: Based on review of the closure letter, this site should not pose an adverse environmental impact.

40. San Jose Steel Company/Monarch Truck Center, 195 N. 30th Street, San Jose, CA Listed as map ID 409, this site is listed on the LUST database for release discovered during closure of USTs in the early 1990's. There is a closure letter on file and included in Appendix

C. Review of the closure letter indicates that significant levels of petroleum hydrocarbons as gasoline and benzene were left onsite, and the site was closed since there were no receptors.

Assessment: During the site visit, groundwater monitoring wells were observed downgradient of this site and upgradient of the Route 101/McKee Road Overcrossing. Based on the review of the closure report and site observations, additional assessment of groundwater in the right-of-way area downgradient of this site is warranted.

41. Gas and Shop, 1590 McKee Road, San Jose, CA

Listed as map ID 386, this site is listed on the LUST database and is upgradient of the right-ofway. The most recent quarterly monitoring report is included in Appendix C. The report indicates that the groundwater gradient is towards the northwest, and benzene has been detected in the most downgradient monitoring wells.

Assessment: This site is upgradient and the contamination has not been fully characterized. Groundwater downgradient of this site adjacent to the right-of-way should be characterized.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Review of previous land use and the site reconnaissance indicates that the Route 101 corridor has supported vehicular activity since the 1950s. It is highly likely that the surface soils along corridor are affected by deposition of aerial lead. Therefore it is recommended that surface samples of soil be collected and analyzed for total lead.

Review of historical information indicates that the study area is built on farmland. It is likely that the soils are impacted with pesticides and herbicides, including arsenic, mercury, and DDT, as a result of historical farming operations. It is therefore recommended that soil samples be collected to the depth of the proposed excavation areas (if any) and analyzed for these constituents.

There are structures (including bridges) within the proposed right-of-way expansion. Due to the age of these structures there is a potential for presence of asbestos containing materials (ACM) and lead based paint. An ACM investigation should be performed by an inspector certified by Asbestos Hazardous Emergency Response Act (AHERA) under Toxic Substance Control Act (TSCA) Title II and certified by Cal OSHA under State of California rules and regulations

(California Code of Regulations, Section 1529). This work should be performed during the design phase.

Surveys for lead based paint should be conducted prior to demolition of the structures within the right-of-way. Lead based paint and ACM should be abated by using a contractor certified to perform such work.

In general, the areas surrounding the proposed Route 101/Zanker Road/N. 4th Street Interchange should be investigated due to historical industrial activities associated with this area. In addition, the groundwater along the right-of-way from Zanker Road to the Route 101/Oakland Road/13th Street Interchange could be impacted as a result of historical operations from upgradient sources. Also, the areas along the right-of-way for the on ramp from westbound I-880 to southbound Route 101 and northbound Route 101 to eastbound I-880 should be investigated. Further east, the groundwater downgradient of Watson Park and the Route 101/McKee Road Overcrossing should be investigated.

Specific review of the EDR Site Regulatory Report and other regulatory reports identified 21 sites adjacent to and/or upgradient of the of the Route 101 corridor that could pose an adverse environmental impact to the proposed projects included in the Route 101 Implementation Plan. These sites are:

- Penske Truck Leasing Co., 1691 and 1695 N. 4th Street
- Cascade Computer Coatings, 1615 Terminal Avenue
- All Brand Forklift, 1481 Terminal Avenue
- Pony Express 1533 Terminal Avenue
- All Auto, 1539 Terminal Avenue
- Allis Chamber, 1521 Terminal Avenue
- Computer & Electronic Finishing, 1509 Terminal Avenue
- Jim's Body Shop 1481 Terminal Avenue
- Action Forklift, 1441 Terminal Avenue
- Piercy Toyota, 1744 N. 4th Street
- Pinnacle Truck Leasing, 1744 N. 4th Street
- Coast Counties Truck and Equipment, 1740 N. 4th Street
- The Koll Company, 1420 Koll Circle

- Consolidated Freightways, 390 Commercial Street
- Santa Clara County Office of Education, 1245 N. 5th Street and other businesses on the north side of N. 5th Street
- Dahl's Equipment Rentals, 1091 N. 10th Street,
- Soares and Son Lumber, 1133 N. 10th Street
- George Bianchi Construction, 775-A Mabury Road
- Watson Park, Disposal Site, 520 N. 22nd Street
- San Jose Steel Company/Monarch Truck Center, 195 N. 30th Street
- Gas and Shop, 1590 McKee Road

The review also identified six sites adjacent to the right-of-way that are impacted with various contaminants, such as petroleum hydrocarbons. If the right-of-way is to expand onto these properties, the soil and groundwater within the right-of-way may be impacted. These sites are:

- 1736 Old Bayshore Highway
- Mohawk Packing/Recycling/Western Standard Transport, 1720 Old Bayshore Highway
- Rollins Trucking/Leasing/ Penske Trucking, 1691 Old Bayshore Highway
- Mohawk Packing, 1660 Old Bayshore Highway
- Pacific National Lease/Easy Fuel Inc., 1346 E. Taylor Street
- Industrial Landscape, 1199 E. Taylor Street

Other than noted above during the site reconnaissance of the study area, environmental areas of concern were not readily identified or apparent based on the scope of work performed for this ISA. Based on PARIKH Consultants, Inc.'s findings, environmental conditions or issues of concerns, other than noted above, were not identified or indicated.

6.0 LIMITATIONS

The operations, facility conditions, and information obtained and utilized in the preparation of this report have been obtained in part from the client, and their employees or agents, and various government officials and are assumed by PARIKH Consultants, Inc. to be complete and correct. It should be noted that this information is subject to professional interpretation, which leads to conclusions that may differ based upon opinions specific to individuals.

This report has been presented in accordance with generally accepted environmental assessment practices, based upon the information set forth within the report narrative, for specific

application to the proposed Route 101 Implementation Plan in San Jose, Santa Clara County, California. No warranty, expressed or implied, is made.

The conclusions in this report are qualitative opinions based on limited quantitative information. Soil and groundwater sampling and analysis were not a part of this scope of work. The scope of work was limited to observation of the surface at a specific time, a limited aerial survey review, and environmental database research. This assessment is not designed to predict future onsite or offsite conditions. Also, site conditions can differ at locations other than those observed along the Route 101 corridor. Subsurface conditions can differ from those observed on the surface.

This investigation is not a risk assessment and is not intended to provide information needed for public health risk assessment purposes. The consultant has endeavored to determine as much as practical about the site conditions given what we consider to be a reasonable amount of analysis and research time. Additional investigation or sampling and analysis could result in information that would lead to revised conclusions. Additional search can often result in more information, but frequently with a diminishing rate of information return for the effort spent. The degree of certainty of an environmental assessment is proportional to the time and effort spent. However, the degree of certainty cannot be 100% even with highly detailed exploratory drilling and testing work well beyond the scope of this study.

Respectfully submitted, **PARIKH CONSULTANTS, INC.**

Gary Parikh, P.E., G.E. #666 Project Manager

ATTACHMENT E

TRAFFIC REPORT

November 2009

(To be provided under separate cover)

ATTACHMENT F

SURVEYING REPORT

(To be provided under separate cover)