Revised Traffic Study for:

San Leandro Kaiser Medical Center plus Mixed-Use Retail Development

Prepared for:

PBS&J and the City of San Leandro

Submitted by:

Dowling Associates, Inc.

Transportation Engineering • Planning • Research • Education

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April 06, 2010

April 06, 2010

Post Buckley Shue & Jernigan
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Attn: Michael Kay, Project Manager

Subject: Revised Traffic Report for the San Leandro Kaiser Medical Center and Mixed-Use Retail Development Project P09066

Dear Mr. Kay,

Dowling Associates is pleased to submit the revised traffic report for the San Leandro Kaiser Medical Center plus Mixed-Use Retail Development Project. The detailed calculations and volume graphics are provided in the attached Technical Appendix.

Sincerely,

Dowling Associates, Inc.

Damian Stefanakis
Principal

Debbie Chan Yueh, AICP
Senior Transportation Planner

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Introduction

This traffic report presents the traffic and circulation impacts for the San Leandro Kaiser Medical Center and Mixed-Use Retail Development Project ("Project"). The proposed site for the Project is bounded by the Interstate 880 freeway on the east, Merced Street on the west, Marina Boulevard on the north and Fairway Drive on the south.

The Project includes a retail and Mixed-Use retail development in the northern portion and a hospital and medical center in the southern portion of the site. The Mixed-Use retail development comprises 387,000 square-feet of retail (potentially consisting of any number of large format stores, multi-tenant retail uses, restaurants, soft goods, and service-oriented retailers) and a Mixed-Use project consisting of up to 250 residential apartment units. The retail mixed use portion of the project has been analyzed at a programmatic level.

The Kaiser Medical Center was analyzed in two phases: "Medical Center Phase 1" is comprised of up to 711,000 square feet of medical uses, including a 275,000 square-foot hospital support building, a 436,000 square-foot hospital of 264 beds, and a 31,000 square-foot central utility plant and a 20,000 square-foot outdoor service yard. "Build-Out" is comprised of Phase 1 plus 200,000 additional square feet of medical office space and a 120 bed hospital wing. The medical portion of the project has been analyzed at the detailed project level.

The purpose of the study is to evaluate the traffic and circulation impacts of the Project on the transportation system in the Baseline (2015) and Cumulative (2030) future year conditions. Analysis includes evaluations of vehicular traffic, bicycle and pedestrian transportation, transit operations, and parking.

The following eight (8) scenarios were analyzed:

- Existing (2007) – No Project
- Baseline (2015) plus Kaiser Medical Center Phase 1
- Baseline (2015) plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development
- Cumulative (2030) – No Project
- Cumulative (2030) plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

- Cumulative (2030) plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development (with Aladdin Avenue Extension)
- Cumulative (2030) plus Kaiser Build-Out plus Mixed-Use Retail Development
- Cumulative (2030) plus Kaiser Build-Out plus Mixed-Use Retail Development (with Aladdin Avenue Extension)

Environmental Setting

Background and Terminology

Several traffic analysis concepts were used to evaluate the Project's impacts on the existing and future transportation system. The following is an explanation of traffic terminology used in this report.

Level of Service (LOS)

"Levels of service" describe the operating conditions experienced by motorists during peak times of travel. Level of service (LOS) is a qualitative measure of the effect of a number of factors, including speed and travel time, traffic interruptions, freedom to maneuver, driving comfort and convenience. Levels of service are designated "A" through "F" from best to worst, which cover the entire range of traffic operations that might occur. Level of Service (LOS) "A" through "E" generally represent traffic volumes at less than intersection capacity, while LOS "F" represents over capacity and/or significant delays.

Traffic Analysis Zones (TAZ)

The Alameda County Congestion Management Agency (ACCMA) Model was used to calculate future land use and traffic volumes. In order to forecast traffic generated by land uses, the ACCMA Model divides the region into Traffic Analysis Zones (TAZs), which contain information on existing and projected land uses that are located within a particular TAZ. Each TAZ is connected to the adjacent street network via a connector, which provides access to and from the TAZ. Depending on the type of land uses allocated to each zone, the TAZ would generate a certain combination of outbound trips (trip production) and inbound trips (trip attraction) during the analysis periods.

Peak hour Factor (PHF)

A peak hour factor is a measure of fluctuation in vehicle flow. In urban and suburban areas, PHFs are found to be in the range of 0.70 to 1.00. PHFs closer to 1.00 reflect locations where the vehicle flow is consistent and uniform, whereas PHFs with less than 0.80 tend to be locations with more erratic vehicle flow. When a PHF is unknown, default values of 0.90 to 0.95 tend to be used. PHF is calculated by dividing the total vehicles in an hour by four times the highest 15-minute increment of vehicles in that same hour.

Substandard versus Impact

"Substandard" is a term used in this report to identify locations that are operating below acceptable traffic operation standards. These standards and thresholds are established by the City of San Leandro, the Alameda County Congestion Management Agency (ACCMA), and/or the California Department of Transportation (Caltrans). An "Impact" is identified when the Project causes locations to operate at sub-standard LOS D based on the City's standards or adds significant delay to locations that are sub-standard under No Project conditions.

Study Area

The Project site is approximately 63 acres and is located in San Leandro, Alameda County. The project site is the former Albertson's supermarkets distribution and maintenance center. The Project would replace current uses at the site, which consist of varied warehouse distribution and industrial uses. Potential development of the site with the retail, residential, and medical uses would require the creation of a new General Plan land use designation and zoning district. The Project Site and study area are shown in Figure 1.

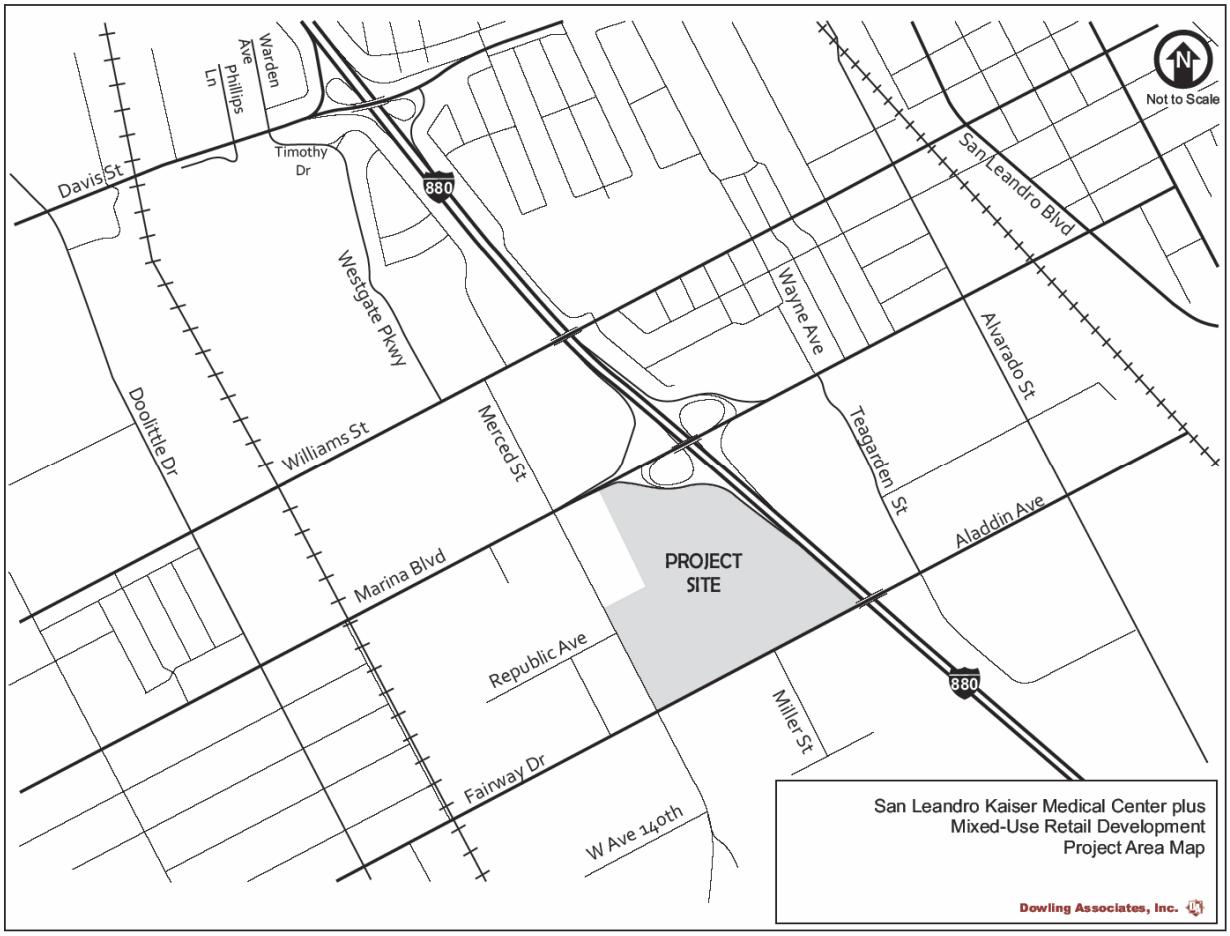
Land Use Setting

The Project Site is currently zoned as General Industrial in San Leandro's General Plan and Zoning Ordinance. The land uses immediately surrounding the project site are primarily industrial and commercial. Land uses east of Interstate 880 include industrial, residential; a commercial shopping center; and the San Leandro Ball Park and Pacific Recreation Complex. Industrial land uses are also present west of the project, and industrial and residential land uses are found further south of the project site.

Existing and Planned Transportation Facilities

Regional traffic access to the site is provided primarily by the Interstate 880/ Marina Boulevard interchange. Local street access is provided by Marina Boulevard, Merced Street and Fairway Drive.

Figure 1: Project Site and Study Area



Existing Roadway Facilities

The following is a description of roadways that are analyzed and contained in the study area.

Freeways

Interstate 880 (I-880) is an eight to ten-lane, north south freeway with a posted speed limit of 65 miles per hour that connects San Leandro with local cities, such as Hayward and Oakland, and regional destinations, such as San Jose. The average daily traffic on I-880 in the vicinity of Marina Boulevard is 223,000 to 229,000 vehicles per day (vpd).[1] In the vicinity of the project, I-880 has interchanges at Marina Boulevard, Davis Street and Washington Avenue. Bicyclists and pedestrians are not allowed on this facility.

1 2006 Traffic Volumes. California Department of Transportation (Caltrans). http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm,

Arterials

Alvarado Street is a two-lane, north-south roadway with a two-way left-turn lane and a posted speed limit of 35 miles per hour north of Marina Boulevard and 40 miles per hour from Marina Boulevard to Aladdin Avenue. It is traversed by railroad tracks west of San Leandro Boulevard. In the study area, Alvarado Street is bordered by industrial land uses and is a designated local truck route.

Davis Street (State Route 112) is a four- to six-lane, east-west roadway with a posted speed limit of 35 miles per hour. In the study area, it is bordered by industrial and retail land uses. According to Caltrans, the 2006 average daily vehicle volumes in the study area were 30,000 to 36,000, with the higher volumes close to the I-880 interchange.[2] There is a raised median and an overpass for crossing the railroad tracks between Doolittle Drive and Philips Lane. The sidewalk is limited to the southern side of the roadway on the overpass between Doolittle Drive and Phillips Lane and near I-880 interchange.

Doolittle Drive is a four-lane, north-south roadway with a posted speed limit of 40 miles per hour. North of Davis Street, Doolittle Drive is designated as State Route 61, and south of Davis Street, it is a local City street. On-street parking is allowed on intermittent sections of the roadway between Williams Street and Fairway Drive, although truck parking is restricted. It is traversed by railroad tracks between Williams and Davis Streets. In the study area, it is bordered by industrial, retail, and residential land uses.

Fairway Drive-Aladdin Avenue is a two-lane, east-west roadway with a posted speed limit of 30 to 40 miles per hour. In the study area, it is bordered by mostly industrial land uses. On-street parking is allowed on intermittent sections of the roadway between Nicholson Street and Doolittle Drive, although truck parking is prohibited. It is traversed by railroad tracks between Doolittle Drive and Merced Street. The sidewalk is limited to the southern side of the roadway on the overpass between Miller and Teagarden Streets.

Marina Boulevard is a four- to six-lane, east-west roadway with a posted speed limit of 30 to 40 miles per hour. There is a raised, landscaped median in the eastern portion of the roadway. Between Doolittle Drive and Merced Street, on-street parking is allowed on intermittent sections of the roadway and it is traversed by railroad tracks. The sidewalk is limited to the southern side of the roadway on the I-880 interchange overpass between Merced and Teagarden Streets. In the study area, it's bordered by industrial and retail land uses.

Merced Street is a three- to four-lane, north-south roadway with a posted speed limit of 35 miles per hour. Between Williams Street and Marina Boulevard, on-street parking is allowed on intermittent sections of the roadway. The sidewalk has some discontinuity on the western side of the roadway near Abram Court in front of the Cal-Neva facility at 1900 Marina Boulevard. In the study area, it's bordered by industrial and retail land uses.

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2 2006 Traffic Volumes. California Department of Transportation (Caltrans). http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm,

San Leandro Boulevard is a four-lane, north-south roadway with a posted speed limit of 40 miles per hour. It has a raised, landscaped median in the study area. There is only partial sidewalk, in the form of bus pads, on the western side of the roadway. It's bordered by residential land use on the east and industrial use on the west of the study area.

Collectors

Teagarden Street is a two- to four-lane, north-south roadway with a posted speed limit of 25 to 35 miles per hour. On-street parking is allowed on intermittent sections of the roadway between Aladdin Street and Marina Boulevard with restrictions on truck parking. It is bordered by residential, retail, industrial, and school land uses in the study area. North of Marina Boulevard, Teagarden Street becomes Wayne Avenue, a residential collector.

Westgate Parkway-Timothy Drive is a two- to four-lane, north-south roadway with a posted speed limit of 25 to 35 miles per hour. There is a raised, landscaped median near Davis Street. Sidewalks alternate from the eastern to western side of the roadway between the Westgate Shopping Center driveway and Williams Street. It is bordered by retail, residential and industrial land uses in the study area.

Williams Street is a two-lane, east-west roadway with a posted speed limit of 30 to 35 miles per hour. On-street parking is allowed on intermittent sections of the roadway between Westgate Parkway and Doolittle Drive. In the study area, Williams Street is bordered by industrial land uses west of I-880 and residential and school land uses east of I-880. Williams Street is a designated local truck route.

Local Streets

Miller Street is a two-lane, north-south roadway with a posted speed limit of 25 miles per hour with no through access that provides access to industrial land uses. On-street parking is allowed.

Republic Avenue is a two-lane, east-west roadway with no through access and with a posted speed limit of 25 miles per hour. It provides access to mostly industrial land uses. On-street parking is allowed on Republic Avenue, but truck parking is prohibited.

West Avenue 140th is a two-lane, east-west roadway with a posted speed limit of 25 miles per hour that provides access to mostly industrial land uses. On-street parking is allowed but truck parking is prohibited on the north side of the roadway.

Planned Roadway Facilities

According to the Alameda County Congestion Management Agency's Model, San Leandro's General Plan, and discussions with City staff[3], planned changes to roadways in the study area include the following:

- *Interstate 880* would have a High Occupancy Vehicle (HOV) lane installed in the southbound direction from Hegenberger Road to the current HOV lane located south of Marina Boulevard by 2015.
- The Marina Boulevard interchange at I-880 would be reconfigured. A Project Study Report (PSR) for the Marina Boulevard interchange project began in 2008. The interchange design was not finalized at the commencement of this study, so it uses the design that seemed most feasible.[4] With the exception of the northbound off-ramp, all the existing diamond on-ramp free right turns would be removed and replaced with right turn lanes at the ramp signalized intersections; the two loop off-ramps would remain; and both northbound and southbound ramp terminal intersections would be signalized. A schematic of the interchange is shown in Figure 2.
- *Marina Boulevard*, from Teagarden Street to Alvarado Street, would be widened to six lanes (from the existing four lanes) by 2015.
- *Alvarado Street*, from Marina Boulevard to Aladdin Avenue, would be widened to four lanes (from the existing two lanes with a two-way left turn lane) by 2015.
- *Davis Street (SR-112)*, between Warden Avenue-Timothy Drive to the I-880 interchange, would be widened to six lanes (from the existing four lanes) by 2030.

These planned roadway changes were incorporated into the analysis models for the appropriate horizon years for Baseline and Cumulative conditions.

Transit Facilities

Roadways bordering the Project Site are currently served by existing bus transit service. Existing and future transit service and facilities in the study area and in San Leandro are described below.

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3 Phone discussion with City of San Leandro Staff Keith Cooke, Principal Engineer, and Reh-Lin Chen, Senior Transportation Engineer on March 27, 2008 and subsequent discussions in December 2009.

4 Alternative 2 Design was used from the *I-880/ Marina Interchange Project Traffic Operations Draft Report* by Dowling Associates, submitted September 10, 2009 to the Alameda County Congestion Management Agency via BKF Engineers. The current timing for completion of this project is 2013.

Rail Service

The San Francisco Bay Area Rapid Transit District (BART) provides heavy-rail, regional transit service to Alameda, San Francisco, Contra Costa, and San Mateo counties. San Leandro contains two BART stations, the San Leandro station (1.9 miles from the Project Site) and the Bay Fair station (4.2 miles from the Project Site). The closest BART Station to the Project Site is the San Leandro Station, located at Davis and San Leandro Streets. The station is elevated, is fronted by bus bays, and is surrounded by surface parking lots. BART's direct service from this station includes the Richmond-Fremont line, the Dublin-Pleasanton/Daly City-Millbrae line, and the Fremont/ Daly City line. Table 1 displays a summary of service days, hours, and frequencies for BART service from the San Leandro and Bay Fair stations.

Figure 2: Marina Boulevard Interchange Concept Plan

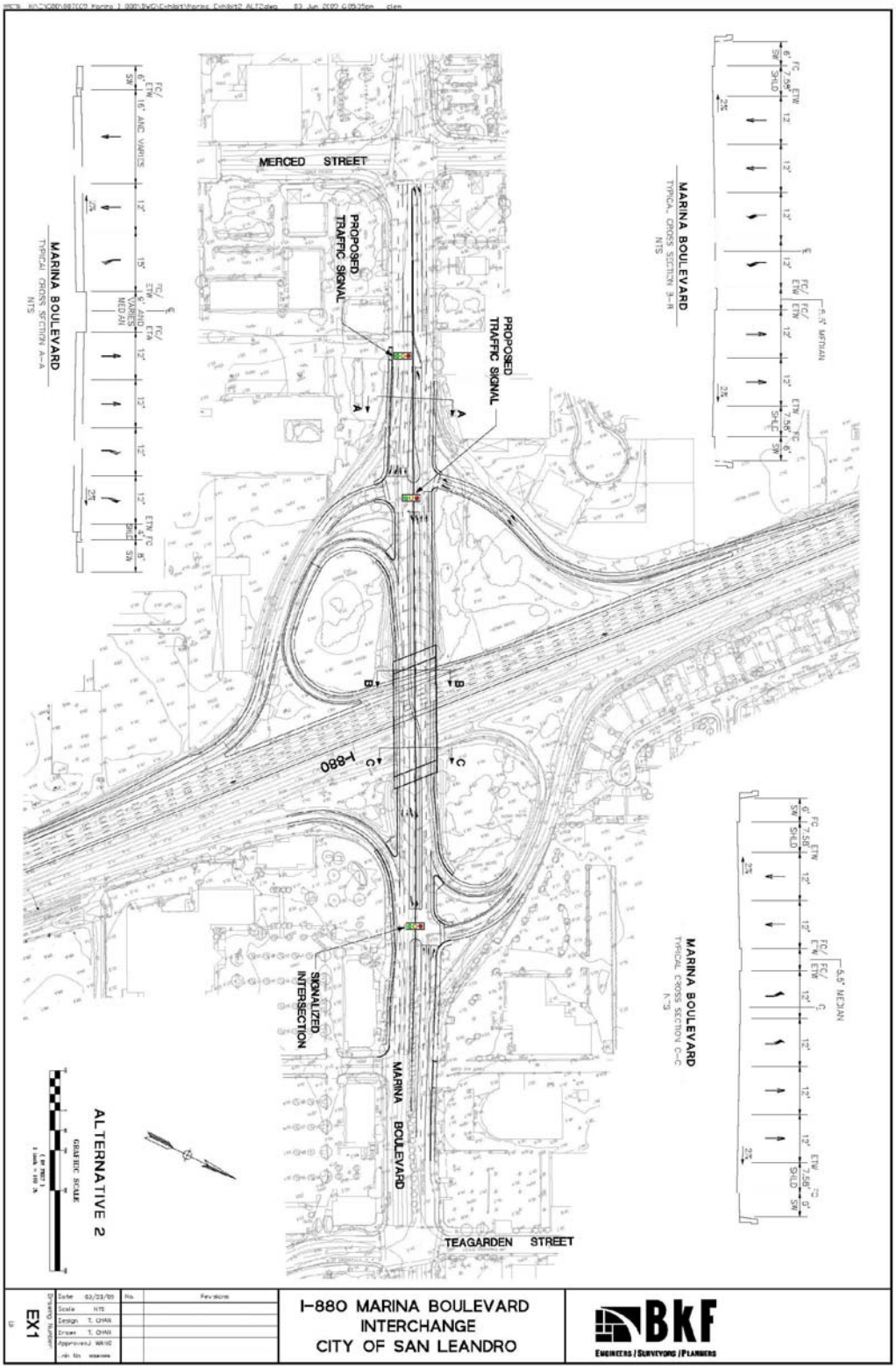

Table 1: BART Service from San Leandro and Bay Fair Stations

Line	Day	Times	
Fremont/ Richmond	**Weekday**	**First**	4:15 AM
		Last	1:00 AM
		Frequency	15 minutes
	Saturday	**First**	6:00 AM
		Last	1:00 AM
		Frequency	20 minutes
	Sunday	**First**	8:00 AM
		Last	1:00 AM
		Frequency	20 minutes
Dublin-Pleasanton/ Daly City-Millbrae	**Weekday**	**First**	4:30 AM
		Last	12:45 AM
		Frequency	15 minutes
	Saturday	**First**	6:15 AM
		Last	12:45 AM
		Frequency	20 minutes
	Sunday	**First**	8:00 AM
		Last	12:45 AM
		Frequency	20 minutes
Fremont/ Daly City	**Weekday**	**First**	5:30 AM
		Last	7:30 PM
		Frequency	15 minutes
	Saturday	**First**	9:00 AM
		Last	7:30 PM
		Frequency	20 minutes
	Sunday	*No direct service*	

Source: *BART Fares and Schedules.* January 2008.

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Planned changes in the County include a new station in West Dublin, an expansion of the Fremont line to the south by 5.4 miles to terminate at the Warm Springs district in Fremont, and an Oakland Airport Fixed Guideway Transit (Tram) connector from the Coliseum Station. An extension of BART tracks from Dublin-Pleasanton to Livermore has been studied. The Regional Rail Plan is a study currently underway to create a blueprint for rail expansion projects in the nine-county, Bay Area region and adjacent counties for the next fifty years.

Amtrak operates interstate and intercity heavy rail service in San Leandro. The Capital Corridor and Coast Starlight routes run through the City just west of San Leandro Boulevard, but there are currently no Amtrak stops in San Leandro. The City's General Plan calls for further exploration of an Amtrak station stop, possibly near the San Leandro BART station. However, plans for a station in San Leandro are not contained in the most recent Amtrak rail plan document.[5]

Bus Service

The Alameda Contra Costa Transit District (AC Transit) provides bus service in western Alameda and Contra Costa Counties. It provides service coverage of 13 cities and the unincorporated areas of Alameda County. It operates local, school bus, and Transbay routes to San Francisco and the Peninsula and is a service provider for paratransit. Additionally, AC Transit is a participating transit provider for the regional, All Nighter bus system, providing night owl bus service when BART is not operating. Buses are equipped with front-loading racks that can hold up to two bicycles.

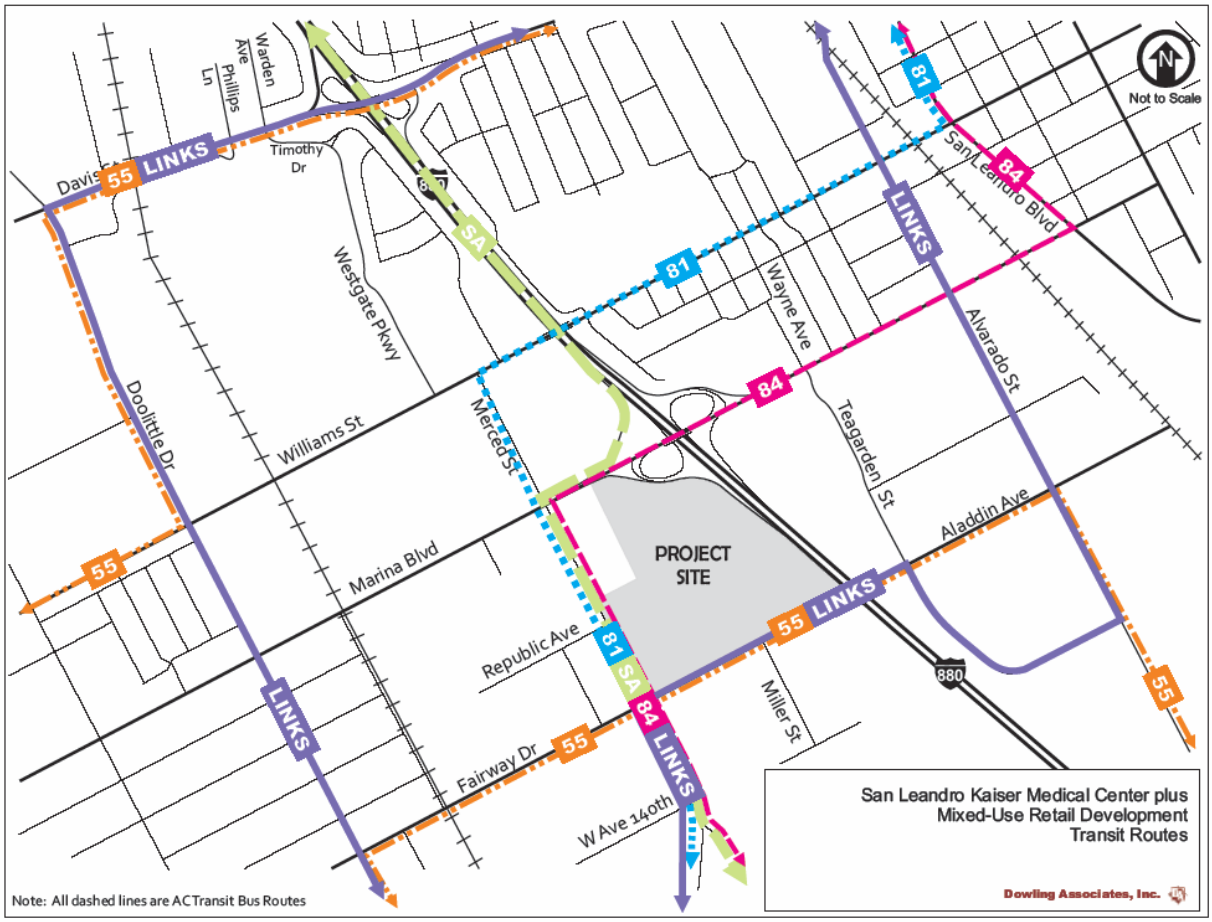
In the study area, AC Transit operates three local bus routes (55, 81, and 84) and one transbay bus route (SA). Most bus stops in the study area are indicated with a pole and sign showing the route numbers, though there are bus shelters, schedule and route information, and/or benches at some of the stops. Figure 3 shows AC Transit's bus service in the study area and Table 2 details bus service (including cities served, major timepoints, and service times and frequency).

According to the proposed 2009 Service Adjustments Plan, all the bus routes currently serving the study area would be terminated and be replaced by new or expanded services. The new Route 75 would operate between Bay Fair BART and MacArthur Boulevard via 159th Street and would replace a portion of Routes 81 and 84. The new Route 89 would operate between San Leandro BART and Aurora Drive via San Leandro Boulevard and would serve a portion of the existing Routes 55 and 84. The existing Route S would be expanded to cover the existing Route SA. These changes are targeted for implementation by early 2010.[6] Other major changes to AC Transit service in San Leandro are also being planned. Such changes include enhanced bus service, Bus Rapid Transit (BRT), and expansion of regional express bus service. According to AC Transit's *Short Range Transit Plan FY2003-FY2012*, enhanced bus service is proposed along Hesperian Boulevard and East 14th Street. Enhanced bus service includes decreasing vehicle travel times by limiting bus stops and changing traffic signal timing to benefit transit and improving the passenger waiting environments with shelters and real-time bus arrival information. The enhanced bus service on East 14th Street would become part of the Berkeley-Oakland-San Leandro BRT. BRT service would reduce vehicle travel times, operate at 5 to 7.5 minute frequencies, and would feature exclusive bus travel lanes, stations complete with covered waiting areas and real-time bus arrival information, traffic signal timing changes to benefit transit, pre-boarding fare payment, and passenger

5 *California State Rail Plan 2005-06 to 2015-16*. California Department of Transportation. December 2005.
6 AC Transit website, Extensive Changes Proposed in Service Adjustments Plan,. http://www.actransit.org/news/articledetail.wu?articleid=bab11473&r=n, accessed December 30, 2009.

boarding and alighting through multiple doors.[7] However, the City of San Leandro is collaborating with AC Transit and other agencies in developing the BRT service of which implementation is not yet certain. According to the AC Transit website, there are plans to expand the regional express bus system and create seven new major transit hubs, including the Bay Fair BART station.[8] AC Transit's *Strategic Plan*, a document that includes projects that may not have funding, includes enhanced bus service on Hesperian Boulevard and the Foothill-MacArthur Boulevards corridor, the latter of which would be converted to a BRT corridor.[9]

Figure 3: Existing AC Transit and LINKS Shuttle Service in the Study Area



7 *AC Transit Short Range Transit Plan FY2003-FY2012*. May 2004. Alameda-Contra Costa Transit District.
8 AC Transit Planning Focus website for Projects in the Works: Express Bus Connectivity – Major Hubs Project. http://www2.actransit.org/planning_focus/planning_focus.wu?category_id=2, accessed March 21, 2008.
9 *AC Transit Strategic Vision: A World Class Transit System for the East Bay 2001-2010*. August 2002. Alameda-Contra Costa Transit District.

Table 2: AC Transit Bus Service in the Study Area

Route	Serving	Timepoints	Day	Times	
55	San Leandro	Bay Fair BART; Fairway Dr & Aurora Dr; Marina Blvd & Aurora Dr; San Leandro BART	**Weekday**	**First**	5:30 AM
				Last	7:00 PM
				Frequency	30 minutes
			Weekend	**First**	7:15 AM
				Last	6:15 PM
				Frequency	60 minutes
81	San Leandro Cherryland Hayward	San Leandro BART; Marina Blvd & Merced St; Farallon St & Wicks Blvd; Farnsworth St & Lewelling Blvd; Washington Ave & Lewelling Blvd; Paseo Grande & Hesperian Blvd; Meekland Ave & Blossom Wy; Hayward BART	**Weekday**	**First**	6:15 AM
				Last	7:15 PM
				Frequency	30-60 minutes
			Weekend	**First**	8:00 AM
				Last	7:00 PM
				Frequency	60 minutes
84	San Leandro Ashland Castro Valley Hayward	San Leandro BART; Marina Blvd & Merced St; Farnsworth St & Lewelling Blvd; Fargo Ave & Washington Ave; Washington Ave & Floresta Blvd; Bay Fair BART; 164th Ave & E 14th St; Castro Valley BART; Foothill Blvd & Grove Wy; Hayward BART; Santa Clara St & Jackson St; Kaiser Permanente Hayward Medical Center	**Weekday**	**First**	6:00 AM
				Last	8:15 PM
				Frequency	30 minutes
			Weekend	**First**	7:45 AM
				Last	6:45 PM
				Frequency	60 minutes
SA	San Lorenzo San Leandro San Francisco	Paseo Grande & Paseo Largavista; Washington Ave & Lewelling Blvd; Manor Blvd & Farnsworth St; Marina Blvd & Merced St; San Francisco Transbay Terminal	**Weekday westbound**	**First**	5:30 AM
				Last	7:45 AM
				Frequency	30 minutes
			Weekday eastbound	**First**	4:00 PM
				Last	7:00 PM
				Frequency	30 minutes
			Weekend	No service	

Source: AC Transit website, www.actransit.org, accessed December 30, 2009

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Shuttle

The LINKS program is a free shuttle that provides transportation between the San Leandro BART Station to major employment centers in west San Leandro. It is funded by a Business Improvement District fee, the City, and various grants including those from the Bay Area Air Quality Management District (BAAQMD). It operates every 20 minutes on non-holiday weekdays from 5:45 AM to 9:30 AM, and then again from 2:00 PM to 7:30 PM. [10] There is a Guaranteed Ride Home program for emergency mid-day travel needs. The LINKS route is shown in Figure 3.

Paratransit

There are paratransit options for San Leandro citizens who are older or those who are unable to drive or access other forms of private or public transportation independently due to a medical or disabling condition and are East Bay Paratransit certified.

The City offers the Flex Shuttle service. There is a free, fixed-route service operating weekdays from 9:00 AM to 5:00 PM in 70 minute intervals within the city limits. Additionally, there is a curb-to-curb service by appointment only. Curb-to-curb trips cover all destinations within San Leandro, which are free, and medical-related trips outside of the city limits, which are assessed distance-related charges. Additionally, the City offers transportation services to groups of seniors or people with disabilities by reservation. [11]

AC Transit, together with BART, offers paratransit in the AC Transit service area. They offer paid, curb-to-curb service to assist passengers who have a disability or health condition that prevents them from using buses or BART trains. [12]

Water Transit

There is currently no ferry service available from San Leandro. The City's General Plan supports study of ferry service at the San Leandro Marina. However, the San Francisco Bay Area Water Transit Authority currently has no plans for locating a ferry terminal in San Leandro. [13]

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10 San Leandro LINKS website, http://www.sanleandrolinks.com/, accessed March 24, 2008
11 City of San Leandro paratransit website, http://www.ci.san-leandro.ca.us/paratransit.html, accessed March 24, 2008
12 AC Transit website, http://www.actransit.org/riderinfo/paratransit.wu, accessed March 24, 2008.
13 San Francisco Bay Area Water Transit Authority website, http://www.watertransit.org/newferryroutes.shtml, accessed March 24, 2008

Bicycle Facilities

The following section discusses general terminology of bicycle facilities and existing bicycle facilities and volumes in the study area.

Terminology

The provision of bicycle facilities may include the following components:

- Bikeways that are indicated by pavement markings and/or signage. There are generally three classes of bikeways:
  - Class I (Paths) - Trails that are exclusively for non-motorized access and are typically shared with pedestrians and/or equestrians
  - Class II (Bike Lanes) – Marked lanes on roadways for exclusive use by bicyclists
  - Class III (Bike Routes) – Roadways in which bicyclists and motorists share the travel lane.

  All of these bikeways may be supplemented with signage and/or bicycle symbol pavement markings. The lack of bicycle designations on city streets does not preclude bicycle usage, as they are defined as a vehicle in the California Vehicle Code and subject to the same rules governing motor vehicles

- Bicycle parking, which includes two classes of facilities:
  - Short-term parking, typically U-racks or wave racks, are recommended in locations close to building entrances for customers and visitors.
  - Long-term parking, most likely provided in secure locations with controlled access or surveillance, is recommended for employees, students, and train stations.

- Intersection aids, such as bicycle detection at actuated traffic signals with pavement markings, bike boxes at signalized intersections, and colored bike lanes at potential motorist-bicyclist conflict points (such as at freeway entrances).

- Amenities, such as employee locker/ showering facilities, benches, water fountains, maps, and directional signage with mileage indications to key destinations.

Bicyclist Volumes

Bicyclists were counted at five study intersections in the month of December, 2007. While the survey days were free of rain, bicycling volumes in the winter tend to be lower than at other times of the year. In any case, bicycling volumes were highest at the Merced Street & Williams Street intersection and lowest at the I-880 Southbound ramps & Davis Street intersection. Table 3 shows the total volumes at all five intersections.

Table 3: Bicyclist Intersection Volumes

Intersection		Peak	Times	Volumes
3	Warden Ave-Timothy Dr & Davis St	AM	7:30-8:30	6
		PM	4:30-5:30	9
		Sat	11:00-12:00	7
4	I-880 SB ramps & Davis St	AM	8:00-9:00	6
		PM	5:00-6:00	4
		Sat	11:00-12:00	2
8	Merced St & Williams St	AM	7:15-8:15	22
		PM	4:00-5:00	15
		Sat	12:45-1:45	16
10	Merced St & Marina Blvd	AM	7:00-8:00	9
		PM	4:00-5:00	4
		Sat	12:15-1:15	5
15	Merced St & Fairway Dr	AM	7:15-8:15	6
		PM	4:00-5:00	6
		Sat	11:45-12:45	4

Counts conducted by Wiltec on Thursday, December 13 for the AM (7:00 to 9:00 am) and PM (4:00 to 6:00 pm) peak-hours and Saturday, December 8, 2007 from 11:00 am to 2:00 pm.

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A number of field observations were made. The bike lanes on Williams Street near Orchard Avenue are not wide enough to accommodate both bicyclists and parked vehicles, so bicyclists are forced out of the bike lanes. At a few intersections, bike lanes are positioned between right-turn only lanes and through-lanes to minimize bicyclist-motorist conflicts, as shown in Photo 2. Bike lanes are often supplemented with signage.

Photo 1: Bicyclist – Williams Street west of Merced Street

Photo 2: Bike lane between right-turn and through lane - Fairway Drive at Doolittle Drive

Despite the provision of bikeways in the study area, potential bicyclists may be discouraged by the high vehicle speeds and the accumulation of debris in bike lanes, especially at overpasses. The bicycling environment is inviting on Williams Street, where vehicle speeds and volumes are lower.

According to the San Leandro Bicycle and Pedestrian Master Plan[14], both Class III bike routes and Class II bike lanes are found in the study area. A Class III facility is provided on the Fairway Drive over-pass from I-880 to Teagarden Street, while Class II bike lanes are provided along the following locations in the study area:

- Williams Street between Neptune Drive and San Leandro Boulevard
- San Leandro Boulevard between north of Davis Street and Washington Avenue
- Davis Street between Doolittle Drive and west of Phillips Lane and between Gilmore Drive and the railroad tracks just west of Alvarado Street
- Fairway Drive between Monarch Bay Drive and I-880
- Aladdin Avenue between Teagarden Street and Alvarado Street
- Teagarden Street between Aladdin Avenue and Alvarado Street
- Alvarado Street between West Estudillo Avenue and Thornton Street, between Marina Boulevard and Aladdin Avenue, and between Teagarden Street and Fremont Avenue
- Doolittle Drive between City Limit and Davis Street and between Fairway Drive and Farallon Drive

The San Leandro Bicycle and Pedestrian Master Plan proposed a number of improvements to better connect the existing bicycle network in the city. In the study area, it includes provision of Class III bike routes along the following segments:

14 City of San Leandro, *San Leandro Bicycle and Pedestrian Master Plan*. Adopted November 2004.

- Davis Street west of Doolittle Drive, on the I-880 overpass, and between San Leandro Boulevard and East 14th Street
- Alvarado Street between Thornton Street and Marina Boulevard and between Aladdin Avenue and Teagarden Street

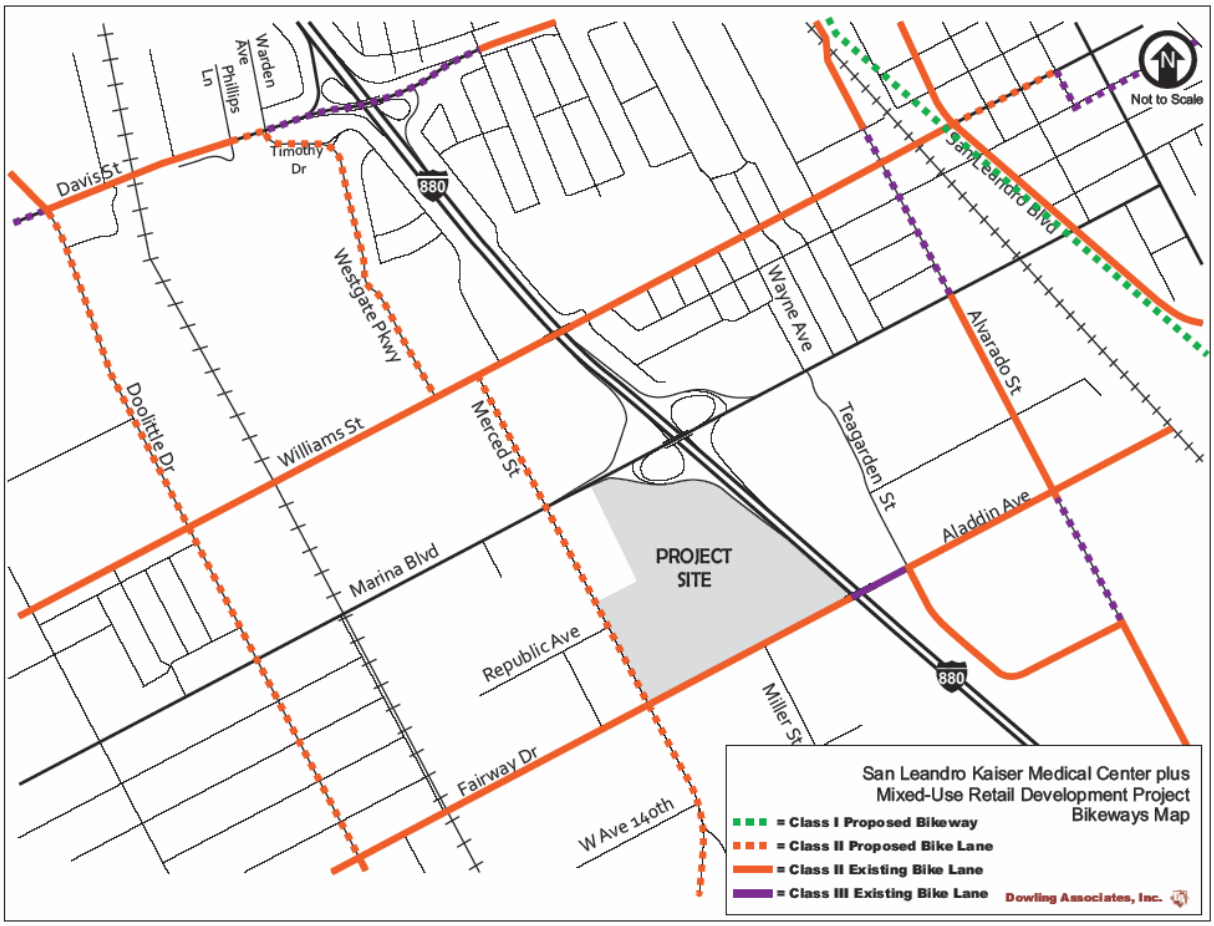
Class II bike lanes are proposed along the following roadways:

- Doolittle Drive between Davis Street and Fairway Drive
- Merced Street/Wicks Boulevard from Williams Street to Farallon Drive
- Davis Street between Beecher Street and Timothy Drive
- Westgate Parkway/Timothy Drive between Davis Street and Williams Street

A Class I bike trail is also proposed along the railroad tracks that would extend along the BART right-of-way across the city.

Figure 4 shows a map of existing and planned bicycle bikeways in the study area.

Figure 4: Existing and Planned Bikeways in the Study Area



Bicycle Parking

There appeared to be no bicycle parking facilities provided to the public in the study area. According to the zoning codes, bicycle parking is required with most commercial developments and public or semi-public space. In commercial developments, short-term bicycle parking space requirements are calculated as 5% of vehicle parking spaces. There are no requirements for long-term bicycle parking for residential (including apartment buildings) or commercial developments. [15]

Bicycle Intersection Aids

There appeared to be no intersection aids in the study area, except the positioning of bike lanes to the left of right-turn lanes at two locations.

15 *City of San Leandro Zoning Code – Article 17*. Bike Parking 4-1714. July 16, 2001

Pedestrian Facilities

The following section discusses general terminology of pedestrian facilities and existing pedestrian facilities and volumes in the study area.

Terminology

Pedestrian facilities are made up of several components and may include the following:

- Walkways, such as sidewalks, paths, and roadway shoulders, which provide exclusive access to pedestrian circulation and adequate widths for walking that are free of obstructions. On high-volume and/or high-speed roadways, buffers are needed to provide greater separation from roadway traffic to create a more conducive walking environment. Buffers, which are areas between the curb and walkway, often house utilities, street furniture, and landscaping
- Intersection crossing aids, such as marked crosswalks, pedestrian bulb-outs, in-pavement flashers, raised crosswalks, median pedestrian refuges, pedestrian-actuated signalization with visual and audible pedestrian signal heads, and curb ramps with detectable warnings.
- Landscaping, such as trees, bushes, and other foliage, can provide shade from the sun and overhead protection during inclement weather, create a more pleasant walking environment, and may absorb noise and pollution from the roadway if placed in the buffer zone.
- Amenities, such as benches, water fountains, pedestrian-scaled lighting, refuse cans, mailboxes, newspaper stands, maps and directional signage.

Additionally, pedestrian activity is encouraged for routine and recreational purposes by providing and maintaining walkway facilities on both sides of all roadways, allowing pedestrians to cross all intersection legs, orienting buildings towards walkways rather than parking lots, and providing easy, continuous, direct path to and from activity centers. Pedestrian activity is discouraged by locating dead spaces (fences, blank walls, surface parking) next to walkways, designing limited access roadways (cul-de-sacs, long stretches of road with no intersections) with no pedestrian access points, high-volume or high-speed roadways with inadequate walkway widths and no buffers, and large turning radii at intersections.

Pedestrian Volumes

Pedestrians were counted at five study intersections in the month of December, 2007, while schools were still in session. While the survey days were free of rain, pedestrian volumes in the winter tend to be lower than at other times of the year.

Table 4 shows the volumes at all five intersections. Two types of intersection volumes are summarized in this table. "Crossings" is the sum of pedestrian crossings at each leg of the intersection. This means that a single pedestrian may be counted twice in the crossing data. "Volumes" are the sum of total pedestrians approaching the intersection, and may include right- and left-turning pedestrians who never enter the crosswalks.

Pedestrian crossings and volumes were highest at the Warden Avenue-Timothy Drive & Davis Street intersection, especially on Saturday. This is not surprising given the high concentration of retail land uses in the area. However, there were also sizeable pedestrian crossings at the I-880 southbound ramps on Davis Street in the weekday PM and Saturday mid-day study periods. Additionally, the intersection of Merced Street & Williams Street also experienced sizeable crossing volumes during all study periods. Pedestrian volumes were generally lower closer to the Project Site.

Table 4: Pedestrian Intersection Volumes

Intersection		Peak	Times	Crossings	Times	Volumes
3	Warden Ave-Timothy Dr & Davis St	AM	7:45-8:45	23	7:15-8:15	39
		PM	4:00-5:00	41	4:00-5:00	48
		Sat	1:00-2:00	56	1:00-2:00	47
4	I-880 SB ramps & Davis St	AM	7:45-8:45	5	N/A	N/A
		PM	4:00-5:00	21	N/A	N/A
		Sat	11:00-12:00	13	N/A	N/A
8	Merced St & Williams St	AM	7:00-8:00	21	7:00-8:00	15
		PM	4:00-5:00	18	4:00-5:00	16
		Sat	12:00-1:00	14	11:30-12:30	15
10	Merced St & Marina Blvd	AM	7:45-8:45	7	7:45-8:45	9
		PM	4:00-5:00	12	4:00-5:00	12
		Sat	12:45-1:45	7	11:00-12:00	10
15	Merced St & Fairway Dr	AM	7:45-8:45	13	7:45-8:45	13
		PM	4:00-5:00	8	4:00-5:00	5
		Sat	11:15-12:15	6	11:15-12:15	6

Counts conducted by Wiltec on Thursday, December 13 for the AM (7:00 to 9:00 am) and PM (4:00 to 6:00 pm) peak-hours and Saturday, December 8, 2007 from 11:00 am to 2:00 pm.

Crossings is the sum of pedestrian crossings at each intersection leg. **Volumes** is the number of pedestrians approaching the intersection, whether or not they crossed the roadway.

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Walkways

In the study area, there are generally concrete sidewalks in good condition on both sides of the street on every study roadway. Overall, the pedestrian walkway network is connected and continuous. At-grade railroad crossings for pedestrians and wheelchair users in the study area are smooth, as shown in Photo 3.

Photo 3: Example of at-grade railroad crossing - Alvarado Street near Montague Street

Photo 4: Example of sidewalk obstructions - Fairway Drive west of Nicholson Street

There is some sidewalk discontinuity found at the following locations

- Merced Street on the west side between Williams Street and Marina Boulevard in front of the Cal Neva building at 1900 Marina Boulevard
- Merced Street on the east side of Merced Street near Republic Avenue
- Marina Boulevard on the north side between the I-880 northbound on-ramp and the I-880 southbound off-ramp on the overpass
- Davis Street on the north side between Philips Lane and Doolittle Drive on the overpass
- Fairway Drive on the north side between Teagarden and Merced Streets on the overpass

Some common problems found with existing walkways during a field survey included frequent obstructions in the sidewalk by utility poles, street lighting poles, and foliage on at least one side of the roadway, as shown in Photo 4. In addition, debris was found on overpass sidewalks. Many sidewalks lack buffers between the roadway and walkway on the high volume arterials, making the sidewalks feel narrow and creating an unpleasant walking experience. In the Project Site area, sidewalks on the south side of Marina Boulevard west of the I-880 southbound ramps and the east side of Merced Street near Republic Avenue are damaged and would need to be repaired or replaced.

Pedestrian Crossing Aids at Intersections

Most signalized intersections in the study area have marked crosswalks on at least three legs and pedestrian signal heads. Audible signals and countdown pedestrian are generally not found in the study area intersections. Several pedestrian-actuated buttons were not ADA compliant due to positioning and barriers. Some intersections prohibit pedestrian crossings on selected legs, such as those with heavy vehicle left-turn volumes or at freeway on-ramps. Pedestrian ramps are present at almost all signalized intersection legs, but lack truncated domes for visually impaired pedestrians. Many intersections have wide turning radii, which encourages greater speeding by right-turning motorists and increases pedestrian crossing distances. Pedestrian bulb-outs are not found in the study area.

Typically unsignalized intersections lack crossing aids. Marked crosswalks may be found at freeway ramps and across side streets, but not across major roadways. This can be onerous for pedestrians, as the distances between signalized intersections are often well over ¼ mile in the study area and sometimes over ½ mile, as is the case between Merced Street and Doolittle Drive. Additionally, unsignalized intersections, especially at T-intersections, frequently lack pedestrian curb ramps. There is also a sight distance problem for motorists and pedestrians at the I-880 northbound off-ramp on the south side of Marina Boulevard due to foliage.

Landscaping

East of I-880, some landscaping and street trees are found along the roadways in the study area, as well as in roadway medians. West of I-880, there is a lack of landscaping in the public right-of-way, although some private properties have landscaping and trees. Uncontrolled foliage from private properties impedes the pedestrian walkways in some locations.

Pedestrian Amenities

Refuse cans, newspaper stands, mailboxes, and benches are found in disparate locations in the study area, usually in close proximity to bus stops.

Railroad Crossings

Most of the roadways in the study area are bisected by at-grade railroad crossings, which are functioning and owned and operated by Union Pacific Railroad (UPRR). As observed during a field survey, all of the at-grade crossings in the study area appeared to have adequate features to facilitate traffic crossings for vehicles, pedestrians and bicyclists, including concrete pavement beds, warning bells and crossing gates.

Truck Routes

San Leandro has established two-tiers of truck routes on city-owned roadways in its General Plan: one tier for through movements, meaning the origin and destination

are not in the City's limits, and the other tier for local access, meaning the origin or destination is in San Leandro. For sites in San Leandro that are not on the local truck routes, trucks must access the designated truck routes as directly as possible to their origin or from their destination.

In the study area, San Leandro Boulevard is a designated truck route for through movements. Almost all of the study roadways are designated as local truck routes, including Davis Street, Williams Street, Marina Boulevard, Fairway Drive, Doolittle Drive, Merced Street, and Alvarado Street.

Study Intersections

A set of intersections and Project access points were selected for study based upon the anticipated volume and distributional patterns of Project traffic and known locations of operational difficulty. This selection was made in collaboration with the City Engineering and Transportation Department staff. The selection considered comments received on the Notice of Preparation (NOP) and considered transportation plans by the Metropolitan Transportation Commission (MTC), the Alameda County Congestion Management Agency (ACCMA), and the California State Department of Transportation (Caltrans). One study intersection would be installed if the Project is approved. Table 5 lists the study intersections, which are displayed on a map in Figure 5.

Table 5: Study Intersections

#	Intersection
1	Davis Street (SR-112) & Doolittle Drive (SR-61)
2	Davis Street (SR-112) & Phillips Lane
3	Davis Street (SR-112) & Warden Avenue-Timothy Drive
4	Davis Street (SR-112) & I-880 Southbound ramps
5	Westgate Shopping Center Driveway & Westgate Parkway
6	Williams Street & Doolittle Drive
7	Williams Street & Westgate Parkway
8	Williams Street & Merced Street
9	Marina Boulevard & Doolittle Drive
10	Marina Boulevard & Merced Street
11	Marina Boulevard & Wayne Avenue-Teagarden Street
12	Marina Boulevard & Alvarado Street
13	Republic Avenue & Merced Street
14	Fairway Drive & Doolittle Drive
15	Fairway Drive & Merced Street
16	Fairway Drive & Miller Street
17	Aladdin Avenue & Teagarden Street
18	Aladdin Avenue & Alvarado Street
19	West Avenue 140th & Merced Street
20	Marina Boulevard & I-880 Southbound ramps
21	Marina Boulevard & I-880 Northbound ramps
22	San Leandro Boulevard & Marina Boulevard
23	Wells Fargo Driveway & Merced Street
24	Fairway Drive & Kaiser West Driveway

(1) Intersection 24 is a future intersection associated with the Project

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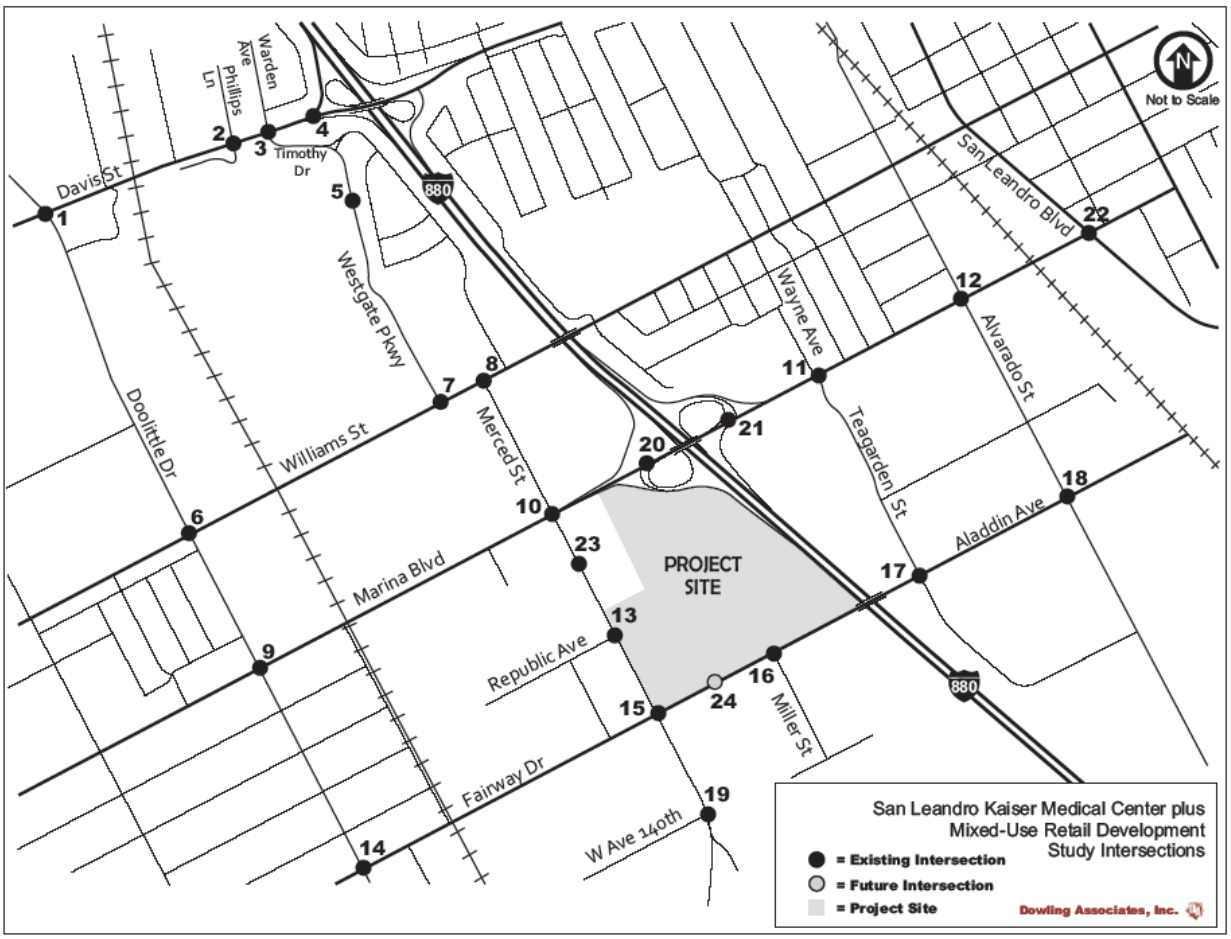
Figure 5: Study Area Map with Numbered Intersections



Existing (2007) Traffic Conditions

This section describes traffic and truck volume count results, as well as presenting intersection levels of service based on existing conditions.

Twenty-Four Hour Vehicle Volumes

Twenty-four hour roadway directional counts (pneumatic tube counter) were also conducted at five locations on a weekday and a Saturday in December 2007. A summary of the results is contained in Table 6.

Table 6: Twenty-Four Hour Vehicle Counts

Roadway	Segment	Direction	Weekday	Saturday
Fairway Drive	Merced and Menlo Streets	Eastbound	5,500	3,450
		Westbound	4,980	3,150
		Total	**10,480**	**6,600**
Marina Boulevard	Merced and Menlo Streets	Eastbound	7,760	6,630
		Westbound	7,080	6,090
		Total	**14,840**	**12,720**
Davis Street	Doolittle Drive and Warden Avenue-Timothy Drive	Eastbound	8,840	6,050
		Westbound	9,580	6,170
		Total	**18,420**	**12,220**
Merced Street	Marina Boulevard and Republic Avenue	Northbound	10,340	7,130
		Southbound	9,070	6,130
		Total	**19,410**	**13,260**
Doolittle Drive	Marina Boulevard and Williams Street	Northbound	6,230	3,810
		Southbound	7,300	4,550
		Total	**13,530**	**8,360**

Counts conducted by Wiltec in 2007 on Saturday, December 8, and Tuesday, December 11.

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Of the five survey locations, Merced Street between Marina Boulevard and Republic Avenue carried the highest vehicle volumes on the weekday and Saturday with 19,400 and 13,250 vehicles, respectively. Vehicle volumes were lowest on Fairway Drive between Merced and Menlo Streets on the weekday and Saturday with 10,480 and 6,600 vehicles, respectively.

Truck Volumes

In order to determine truck volumes and percentages at select locations in the study area, axle classification counts were conducted at the same time the twenty-four hour vehicle counts were collected. A summary of Weekday and Saturday truck volumes and percentages are contained in Table 7 and Table 8, respectively. They are subdivided into two categories of trucks: Classes 5 through 7 and Classes 8 through 13. Class 5-7 vehicles are single-unit trucks (meaning the motor and cargo units are on the same frame). Examples of Class 5-7 vehicles include delivery trucks

(such as UPS and FedEx trucks), gravel and dump trucks. Class 8-13 vehicles are semi-articulated trucks (meaning the motorized unit can be detached from the cargo units). These are often referred to as "heavy trucks" and are typically the types of vehicles subject to routing and parking restrictions.

Highest volumes and percentages (as compared to total number of vehicles) of heavy trucks were found on Davis Street between Doolittle Drive and Warden Avenue-Timothy Drive. 1,650 heavy trucks constituted 9.0% of vehicle volumes on the weekday, and similarly 640 (5.2%) on Saturday. Lowest volumes and percentages were found on Fairway Drive between Menlo Street and Merced Street. 640 heavy trucks constituted 5.2% of vehicle volumes on the weekday, and similarly 39 (0.6%) on Saturday.

Intersection Turning Movement Counts

Manual intersection turning movement counts were conducted in 2007 by Wiltec, an independent traffic counting firm. Most intersections were surveyed in May and June 2007 with a few others conducted in November and December of the same year. All counts were conducted while the San Leandro Public Schools were in session and under non-rainy conditions. Surveys were conducted during the AM and PM commute periods (7:00 to 9:00 AM and 4:00 to 6:00 PM), and on Saturday during the mid-day peak hour (11:00 AM to 2:00 PM).

Existing intersection geometries, traffic controls, and intersection turning movement count volumes are shown in the appendix.

Existing Intersection Levels of Service

Table 9 provides information on levels of service and delays at all study intersections for weekday AM & PM peaks, and for weekend Saturday peak conditions. All the intersections currently meet San Leandro's General Plan stands of LOS D or better. However, traffic on the southbound approach of the I-880 southbound off-ramp and Marina Boulevard intersection would experience unacceptable delays as they must yield to oncoming traffic. The intersection is unsignalized and recognized in San Leandro's General Plan as operating at sub-standard levels of service. Plans to reconfigure the Marina Boulevard interchange are in the planning stages to address the operational issues at these two intersections.

Table 7: Weekday Truck Counts and Percentages

Roadway	Segment	Direction	Total Vehicles	Class 5-7 Volume	Class 5-7 Percent	Class 8-13 Volume	Class 8-13 Percent	Total Trucks Volume	Total Trucks Percent
Fairway Drive	Merced and Menlo Streets	Eastbound	5,500	400	7.3%	170	3.1%	570	10.4%
		Westbound	4,980	360	7.2%	110	2.2%	480	9.6%
		Total	10,480	760	7.3%	280	2.7%	1,050	10.0%
Marina Boulevard	Merced and Menlo Streets	Eastbound	7,760	410	5.3%	350	4.5%	770	9.9%
		Westbound	7,080	420	5.9%	420	5.9%	840	11.9%
		Total	14,840	830	5.6%	770	5.2%	1,610	10.8%
Davis Street	Doolittle Drive and Warden Avenue-Timothy Drive	Eastbound	8,840	850	9.6%	880	10.0%	1,730	19.6%
		Westbound	9,580	880	9.2%	770	8.0%	1,650	17.2%
		Total	18,420	1,730	9.4%	1,650	9.0%	3,380	18.3%
Merced Street	Marina Boulevard and Republic Avenue	Northbound	10,340	830	8.0%	930	9.0%	1,760	17.0%
		Southbound	9,060	590	6.5%	690	7.6%	1,270	14.0%
		Total	19,400	1,420	7.3%	1,620	8.4%	3,030	15.6%
Doolittle Drive	Marina Boulevard and Williams Street	Northbound	6,230	400	6.4%	390	6.3%	790	12.7%
		Southbound	7,300	500	6.8%	580	7.9%	1,080	14.8%
		Total	13,530	900	6.7%	970	7.2%	1,870	13.8%

Counts conducted by Wiltec on Tuesday, December 11, 2007.

Class 5-7 vehicles are non-articulated trucks, such as delivery, gravel and dump trucks. Class 8-13 vehicles are articulated trucks where the motor-powered units are detachable from the cargo-carrying units.

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Table 8: Saturday Truck Counts and Percentages

Roadway	Segment	Direction	Total Vehicles	Class 5-7		Class 8-13		Total Trucks	
				Volume	Percent	Volume	Percent	Volume	Percent
Fairway Drive	Merced and Menlo Streets	Eastbound	3,450	130	3.8%	20	0.6%	150	4.3%
		Westbound	3,150	120	3.8%	20	0.6%	130	4.1%
		Total	6,600	250	3.8%	40	0.6%	280	4.2%
Marina Boulevard	Merced and Menlo Streets	Eastbound	6,630	220	3.3%	150	2.3%	370	5.6%
		Westbound	6,090	220	3.6%	230	3.8%	450	7.4%
		Total	12,720	440	3.5%	380	3.0%	820	6.4%
Davis Street	Doolittle Drive and Warden Avenue-Timothy Drive	Eastbound	6,050	230	3.8%	330	5.5%	560	9.3%
		Westbound	6,170	200	3.2%	300	4.9%	500	8.1%
		Total	12,220	430	3.5%	630	5.2%	1,060	8.7%
Merced Street	Marina Boulevard and Republic Avenue	Northbound	7,130	360	5.0%	310	4.3%	670	9.4%
		Southbound	6,130	200	3.3%	250	4.1%	450	7.3%
		Total	13,260	560	4.2%	560	4.2%	1,120	8.4%
Doolittle Drive	Marina Boulevard and Williams Street	Northbound	3,810	120	3.1%	100	2.6%	230	6.0%
		Southbound	4,550	180	4.0%	160	3.5%	340	7.5%
		Total	8,360	300	3.6%	260	3.1%	570	6.8%

Counts conducted by Wiltec on Saturday, December 8, 2007

Class 5-7 vehicles are non-articulated trucks, such as delivery, gravel and dump trucks. Class 8-13 vehicles are articulated trucks where the motor-powered units are detachable from the cargo-carrying units.

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Table 9: Intersection LOS for Existing AM, PM, and Saturday Peak Hours

		AM		PM		Saturday	
Signalized Intersections [1]		**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
1	Davis St & Doolittle Dr	C	27.4	C	22.7	C	20.3
2	Davis St & Phillips Ln	B	16.8	D	47.7	D	36.9
3	Davis St & Warden Ave	C	22.1	D	39.7	C	28.2
4	Davis St & I-880 SB ramps	B	10.3	B	12.5	B	13.9
5	Westgate Shopping Center driveway & Westgate Pkwy	B	13.0	C	20.2	C	15.5
6	Williams St & Doolittle Dr	A	9.4	A	9.5	A	6.7
7	Williams St & Westgate Pkwy	B	11.7	B	15.5	A	7.9
8	Williams St & Merced St	C	27.5	C	29.4	B	18.0
9	Marina Blvd & Doolittle Dr	C	26.5	C	28.9	C	31.3
10	Marina Blvd & Merced St	C	29.3	D	40.9	C	25.3
11	Marina Blvd & Teagarden St	C	31.1	D	36.3	C	33.0
12	Marina Blvd & Alvarado St	C	29.9	D	39.7	B	17.2
14	Fairway Dr & Doolittle Dr	B	13.9	B	13.0	B	13.1
15	Fairway Dr & Merced Street	C	25.3	C	32.3	C	22.8
17	Aladdin Ave & Teagarden St	B	17.9	B	15.2	B	11.9
18	Aladdin Ave & Alvarado St	C	22.0	B	15.7	B	15.6
19	West Ave 140th & Merced St	A	3.8	A	5.2	A	4.1
22	Marina Blvd & San Leandro Blvd	D	36.4	D	44.3	C	26.6
23	Wells Fargo driveway & Merced St	A	1.7	A	5.4	A	4.0
24	Fairway Dr & Kaiser West Driveway			*Project Intersection*			
Unsignalized Intersections [2]		**AM**		**PM**		**Saturday**	
		LOS	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
13	Republic Ave & Merced St	A/ D	0.7/ 25.8	A/ C	1.0/ 23.3	A/ C	0.3/ 16.6
16	Fairway Dr & Miller St	A/ B	1.2/ 14.9	A/ C	2.6/ 17.4	A/ B	0.6/ 10.5
20	Marina Blvd & I-880 SB Ramps	B /D	6.2/25.4	***B / F***	***11.6/ 50.2***	***B / E***	***11.6/40.1***
21	Marina Blvd & I-880 NB Ramps	B/D	9.0/26.1	A/ D	4.4/ 16.2	A/ C	6.4 / 21.3

Source: Dowling Associates, Inc., November 2009.

Notes: **LOS** = Level of Service; **Delay** = Weighted average seconds of delay per vehicle; **Bold** denotes sub-standard operations

1 LOS and delay at signalized intersections are based on weighted average delay of all intersections approaches.

2 The Highway Capacity Manual calculates LOS and delay at side-street stop-controlled intersections as approach delay of the *intersection leg with the worst LOS*. Synchro also reports the weighted average delay of all movements at side-street stop-controlled intersections. This table displays both values as "all legs/ worst leg" for LOS and delay.

Existing Freeway Levels of Service

Existing volumes on I-880 northbound and southbound mainline segments and weaving sections were derived from Year 2005-2006 data obtained from Caltrans. Table 10 presents the existing levels of service at the study freeway segments and weaving area during weekday AM and PM peak hours. The results indicate that both directions of I-880 are operating at LOS E or better during the peak hours.

Table 10: Freeway LOS for Existing AM & PM Peak hours

Location		AM Peak Hour			PM Peak Hour		
	Type	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]
I-880 Northbound							
Washington Av. to Marina Blvd.	Mainline	8,867	31.6	D	7,250	24.7	C
Marina Blvd. to Davis St.	Weave[4]	8,553	–	C	7,450	–	C
Davis St. to 98th Av.	Mainline	8,300	42.3	E	7,500	34.5	D
I-880 Southbound							
98th Av. to Davis St	Mainline	6,411	27.6	D	8,156	40.6	E
Davis St. to Marina Blvd.	Mainline	6,943	23.6	C	8,577	30.1	D
Marina Blvd. to Washington Av.	Mainline	5,419	23.0	C	7,207	32.3	D

Source: Dowling Associates, Inc., 2009.

[1] Volume = vehicles per hour (vph)

[2] Density = passenger car per mile per lane (pc/m/ln)

[3] LOS = Level of Service

Bold denotes locations operating at below standards; **Boxed** denotes locations with significant project impacts.

[4] Marina Blvd. to Davis St. analyzed as a weaving section using the Leisch Method as described in the Caltrans Design Manual, September 1, 2006. The volume shown for this segment is the total mainline volume.

Existing Freeway Ramp Queuing

Table 11 summarizes the results of the existing freeway ramp queuing analysis.

Table 11: Existing Year Freeway Ramp Queue (in feet)

	Marina Boulevard Northbound Diagonal Off-Ramp	Marina Boulevard Northbound Loop Off-Ramp	Marina Boulevard Southbound Diagonal Off-Ramp	Marina Boulevard Southbound Loop Off-Ramp	Davis Street Southbound Off-Ramp
Available Storage Length	**750**	**1,545**	**1,745**	**1,150**	**1,120**
AM Queue[1]	Free	216	Free	169	132
PM Queue[1]	Free	112	Free	297	193
Saturday Queue[1]	Free	150	Free	283	346

Source: Dowling Associates, Inc., 2009

[1] 95th percentile queue length in feet

Free = off-ramp is uncontrolled

Regulatory Setting

This section summarizes applicable local and municipal plans and regulations that apply to the study area. This information provides a context for the impact discussion related to the Project's consistency with applicable policies, plans, laws, and regulations.

Local

Streets in the study area are generally under the jurisdiction of San Leandro, except State highways that are under Caltrans' jurisdiction.

San Leandro

General Plan

The City's General Plan Update was adopted in May 2002. The Transportation Element provides the policy framework for the regulation and development of transportation systems, balancing demands for moving people and goods within the city. It is comprehensive, addressing vehicular, pedestrian, bicycle, transit, truck, ferry and air transportation, as well as land use. The Plan contains the following goals, accompanied by specific policies and actions:

Goal 13: Coordinating Land Use and Transportation – Coordinate land use and transportation planning.

Goal 14: Bicycle and Pedestrian Circulation – Promote and accommodate alternative, environmentally-friendly methods of transportation, such as walking and bicycling.

Goal 15: Public Transportation – Ensure that public transportation is safe, convenient, and affordable and provides a viable alternative to driving.

Goal 16: Streets and Highways – Improve major transportation arteries for circulation in and around the City.

Goal 17: Neighborhood Traffic Management – Minimize the adverse effects of business, industrial, and through traffic on neighborhood streets.

Goal 18: Traffic Safety – Improve traffic safety and reduce the potential for accidents on San Leandro Streets.

Goal 19: Pedestrian-Oriented Streetscape – Encourage community design principles and standards which de-emphasize automobiles.

Goal 20: Interagency Coordination – Coordinate local transportation planning with other agencies and jurisdictions.

Bicycle and Pedestrian Master Plan

The City's Bicycle and Pedestrian Master Plan was adopted in November 2004. It contains an assessment of existing conditions for bicyclists and pedestrians and provides recommendations for biking and walking facilities, the interface between bicyclists and transit, and programs. It contains the following goals, accompanied by specific policies:

Goal 1: Support bicycling and walking and the development of a comprehensive bicycle and pedestrian transportation system as a viable alternative to the automobile.

Goal 2: Maximize the amount of state and federal funding for bicycle and pedestrian improvements for which San Leandro is eligible.

Goal 3: Build upon existing bicycle and pedestrian facilities.

Goal 4: Develop a bicycle and pedestrian system that meets the needs of commuter and recreation users, helps reduce vehicle trips, and links residential neighborhoods with regional destinations.

Goal 5: Maximize multi-modal connections to the bicycle and pedestrian system.

Goal 6: Improve bicycle and pedestrian safety.

Goal 7: Develop detailed and ranked bicycle improvements.

Goal 8: Encourage public participation and creation of an ongoing Bicycle Pedestrian Advisory Committee.

Goal 9: Develop a coordinated marketing strategy to encourage bicycling.

Goal 10: Improve the walkability of streets in San Leandro.

Goal 11: Provide a safe, comfortable walking environment that promotes pedestrian activity in all new developments.

California Department of Transportation

Caltrans is responsible for planning, design, construction, and maintenance of all interstate freeways and state routes. Interstate 880, a freeway in the study area, is under Caltrans jurisdiction, as are portions of Davis Street (State Route 112) and Doolittle Drive (SR 61) from Davis Street to its north. Caltrans requirements are described in their Guide for the Preparation of Traffic Impact Studies (Caltrans, 2001), which covers the information needed for Caltrans to review the impacts to State highway facilities; including freeway segments, on- and off-ramps, and signalized intersections.

Alameda County Congestion Management Agency

The Alameda County Congestion Management Agency (CMA) prepares the Congestion Management Program (CMP), a plan mandated by California law to describe the strategies to address congestion problems on the CMP network, which includes state highways and principal arterials. The CMP uses LOS standards as a mean to measure congestion and has established LOS standards to determine how local governments meet the standards of the CMP.

Impact Analysis

Thresholds of Significance

This section describes the criteria used to determine whether potential transportation impacts would be considered significant. Significance criteria for the Project's impacts on traffic are drawn from existing planning documents and from the California Environmental Quality Act (CEQA) Guidelines, Appendix G, Section XV-Transportation/Traffic, items (a) through (g). The Kaiser Medical Center and Mixed-Use Retail Development Project would create a significant circulation impact if it would:

a. Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).

b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency (CMA) for designated roads or highways.

c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

e. Result in inadequate emergency access.

f. Result in inadequate parking capacity.

g. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

The above general significance criteria are interpreted as follows in evaluating the Project:

a. Traffic Impacts

Freeway and Ramp Operations

As stated in the Caltrans TIS Guide, "Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State highway facilities; however, Caltrans acknowledges that this may not always be feasible… If an existing State highway facility is operating at less than the appropriate target LOS, the existing MOE should be maintained." However, the Alameda County Congestion Management Plan identifies levels of service no worse than E on freeways and ramps during peak hours. For the purposes of this study, significant traffic impacts on I-880 in the study area are identified if the Project causes:

- The operations of a freeway segment or ramp to deteriorate from LOS E or better to LOS F; or
- An increase in the amount of vehicle traffic on a freeway segment already operating at LOS F by more than one percent of the freeway segment's design capacity.

Intersection Operations

San Leandro's General Plan contains LOS standards for intersection operations, whether an intersection is signalized or not. According to Policy 16.02, the minimum acceptable LOS is D. Exceptions are detailed on page 4-20 of the General Plan, which states,

"LOS D may only be exceeded where the following circumstances exist:

- Road improvements are not possible because the necessary right-of-way does not exist and cannot be acquired without significant impacts on adjacent buildings and properties.
- The intersection or road segment is in a pedestrian district, such as Downtown, where the priority is on pedestrian, bicycle, and public transit access rather than vehicle traffic."

For the purposes of this study, significant traffic impacts at intersections in the study area are identified if the Project causes:

- An intersection to operate at LOS E or F; or
- An increase in the volume-to-capacity (v/c) ratio of 0.05 or more for signalized intersections that operate at LOS E or F under No Project conditions; or
- An increase in average delay of more than five (5) seconds on the worst approach for unsignalized intersections that operate at LOS E or F under No Project conditions.

b. Congestion Management Agency Requirements

According to the Alameda County CMP, the LOS standard for Metropolitan Transportation System (MTS) roadways, which include the CMP roadway network, is LOS E, except for those locations at LOS F in 1991. Significant traffic impacts on MTS roadways in the study area are identified if the Project causes:

- The operations on MTS roadways to deteriorate from LOS E or better to LOS F; or
- An increase volume-to-capacity (v/c) ratio on an MTS roadway already operating at LOS F by more than three (3) percent.

c. Air Traffic Patterns

Significant impacts in the Project Site area are identified if the Project results in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

d. Design Features or Incompatible Uses

Significant impacts in the Project Site area are identified if the Project substantially increases hazards due to design features, such as sharp curves, inadequate sight distances, or dangerous intersections.

e. Emergency Access

Significant impacts in the Project Site area are identified if the Project does not provide adequate emergency access.

f. Parking Supply

Significant impacts in the Project Site area are identified if the Project does not provide adequate parking capacity consistent with San Leandro's adopted standards as described in Article 17 of the City's Zoning Code or it does not provide adequate parking supply to meet parking requirement identified in a parking demand study approved by the City.

g. Alternative Modes

Significant impacts in the Project Site area are identified if the Project conflicts with adopted policies, plans or programs supporting alternative transportation.

Approach and Methodology

The analysis methodology required the use of two transportation tools: The Alameda County Congestion Management Agency (ACCMA) Countywide travel demand model in the CUBE/Voyager software, which forecasts roadway volumes and intersection turning volumes, and the Synchro software, which was used to determine intersection levels of service. The ACCMA Countywide travel demand model was further refined for this study to accurately reflect existing and future vehicle volumes in the local study area. These tools were selected through coordination with the City.

Travel Demand Model Assumptions

Traffic forecasts for all conditions analyzed were prepared using a combination of the travel demand model developed by ACCMA and ITE Trip Generation.

Typical methods of analysis for relatively small proposed projects use travel demand models to develop traffic volume forecasts for future years without the project and then add trips developed by ITE trip generation procedures to those no-project conditions. That procedure is relatively straightforward when major changes in land use or substantial changes in the transportation system are not proposed as part of the project. In the case of the proposed Kaiser Medical plus Mixed-Use Retail project, major changes in land use are proposed. The procedures used to develop future traffic volumes described below for the project rely more heavily on the use of travel demand models to forecast future traffic for the project. These procedures are more consistent with those typically used to evaluate the effects of a specific plan for a large area like the proposed Kaiser project.

The City of San Leandro typically uses the ACCMA Countywide Travel Demand Model to forecast its travel demand. The most recent model is implemented using the Cube software and is based on network assumptions from MTC's 2005 Regional Transportation Plan (RTP) and the Countywide Transportation Plan. Land use assumptions are based on the most recently available Association of Bay Area Governments' (ABAG) Projections 2005, to forecast travel demand. ABAG Projections 2007 was not available in the ACCMA Countywide Model in 2008 when the traffic estimates were developed. The model forecasts weekday average daily traffic (ADT) and, AM and PM peak hour traffic for links and intersections based on the industry standard 4-step travel demand model method. To minimize model calibration error, Dowling has developed a comprehensive post-processing procedure to adjust the model intersection turn forecasts prior to inputting results and analyzing the intersection LOS into Synchro. The ACCMA model was recently recalibrated to the 2000 conditions based on updated land use and network assumptions and was locally revalidated to the new 2007 counts for this project. The model does not forecast weekend Saturday conditions, so this period was derived from the relationship between Saturday counts and weekday counts and then extrapolated to the weekday model forecasts. A summary of the assumptions is included below:

- For Existing 2007 model conditions, the land uses for the Traffic Analysis Zones (TAZs) located within the study area were obtained from ABAG P05 demographics and interpolated to 2007 using the 2005 and 2015 model horizon years..
- For Baseline 2015 Conditions, the land uses for the TAZs located within the study area were obtained from ABAG P05 demographics for the 2015 model horizon year.
- Planned roadway changes incorporated into the model for this future year are detailed in the Baseline scenarios.
- For the Cumulative 2030 Conditions, the land uses for the TAZs located within the study area were obtained from ABAG P05 demographics for the 2030 model horizon year. Planned roadway changes incorporated into the model for this future year are detailed in the cumulative scenarios.

Synchro Level of Service Model Assumptions

The most current version of the Synchro software was used to analyze intersections. Intersection levels of service were calculated and reported using the 2000 *Highway Capacity Manual* techniques for operations at signalized and unsignalized intersections as implemented in the Synchro computer model.

Framework for Analysis

The analysis of the Kaiser Medical Center plus Mixed-Use Retail Development Project traffic impacts involves multiple sequential steps, with the conclusions of each step reviewed for reasonableness before proceeding with the next step. The sequence of steps in the traffic analysis for the Project Traffic Report was as follows:

Traffic Task	Method or Tool Applied
1. Assign existing model traffic	The ACCMA travel demand model was implemented and refined to develop trip generation, trip distribution, mode choice and trip assignment for existing conditions in the City. The model uses Institute of Transportation Engineering (ITE) Manual trip rates for all land uses. Peak hour AM and PM weekday trips were developed for existing uses for all roadways and intersections in the model. The model results are compared to counts and any difference between the two forms the basis for adjustment of future volumes. The model does not have the capability to develop Saturday mid-day trips, so these were developed by factoring the AM and PM weekday peak period model volumes in proportion to the Saturday to Weekday counts.
For each future scenario:	
2. Assign trips to road network	The ACCMA travel demand model was used to distribute daily person trips and assign peak hour vehicle traffic to and from the Project Site to the future roadway network.
3. Estimate background traffic	The ACCMA travel demand model was used to determine peak hour traffic conditions at 24 intersections where the Project may affect traffic. The model was used to generate data files representing traffic movements at those 24 intersections under existing 2007 conditions and two future conditions without the Project: • Existing Conditions (2007) • Baseline Conditions (2015) • Cumulative Conditions (2030)

4. Add Project traffic to future scenarios

Project land use was added to the ACCMA travel demand model, which was used to distribute daily person trips and assign peak hour traffic to and from the Project Site to the future roadway network. The method relies on the model's built-in processes to determine trip redistributions and pass by trips as a result of the project and related traffic congestion levels. The model was implemented for all future scenarios based on changes to the network for each Project scenario.

- Baseline (2015) plus Kaiser Medical Center Phase 1
- Baseline (2015) plus Kaiser Medical Center Phase 1 & Mixed-Use Retail Development
- Cumulative (2030) plus Kaiser Medical Center Phase 1 & Mixed-Use Retail Development
- Cumulative (2030) plus Kaiser Medical Center Phase 1 & Mixed-Use Retail Development with Aladdin Avenue Extension
- Cumulative (2030) plus Kaiser Medical Center Build-Out & Mixed-Use Retail Development
- Cumulative (2030) plus Kaiser Medical Center Build-Out & Mixed-Use Retail Development with Aladdin Avenue Extension

The model runs for all future project scenarios are then compared to the no-project model runs and the results were reviewed for reasonableness. Since the model employs congestion as a measure to assign traffic to the network, it may not add additional traffic to overloaded links if the roadways are too congested. Instead, it will redistribute some traffic to other routes. As a result, the volume differences on the network between the no-project and project runs may not necessarily be attributed entirely to project traffic. This process can sometimes lead to minor fluctuations or anomalies due to traffic redistribution. Some anomalies are factored out in the next step of the methodology, but the fluctuations will not change the overall results of the analysis.

5	Adjust future intersection volumes	Future model intersection volumes were further post-processed to correlate model results with actual traffic counts by considering the difference between the 2007 model and 2007 counts using the industry standard automatic Incremental Adjustment Method with Furness. The adjustment method factors out the model error from the forecasted volumes. This method was developed by the Transportation Research Board as referenced in the *National Cooperative Highway Research Program Report (NCHRP) 255: Highway Traffic Data for Urbanized Area Project Planning and Design (1982).* Further manual adjustments were done in locations where new future facilities affected the automatic method of adjustment. Traffic on Davis Street was adjusted to more reasonable levels as a result of overprediction caused by future employment increases at the Oakland International Airport. Additional adjustments were also made to balance traffic at the multiple project access locations that are not well represented by the travel model.
6.	Estimate intersection LOS	Intersection operation is characterized by levels of service (LOS) expressed in terms of vehicle delay, ranging from A (none to negligible delay) to F (excessive delay). The City conducts level of service calculations for signalized and unsignalized intersections using Synchro software, which implements the *Highway Capacity Manual* (HCM) methodologies.
7.	Identify Project impacts and mitigation measures	For intersections that are identified as exceeding LOS standards, determine if the Project has caused an impact and what measures, if any, would improve operations to an acceptable level of service.

Unsignalized Intersections Analysis

Stop sign-controlled intersections were analyzed utilizing the operational methodology outlined in the *Highway Capacity Manual* (Transportation Research Board, Washington, D.C., 2000, Chapter 17). This methodology calculates a **weighted average stop delay** in seconds per vehicle for each controlled intersection leg and for the intersection as a whole. An LOS designation is assigned based upon the weighted average control delay per vehicle on the intersection leg with the **worst delay** at one- or two-way stop-controlled intersections. For all-way stop-controlled intersections, an LOS designation is based upon the weighted average control delay for all intersection legs, similar to the LOS designation for signalized intersections. Table 12 presents the relationship of average delay to level of service for stop-controlled intersections.

Table 12: HCM Level of Service Threshold for Unsignalized Intersections

Level of Service (LOS)	Average Delay (seconds/vehicle)	Description
A	≤ 10	Very Low Delay
B	> 10 and ≤ 15	Minimal Delays
C	> 15 and ≤ 25	Acceptable Delay
D	> 25 and ≤ 35	Approaching Unstable Operation and/or Significant Delays
E	> 35 and ≤ 50	Unstable Operation and/or Substantial Delays
F	> 50	Excessive Delays

Source: *Highway Capacity Manual* (HCM), Transportation Research Board, Washington, DC, 2000, Chapter 17 (Unsignalized Intersections)

Signalized Intersections Analysis

Signalized intersection analyses were conducted using the operational methodology outlined in the *Highway Capacity Manual* (Transportation Research Board, Washington, D.C., 2000, Chapter 16), as required by the City. This procedure calculates a **weighted average stop delay** in seconds per vehicle at a signalized intersection, and assigns a level of service designation based upon the delay. Table 13 shows level of service criteria for signalized intersections in the 2000 *Highway Capacity Manual*.

Freeway Operations Analysis

The freeway operations analysis was conducted using the methodology described in the 2000 *Highway Capacity Manual*. The Highway Capacity Software (HCS) was used to analyze three segments of I-880 in both travel directions:

- I-880 between 98th Avenue and Davis Street
- I-880 between Davis Street and Marina Boulevard
- I-880 Marina Boulevard and Washington Avenue

Components of freeway operations analysis include Mainline, Weaving, Merging/ Diverging, and Ramp Queuing, as described in more detail below.

Table 13: HCM Level of Service Threshold for Signalized Intersections

Level of Service (LOS)	Average Delay (seconds/vehicle)	Description
A	≤ 10	Very Low Delay: This level of service occurs when progression is extremely favorable and most vehicles arrive during a green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	> 10 and ≤ 20	Minimal Delays: This level of service generally occurs with good progression, short cycle lengths, or both. More vehicles stop than at LOS A, causing higher levels of average delay.
C	> 20 and ≤ 35	Acceptable Delay: Delay increases due to fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level of service. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	> 35 and ≤ 55	Approaching Unstable Operation/Significant Delays: The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume / capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55 and ≤ 80	Unstable Operation/Substantial Delays: These high delay values generally indicate poor progression, long cycle lengths, and high volume / capacity ratios. Individual cycle failures are frequent occurrences.
F	> 80	Excessive Delays: This level, considered unacceptable to most drivers, often occurs with oversaturation (that is, when arrival traffic volumes exceed the capacity of the intersection). It may also occur at high volume / capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Source: *Highway Capacity Manual* (HCM), Transportation Research Board, Washington, DC, 2000, Chapter 16 (Signalized Intersections)

Freeway Mainline Analysis

The freeway mainline was analyzed utilizing a methodology outlined in the *Highway Capacity Manual* (Transportation Research Board, Washington, D.C., 2000, Chapters 13 and 23). Table 14 shows the relationship of freeway volume-to-capacity ratios and density to LOS.

Freeway Weaving Analysis

Freeway weaving segments were analyzed using the Leisch Method as described in the Caltrans Design Manual, dated September 1, 2006. Freeway weaving conditions are dependent upon traffic volumes and the weaving length between the interchanges; lane configurations, and free-flow speed of the freeway segment. Weaving analysis is typically applicable for freeway segments where the distance between an on-ramp and a downstream off-ramp is less than 2,500 feet.

Freeway Ramp Queuing Analysis

Queuing analysis was performed for all I-880 off-ramp locations in the study area. Synchro software was used to compute the 95th percentile queue from the intersection analysis, using the *Highway Capacity Manual* 2000 methodologies.

Table 14: Level of Service Criteria – Freeway Mainline

Level of Service	Maximum Density (passenger vehicles per mile per lane)
A	11
B	18
C	26
D	35
E	45
F	>45

Source: *Highway Capacity Manual*. Transportation Research Board. Washington, D.C., 2000

Project Analysis

The Project was analyzed for its effects on existing and future transportation systems in the study area. This section details the Project.

Project Description

San Leandro's General Plan designates the 63-acre Project Site as General Industrial and was formerly occupied by a distribution and maintenance center for Albertson's supermarkets. The Project would replace current warehouse and distribution uses and would require a new General Plan land use designation and zoning district. The Project contains retail, residential, medical office and hospital uses. The development projects have been divided up into two analysis units, as described below:

Mixed-Use Retail Development – The northern 25 acres of the site is currently analyzed as a programmatic level and would be developed into a 387,000 square-foot retail project (consisting of large format stores, multi-tenant retail uses, restaurants, soft goods, and service-oriented retailers) and a Mixed-Use residential project, consisting either of 250 one- and two-bedroom apartments or equivalent trip generating hotel or retail use.

Kaiser Medical Center - Kaiser Foundation Hospitals plans to develop the southern 38 acres of the site in two phases. Phase 1 of the development is comprised of up to 711,000 square feet of uses, including a 275,000 square-foot medical office building, a 436,000 square-foot hospital with up to 264 beds, and a 31,000 square-foot central utility plant and a 20,000 square-foot outdoor service yard. Project Build-Out would add an additional 200,000 square feet of medical offices and a 175,000 square-foot or 120 bed hospital wing. Phase 1 is expected to be constructed and fully operational by the year 2015. Build-Out is expected to occur by the year 2030.

Site Circulation

Access to and from the northern mixed-use retail portion of the site would be provided at two locations:

- Full signalized access to and from the site on Merced Street at Republic Avenue, which would be shared with Kaiser Medical Center (Intersection 13); and
- Right-turn in and right-turn out only stop-controlled access onto Marina Boulevard, east of the existing Denny's restaurant.

Access to and from the southern Kaiser Medical Center portion would be provided at the following locations:

- Full signalized access to and from the site on Merced Street at Republic Avenue Extension, which would be shared with the Mixed-Use retail development (Intersection 13);
- Right-turn out only stop-controlled access onto Merced Street, approximately 200 feet south of the Republic Avenue intersection;
- Right-turn out only stop-controlled access onto Merced Street, approximately 200 feet north of the Fairway Drive intersection;
- Full signalized access to and from the site on Fairway Drive about 500 feet east of the Merced Street intersection, a new access point named the West Driveway (Intersection 24);
- Full signalized access to and from the site on Fairway Drive at Miller Street (Intersection 16); and
- Stop-controlled access for deliveries at the south-eastern corner of the Project Site under the Fairway Drive-Aladdin Avenue overcrossing.

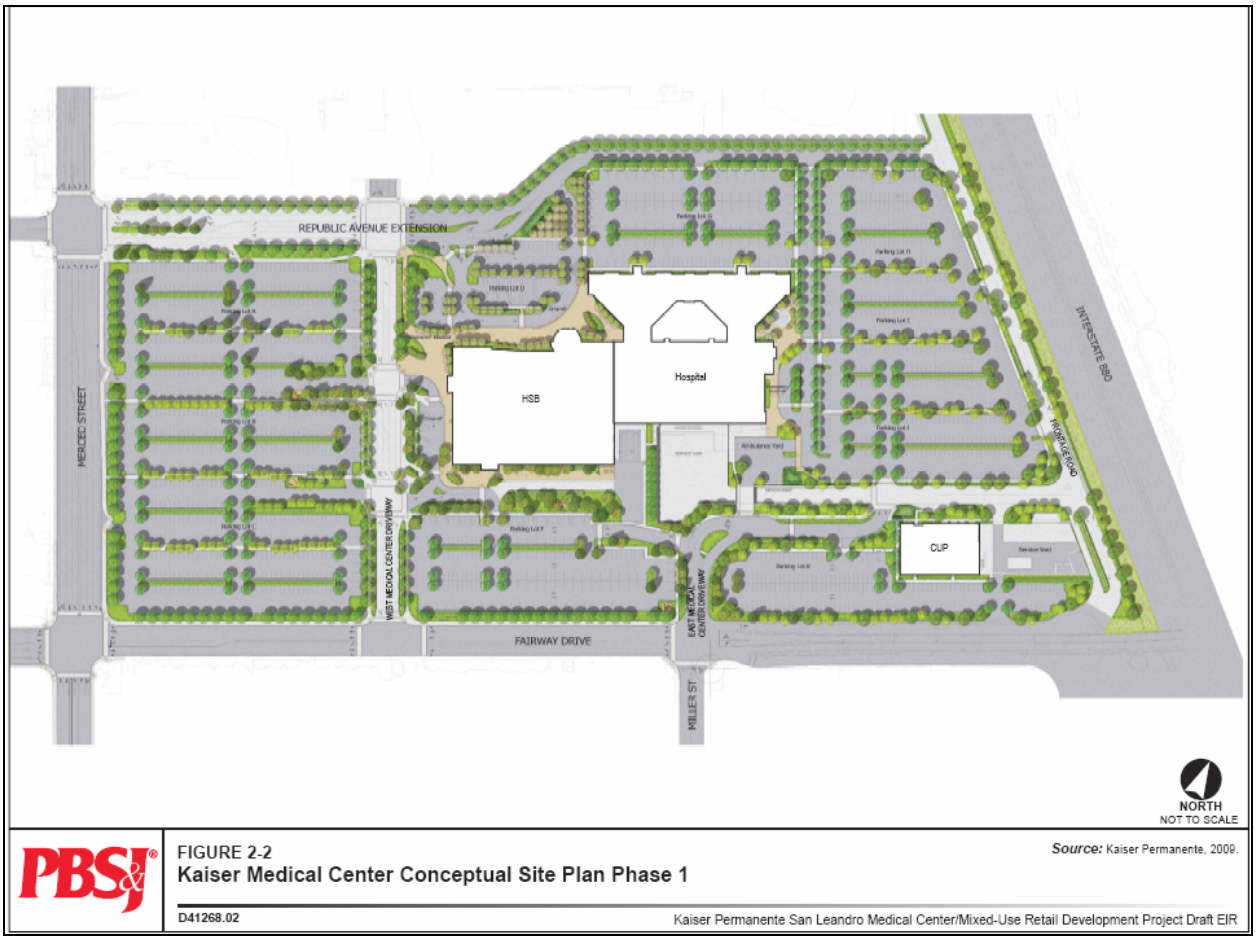
Figure 6 shows site circulation and parking proposed for the Kaiser Medical Center portion of the Project.

Roadways

Access to the Project Site is provided by Marina Boulevard, Merced Street, and Fairway Drive. The site is adjacent to the Interstate 880 interchange on Marina Boulevard. As part of the project, some roadway changes are to be implemented. These roadway changes are detailed below:

-
- Widening of Merced Street to include a left-turn lane from Republic Avenue to Fairway Drive;
- An eastern extension of Republic Avenue into the project site and the signalization of the Republic Avenue/Merced Street intersection;
- Widening of Fairway Drive to three lanes (two lanes westbound and one lane eastbound, from the existing one lane in each direction) from Merced Street to Miller Street;
- A new signalized intersection on Fairway Drive 500 feet east of Merced Street at the access to the Kaiser site at the west end of Fairway Drive; and
- A northern extension of Miller Street into the project site and the signalization of the Fairway Drive/ Miller Street intersection.

Figure 6: Site Circulation and Parking for the Kaiser Medical Center



Adjacent Land Uses

The land uses immediately surrounding the project site are primarily industrial and commercial. Land uses east of I-880 include residential; a commercial shopping center; and the San Leandro Ball Park and Pacific Recreation Complex. Residential land uses are also present further west and further south of the project site.

Bicycle

Bicycle parking would be provided on-site in both portions of the Project. The Conceptual Merced Improvements (Marina Boulevard to Republic Avenue) drawing dated January 8, 2010 does not include the future bike lane on Merced Street between Republic Avenue and Marina Boulevard on the northbound direction; whereas the one on the southbound direction remains. This bike lane was proposed as a part of the San Leandro Bicycle and Pedestrian Master Plan as discussed in the Bicycle Facilities section of this report.

Pedestrian

The following changes to pedestrian facilities are included in the implementation of the Mixed-Use Retail Development portion of the Project:

- New, wider sidewalks with buffers along Merced Street
- Sidewalks along driveway entrances into the Project on both sides of the roadway
- Installation of crosswalks, pedestrian signal heads, audible pedestrian signal and curb ramps with detectable warnings on the north, east, and south legs at the Merced Street/Republic Avenue intersection.

The following changes to pedestrian facilities are included in the implementation of the Kaiser Medical Center portion of the Project:

- New, wider sidewalks with buffers along Merced Street and Fairway Drive
- Sidewalks along the West Driveway and Miller Avenue entrances into the Project on both sides of the roadway
- The Kaiser West Driveway/Fairway Drive intersection would be signalized and would require installation of crosswalks, pedestrian signal heads, audible pedestrian signal and curb ramps with detectable warnings would be required at all legs of the intersection
- The Miller Street/ Fairway Drive intersection would be signalized and would require installation of crosswalks, pedestrian signal heads, audible pedestrian signal and curb ramps with detectable warnings at all intersection legs at the intersection.

Parking

The current site plan for the Kaiser Medical Phase 1 provides for 2,100 on-site parking spaces to serve 711,000 square feet of medical uses. Parking for future phases would be accounted for with additional spaces and parking structures and would be designed to conform to City parking requirements. The current site plan for the Mixed-Use Retail Development portion is at a programmatic level and has therefore not been designed yet.

Project Trip Analysis

The Project was analyzed for its effects on the transportation network.

Project Trip Generation

Trip generation refers to the number of new trips the Project would create. Vehicle trips generated by the retail and housing were calculated using standard rates from the Institute of Transportation Engineer's (ITE) *Trip Generation, 7th Edition* whereas the Kaiser Medical Center portion was calculated using results from a previous EIR for Kaiser Modesto Medical Center. [16] Trips between the Hospital and the Hospital Support Building components of the Kaiser center were split using ITE rates. The analysis assumes the Project would generate all new trips. Based on estimates from the travel demand model, the trips were reduced by five percent to account for transit usage. Given that the medical trip rates were obtained from a suburban area of Modesto with minimal transit service, this is considered a reasonable reduction to the rates considering the San Leandro site is well served by bus and rail nearby. Internalization of trips between the retail, residential and medical components of the project, were accounted for by the travel demand model and average less than 5% of all project trips and is considered conservative. Pass by and diversion adjustments were accounted for by the travel demand model. As shown in Table 15, Project generated trips are analyzed for three scenarios:

1. Kaiser Medical Center Phase 1
2. Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development
3. Kaiser Medical Center Build-Out plus Mixed-Use Retail Development

Kaiser Medical Center Phase 1

During the weekday, the Kaiser Medical Center is expected to generate 18,883 daily vehicle trips, of which 1,121 would occur in the AM peak hour and 1,449 would occur in the PM peak hour. During Saturday, it is expected to generate 466 mid-day peak hour trips.

16 Kaiser Modesto Medical Center/ Cornerstone Business Park Project, Final EIR, Volume I, July 8, 2004.

Table 15: Project Trip Generation

Kaiser Medical Center Phase 1

							Weekday										Weekend				
							A.M. Peak Hour Traffic					P.M. Peak Hour Traffic					Saturday Peak Hour Traffic				
Phase	Use	Size	Units	ITE Code	Daily Rate	Daily Trips	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out
Kaiser Phase 1	HSB	275	ksf	720	38.33	10,541	2.30	0.79	0.21	500	133	3.46	0.27	0.73	257	695	0.95	0.47	0.53	123	138
Kaiser Phase 1	Hospital	436	ksf	610	19.13	8,342	1.12	0.59	0.41	288	200	1.14	0.33	0.67	164	333	0.47	0.47	0.53	96	109
Kaiser - Total						18,883				788	333				421	1,028				219	247

Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

							Weekday										Weekend				
							A.M. Peak Hour Traffic					P.M. Peak Hour Traffic					Saturday Peak Hour Traffic				
Phase	Use	Size	Units	ITE Code	Daily Rate	Daily Trips	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out
Retail	Retail	387	ksf	820	42.94	16,618	1.03	0.61	0.39	243	155	3.75	0.48	0.52	697	755	4.97	0.61	0.39	1,173	750
Multi-family Apts	Housing	250	HH	220	6.72	1,680	0.55	0.29	0.71	40	98	0.67	0.61	0.39	102	65	0.71	0.29	0.71	51	126
Mixed Use - Total						18,298				283	253				799	820				1,225	876
Kaiser Phase 1	HSB	275	ksf	720	38.33	10,541	2.30	0.79	0.21	500	133	3.46	0.27	0.73	257	695	0.95	0.47	0.53	123	138
Kaiser Phase 1	Hospital	436	ksf	610	19.13	8,342	1.12	0.59	0.41	288	200	1.14	0.33	0.67	164	333	0.47	0.47	0.53	96	109
Kaiser - Total						18,883				788	333				421	1,028				219	247
Mixed Use + Kaiser Phase 1 - Total						37,181				1,071	586				1,220	1,848				1,444	1,123

Kaiser Medical Center Build-Out plus Mixed-Use Retail Development

							Weekday										Weekend				
							A.M. Peak Hour Traffic					P.M. Peak Hour Traffic					Saturday Peak Hour Traffic				
Phase	Use	Size	Units	ITE Code	Daily Rate	Daily Trips	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out
Retail	Retail	387	ksf	820	42.94	16,618	1.03	0.61	0.39	243	155	3.75	0.48	0.52	697	755	4.97	0.61	0.39	1,173	750
Multi-family Apts	Housing	250	HH	220	6.72	1,680	0.55	0.29	0.71	40	98	0.67	0.61	0.39	102	65	0.71	0.29	0.71	51	126
Mixed Use - Total						18,298				283	253				799	820				1,225	876
Kaiser Build-Out	HSB	475	ksf	720	38.33	18,207	2.30	0.79	0.21	863	229	3.46	0.27	0.73	444	1,200	0.95	0.47	0.53	212	239
Kaiser Build-Out	Hospital	611	ksf	610	19.13	11,691	1.12	0.59	0.41	404	281	1.14	0.33	0.67	230	467	0.47	0.47	0.53	135	152
Kaiser - Total						29,898				1,267	510				674	1,666				347	391
Mixed Use + Kaiser Phase 2 - Total						48,195				1,550	763				1,472	2,486				1,572	1,268

Source: Retail & Housing rates from ITE Trip Generation 7th Edition
Source: Kaiser Medical rates obtained from 2006 Kaiser Modesto Study by Fehr & Peers
Kaiser weekend rates based on 25% of medical in use active during Saturday peak
ksf = Thousand square feet
HSB = Hospital Support Building
Dowling Associates, Inc. 2009

Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

Under Kaiser Medical Center Phase 1 plus Mixed-Used Development conditions, the Project is expected to generate 37,181 weekday daily vehicle trips, of which 1,657 would occur in the AM peak hour and 3,067 would occur in the PM peak hour. During Saturday, it is expected to generate 2,567 mid-day weekend peak hour trips.

Kaiser Medical Center Build-Out plus Mixed-Use Retail Development

Under Build-Out conditions, the Project is expected to generate a total of 48,195 weekday daily vehicle trips, of which 2,313 would occur in the AM peak hour and 3,959 would occur in the PM peak hour. During Saturday, it is expected to generate 2,839 mid-day weekend peak hour trips.

Project Trip Distribution

Trip distribution refers to the approach and departure directions used to access the Project Site. The ACCMA Countywide Travel Demand Model was used to distribute the daily person trips from the Project Site to the surrounding areas. Figure 7 displays the trip distribution to and from the project site.

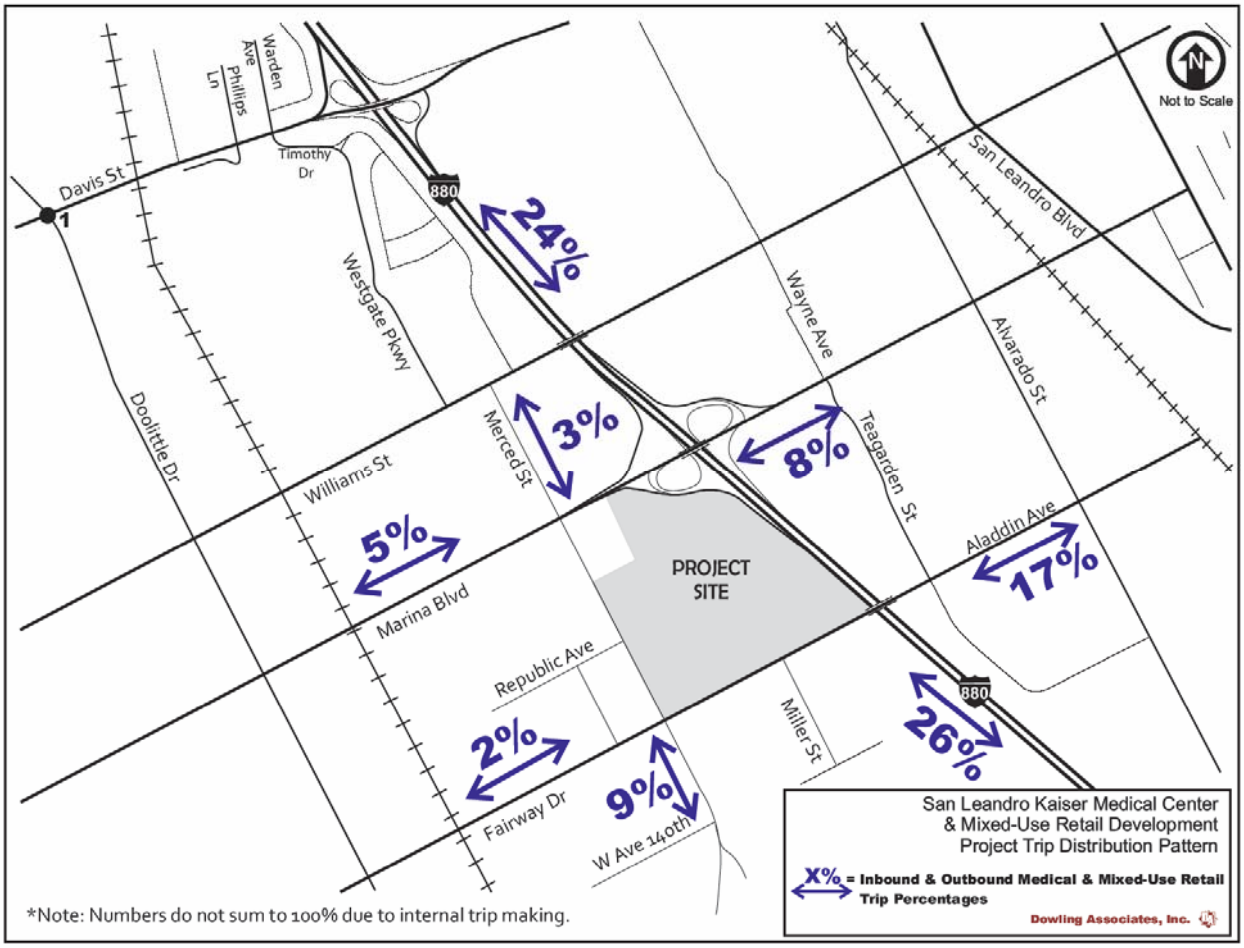
Project Trip Mode Choice

The ACCMA Countywide Travel Demand Model was used to determine the choice of mode for the daily person trips to and from the Project Site to the surrounding areas. The model has a fully calibrated mode choice process that utilizes future land use assumptions and future roadway and transit supply to determine the probability of choosing a specific mode of travel, like auto drive-alone or shared ride, or walk, bike, bus or rail transit.

Project Trip Assignment

The ACCMA Countywide Travel Demand Model was used to convert the daily auto trips into peak hour vehicle trips and assign the traffic to and from the site to the surrounding areas on the road network.

Figure 7: Project Trip Distribution



Baseline (2015) Conditions

Baseline No Project Conditions

Under Baseline No Project conditions, approved developments that are expected to be implemented by 2015 are included in the analysis. Planned roadway changes projected to be constructed by 2015 are discussed in the Planned Roadway Facilities section of the report and summarized below:

- High Occupancy Vehicle (HOV) lane on southbound between Hegenberger Road and the current HOV lane located south of Marina Boulevard
- Reconfiguration of the Marina Boulevard interchange at I-880 which includes removal of all existing diamond ramps with the exception of the northbound off-ramp; retaining the two loop-ramps; and signalization of both northbound and southbound ramps on Marina Boulevard
- Widening of Marina Boulevard from Teagarden Street to Alvarado Street from four lanes to six lanes
- Widening of Alvarado Street from Marina Boulevard to Aladdin Avenue from two lanes to four lanes

Baseline Intersection Turning Movement Volumes

Weekday and Saturday peak hour intersection turning movement volumes for Baseline Conditions without the Project are shown Appendix A.

Baseline Intersection Levels of Service

Table 16 provides information on levels of service and average delay at all study intersections, highlighting those at which levels of service under Baseline conditions did not meet San Leandro's General Plan standards. The intersection of Davis Street and Doolittle Drive is projected to operate at a substandard level during the PM peak hour.

Baseline (2015) Freeway Operations

The Freeway mainline operation was analyzed for Baseline conditions. Table 17 provides information on freeway volumes, density and levels of service at the study segments. The results show that the I-880 Northbound segment between Davis Street and 98th Avenue would operate at LOS F condition during the weekday AM peak hour. All other segments would continue to operate at LOS E or better.

Table 16: Intersection LOS for Baseline No Project Conditions - AM, PM and Saturday Peak Hours

		AM		PM		V/C	Saturday	
Signalized Intersections [1]		**LOS**	**Delay**	**LOS**	**Delay**		**LOS**	**Delay**
1	Davis St & Doolittle Dr	D	38.7	**E**	**71.2**	**1.01**	D	36.7
2	Davis St & Phillips Ln	B	15.2	D	47.7		C	31.2
3	Davis St & Warden Ave	C	20.6	C	32.7		C	31.4
4	Davis St & I-880 SB ramps	B	12.6	B	11.9		B	16.3
5	Westgate Shopping Center Drwy & Westgate Pkwy	B	12.5	C	20.8		B	18.7
6	Williams St & Doolittle Dr	B	10.1	A	9.7		A	7.0
7	Williams St & Westgate Pkwy	B	12.1	B	12.6		A	8.4
8	Williams St & Merced St	C	33.3	C	26.8		B	19.1
9	Marina Blvd & Doolittle Dr	C	28.8	C	30.0		D	38.5
10	Marina Blvd & Merced St	C	28.5	C	34.5		C	29.3
11	Marina Blvd & Teagarden St	C	24.8	C	33.8		C	30.4
12	Marina Blvd & Alvarado St	C	30.5	C	32.2		C	29.3
14	Fairway Dr & Doolittle Dr	B	15.4	B	13.6		B	13.4
15	Fairway Dr & Merced Street	C	33.0	C	33.1		C	29.2
17	Aladdin Ave & Teagarden St	B	19.1	B	14.8		B	12.7
18	Aladdin Ave & Alvarado St	C	23.8	C	21.5		B	17.1
19	West Ave 140th & Merced St	A	2.5	A	3.6		A	4.1
20	Marina Blvd & I-880 SB Ramps	B	19.7	C	23.5		B	19.5
21	Marina Blvd & I-880 NB Ramps	A	5.9	A	2.9		A	3.8
22	Marina Blvd & San Leandro Blvd	D	42.7	C	31.5		C	26.5
23	Wells Fargo Drwy & Merced St	A	2.4	A	3.7		A	3.9
24	Fairway Dr & Kaiser West Drwy			*Project Intersection*				
		AM		**PM**			**Saturday**	
Unsignalized Intersections [2]		**LOS**	**Delay**	**LOS**	**Delay**		**LOS**	**Delay**
13	Republic Ave & Merced St	A/ D	0.7/ 25.1	A/ D	1.1/ 26.0		A/ C	0.3/ 16.9
16	Fairway Dr & Miller St	A/ C	1.1/ 15.7	A/C	2.4/ 15.9		A/ B	0.9/ 10.8

Source: Dowling Associates, Inc., Dec 2009.

LOS =Level of Service; **Delay** =Weighted average seconds of delay per vehicle; **V/C** =volume to capacity ratio; **BOLD** denotes sub-standard operations

1 LOS and delay at signalized intersections are based on weighted average delay of all intersections approaches.

2 The Highway Capacity Manual calculates LOS and delay at side-street stop-controlled intersections as approach delay of the intersection leg with the worst LOS. Synchro also reports the weighted average delay of all movements at side-street stop-controlled intersections. This table displays both values as "all legs/ worst leg" for LOS and delay.

Table 17: Freeway Analysis for Baseline Conditions - AM and PM Peak Hours

		Baseline Conditions					
		AM Peak Hour			PM Peak Hour		
Location	Type	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]
I-880 Northbound							
Washington Avenue to Marina Boulevard	Mainline	9,332	34.2	D	8,384	29.2	D
Marina Boulevard to Davis Street	Weave[4]	8,814	–	C	8,274	–	C
Davis Street to 98th Avenue	Mainline	8,550	>45.0	F	7,845	37.4	E
I-880 Southbound							
98th Avenue to Davis Street	Mainline	6,589	28.6	D	7,861	37.6	E
Davis Street to Marina Boulevard	Mainline	7,277	24.8	C	8,059	27.8	D
Marina Boulevard to Washington Avenue	Mainline	6,667	29	D	7,573	35.1	E

Source: Dowling Associates, Inc., 2009.

[1] Volume = vehicles per hour (vph)

[2] Density = passenger car per mile per lane (pc/m/ln)

[3] LOS = Level of Service

[4] Marina Boulevard to Davis Street analyzed as a weaving section using the Leisch Method as described in the Caltrans Design Manual, September 1, 2006. The volume shown for this segment is the total mainline volume.

Baseline (2015) Freeway Ramp Queuing

Table 18 summarizes the results of the freeway ramp queuing analysis under Baseline (2015) conditions. The storage capacities at all the study locations are sufficient for the estimated 95th percentile queues.

Table 18: Freeway Ramp Queue for Baseline Conditions (in feet)

	Northbound Off-Ramp to eastbound Marina Boulevard	Northbound Off-Ramp to westbound Marina Boulevard	Southbound Off-Ramp to eastbound Marina Boulevard	Southbound Off-Ramp to westbound Marina Boulevard	Davis Street Southbound Off-Ramp
Available Storage Length	**800 [2]**	**1,545**	**1,150**	**950 [2]**	**1,120**
AM Queue[1]	0	0	0	312	186
PM Queue[1]	0	0	0	171	260
Saturday Queue[1]	0	0	0	259	395

Source: Dowling Associates, Inc., 2009

[1] 95th percentile queue length in feet

[2] Storage lengths are estimates only

Baseline (2015) Conditions plus Kaiser Medical Center Phase 1

Under Baseline with Kaiser Medical Center Phase 1 Conditions, project trips generated by Kaiser Medical land uses were added to the model. The modeling network assumed the planned roadway network changes detailed in this section under Planned Roadway Facilities. Peak hour and Saturday intersection turning movement volumes for Baseline Conditions with Kaiser Medical Center Phase 1 are shown in Appendix A.

Intersection Level of Service Analysis

Table 19 summarizes the results of the weekday and Saturday peak hour intersection level of service analysis for Baseline with and without Kaiser Medical Center Phase 1 land uses. Intersections operating at a sub-standard level of service appear in bold in the tables and intersections that would be significantly impacted by the Project are boxed. Project-related impacts are detailed in the Impacts and Mitigations section. Detailed LOS calculations for this scenario are contained in the technical appendices.

The results of the analysis indicate that, with the addition of traffic generated by Kaiser Medical Center Phase 1, all but two of the study intersections would maintain acceptable operations during the AM, PM, and Saturday midday peak hours. The intersection of Davis Street and Doolittle Drive would operate at LOS E in the PM peak hour with and without the addition of Kaiser Medical Center-generated traffic. Since the volume to capacity ratio (V/C) would only increase by 0.01 with the addition of traffic associated with Kaiser Medical Center Phase 1, the impact is not considered significant at this intersection. However, the intersection of Marina Boulevard and Merced Street would degrade from LOS C to LOS E during the PM peak hour. This is a significant impact.

Freeway Operations

Table 20 summarizes the results of the freeway operations analysis for the Baseline with and without Kaiser Medical Center Phase 1. The results show that the northbound I-880 mainline segment between Davis Street and 98th Avenue would continue to operate at LOS F. However, the project would not cause an increase in the amount of vehicle traffic on this segment by more than one percent of the freeway segment's design capacity.

Freeway Ramp Queuing

Table 21 summarizes the results of the freeway ramp queuing analysis under Baseline with Kaiser Medical Center Phase 1 conditions. The storage capacities at all the study locations are sufficient for the estimated 95th percentile queues.

Table 19: Weekday Peak hour Intersection LOS for Baseline Conditions with and without Kaiser Medical Center Phase 1

		Baseline No Project							Baseline Kaiser Medical Center Phase 1						
		AM		PM			Saturday		AM		PM			Saturday	
Signalized Intersections [1]		LOS	Delay	LOS	Delay	V/C	LOS	Delay	LOS	Delay	LOS	Delay	V/C	LOS	Delay
1	Davis St & Doolittle Dr	D	38.7	**E**	**71.2**	1.01	D	36.7	D	40.2	**E**	**74.4**	**1.02**	D	37.4
2	Davis St & Phillips Ln	B	15.2	D	47.7		C	31.2	B	15.7	D	48.0		C	31.2
3	Davis St & Warden Ave	C	20.6	C	32.7		C	31.4	C	21.1	C	33.6		C	32.0
4	Davis St & I-880 SB ramps	B	12.6	B	11.9		B	16.3	C	34.7	B	11.9		B	16.6
5	Westgate Shopping Center Drwy & Westgate Pkwy	B	12.5	C	20.8		B	18.7	B	12.0	C	20.8		B	19.5
6	Williams St & Doolittle Dr	B	10.1	A	9.7		A	7.0	B	11.2	A	9.8		A	7.0
7	Williams St & Westgate Pkwy	B	12.1	B	12.6		A	8.4	B	17.8	B	12.6		A	8.6
8	Williams St & Merced St	C	33.3	C	26.8		B	19.1	C	30.8	C	26.6		B	19.7
9	Marina Blvd & Doolittle Dr	C	28.8	C	30.0		D	38.5	C	30.1	C	30.6		D	38.8
10	Marina Blvd & Merced St	C	28.5	C	34.5		C	29.3	D	35.4	**E**	**58.2**		C	29.4
11	Marina Blvd & Teagarden St	C	24.8	C	33.8		C	30.4	C	25.5	C	33.6		C	30.4
12	Marina Blvd & Alvarado St	C	30.5	C	32.2		C	29.3	C	32.0	C	34.0		C	28.6
13	Republic Ave & Merced St	A/ D	0.7/ 25.1	A/ D	1.1/ 26.0		A/ C	0.3/ 16.9	C	21.7	C	23.5		A	9.4
14	Fairway Dr & Doolittle Dr	B	15.4	B	13.6		B	13.4	B	17.0	B	14.4		B	13.5
15	Fairway Dr & Merced Street	C	33.0	C	33.1		C	29.2	C	34.4	D	43.4		C	28.4
16	Fairway Dr & Miller St	A/ C	1.1/ 15.7	A/C	2.4/ 15.9		A/ B	0.9/ 10.8	B	15.4	C	22.8		A	9.7
17	Aladdin Ave & Teagarden St	B	19.1	B	14.8		B	12.7	C	30.6	B	17.6		B	13.0
18	Aladdin Ave & Alvarado St	C	23.8	C	21.5		B	17.1	D	41.3	C	23.7		B	18.8
19	West Ave 140th & Merced St	A	2.5	A	3.6		A	4.1	A	2.5	A	3.5		A	4.1
20	Marina Blvd & I-880 SB Ramps	B	19.7	C	23.5		B	19.5	C	21.4	C	22.1		C	22.6
21	Marina Blvd & I-880 NB Ramps	A	5.9	A	2.9		A	3.8	A	6.2	A	4.6		A	4.3
22	Marina Blvd & San Leandro Bl	D	42.7	C	31.5		C	26.5	D	49.5	D	36.5		C	27.4
23	Wells Fargo Drwy & Merced St	A	2.4	A	3.7		A	3.9	A	2.5	A	4.2		A	3.8
24	Fairway Dr & Kaiser West Dwy				*Project Intersection*				A	3.6	B	11.5		A	2.8

Source: Dowling Associates, Inc., Jan 2010.

LOS=Level of Service; **Delay**=Weighted average seconds of delay per vehicle; **V/C** =Volume to capacity ratio;
BOLD denotes locations with sub-standard operations; **BOXED** denotes locations with significant project impact
1 LOS and delay at signalized intersections are based on weighted average delay of all intersections approaches.
2 The Highway Capacity Manual calculates LOS and delay at side-street stop-controlled intersections as approach delay of the intersection leg with the worst LOS. Synchro also reports the weighted average delay of all movements at side-street stop-controlled intersections. This table displays both values as "all legs/ worst leg" for LOS and delay.

Table 20: Freeway Operations for Baseline Conditions with Kaiser Medical Center Phase 1

		Baseline Conditions						Baseline Plus Kaiser Medical					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
Location	Type	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]
		I-880 Northbound						I-880 Northbound					
Washington Avenue to Marina Boulevard	Mainline	9,332	34.2	D	8,384	29.2	D	9,441	34.9	D	8,532	29.9	D
Marina Boulevard to Davis Street	Weave[4]	8,814	–	C	8,274	–	C	8,842	–	C	8,405	–	D
Davis Street to 98th Avenue	Mainline	8,550	>45.0	**F**	7,845	37.4	E	8,682	>45.0	**F**	7,970	38.2	E
		I-880 Southbound						I-880 Southbound					
98th Avenue to Davis Street	Mainline	6,589	28.6	D	7,861	37.6	E	6,711	29.2	D	8,035	39.3	E
Davis Street to Marina Boulevard	Mainline	7,277	24.8	C	8,059	27.8	D	7,390	25.2	C	8,132	28.1	D
Marina Boulevard to Washington Avenue	Mainline	6,667	29	D	7,573	35.1	E	6,930	30.5	D	7,709	36.2	E

Source: Dowling Associates, Inc., 2009.

[1] Volume = vehicles per hour (vph)

[2] Density = passenger car per mile per lane (pc/m/ln)

[3] LOS = Level of Service

[4] Marina Boulevard to Davis Street analyzed as a weaving section using the Leisch Method as described in the Caltrans Design Manual, September 1, 2006. The volume shown for this segment is the total mainline volume.

Table 21: Freeway Ramp Queue for Baseline Conditions with Kaiser Medical Center Phase 1 (in feet)

	Northbound Off-Ramp to eastbound Marina Boulevard	Northbound Off-Ramp to westbound Marina Boulevard	Southbound Off-Ramp to eastbound Marina Boulevard	Southbound Off-Ramp to westbound Marina Boulevard	Davis Street Southbound Off-Ramp
Available Storage Length	**800 [2]**	**1,545**	**1,150**	**950 [2]**	**1,120**
AM Queue[1]	0	0	0	325	202
PM Queue[1]	0	0	0	244	260
Saturday Queue[1]	0	0	0	289	424

Source: Dowling Associates, Inc., 2010

[1] 95th percentile queue length in feet

[2] Storage lengths are estimates only

Baseline (2015) Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

Under the Baseline Conditions, trips generated by Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development were added to the model. The modeling network assumed the same planned network changes as the Baseline Conditions plus Kaiser Medical Center Phase 1. The Project includes the roadway changes already detailed for Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development in the section under site circulation. Peak hour and Saturday intersection turning movement volumes for are shown in Appendix A.

Intersection Level of Service Analysis

Table 22 summarizes the results of the weekday peak hour intersection level of service analysis for Baseline Year 2015 with and without Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development. Intersections operating at a sub-standard level of service appear in bold in the tables and intersections that would be significantly impacted by the Project are boxed. Project-related impacts are detailed in the Impacts and Mitigations section. Detailed LOS calculations for this scenario are contained in the technical appendices.

The results of the level of service calculations indicate that all but four of the study intersections would maintain acceptable operations during the AM, PM, and Saturday midday peak hours. The intersection of Davis Street and Doolittle Drive would operate at LOS E in the PM peak hour with and without the addition of project-generated traffic. However, the volume to capacity ratio (V/C) would increase by only 0.01. Therefore, the Project's impact is not considered significant.

Implementation of Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development would cause the level of service at the Aladdin Avenue and Alvarado Street intersection to degrade to LOS E in the AM peak hour, the Republic Avenue and Merced Street intersection to degrade to LOS F in the PM peak hour, and the Marina Boulevard and Merced Street intersection to degrade to LOS F in both PM and Saturday peak hours. These are considered significant impacts.

Freeway Operations

Table 23 summarizes the results of the freeway operations analysis for the Baseline with and without Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development. The results show that the northbound I-880 mainline segment between Davis Street and 98th Avenue would continue to operate at LOS F. However, the project would not cause an increase in the amount of vehicle traffic on this segment by more than one percent of the freeway segment's design capacity.

Table 22: Weekday Peak hour Intersection LOS for Baseline Conditions with and without Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

		Baseline No Project							Baseline Kaiser Medical Center & Mixed-Use Project						
		AM		PM		-	Saturday		AM		PM		-	Saturday	
	Signalized Intersections [1]	LOS	Delay	LOS	Delay	V/C	LOS	Delay	LOS	Delay	LOS	Delay	V/C	LOS	Delay
1	Davis St & Doolittle Dr	D	38.7	**E**	**71.2**	1.01	D	36.7	D	41.5	**E**	**76.4**	**1.02**	D	39.1
2	Davis St & Phillips Ln	B	15.2	D	47.7		C	31.2	B	16.0	D	48.0		C	31.1
3	Davis St & Warden Ave	C	20.6	C	32.7		C	31.4	C	21.4	C	34.5		D	36.8
4	Davis St & I-880 SB ramps	B	12.6	B	11.9		B	16.3	D	36.9	B	12.0		B	19.2
5	Westgate Shopping Center Drwy & Westgate Pkwy	B	12.5	C	20.8		B	18.7	B	11.9	C	20.8		C	23.1
6	Williams St & Doolittle Dr	B	10.1	A	9.7		A	7.0	B	11.6	A	10.0		A	7.1
7	Williams St & Westgate Pkwy	B	12.1	B	12.6		A	8.4	C	20.9	B	12.6		B	10.2
8	Williams St & Merced St	C	33.3	C	26.8		B	19.1	C	29.8	C	26.4		C	24.1
9	Marina Blvd & Doolittle Dr	C	28.8	C	30.0		D	38.5	C	30.8	C	29.5		D	40.9
10	Marina Blvd & Merced St	C	28.5	C	34.5		C	29.3	D	42.4	**F**	**180.2**		**F**	**151.5**
11	Marina Blvd & Teagarden St	C	24.8	C	33.8		C	30.4	C	26.8	C	34.7		C	32.0
12	Marina Blvd & Alvarado St	C	30.5	C	32.2		C	29.3	C	32.1	D	38.3		C	30.9
13	Republic Ave & Merced St	A/ D	0.7/ 25.1	A/ D	1.1/ 26.0		A/ C	0.3/ 16.9	C	24.0	**F**	**98.6**		D	38.4
14	Fairway Dr & Doolittle Dr	B	15.4	B	13.6		B	13.4	B	17.3	B	15.7		B	13.9
15	Fairway Dr & Merced Street	C	33.0	C	33.1		C	29.2	D	36.9	D	54.0		C	32.2
16	Fairway Dr & Miller St	A/ C	1.1/ 15.7	A/C	2.4/ 15.9		A/ B	0.9/ 10.8	B	19.2	D	37.3		A	9.7
17	Aladdin Ave & Teagarden St	B	19.1	B	14.8		B	12.7	D	46.1	C	25.6		B	17.0
18	Aladdin Ave & Alvarado St	C	23.8	C	21.5		B	17.1	**E**	**59.9**	C	25.4		C	25.1
19	West Ave 140th & Merced St	A	2.5	A	3.6		A	4.1	A	2.6	A	3.4		A	4.0
20	Marina Blvd & I-880 SB Ramps	B	19.7	C	23.5		B	19.5	C	21.6	C	32.1		D	43.7
21	Marina Blvd & I-880 NB Ramps	A	5.9	A	2.9		A	3.8	A	6.5	A	7.1		B	19.6
22	Marina Blvd & San Leandro Blvd	D	42.7	C	31.5		C	26.5	D	52.6	D	46.9		D	38.7
23	Wells Fargo Drwy & Merced St	A	2.4	A	3.7		A	3.9	A	2.5	A	6.8		A	4.3
24	Fairway Dr & Kaiser West Drwy			*Project Intersection*					A	4.8	B	15.3		A	A

Source: Dowling Associates, Inc., Jan 2010

LOS=Level of Service; **Delay**=Weighted average seconds of delay per vehicle; **V/C** =Volume to capacity ratio;
BOLD denotes locations with sub-standard operations; **BOXED** denotes locations with significant project impact
1 LOS and delay at signalized intersections are based on weighted average delay of all intersections approaches.
2 The Highway Capacity Manual calculates LOS and delay at side-street stop-controlled intersections as approach delay of the intersection leg with the worst LOS. Synchro also reports the weighted average delay of all movements at side-street stop-controlled intersections. This table displays both values as "all legs/ worst leg" for LOS and delay.

Table 23: Freeway Operations for Baseline Conditions with Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

		Baseline Conditions						Baseline Plus Kaiser Medical & Mixed Use					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
Location	Type	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]
		I-880 Northbound						I-880 Northbound					
Washington Avenue to Marina Boulevard	Mainline	9,332	34.2	D	8,384	29.2	D	9,550	35.6	E	8,619	30.3	D
Marina Boulevard to Davis Street	Weave[4]	8,814	–	C	8,274	–	C	8,869	–	C	8,536	–	D
Davis Street to 98th Avenue	Mainline	8,550	>45.0	F	7,845	37.4	E	8,709	>45.0	F	8,095	40.0	E
		I-880 Southbound						I-880 Southbound					
98th Avenue to Davis Street	Mainline	6,589	28.6	D	7,861	37.6	E	6,817	29.9	D	8,099	40.0	E
Davis Street to Marina Boulevard	Mainline	7,277	24.8	C	8,059	27.8	D	7,485	25.6	C	8,205	28.4	D
Marina Boulevard to Washington Avenue	Mainline	6,667	29	D	7,573	35.1	E	6,971	30.8	D	7,845	37.4	E

Source: Dowling Associates, Inc., 2009.

[1] Volume = vehicles per hour (vph)

[2] Density = passenger car per mile per lane (pc/m/ln)

[3] LOS = Level of Service

[4] Marina Boulevard to Davis Street analyzed as a weaving section using the Leisch Method as described in the Caltrans Design Manual, September 1, 2006. The volume shown for this segment is the total mainline volume.

Table 24: Freeway Ramp Queue for Baseline Conditions with Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development (in feet)

	Northbound Off-Ramp to eastbound Marina Boulevard	Northbound Off-Ramp to westbound Marina Boulevard	Southbound Off-Ramp to eastbound Marina Boulevard	Southbound Off-Ramp to westbound Marina Boulevard	Davis Street Southbound Off-Ramp
Available Storage Length	**800 [2]**	**1,545**	**1,150**	**950 [2]**	**1,120**
AM Queue[1]	0	0	0	325	208
PM Queue[1]	0	0	0	455	262
Saturday Queue[1]	0	254	0	534	524

Source: Dowling Associates, Inc., 2010

[1] 95th percentile queue length in feet

[2] Storage lengths are estimates only

Freeway Ramp Queuing

Table 24 summarizes the results of the freeway ramp queuing analysis. The storage capacities at all the study locations are sufficient for the estimated 95th percentile queues.

Cumulative (2030) Conditions

Cumulative (2030) conditions assume No Project conditions in the study area, but include future developments that have been approved in San Leandro and all surrounding city's General Plans. Year 2030 Conditions also include growth in developed land uses outside of the County as forecast by the Association of Bay Area Governments (ABAG) Projections 2005 as allocated to the traffic analysis zone level by the ACCMA Countywide Travel Demand Model. For the cumulative impact analysis, the following potential future Project scenarios were analyzed:

Cumulative Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development – Traffic generated by Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development was added to cumulative background traffic to develop the future traffic volumes. Access to and from the project site is provided on Marina Boulevard, Merced Street, and Fairway Drive.

Cumulative Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development with Aladdin Avenue Extension – Traffic generated by Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development was added to cumulative background traffic to develop the future traffic volumes. Access to and from the project site is provided on Marina Boulevard, Merced Street, and Fairway Drive. This scenario assumes an eastwardly extension of Aladdin Avenue from Alvarado Street to San Leandro Boulevard.

Cumulative Conditions plus Kaiser Medical Center Build-Out plus Mixed-Use Retail Development – Traffic generated by Kaiser Medical Center Build-Out plus Mixed-Use Retail Development was added to cumulative background traffic to develop the future traffic volumes. Access to and from the project site is provided on Marina Boulevard, Merced Street, and Fairway Drive.

Cumulative Conditions plus Kaiser Medical Center Build-Out plus Mixed-Use Retail Development with Aladdin Avenue Extension – Traffic generated by Kaiser Medical Center Build-Out plus Mixed-Use Retail Development was added to cumulative background traffic to develop the future traffic volumes. Access to and from the project site is provided on Marina Boulevard, Merced Street, and Fairway Drive. This scenario assumes an eastwardly extension of Aladdin Avenue from Alvarado Street to San Leandro Boulevard.

Cumulative (2030) No Project Condition

Under Cumulative No Project Conditions, approved developments that are expected to be implemented by 2030 are included in the analysis. Planned roadway changes projected to be constructed by 2030 are discussed in the Planned Roadway Facilities section of the report. In addition to the improvements slated to be completed by 2015, widening of Davis Street (SR-112) between Warden Avenue-Timothy Drive and the I-880 interchange from four lanes to six lanes by 2030.

Cumulative No Project Intersection Turning Movement Volumes

Peak hour and Saturday intersection turning movement volumes for Cumulative Conditions without the project are shown in Appendix A.

Cumulative No Project Intersection Levels of Service

Several intersections in the study area would be congested under cumulative conditions without the project. Table 25 provides information on levels of service and average delay at all study intersections, highlighting those at which levels of service under cumulative conditions did not meet San Leandro's General Plan standards. There were three such intersections:

- Davis Street and Doolittle Drive (AM, PM and Saturday)
- Davis Street and Phillips Lane (PM)
- Marina Boulevard and San Leandro Boulevard (AM)

Cumulative No Project Freeway Operations

The Freeway mainline operation was analyzed for Cumulative No Project Conditions. Table 26 provides information on freeway volumes, density and levels of service at the study segments. The results show that the I-880 northbound segment between Davis Street and 98th Avenue would operate at LOS F during both AM and PM peak hours; while the I-880 southbound segment between Marina Boulevard and Washington Avenue would operate at LOS F during the AM peak hour.

Cumulative No Project Freeway Ramp Queuing

Table 27 summarizes the results of the freeway ramp queuing analysis under Cumulative conditions. The storage capacities at all the study locations are sufficient for the estimated 95th percentile queues.

Table 25: Intersection LOS for Cumulative No Project Conditions - AM, PM, and Saturday Peak Hours

	Signalized Intersections [1]	AM LOS	AM Delay	- V/C	PM LOS	PM Delay	- V/C	Saturday LOS	Saturday Delay	V/C
1	Davis St & Doolittle Dr	**F**	**81**	**1.09**	**F**	**184.7**	**1.36**	**E**	**73**	**1.02**
2	Davis St & Phillips Ln	B	18.9		**E**	**70.4**	**1.05**	D	38.9	
3	Davis St & Warden Ave	B	19.7		D	48.4		D	38.2	
4	Davis St & I-880 SB ramps	A	7.3		B	11.5		B	17.5	
5	Westgate Shopping Center Drwy & Westgate Pkwy	B	12.5		C	21.1		B	17.2	
6	Williams St & Doolittle Dr	B	14.3		B	11.6		A	7.6	
7	Williams St & Westgate Pkwy	B	10		B	13.6		A	8.5	
8	Williams St & Merced St	C	32.9		C	30.1		C	21.2	
9	Marina Blvd & Doolittle Dr	C	30.4		C	34.3		D	43.5	
10	Marina Blvd & Merced St	D	37		D	42		C	32	
11	Marina Blvd & Teagarden St	C	28.2		D	49.4		D	37.6	
12	Marina Blvd & Alvarado St	B	18.1		C	21.3		B	17.2	
14	Fairway Dr & Doolittle Dr	D	41.6		D	46.5		C	33.4	
15	Fairway Dr & Merced Street	D	41.7		D	46.7		C	33.4	
17	Aladdin Ave & Teagarden St	C	27.1		B	16.4		B	12.8	
18	Aladdin Ave & Alvarado St	D	39.1		C	24.2		C	22	
19	West Ave 140th & Merced St	A	2.4		A	3.9		A	4.1	
20	Marina Blvd & I-880 SB Ramps	D	43.2		C	21.6		C	34.5	
21	Marina Blvd & I-880 NB Ramps	A	7.8		A	4.2		A	7.9	
22	Marina Blvd & San Leandro Blvd	**F**	**152.9**	**1.48**	D	45.7		D	44.8	
23	Wells Fargo Drwy & Merced St	A	2.3		A	4.2		A	3.9	
24	Fairway Dr & Kaiser West Drwy				*Project Intersection*					
	Unsignalized Intersections [2]	**AM LOS**	**AM Delay**	**-**	**PM LOS**	**PM Delay**	**-**	**Saturday LOS**	**Saturday Delay**	
13	Republic Ave & Merced St	A/ D	0.7/ 29.6		A/ D	1.0/ 26.8		A/ C	0.3/ 20.2	
16	Fairway Dr & Miller St	A/ C	1.1/ 21.3		A/ D	3.2/ 25.6		A/ B	0.8/ 11.9	

Source: Dowling Associates, Inc., January 2010

Notes: **LOS** = Level of Service; **Delay** = Weighted average seconds of delay per vehicle

1 LOS and delay at signalized intersections are based on weighted average delay of all intersections approaches.

Bold denotes locations operating at below standards

2 The Highway Capacity Manual calculates LOS and delay at side-street stop-controlled intersections as approach delay of the intersection leg with the worst LOS. Synchro also reports the weighted average delay of all movements at side-street stop-controlled intersections. This table displays both values as "all legs/ worst leg" for LOS and delay.

Table 26: Freeway Analysis for Cumulative No Project Conditions - AM and PM Peak hours

Location	Type	AM Peak Hour			PM Peak Hour		
		Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]
I-880 Northbound							
Washington Av. to Marina Blvd.	Mainline	9,763	37.1	E	10,449	43.1	E
Marina Blvd. to Davis St.	Weave[4]	8,780	–	C	9,351	–	D
Davis St. to 98th Av.	Mainline	**8,804**	**>45.0**	**F**	**8,716**	**>45.0**	**F**
I-880 Southbound							
98th Av. to Davis St	Mainline	7,414	33.8	D	8,203	41.2	E
Davis St. to Marina Blvd.	Mainline	8,901	31.8	D	8,286	28.8	D
Marina Blvd. to Washington Av.	Mainline	**8,738**	**>45.0**	**F**	7,953	38.5	E

Source: Dowling Associates, Inc., 2009.

BOLD denotes locations with sub-standard operations;

[1] Volume = vehicles per hour (vph)

[2] Density = passenger car per mile per lane (pc/m/ln)

[3] LOS = Level of Service

[4] Marina Blvd. to Davis St. analyzed as a weaving section using the Leisch Method as described in the Caltrans Design Manual, September 1, 2006. The volume shown for this segment is the total mainline volume.

Table 27: Freeway Ramp Queue (in feet) for Cumulative No Project Conditions

	Northbound Off-Ramp to eastbound Marina Boulevard	Northbound Off-Ramp to westbound Marina Boulevard	Southbound Off-Ramp to eastbound Marina Boulevard	Southbound Off-Ramp to westbound Marina Boulevard	Davis Street Southbound Off-Ramp
Available Storage Length	**800 [2]**	**1,545**	**1,150**	**950 [2]**	**1,120**
AM Queue[1]	0	0	0	510	103
PM Queue[1]	0	0	0	235	180
Saturday Queue[1]	0	0	0	513	338

Source: Dowling Associates, Inc., 2009

[1] 95th percentile queue length in feet

[2] Storage lengths are estimates only

Cumulative (2030) Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

Using the Cumulative Conditions, project trips generated by the Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development were added to the model. The modeling network assumed the same roadway network changes as assumed under Cumulative No Project Conditions and detailed under Planned Roadway Facilities in the report. Peak hour and Saturday intersection turning movement are shown in Appendix A.

Intersection Level of Service Analysis

Table 28 summarizes the results of intersection level of service analysis for Cumulative Year 2030 with and without Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development. Detailed LOS calculations for this scenario are contained in the technical appendices. Intersections operating at a sub-standard level of service appear in bold and intersections that would be significantly impacted by the project are boxed. The result shows that nine intersections would be significantly impacted by the project:

- Davis Street and Doolittle Drive (AM and PM)
- Marina Boulevard and Merced Street (AM, PM and Saturday)
- Marina Boulevard and Teagarden Street (PM)
- Marina Boulevard and Alvarado Street (AM and PM)
- Republic Avenue and Merced Street (PM and Saturday)
- Fairway Drive and Merced Street (PM)
- Aladdin Avenue and Alvarado Street (AM)
- Marina Boulevard and I-880 Southbound ramps (AM, PM and Saturday)
- Marina Boulevard and San Leandro Boulevard (AM, PM and Saturday)

Freeway Operations

Table 29 summarizes the results of the freeway operations analysis for the Cumulative with Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development. The results show that, as with No Project conditions, the I-880 northbound segment between Davis Street and 98th Avenue would operate at LOS F during both AM and PM peak hours; while the I-880 southbound segment between Marina Boulevard and Washington Avenue would operate at LOS F during the AM peak hour. The addition of project traffic would cause an increase in the amount of vehicle traffic on the southbound segment by more than one percent of the freeway segment's design capacity during the AM peak hour; therefore, this is considered a significant impact.

Table 28: Intersection LOS for Cumulative (2030) with and without Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

	Signalized Intersections [1]	Cumulative No Project									Cumulative with Kaiser Medical Center Phase 1 + Mixed-Use Retail Development								
		AM			PM			Saturday			AM			PM			Saturday		
		LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
1	Davis St & Doolittle Dr	F	81.0	1.09	F	184.7	1.36	E	73.0	1.02	**F**	**89.7**	1.14	**F**	**194.9**	1.48	**E**	**75.2**	**1.04**
2	Davis St & Phillips Ln	B	18.9		E	70.4	1.05	D	38.9		B	19.1		**E**	**75.7**	1.07	D	39.6	
3	Davis St & Warden Ave	B	19.7		D	48.4		D	38.2		C	21.6		D	51.3		D	40.6	
4	Davis St & I-880 SB ramps	A	7.3		B	11.5		B	17.5		A	9.7		B	12.0		B	17.5	
5	Westgate Shopping Center Drwy & Westgate Pkwy	B	12.5		C	21.1		B	17.2		B	11.7		C	23.1		B	19.2	
6	Williams St & Doolittle Dr	B	14.3		B	11.6		A	7.6		B	15.6		C	25.2		A	7.8	
7	Williams St & Westgate Pkwy	B	10.0		B	13.6		A	8.5		B	18.4		B	14.0		A	8.6	
8	Williams St & Merced St	C	32.9		C	30.1		C	21.2		D	47.7		C	32.0		C	25.3	
9	Marina Blvd & Doolittle Dr	C	30.4		C	34.3		D	43.5		C	34.0		D	37.3		D	53.2	
10	Marina Blvd & Merced St	D	37.0		D	42.0		C	32.0		**F**	**103.4**		**F**	**163.9**		**F**	**101.7**	
11	Marina Blvd & Teagarden St	C	28.2		D	49.4		D	37.6		C	31.8		**E**	**60.8**		D	39.0	
12	Marina Blvd & Alvarado St	D	47.8		D	43.5		C	32.3		**E**	**65.7**		**E**	**68.4**		C	34.8	
13	Republic Ave & Merced St	A/ D	0.7/ 29.6		A/ D	1.0/ 26.8		A/ C	0.3/ 20.2		C	34.0		**F**	**117.6**		**F**	**104.1**	
14	Fairway Dr & Doolittle Dr	B	18.1		C	21.3		B	17.2		B	19.3		C	26.4		B	17.5	
15	Fairway Dr & Merced Street	D	41.6		D	46.5		C	33.4		D	48.2		**F**	**97.2**		D	38.1	
16	Fairway Dr & Miller St	A/ C	1.1/ 21.3		A/ D	3.2/ 25.6		A/ B	0.8/ 11.9		B	18.5		C	25.6		B	14.3	
17	Aladdin Ave & Teagarden St	C	27.1		B	16.4		B	12.8		D	50.6		C	30.3		B	15.1	
18	Aladdin Ave & Alvarado St	D	39.1		C	24.2		C	22.0		**E**	**59.1**		D	38.0		D	37.3	
19	West Ave 140th & Merced St	A	2.4		A	3.9		A	4.1		A	2.8		A	4.3		A	4.2	
20	Marina Blvd & I-880 SB Ramps	D	43.2		C	21.6		C	34.5		**E**	**78.8**		**F**	**81.2**		**F**	**129.5**	
21	Marina Blvd & I-880 NB Ramps	A	7.8		A	4.2		A	7.9		A	9.1		A	7.6		D	45.8	
22	Marina Blvd & San Leandro Blvd	F	152.9	1.48	D	45.7		D	44.8		**F**	**182.5**	1.59	**E**	**61.3**		**E**	**58**	
23	Wells Fargo Drwy & Merced St	A	2.3		A	4.2		A	3.9		A	4.3		A	7.8		A	5.8	
24	Fairway Dr & Kaiser West Drwy	*Project Intersection*									A	5.8		B	17.8		A	6.2	

Source: Dowling Associates, Inc., Jan 2010

LOS=Level of Service; **Delay**=Weighted average seconds of delay per vehicle; **V/C** =Volume to capacity ratio;
BOLD denotes locations with sub-standard operations; **BOXED** denotes locations with significant project impact

1 LOS and delay at signalized intersections are based on weighted average delay of all intersections approaches.

2 The Highway Capacity Manual calculates LOS and delay at side-street stop-controlled intersections as approach delay of the intersection leg with the worst LOS. Synchro also reports the weighted average delay of all movements at side-street stop-controlled intersections. This table displays both values as "all legs/ worst leg" for LOS and delay.

Table 29: Freeway Operations for Cumulative Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

		Cumulative No-Project Conditions						Cumulative Plus Kaiser Medical Center Phase 1 & Mixed Use Retail Development					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
Location	Type	e[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]
		I-880 Northbound						I-880 Northbound					
Washington Avenue to Marina Boulevard	Mainline	9,763	37.1	E	10,449	43.1	E	10,040	39.3	E	**10,840**	**>45.0**	**F**
Marina Boulevard to Davis Street	Weave[4]	8,780	–	C	9,351	–	D	8,884	–	C	9,766	–	D
Davis Street to 98th Avenue	Mainline	**8,804**	**>45.0**	**F**	**8,716**	**>45.0**	**F**	**8,904**	**>45.0**	**F**	**9,116**	**>45.0**	**F**
		I-880 Southbound						I-880 Southbound					
98th Avenue to Davis Street	Mainline	7,414	33.8	D	8,203	41.2	E	7,689	36.0	E	8,472	44.5	E
Davis Street to Marina Boulevard	Mainline	8,901	31.8	D	8,286	28.8	D	9,201	33.4	D	8,599	30.2	D
Marina Boulevard to Washington Avenue	Mainline	**8,738**	**>45.0**	**F**	7,953	38.5	E	**8,855**	**>45.0**	**F**	8,357	43.0	E

Source: Dowling Associates, Inc., 2009.

Bold denotes locatiosn with sub-standard operations

Boxed denotes locations with significant impacts

[1] Volume = vehicles per hour (vph)

[2] Density = passenger car per mile per lane (pc/m/ln)

[3] LOS = Level of Service

[4] Marina Boulevard to Davis Street analyzed as a weaving section using the Leisch Method as described in the Caltrans Design Manual, September 1, 2006. The volume shown for this segment is the total mainline volume.

Freeway Ramp Queuing

Table 30 summarizes the results of the freeway ramp queuing analysis under Cumulative with Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development conditions. With the exception of the southbound off-ramp to westbound Marina Boulevard, the storage capacities at all the study locations are sufficient for the estimated 95th percentile queues. The Saturday peak hour queue length at the I-880 southbound ramp to westbound Marina Boulevard is projected to be 1,077 feet. This queue could potentially extend back onto the freeway mainline; thus impeding freeway traffic. This is considered a **significant impact**.

Table 30: Freeway Ramp Queue for Cumulative Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development (in feet)

	Northbound Off-Ramp to eastbound Marina Boulevard	Northbound Off-Ramp to westbound Marina Boulevard	Southbound Off-Ramp to eastbound Marina Boulevard	Southbound Off-Ramp to westbound Marina Boulevard	Davis Street Southbound Off-Ramp
Available Storage Length	**800** [2]	**1,545**	**1,150**	**950** [2]	**1,120**
AM Queue[1]	0	25	0	619	235
PM Queue[1]	0	0	0	706	192
Saturday Queue[1]	0	678	0	**1077**	343

Source: Dowling Associates, Inc., 2010

Bold denotes significant impact

[1] 95th percentile queue length in feet

[2] Storage lengths are estimates only

Cumulative (2030) Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development with Aladdin Avenue Extension

As an alternative roadway alignment, Aladdin Avenue is extended from its present location at Alvarado Avenue eastwards across the railroad track to intersection with San Leandro Boulevard. This roadway change would provide an alternative route to access the project. The model was implemented with the addition of this roadway extension. Peak hour and Saturday intersection turning movement volumes for this scenario are shown Appendix A.

Intersection Level of Service Analysis

Table 31 summarizes the results of peak hour intersection level of service analysis for Cumulative with and without Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development with the Aladdin Avenue Extension. Detailed LOS calculations for this scenario are contained in the technical appendices. Intersections operating at a sub-standard level of service appear in bold and intersections that would be significantly impacted by the project are boxed.

Table 31: Intersection LOS for Cumulative (2030) with and without Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development with Aladdin Avenue Extension

		Cumulative No Project									Cumulative + Kaiser Phase 1 & Mixed-Use with Aladdin Extension								
		AM			PM			Saturday			AM			PM			Saturday		
	Signalized Intersections [1]	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
1	Davis St & Doolittle Dr	F	81.0	1.09	F	184.7	1.36	E	73.0	1.02	**F**	**108.00**	**1.2**	**F**	**199.80**	**1.49**	**E**	**75.20**	**1.04**
2	Davis St & Phillips Ln	B	18.9		E	70.4	1.05	D	38.9		C	20		**F**	**81.10**	1.09	D	39.6	
3	Davis St & Warden Ave	B	19.7		D	48.4		D	38.2		C	21.4		D	52		D	40.6	
4	Davis St & I-880 SB ramps	A	7.3		B	11.5		B	17.5		A	9.2		B	12.6		B	17.5	
5	Westgate Center & Westgate Pky	B	12.5		C	21.1		B	17.2		B	11.9		C	21.9		B	19.2	
6	Williams St & Doolittle Dr	B	14.3		B	11.6		A	7.6		B	18.1		C	21.5		A	7.8	
7	Williams St & Westgate Pkwy	B	10.0		B	13.6		A	8.5		B	15.5		B	14.6		A	8.6	
8	Williams St & Merced St	C	32.9		C	30.1		C	21.2		C	34.1		C	31.5		C	25.3	
9	Marina Blvd & Doolittle Dr	C	30.4		C	34.3		D	43.5		D	45.8		D	37.5		D	53.2	
10	Marina Blvd & Merced St	D	37.0		D	42.0		C	32.0		**F**	**98.50**		**F**	**150.90**		**F**	**101.70**	
11	Marina Blvd & Teagarden St	C	28.2		D	49.4		D	37.6		C	31.1		**E**	**58.90**		D	39	
12	Marina Blvd & Alvarado St	D	47.8		D	43.5		C	32.3		**E**	**71.20**		**E**	**65.90**		C	34.8	
13	Republic Ave & Merced St	A/ D	0.7/ 29.6		A/ D	1.0/ 26.8		A/ C	0.3/ 20.2		C	32.1		**F**	**127.00**		**F**	**107.00**	
14	Fairway Dr & Doolittle Dr	B	18.1		C	21.3		B	17.2		B	19.2		C	26.2		B	17.5	
15	Fairway Dr & Merced Street	D	41.6		D	46.5		C	33.4		D	44.5		**F**	**92.60**		D	39.7	
16	Fairway Dr & Miller St	A/ C	1.1/ 21.3		A/ D	3.2/ 25.6		A/ B	0.8/ 11.9		C	20.7		C	29.3		B	14.4	
17	Aladdin Ave & Teagarden St	C	27.1		B	16.4		B	12.8		**E**	**64.90**		C	34.3		B	15.1	
18	Aladdin Ave & Alvarado St	D	39.1		C	24.2		C	22.0		**E**	**63.00**		D	42.4		C	31.2	
19	West Ave 140th & Merced St	A	2.4		A	3.9		A	4.1		A	2.5		A	4.2		A	4.2	
20	Marina Blvd & I-880 SB Ramps	D	43.2		C	21.6		C	34.5		**E**	**55.20**		**E**	**61.50**		**F**	**103.20**	
21	Marina Blvd & I-880 NB Ramps	A	7.8		A	4.2		A	7.9		A	8.6		A	8.5		D	46.3	
22	Marina Blvd & San Leandro Blvd	F	152.9	1.48	D	45.7		D	44.8		**F**	**175.70**	**1.57**	**E**	**63.40**		**E**	**58.00**	
23	Wells Fargo Drwy & Merced St	A	2.3		A	4.2		A	3.9		A	3.8		A	8.8		A	5.8	
24	Fairway Dr & Kaiser West Drwy				*Project Intersection*						A	5.5		B	15.5		A	5.4	

Source: Dowling Associates, Inc., Jan 2010.

LOS=Level of Service; **Delay**=Weighted average seconds of delay per vehicle; **V/C** =Volume to capacity ratio;
BOLD denotes locations with sub-standard operations; **BOXED** denotes locations with significant project impact

1 LOS and delay at signalized intersections are based on weighted average delay of all intersections approaches.

2 The Highway Capacity Manual calculates LOS and delay at side-street stop-controlled intersections as approach delay of the intersection leg with the worst LOS. Synchro also reports the weighted average delay of all movements at side-street stop-controlled intersections. This table displays both values as "all legs/ worst leg" for LOS and delay.

The result shows that ten intersections would be significantly impacted by the project:

- Davis Street and Doolittle Drive (AM and PM)
- Marina Boulevard and Merced Street (AM, PM and Saturday)
- Marina Boulevard and Teagarden Street (PM)
- Marina Boulevard and Alvarado Street (AM and PM)
- Republic Avenue and Merced Street (PM and Saturday)
- Fairway Drive and Merced Street (PM)
- Aladdin Avenue and Teagarden Street (AM)
- Aladdin Avenue and Alvarado Street (AM)
- Marina Boulevard and I-880 Southbound ramps (AM, PM and Saturday)
- Marina Boulevard and San Leandro Boulevard (AM, PM and Saturday)

Freeway Operations

The installation of the Aladdin Avenue Extension is expected to have minimal affect on freeway operations and cannot be quantified by the travel demand model due to regional nature of the freeway system. It is projected that the freeway operations under this scenario is the same as that under Cumulative Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development as described the previous section.

Freeway Ramp Queuing

Table 32 summarizes the results of the freeway ramp queuing analysis under Cumulative with Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development conditions with Aladdin Avenue Extension. With the exception of the southbound off-ramp to westbound Marina Boulevard, the storage capacities at all the study locations are sufficient for the estimated 95th percentile queues. The Saturday peak hour queue length at the I-880 southbound ramp to westbound Marina Boulevard is projected to be 1,041 feet. This queue could potentially extend back onto the freeway mainline; thus impeding freeway traffic. This is considered a **significant impact**.

Table 32: Freeway Ramp Queue for Cumulative Conditions with Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development with Aladdin Avenue Extension (in feet)

	Northbound Off-Ramp to eastbound Marina Boulevard	Northbound Off-Ramp to westbound Marina Boulevard	Southbound Off-Ramp to eastbound Marina Boulevard	Southbound Off-Ramp to westbound Marina Boulevard	Davis Street Southbound Off-Ramp
Available Storage Length	**800** [2]	**1,545**	**1,150**	**950** [2]	**1,120**
AM Queue[1]	0	0	0	593	221
PM Queue[1]	0	0	0	667	204
Saturday Queue[1]	0	621	0	**1041**	343

Source: Dowling Associates, Inc., 2009
Bold denotes significant impact
[1] 95th percentile queue length in feet
[2] Storage lengths are estimates only

Cumulative (2030) Conditions plus Kaiser Medical Center Build-Out plus Mixed-Use Retail Development

Project trips generated by Kaiser Medical Center Build-Out plus Mixed-Use Retail Development were added to the Year 2030 model. The modeling network assumed the same roadway network changes as assumed under Cumulative No Project Conditions. Peak hour and Saturday intersection turning movement volumes are shown in Appendix A.

Intersection Level of Service Analysis

Table 33 summarizes the results of the peak hour intersection level of service analysis for Cumulative Conditions with and without Kaiser Medical Center Build-Out plus Mixed-Use Retail Development. Detailed LOS calculations for this scenario are contained in the technical appendices. The result shows that 11 intersections would be significantly impacted by the project:

- Davis Street and Doolittle Drive (AM and PM)
- Davis Street and Phillips Lane (PM)
- Marina Boulevard and Merced Street (AM, PM and Saturday)
- Marina Boulevard and Teagarden Street (PM)
- Marina Boulevard and Alvarado Street (AM and PM)
- Republic Avenue and Merced Street (AM, PM and Saturday)
- Fairway Drive and Merced Street (PM)
- Aladdin Avenue and Teagarden Street (AM)

Table 33: Weekday Peak hour Intersection LOS for Cumulative Conditions with and without Kaiser Medical Center Build-Out plus Mixed-Use Retail Development

	Signalized Intersections [1]	Cumulative No Project									Cumulative + Kaiser Build-Out & Mixed-Use Retail Development								
		AM			PM			Saturday			AM			PM			Saturday		
		LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
1	Davis St & Doolittle Dr	F	81.0	1.0	F	184.7	1.36	E	73.0	1.0	**F**	**99.30**	1.18	**F**	**196.7**	1.49	**E**	**75.80**	**1.05**
2	Davis St & Phillips Ln	B	18.9		E	70.4	1.05	D	38.9		C	20.4		**F**	**81.80**	1.1	D	39.6	
3	Davis St & Warden Ave	B	19.7		D	48.4		D	38.2		C	22.9		D	53.5		D	41.4	
4	Davis St & I-880 SB ramps	A	7.3		B	11.5		B	17.5		B	14.9		B	12.6		B	17.8	
5	Westgate Shopping Center Drwy & Westgate Pkwy	B	12.5		C	21.1		B	17.2		B	11.6		C	23.1		B	19.6	
6	Williams St & Doolittle Dr	B	14.3		B	11.6		A	7.6		B	16.4		C	25.7		A	7.9	
7	Williams St & Westgate Pkwy	B	10.0		B	13.6		A	8.5		D	38.2		B	14.4		A	8.8	
8	Williams St & Merced St	C	32.9		C	30.1		C	21.2		D	45.2		C	32.8		C	25.4	
9	Marina Blvd & Doolittle Dr	C	30.4		C	34.3		D	43.5		D	46.5		D	39.7		D	54.8	
10	Marina Blvd & Merced St	D	37.0		D	42.0		C	32.0		**F**	**138.5**		**F**	**186.2**		**F**	**117.4**	
11	Marina Blvd & Teagarden St	C	28.2		D	49.4		D	37.6		D	38.9		**E**	**66.50**		D	39.1	
12	Marina Blvd & Alvarado St	D	47.8		D	43.5		C	32.3		**F**	**83.60**		**F**	**81.30**		D	36.5	
13	Republic Ave & Merced St	A/ D	0.7/ 29.6		A/ D	1.0/ 26.8		A/ C	0.3/ 20.2		**E**	**74.20**		**F**	**121.8**		**F**	**117.4**	
14	Fairway Dr & Doolittle Dr	B	18.1		C	21.3		B	17.2		C	22		C	27.5		B	17.6	
15	Fairway Dr & Merced Street	D	41.6		D	46.5		C	33.4		D	50.8		**F**	**108.8**		D	44.1	
16	Fairway Dr & Miller St	A/ C	1.1/ 21.3		A/ D	3.2/ 25.6		A/ B	0.8/ 11.9		C	32.6		D	36.4		B	16.2	
17	Aladdin Ave & Teagarden St	C	27.1		B	16.4		B	12.8		**E**	**63.40**		D	39		B	15.4	
18	Aladdin Ave & Alvarado St	D	39.1		C	24.2		C	22.0		**E**	**64.50**		D	43.4		D	40.1	
19	West Ave 140th & Merced St	A	2.4		A	3.9		A	4.1		A	2.6		A	4.2		A	4.2	
20	Marina Blvd & I-880 SB Ramps	D	43.2		C	21.6		C	34.5		**F**	**84.70**		**F**	**98.60**		**F**	**132.6**	
21	Marina Blvd & I-880 NB Ramps	A	7.8		A	4.2		A	7.9		B	10.9		B	14.1		D	50.4	
22	Marina Blvd & San Leandro	F	152.9	1.4	D	45.7		D	44.8		**F**	**189.4**	1.65	**E**	**67.40**		**E**	**65.50**	
23	Wells Fargo Drwy & Merced St	A	2.3		A	4.2		A	3.9		A	4.6		B	12.3		A	6.4	
24	Fairway Dr & Kaiser West Drwy				*Project Intersection*						A	8.3		C	22.1		A	7.5	

Source: Dowling Associates, Inc., Jan 2010

LOS=Level of Service; **Delay**=Weighted average seconds of delay per vehicle; **V/C** =Volume to capacity ratio;
BOLD denotes locations with sub-standard operations; **BOXED** denotes locations with significant project impact

1 LOS and delay at signalized intersections are based on weighted average delay of all intersections approaches.

2 The Highway Capacity Manual calculates LOS and delay at side-street stop-controlled intersections as approach delay of the intersection leg with the worst LOS. Synchro also reports the weighted average delay of all movements at side-street stop-controlled intersections. This table displays both values as "all legs/ worst leg" for LOS and delay.

- Aladdin Avenue and Alvarado Street (AM)
- Marina Boulevard and I-880 Southbound ramps (AM, PM and Saturday)
- Marina Boulevard and San Leandro Boulevard (AM, PM and Saturday)

Freeway Operations

Table 35 summarizes the results of the freeway operations analysis for the Cumulative with Kaiser Build-Out plus Mixed-Use Retail Development. The results show that two I-880 northbound segments and two I-880 southbound segments would operate at LOS F during AM and/or PM peak hours. The northbound segment from Davis Street to 98th Avenue would experience LOS F conditions during both AM and PM peak hours; the southbound segment from Marina Boulevard to Washington Avenue would experience LOS F in the AM peak hour only, and the northbound segment from Washington Avenue to Marina Boulevard and the southbound segment from 98th Avenue to Davis Street would experience LOS F in the PM peak hour only. The addition of project traffic would cause an increase in the amount of vehicle traffic by more than one percent of the freeway volumes during both AM and PM peak hours; therefore, this is considered a significant impact.

Freeway Ramp Queuing

Table 34 summarizes the results of the freeway ramp queuing analysis under Cumulative with Kaiser Build-Out plus Mixed-Use Retail Development conditions. The Saturday peak hour queue length at the I-880 southbound ramp to westbound Marina Boulevard is projected to be 1,083 feet. This queue could potentially extend back onto the freeway mainline; thus impeding freeway traffic. This is considered a **significant impact**.

Table 34: Freeway Ramp Queue for Cumulative Conditions with Kaiser Medical Center Build-Out plus Mixed-Use Retail Development (in feet)

	Northbound Off-Ramp to eastbound Marina Boulevard	Northbound Off-Ramp to westbound Marina Boulevard	Southbound Off-Ramp to eastbound Marina Boulevard	Southbound Off-Ramp to westbound Marina Boulevard	Davis Street Southbound Off-Ramp
Available Storage Length	**800 [2]**	**1,545**	**1,150**	**950 [2]**	**1,120**
AM Queue[1]	0	175	0	627	340
PM Queue[1]	0	0	0	722	201
Saturday Queue[1]	0	771	0	**1,083**	355

Source: Dowling Associates, Inc., 2009

Bold denotes significant impact

[1] 95th percentile queue length in feet

[2] Storage lengths are estimates only

Table 35: Freeway Operations for Cumulative Conditions with and without Kaiser Medical Center Build-Out plus Mixed-Use Development

		Cumulative No-Project Conditions						Cumulative Plus Kaiser Medical Center Build-Out & Mixed-Use Retail Development					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
Location	Type	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]	Volume[1]	Density[2]	LOS[3]
		I-880 Northbound						I-880 Northbound					
Washington Avenue to Marina Boulevard	Mainline	9,763	37.1	E	10,449	43.1	E	10,068	39.5	E	**10,879**	**>45.0**	**F**
Marina Boulevard to Davis Street	Weave[4]	8,780	–	C	9,351	–	D	8,894	–	C	9,808	–	D
Davis Street to 98th Avenue	Mainline	**8,804**	**>45.0**	**F**	**8,716**	**>45.0**	**F**	**8,914**	**>45.0**	**F**	**9,156**	**>45.0**	**F**
		I-880 Southbound						I-880 Southbound					
98th Avenue to Davis Street	Mainline	7,414	33.8	D	8,203	41.2	E	7,717	36.3	E	**8,526**	**>45.0**	**F**
Davis Street to Marina Boulevard	Mainline	8,901	31.8	D	8,286	28.8	D	9,231	33.6	D	8,662	30.5	D
Marina Boulevard to Washington Avenue	Mainline	**8,738**	**>45.0**	**F**	7,953	38.5	E	**8,867**	**>45.0**	**F**	8,438	44.1	E

Source: Dowling Associates, Inc., 2009.

Bold denotes locatiosn with sub-standard operations

Boxed denotes locations with significant impacts

[1] Volume = vehicles per hour (vph)

[2] Density = passenger car per mile per lane (pc/m/ln)

[3] LOS = Level of Service

[4] Marina Boulevard to Davis Street analyzed as a weaving section using the Leisch Method as described in the Caltrans Design Manual, September 1, 2006. The volume shown for this segment is the total mainline volume.

Cumulative Year 2030 Conditions plus Kaiser Medical Center Build-Out plus Mixed-Use Retail Development with the Aladdin Avenue Extension

As an alternative roadway alignment, Aladdin Avenue is extended from its present location at Alvarado Avenue eastwards across the railroad track to intersection with San Leandro Boulevard. This roadway change would provide an alternative route to access the project. The model was implemented with the addition of this roadway extension. Peak hour and Saturday intersection turning movement volumes for Cumulative Conditions plus the Kaiser Medical Center Build-Out plus Mixed-Use Retail Development with the Aladdin Avenue Extension this scenario are shown Appendix A.

Intersection Level of Service Analysis

Table 36 summarizes the results of the weekday peak hour and Saturday intersection level of service analysis for Cumulative Conditions with and without Kaiser Medical Center Build-Out plus Mixed-Use Retail Development with Aladdin Avenue Extension. Detailed LOS calculations for this scenario are contained in the technical appendices. Intersections operating at a sub-standard level of service appear in bold and intersections that would be significantly impacted by the project are boxed. The result shows that the same 11 intersections would be significantly impacted as under Cumulative Conditions with Kaiser Medical Center Build-Out plus Mixed-Use Retail Development scenario.

Freeway Operations

The installation of the Aladdin Avenue Extension is expected to have minimal affect on freeway operations and cannot be quantified by the travel demand model due to regional nature of the freeway system. It is projected that the freeway operations under this scenario are the same as that under Cumulative Conditions with Kaiser Build-Out plus Mixed-Use Retail Development as described the previous section.

Freeway Ramp Queuing

Table 37 summarizes the results of the freeway ramp queuing analysis under Cumulative with Kaiser Build-Out plus Mixed-Use Retail Development conditions with Aladdin Avenue Extension. The Saturday peak hour queue length at the I-880 southbound ramp to westbound Marina Boulevard is projected to be 1,047 feet. This queue could potentially extend back onto the freeway mainline; thus impeding freeway traffic. This is considered a **significant impact**.

Table 36: Intersection LOS for Cumulative Conditions with and without Kaiser Medical Center Build-Out plus Mixed-Use Retail Development with Aladdin Avenue Extension

		Cumulative No Project									Cumulative + Kaiser Build-Out & Mixed-Use with Aladdin Extension								
		AM		-	PM		-	Saturday		-	AM		-	PM		-	Saturday		-
	Signalized Intersections [1]	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
1	Davis St & Doolittle Dr	F	81.0	1.09	F	184.7	1.36	E	73.0	1.02	**F**	**106.60**	1.2	**F**	**200.80**	1.51	**E**	**75.80**	**1.05**
2	Davis St & Phillips Ln	B	18.9		E	70.4	1.05	D	38.9		B	19.9		**F**	**83.00**	1.1	D	39.6	
3	Davis St & Warden Ave	B	19.7		D	48.4		D	38.2		C	23.9		D	53.7		D	41.4	
4	Davis St & I-880 SB ramps	A	7.3		B	11.5		B	17.5		B	15.3		B	12.8		B	17.8	
5	Westgate Ctr Drwy & Westgate Pkwy	B	12.5		C	21.1		B	17.2		B	11.6		C	21.8		B	19.6	
6	Williams St & Doolittle Dr	B	14.3		B	11.6		A	7.6		B	18.8		C	28.2		A	7.9	
7	Williams St & Westgate Pkwy	B	10.0		B	13.6		A	8.5		D	45.5		B	15.4		A	8.8	
8	Williams St & Merced St	C	32.9		C	30.1		C	21.2		C	34.1		C	34.2		C	25.4	
9	Marina Blvd & Doolittle Dr	C	30.4		C	34.3		D	43.5		D	48.3		D	39.3		D	54.8	
10	Marina Blvd & Merced St	D	37.0		D	42.0		C	32.0		**F**	**124.40**		**F**	**181.00**		**F**	**117.40**	
11	Marina Blvd & Teagarden St	C	28.2		D	49.4		D	37.6		D	41.6		**E**	**70.90**		D	39.1	
12	Marina Blvd & Alvarado St	D	47.8		D	43.5		C	32.3		**F**	**105.90**		**F**	**95.40**		D	36.5	
13	Republic Ave & Merced St	A/ D	0.7/ 29.6		A/ D	1.0/ [illegible]		A/ C	0.3/ 20.2		**E**	**78.10**		**F**	**122.00**		**F**	**120.50**	
14	Fairway Dr & Doolittle Dr	B	18.1		C	21.3		B	17.2		C	20.4		C	26.2		B	17.6	
15	Fairway Dr & Merced Street	D	41.6		D	46.5		C	33.4		D	45.7		**F**	**98.70**		D	44.1	
16	Fairway Dr & Miller St	A/ C	1.1/ 21.3		A/ D	3.2/ [illegible]		A/ B	0.8/ 11.9		C	31.5		D	36.6		B	16.2	
17	Aladdin Ave & Teagarden St	C	27.1		B	16.4		B	12.8		**E**	**66.30**		D	40.1		B	15.4	
18	Aladdin Ave & Alvarado St	D	39.1		C	24.2		C	22.0		**E**	**68.50**		D	51.2		C	33.9	
19	West Ave 140th & Merced St	A	2.4		A	3.9		A	4.1		A	2.6		A	4.2		A	4.2	
20	Marina Blvd & I-880 SB Ramps	D	43.2		C	21.6		C	34.5		**E**	**61.70**		**E**	**71.80**		**F**	**104.60**	
21	Marina Blvd & I-880 NB Ramps	A	7.8		A	4.2		A	7.9		B	10.4		B	17.3		D	51	
22	Marina Blvd & San Leandro Blvd	F	152.9	1.48	D	45.7		D	44.8		**F**	**186.40**	1.64	**E**	**70.80**		**E**	**65.50**	
23	Wells Fargo Drwy & Merced St	A	2.3		A	4.2		A	3.9		A	4.7		B	16.4		A	6.4	
24	Fairway Dr & Kaiser West Drwy				*Project Intersection*						A	8.1		C	21.8		A	7.5	

Source: Dowling Associates, Inc., Jan 2010.

LOS=Level of Service; **Delay**=Weighted average seconds of delay per vehicle; **V/C** =Volume to capacity ratio;
BOLD denotes locations with sub-standard operations; **BOXED** denotes locations with significant project impact

1 LOS and delay at signalized intersections are based on weighted average delay of all intersections approaches.

2 The Highway Capacity Manual calculates LOS and delay at side-street stop-controlled intersections as approach delay of the intersection leg with the worst LOS. Synchro also reports the weighted average delay of all movements at side-street stop-controlled intersections. This table displays both values as "all legs/ worst leg" for LOS and delay.

Table 37: Freeway Ramp Queue for Cumulative Conditions with Kaiser Medical Center Build-Out plus Mixed-Use Retail Development with Aladdin Avenue Extension (in feet)

	Northbound Off-Ramp to eastbound Marina Boulevard	Northbound Off-Ramp to westbound Marina Boulevard	Southbound Off-Ramp to eastbound Marina Boulevard	Southbound Off-Ramp to westbound Marina Boulevard	Davis Street Southbound Off-Ramp
Available Storage Length	**800** [2]	**1,545**	**1,150**	**950** [2]	**1,120**
AM Queue[1]	0	127	0	606	344
PM Queue[1]	0	0	0	693	204
Saturday Queue[1]	0	771	0	**1,047**	355

Source: Dowling Associates, Inc., 2009

Bold denotes significant impact

[1] 95th percentile queue length in feet

[2] Storage lengths are estimates only

Congestion Management Program (CMP) Analysis

Existing freeway and state route operations conditions were taken from the *2006 Level of Service Monitoring Report* prepared by the Alameda County Congestion Management Agency (ACCMA). The ACCMA monitors congestion on freeways and state routes in the region by measuring the average travel speed during the AM and PM peak hours (7:00 to 9:00 AM and 4:00 to 6:00 PM, respectively). Freeway traffic conditions are then described in terms of level of service (LOS), a standard measure for traffic operations defined by the average number of seconds of delay per vehicle, with LOS A representing free-flow conditions and LOS F representing gridlocked conditions.

According to the ACCMA, traffic speeds of 49 miles per hour (mph) or higher on the freeway indicate LOS A through C. At LOS D, traffic operating conditions become unstable and speeds can drop as low as 41 mph. At LOS E, there are virtually no usable gaps in the traffic stream and speeds can drop as low as 30 mph. Below 30 mph, stop-and-go traffic operations often occur and the LOS is F. State route segment LOS standards depend on the range of free-flow vehicle speeds and the arterial class, which are not detailed here.

Since the proposed Kaiser Medical Center and Mixed-Use Retail Development Project would generate more than 100 PM peak hour trips, as described in the transportation report prepared for the EIR. Pursuant to the request of the Alameda County Congestion Management Agency (ACCMA) in their letter dated September 10, 2008 in response to the Notice of Preparation (NOP) of the EIR, a Congestion Management Program (CMP) analysis was conducted for this project. The impacts of the project on the regional transportation system were assessed using the latest version of the ACCMA Countywide Travel Demand Model which uses Association of Bay Area Government's (ABAG) Projections 2005 (P'05) socio-economic forecasts. The land use for the Project was added into the model in the form of socio-demographic data for the 2015 and 2030 forecasts. For the Project analysis, the "with Project" forecasts were compared to the baseline "no-project" forecasts for roadway and transit to determine impacts. The impact analysis for roadways includes all Metropolitan Transportation System (MTS) roadways and Congestion Management Program (CMP) designated roadways, plus several local MTS roadways as well as transit corridors in the vicinity of the project area. Transit impacts were addressed for AC Transit and BART. This chapter provides a summary of the analysis.

Significance Criteria

The CMP analysis focuses on roadway links on MTS and CMP highway segments and transit corridors, and does not extend to intersections. This is consistent with the guidelines of the 2005 Congestion Management Program. Significance criteria have been proposed for the highway and transit analysis and are described below.

Roadway Segments

The roadway impacts of the project were considered significant if the addition of project-related traffic would result in a level of service (LOS) value worse than LOS E, except where the roadway link was already at LOS F under no project conditions. For those locations where this no-project condition is LOS F, the impacts of the project were considered significant if the contribution of project-related traffic is at least three percent (3%) of the total traffic. This criterion has been included to address impacts along roadway segments currently operating under unacceptable levels and was developed based on professional judgment using a "reasonableness test" of daily fluctuations of traffic. Also a change of "volume to capacity" (V/C) ratio of 3% has been found to be the threshold for which a perceived change in congestion is observed (the V/C ratio is calculated by comparing the peak hour link volume to the peak hour capacity of the road link). This change is equivalent to about one-half of the change from one level of service to the next.

Level of service (LOS) is a measure of the traffic characteristics of a road segment under different traffic conditions, and is assigned a letter from "A" to "F", with LOS A representing uncongested, high speed and minimum delay, conditions, while LOS F represents highly unstable congested conditions with low speeds and high delay.

Transit Segments

Transit service standards proposed for the CMP are 15-30 minutes for bus service and 3.75-15 minutes for BART during peak hours. The transit impacts of the project were considered significant if the addition of project-related trips would result in a level of service worse than capacity of the transit system, except where the transit system was already operating at capacity under no project conditions. For those locations where this no-project condition is at capacity, the impacts of the project were considered significant if the contribution of project-related trips is at least three percent (3%) of the total trips. Capacity of the transit system is measured by the load factor for the transit segments in the study area.

Congestion Management Program Land Use Analysis

The traffic forecasts were based on the most recent version (during the period when the comments on the NOP were issued) of the Countywide Model, which uses Association of Bay Area Government's (ABAG) Projections 2005 (P'05) socio-economic forecasts. The socio-economic data for the project area was added into the model for the 2015 and 2030 forecasts for all traffic analysis zones within the project area. The exhibit below summarizes the changes in land use for the Specific Plan. Since the project includes housing, and retail and medical land uses, the changes in the land use assumptions are to the number of multi-family housing units, and to retail and service jobs. The EIR document evaluated Baseline impacts in Year 2015 and long term Cumulative impacts in Year 2030 for two phases of the medical center. The Project assumptions include up to 387,000 square feet of retail, 250 apartments and 711,000 square feet of medical use in Phase 1. Kaiser Medical Center Build-Out increases medical uses by another 375,000 square feet.

The EIR also evaluated an alternative network scenario under Cumulative conditions that included an extension of Aladdin Avenue from its present location at Alvarado Avenue eastwards across the railroad track to intersect with San Leandro Boulevard. The CMP analysis only considered the without Aladdin Avenue extension as it represented the worst case for traffic on CMP and MTS roadways.

The Countywide model uses households and employment as inputs. Therefore the housing component was converted to multi-family units, the retail square footage was converted to retail jobs and the Kaiser Medical Center square footage was converted to service jobs using standard conversion rates. Table 38 summarizes the project land uses in terms of housing and jobs that were added to the Countywide model for the 2015 and 2030 project analysis.

For the CMP analysis, traffic estimates were calculated for the Project using the model and then compared against 2015 and 2030 No Project volumes. The model was used to calculate trip generation, trip distribution, mode choice, and trip assignment of project trips from and to the site. No-project and project results were summarized for both highway and transit impacts. Highway impacts were summarized at the designated link locations based on ACCMA's comments on the Notice of Preparation for the Project. The roadway links include selected segments of I-880, I-580, I-238, East 14th Street, Davis Street, Washington Avenue, International Boulevard, Hesperian Boulevard, 150th Avenue and SR 61 (Doolittle Drive). Transit impacts were addressed for AC Transit bus routes servicing the study area and Bay Area Rapid Transit (BART) at the San Leandro BART station.

Table 38: Land Use Changes for Project Area

Project TAZs	Development	Baseline 2015 Phase 1			Cumulative 2030 Phase 2		
		Multi-Family Households	Retail Employment	Service Employment	Multi-Family Households	Retail Employment	Service Employment
1405	Retail/Housing	250	730		250	730	
1406	Kaiser Medical			2,325			3,522
Total		**250**	**730**	**2,325**	**250**	**730**	**3,522**

Source: Dowling Associates, Inc., 2009
Model TAZ 538 was split into 1405 and 1406 to separate the retail/housing and medical components.
The existing land uses in Model TAZ 538 remained as they represent the commercial associated with the existing Reynolds and Brown Property (Denny's and Wells Fargo)

CMP and MTS Highway Segments

The LOS for the designated links were analyzed in a spreadsheet using the Florida Department of Transportation LOS methodology, which provides a planning level analysis based on Highway Capacity Manual 1985 methods. Although a more updated method using HCM 2000 exists, the NOP requested this CMP analysis use the HCM 1985 method. As a planning level analysis, the level of service is based on forecasts of traffic and assumptions for roadway and signalization control conditions, such as facility type (freeway, expressway, and arterial classification), speeds,

capacity and number of lanes. The assumption for the number of lanes at each link location was extracted from the ACCMA Countywide Travel Model, and also confirmed through aerial and field observations.

The traffic baseline forecasts for 2015 and 2030 were extracted at the required CMP and MTS highway segments from the ACCMA Countywide Travel Model for both the AM and PM peak hours. The peak hour operations were evaluated in compliance with ACCMA requirements. The tables compare the no-project results to the with-Project results for each model horizon year. The peak hour volumes, V/C ratios and the level of service for with and without project conditions represent both directions of flow. The detailed traffic volume tables are provided in the appendix for 2015 and 2030 forecast years.

Baseline Conditions Impacts on Regional and Local Roadways

Baseline (2015) Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

A summary of the level of service analysis for Baseline plus and Kaiser Medical Center Phase 1 & Mixed Use Retail is shown in Table 39 for the AM peak hour and Table 40 for the PM peak hour.

The project would contribute to the cumulative impacts on the regional and local roadways. With the addition of the project, some MTS roadways do experience increases in volume and a change in level of service, but no MTS roadway segments are expected to result in significant impacts, and therefore the addition of project-generated traffic to the regional and local CMP roadways would not result in significant impacts.

Cumulative Conditions Impacts on Regional and Local Roadways

Cumulative (2030) plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

A summary of the level of service analysis for Cumulative plus Kaiser Medical Center Phase 1 & Mixed Use Retail is shown in Table 41 in the AM peak hour and Table 42 in the PM peak hour.

The project would contribute to the cumulative impacts on the regional and local roadways. With the addition of the project, some MTS roadways do experience increases in volume and a change in level of service, but the following MTS roadway segments are expected to result in significant impacts:

1. At I-880 south of Marina Boulevard in the southbound direction, the level of service is at F and the project increases traffic by 3.7 percent over the baseline and is therefore also considered impacted.

2. At I-880 south of Marina Boulevard in the southbound direction, during the PM Peak hour, the level of service changes from LOS E to LOS F with project traffic increase of 1.1 percent over the baseline. As result of the LOS changing to F, this is therefore considered a significant impact.

3. At I-238 east of Hesperian Boulevard in the northbound direction, during the PM peak hour, the level of service is at F with and without the project, however the project increases traffic by 4.2 percent over the baseline and is therefore considered a significant impact.

4. At East 14th Street south of San Leandro Boulevard in the southbound direction during the PM peak hour, the level of service is at F with a 7.1 percent addition of project traffic and is therefore considered a significant impact.

The addition of project-generated traffic to the other regional and local roadways would not result in significant impacts.

Mitigations: Impacts 1 through 4 would require an additional travel lane be added to the impacted direction in order to mitigate to less than significant levels. However, these mitigations are considered uncertain due to cost and right of way constraints. Alternatively, a comprehensive TDM plan has been proposed (discussed in a different section) that would likely mitigate some of the above impacts. However, as it is difficult to quantify the trip reduction from the TDM plan for individual impacted locations, the impacts would still remain as significant and unavoidable.

Cumulative (2030) plus Kaiser Medical Center Build-Out plus Mixed-Use Retail Development

A summary of the level of service analysis for Cumulative with Kaiser Medical Center Build-Out & Mixed Use Retail is shown in Table 43 in the AM peak hour and Table 44 in the PM peak hour.

The project would contribute to the cumulative impacts on the regional and local roadways. With the addition of the project, some MTS roadways do experience increases in volume and a change in LOS, but the following MTS roadway segments are expected to result in significant impacts:

1. At I-880 south of Marina Boulevard in the southbound direction, the level of service is at F with and without the project, and the project increases traffic by 3.7 percent over the baseline and is therefore also considered impacted.

2. At I-880 south of Marina Boulevard in the southbound direction during the PM peak hour, the level of service changes from LOS E to LOS F with project

traffic increase of 1.3 percent over the baseline. This is therefore considered a significant impact.

3. At I-238 east of Hesperian Boulevard in the northbound direction during the PM peak hour, the level of service is at F with and without the project, however the project increases traffic by 7.0 percent over the baseline and is therefore considered a significant impact.

4. At East 14th Street south of San Leandro Boulevard in the southbound direction during the PM peak hour the level of service is at F with a 7.1 percent addition of project traffic and is therefore considered a significant impact.

5. At Washington Avenue south of San Leandro Boulevard in the southbound direction during the PM peak hour, the level of service with the project changes from LOS E to LOS F with the addition of 7.6 percent project traffic and is therefore considered a significant impact. The impacted section measures approximately 2,000 feet from San Leandro Boulevard to 139th Avenue.

The addition of project-generated traffic to the other regional and local roadways would not result in significant impacts.

Mitigations: Impacts 1 through 5 would require an additional travel lane be added to the impacted direction in order to mitigate to less than significant levels. However, these mitigations are considered uncertain due to cost and right of way constraints. Alternatively, a comprehensive TDM plan has been proposed (discussed in a different section) that would likely mitigate some of the above impacts. However, as it is difficult to quantify the trip reduction from the TDM plan for individual impacted locations, the impacts would still remain as significant and unavoidable.

MTS Transit Corridors

The proposed Kaiser Medical Center & Mixed Use project is located within the service area of the AC Transit and the Bay Area Rapid Transit (BART) system. The impact of the Project on the transit system was assessed using the latest version of the ACCMA Countywide Model. The ACCMA Countywide model predicts transit ridership for all operators, including AC Transit and BART. Summaries of transit ridership are shown in Table 45 for AC Transit and Table 46 for BART. The model generates daily home-based work and non-work transit trips, but does not split these into peak hour transit trips. Therefore to estimate the number of transit trips occurring during the peak period, a review of existing transit ridership data within the study area indicated peak hour transit trips can be conservatively assumed as 25 percent of daily transit trips.

Transit Ridership on AC Transit Buses

Future growth and development within the project area would increase ridership on AC Transit buses. The impact of the project on the AC Transit bus system was assessed based on the ridership derived from the Countywide Model. Due to the nature of this project, which is primarily a retail-housing and medical center adjacent to existing AC Transit buses and a nearby BART station, it is expected to attract some transit trips from/to the project site. Some commuters are expected to use the transit system to travel to work. The project site is directly served by four bus routes (55, 81, 84 and S) and in 2030 would be indirectly served by the new Bus Rapid Transit (BRT) route proposed to travel on East 14th Street. The model was used to quantify the change in transit trips associated with the project on these routes, and impacts are assessed based on assumptions for load factors obtained from AC Transit, as shown in Table 45.

Baseline (2015) Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

Based on the assumptions described above, under baseline plus Project Phase 1, the project has the potential to generate an increase in overall daily and peak hour AC Transit ridership on the bus routes in the study area as shown in Table 45. Based on a review of the existing bus service data, no buses operate at more than 50% load factor in the study area today. With the projected increase in transit ridership under baseline (2015) conditions, even with future bus service operating at higher frequencies, buses would operate at higher load factors. With the addition of project trips on the AC buses in the study area, no bus route operates over capacity (capacity is reached at a load of 40). As a result, the project related increase would not result in an impact to the peak hour bus service in terms of the 15-30 minute headway standard, and is therefore not considered significant.

Cumulative (2030) Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

Under Cumulative plus Project Phase 1, the addition of project trips on the AC Transit buses in the study area, no bus route would operate over capacity (capacity is reached at a load of 40). As a result, the project related increase would not result in an impact to the peak hour bus service in terms of the 15-30 minute headway standard, and is therefore not considered significant.

Table 39: CMP Segment Analysis for Baseline Conditions with Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development - AM Peak Hour

Link Location	Northbound/Eastbound								Southbound/Westbound							
	No-Project 2015 AM Vol	Project 2015 AM Vol	% Vol Diff	Vol Diff	No-Project 2015 AM LOS	Project 2015 AM LOS	Change in V/C > 3%	Change in LOS	No-Project 2015 AM Vol	Project 2015 AM Vol	% Vol Diff	Vol Diff	No-Project 2015 AM LOS	Project 2015 AM LOS	Change in V/C > 3%	Change in LOS
Interstate/State Highways																
I-880 - north of Davis St	7,966	7,986	*0.3%*	20	E	E	no	no change	6,643	6,643	*0.0%*	0	D	D	no	no change
I-880 - north of Marina Blvd	8,575	8,575	*0.0%*	0	D	D	no	no change	6,749	6,749	*0.0%*	0	C	C	no	no change
I-880 - south of Marina Blvd	9,097	9,127	*0.3%*	30	D	D	no	no change	6,273	6,291	*0.3%*	18	D	D	no	no change
I-580 - north of MacArthur Blvd	7,022	7,022	*0.0%*	0	D	D	no	no change	6,567	6,661	*1.4%*	94	C	C	no	no change
I-580 - south of Estudillo Ave	7,157	7,170	*0.2%*	13	D	D	no	no change	6,359	6,393	*0.5%*	34	D	D	no	no change
I-238 - east of Hesperian Blvd	2,226	2,278	*2.3%*	52	B	B	no	no change	5,638	5,782	*2.5%*	144	E	E	no	no change
SR 61 (Doolittle Dr) - north of Davis St	1,804	1,804	*0.0%*	0	B	B	no	no change	823	1,037	*20.7%*	214	A	A	yes	no change
Arterials																
E.14th St - north of Hays St	561	571	*1.8%*	10	D	D	no	no change	463	481	*3.7%*	18	D	D	no	no change
E.14th St - south of San Leandro Blvd	1,077	1,190	*9.5%*	113	D	D	yes	no change	345	345	*0.0%*	0	D	D	no	no change
Davis St - east of I-880	362	367	*1.4%*	5	D	D	no	no change	719	719	*0.0%*	0	D	D	no	no change
Washington Av - south of S. Leandro Bl	878	881	*0.4%*	3	**F**	**F**	no	no change	426	437	*2.5%*	11	D	D	no	no change
International Blvd - south of 98th Av	980	983	*0.3%*	3	D	D	no	no change	410	419	*2.2%*	9	D	D	no	no change
Hesperian Blvd - north of I-238	1,687	1,735	*2.7%*	48	D	D	no	no change	1,731	1,731	*0.0%*	0	D	D	no	no change
150th Ave - east of E.14th St	1,117	1,120	*0.2%*	3	D	D	no	no change	1,657	1,657	*0.0%*	0	E	E	no	no change
San Leandro Blvd - north of Davis St	922	974	*5.3%*	52	D	D	no	no change	218	230	*5.2%*	12	D	D	no	no change

Source: Dowling Associates, Inc., 2009

Table 40: CMP Segment Analysis for Baseline Conditions with Kaiser Medical Center Phase 1 plus Mixed-Use Retail - PM Peak Hour

Link Location	Northbound/Eastbound								Southbound/Westbound							
	No-Project 2015 PM Vol	Project 2015 PM Vol	% Vol Diff	Vol Diff	No-Project 2015 PM LOS	Project 2015 PM LOS	Change in V/C > 3%	Change in LOS	No-Project 2015 PM Vol	Project 2015 PM Vol	% Vol Diff	Vol Diff	No-Project 2015 PM LOS	Project 2015 PM LOS	Change in V/C > 3%	Change in LOS
Interstate/State Highways																
I-880 - north of Davis St	7,396	7,539	*1.9%*	143	D	E	no	change	7,358	7,420	*0.8%*	62	D	E	no	change
I-880 - north of Marina Blvd	7,892	8,072	*2.2%*	180	D	D	no	no change	7,726	7,823	*1.2%*	97	C	D	no	change
I-880 - south of Marina Blvd	8,013	8,198	*2.3%*	185	D	D	no	no change	7,595	7,694	*1.3%*	99	E	E	no	no change
I-580 - north of MacArthur Blvd	6,891	6,953	*0.9%*	62	D	D	no	no change	7,613	7,613	*0.0%*	0	C	C	no	no change
I-580 - south of Estudillo Ave	6,200	6,312	*1.8%*	112	D	D	no	no change	7,580	7,580	*0.0%*	0	E	E	no	no change
I-238 - east of Hesperian Blvd	5,587	5,771	*3.2%*	184	E	E	yes	no change	2,665	2,855	*6.7%*	190	B	B	yes	no change
SR 61 (Doolittle Dr) - north of Davis St	1,685	1,800	*6.4%*	115	B	B	yes	no change	1,648	1,688	*2.4%*	40	B	B	no	no change
Arterials																
E.14th St - north of Hays St	661	720	*8.2%*	59	D	D	yes	no change	618	635	*2.6%*	17	D	D	no	no change
E.14th St - south of San Leandro Blvd	415	430	*3.5%*	15	D	D	no	no change	1,342	1,500	*10.6%*	158	D	E	yes	change
Davis St - east of I-880	729	729	*0.0%*	0	D	D	no	no change	394	394	*0.0%*	0	D	D	no	no change
Washington Av - south of S. Leandro Bl	618	638	*3.2%*	20	D	E	no	change	769	784	*1.9%*	15	E	E	no	no change
International Blvd - south of 98th Av	675	719	*6.1%*	44	D	D	no	no change	1,043	1,045	*0.2%*	2	D	D	no	no change
Hesperian Blvd - north of I-238	2,106	2,137	*1.4%*	31	D	E	no	change	1,793	1,793	*0.0%*	0	D	D	no	no change
150th Ave - east of E.14th St	1,795	1,806	*0.6%*	11	**F**	**F**	no	no change	1,139	1,139	*0.0%*	0	D	D	no	no change
San Leandro Blvd - north of Davis St	335	405	*17.4%*	70	D	D	yes	no change	775	811	*4.4%*	36	D	D	no	no change

Source: Dowling Associates, Inc., 2009

Table 41: CMP Segment Analysis for Cumulative Conditions with Kaiser Medical Center Phase 1 plus Mixed-Use Retail - AM Peak Hour

Link Location	Northbound/Eastbound								Southbound/Westbound							
	No-Project 2030 AM Vol	Project Ph1 2030 AM Vol	% Vol Diff	Vol Diff	No-Project 2030 AM LOS	Project Ph1 2030 AM LOS	Change in V/C > 3%	Change in LOS	No-Project 2030 AM Vol	Project Ph1 2030 AM Vol	% Vol Diff	Vol Diff	No-Project 2030 AM LOS	Project Ph1 2030 AM LOS	Change in V/C > 3%	Change in LOS
Interstate/State Highways																
I-880 - north of Davis St	8,237	8,316	*1.0%*	79	**F**	**F**	no	no change	7,414	7,734	*4.1%*	320	E	E	yes	no change
I-880 - north of Marina Blvd	8,472	8,645	*2.0%*	173	D	D	no	no change	8,369	8,661	*3.4%*	292	D	D	no	no change
I-880 - south of Marina Blvd	9,502	9,975	*4.7%*	473	E	**E**	**yes**	**no change**	8,346	8,669	*3.7%*	323	**F**	**F**	**yes**	**no change**
I-580 - north of MacArthur Blvd	7,571	7,761	*2.5%*	190	E	E	no	no change	7,897	7,897	*0.0%*	0	D	D	no	no change
I-580 - south of Estudillo Ave	8,320	8,420	*1.2%*	100	**F**	**F**	no	no change	7,389	7,389	*0.0%*	0	D	D	no	no change
I-238 - east of Hesperian Blvd	3,089	3,142	*1.7%*	53	B	B	no	no change	7,156	7,266	*1.5%*	110	**F**	**F**	no	no change
SR 61 (Doolittle Dr) - north of Davis St	2,434	2,434	*0.0%*	0	C	C	no	no change	2,016	2,166	*6.9%*	150	C	C	yes	no change
Arterials																
E.14th St - north of Hays St	769	769	*0.0%*	0	D	D	no	no change	1,037	1,037	*0.0%*	0	D	D	no	no change
E.14th St - south of San Leandro Blvd	1,755	1,755	*0.0%*	0	**F**	**F**	no	no change	1,205	1,330	*9.4%*	125	D	D	yes	no change
Davis St - east of I-880	615	615	*0.0%*	0	D	D	no	no change	1,259	1,259	*0.0%*	0	D	D	no	no change
Washington Av - south of S. Leandro Bl	890	900	*1.1%*	10	**F**	**F**	no	no change	838	854	*1.9%*	16	**F**	**F**	no	no change
International Blvd - south of 98th Av	1,262	1,262	*0.0%*	0	D	D	no	no change	1,049	1,112	*5.7%*	63	D	D	yes	no change
Hesperian Blvd - north of I-238	2,222	2,239	*0.8%*	17	E	E	no	no change	2,660	2,669	*0.3%*	9	**F**	**F**	**no**	**no change**
150th Ave - east of E.14th St	1,587	1,587	*0.0%*	0	E	E	no	no change	1,646	1,646	*0.0%*	0	E	E	no	no change
San Leandro Blvd - north of Davis St	1,500	1,500	*0.0%*	0	E	E	no	no change	755	824	*8.4%*	69	D	D	yes	no change

Source: Dowling Associates, Inc., 2009

Table 42: CMP Segment Analysis for Cumulative Conditions with Kaiser Medical Center Phase 1 plus Mixed-Use Retail – PM Peak Hour

Link Location	Northbound/Eastbound								Southbound/Westbound							
	No-Project 2030 PM Vol	Project Ph1 2030 PM Vol	% Vol Diff	Vol Diff	No-Project 2030 PM LOS	Project Ph1 2030 PM LOS	Change in V/C > 3%	Change in LOS	No-Project 2030 PM Vol	Project Ph1 2030 PM Vol	% Vol Diff	Vol Diff	No-Project 2030 PM LOS	Project Ph1 2030 PM LOS	Change in V/C > 3%	Change in LOS
Interstate/State Highways																
I-880 - north of Davis St	8,156	8,156	*0.0%*	0	**F**	**F**	no	no change	7,661	7,661	*0.0%*	0	E	E	no	no change
I-880 - north of Marina Blvd	8,886	8,941	*0.6%*	55	D	D	no	no change	7,910	7,963	*0.7%*	53	D	D	no	no change
I-880 - south of Marina Blvd	10,083	10,083	*0.0%*	0	**F**	**F**	no	no change	7,953	8,039	*1.1%*	86	E	**F**	**no**	**change**
I-580 - north of MacArthur Blvd	7,799	7,933	*1.7%*	134	E	E	no	no change	7,628	7,628	*0.0%*	0	C	C	no	no change
I-580 - south of Estudillo Ave	6,833	7,068	*3.3%*	235	D	D	no	no change	8,408	8,588	*2.1%*	180	**F**	**F**	no	no change
I-238 - east of Hesperian Blvd	6,567	6,853	*4.2%*	286	**F**	**F**	**yes**	**no change**	3,002	3,002	*0.0%*	0	B	B	no	no change
SR 61 (Doolittle Dr) - north of Davis St	2,306	2,580	*10.6%*	274	C	C	yes	no change	2,172	2,172	*0.0%*	0	C	C	no	no change
Arterials																
E.14th St - north of Hays St	1,322	1,323	*0.1%*	1	D	D	no	no change	876	969	*9.6%*	93	D	D	yes	no change
E.14th St - south of San Leandro Blvd	1,183	1,310	*9.7%*	127	D	D	yes	no change	1,753	1,888	*7.1%*	135	**F**	**F**	**yes**	**no change**
Davis St - east of I-880	1,257	1,257	*0.0%*	0	D	D	no	no change	662	662	*0.0%*	0	D	D	no	no change
Washington Av - south of S. Leandro Bl	896	896	*0.0%*	0	**F**	**F**	no	no change	765	799	*4.3%*	34	E	**E**	**yes**	**no change**
International Blvd - south of 98th Av	1,382	1,408	*1.8%*	26	D	E	no	change	1,339	1,454	*7.9%*	115	D	E	yes	change
Hesperian Blvd - north of I-238	2,608	2,608	*0.0%*	0	E	E	no	no change	2,153	2,185	*1.5%*	32	E	E	no	no change
150th Ave - east of E.14th St	1,645	1,663	*1.1%*	18	E	**E**	**no**	**no change**	1,270	1,280	*0.8%*	10	D	D	no	no change
San Leandro Blvd - north of Davis St	1,516	1,653	*8.3%*	137	E	E	yes	no change	1,223	1,388	*11.9%*	165	D	D	yes	no change

Source: Dowling Associates, Inc., 2009

Table 43: CMP Segment Analysis for Cumulative Conditions with Kaiser Medical Center Build-Out plus Mixed-Use Retail - AM Peak Hour

Link Location	Northbound/Eastbound								Southbound/Westbound							
	No-Project 2030 AM Vol	Project Ph 2 2030 AM Vol	% Vol Diff	Vol Diff	No-Project 2030 AM LOS	Project Ph 2 2030 AM LOS	Change in V/C > 3%	Change in LOS	No-Project 2030 AM Vol	Project Ph 2 2030 AM Vol	% Vol Diff	Vol Diff	No-Project 2030 AM LOS	Project Ph 2 2030 AM LOS	Change in V/C > 3%	Change in LOS
Interstate/State Highways																
I-880 - north of Davis St	8,237	8,255	*0.2%*	18	**F**	**F**	no	no change	7,414	7,977	*7.1%*	563	E	E	yes	no change
I-880 - north of Marina Blvd	8,472	8,639	*1.9%*	167	D	D	no	no change	8,369	8,839	*5.3%*	470	D	D	yes	no change
I-880 - south of Marina Blvd	9,502	9,844	*3.5%*	342	E	**E**	**yes**	**no change**	8,346	8,535	*2.2%*	189	**F**	**F**	**yes**	**no change**
I-580 - north of MacArthur Blvd	7,571	7,652	*1.1%*	81	E	E	no	no change	7,897	7,945	*0.6%*	48	D	D	no	no change
I-580 - south of Estudillo Ave	8,320	8,471	*1.8%*	151	**F**	**F**	no	no change	7,389	7,400	*0.1%*	11	D	D	no	no change
I-238 - east of Hesperian Blvd	3,089	3,143	*1.7%*	54	B	B	no	no change	7,156	7,423	*3.6%*	267	**F**	**F**	yes	no change
SR 61 (Doolittle Dr) - north of Davis St	2,434	2,539	*4.1%*	105	C	C	no	no change	2,016	2,246	*10.2%*	230	C	C	yes	no change
Arterials																
E.14th St - north of Hays St	769	839	*8.4%*	70	D	D	yes	no change	1,037	1,037	*0.0%*	0	D	D	no	no change
E.14th St - south of San Leandro Blvd	1,755	1,800	*2.5%*	45	**F**	**F**	no	no change	1,205	1,337	*9.9%*	132	D	D	yes	no change
Davis St - east of I-880	615	615	*0.0%*	0	D	D	no	no change	1,259	1,259	*0.0%*	0	D	D	no	no change
Washington Av - south of S. Leandro Bl	890	902	*1.3%*	12	**F**	**F**	no	no change	838	855	*2.0%*	17	**F**	**F**	no	no change
International Blvd - south of 98th Av	1,262	1,314	*4.0%*	52	D	D	no	no change	1,049	1,089	*3.6%*	40	D	D	no	no change
Hesperian Blvd - north of I-238	2,222	2,239	*0.8%*	17	E	E	no	no change	2,660	2,669	*0.3%*	9	**F**	**F**	**no**	**no change**
150th Ave - east of E.14th St	1,587	1,587	*0.0%*	0	E	E	no	no change	1,646	1,723	*4.5%*	77	E	E	yes	no change
San Leandro Blvd - north of Davis St	1,500	1,544	*2.9%*	44	E	E	no	no change	755	949	*20.4%*	194	D	D	yes	no change

Source: Dowling Associates, Inc., 2009

Table 44: CMP Segment Analysis for Cumulative Conditions with Kaiser Medical Center Build-Out plus Mixed-Use Retail - PM Peak Hour

Link Location	Northbound/Eastbound								Southbound/Westbound							
	No-Project 2030 PM Vol	Project Ph 2 2030 PM Vol	% Vol Diff	Vol Diff	No-Project 2030 PM LOS	Project Ph 2 2030 PM LOS	Change in V/C > 3%	Change in LOS	No-Project 2030 PM Vol	Project Ph 2 2030 PM Vol	% Vol Diff	Vol Diff	No-Project 2030 PM LOS	Project Ph 2 2030 PM LOS	Change in V/C > 3%	Change in LOS
Interstate/State Highways																
I-880 - north of Davis St	8,156	8,535	*4.4%*	379	**F**	**F**	yes	no change	7,661	7,661	*0.0%*	0	E	E	no	no change
I-880 - north of Marina Blvd	8,886	9,292	*4.4%*	406	D	E	yes	change	7,910	7,929	*0.2%*	19	D	D	no	no change
I-880 - south of Marina Blvd	10,083	10,278	*1.9%*	195	**F**	**F**	no	no change	7,953	8,057	*1.3%*	104	E	**F**	**no**	**change**
I-580 - north of MacArthur Blvd	7,799	7,936	*1.7%*	137	E	E	no	no change	7,628	7,635	*0.1%*	7	C	C	no	no change
I-580 - south of Estudillo Ave	6,833	7,073	*3.4%*	240	D	D	yes	no change	8,408	8,489	*1.0%*	81	**F**	**F**	no	no change
I-238 - east of Hesperian Blvd	6,567	7,065	*7.0%*	498	**F**	**F**	**yes**	**no change**	3,002	3,153	*4.8%*	151	B	B	no	no change
SR 61 (Doolittle Dr) - north of Davis St	2,306	2,596	*11.2%*	290	C	D	yes	change	2,172	2,172	*0.0%*	0	C	C	no	no change
Arterials																
E.14th St - north of Hays St	1,322	1,434	*7.8%*	112	D	E	yes	change	876	912	*3.9%*	36	D	D	no	no change
E.14th St - south of San Leandro Blvd	1,183	1,313	*9.9%*	130	D	D	yes	no change	1,753	1,888	*7.1%*	135	**F**	**F**	**yes**	**no change**
Davis St - east of I-880	1,257	1,298	*3.1%*	41	D	D	no	no change	662	695	*4.8%*	33	D	D	no	no change
Washington Av - south of S. Leandro Bl	896	896	*0.0%*	0	**F**	**F**	no	no change	765	828	*7.6%*	63	E	**F**	**yes**	**change**
International Blvd - south of 98th Av	1,382	1,520	*9.1%*	138	D	E	yes	change	1,339	1,457	*8.1%*	118	D	E	yes	change
Hesperian Blvd - north of I-238	2,608	2,608	*0.0%*	0	E	E	no	no change	2,153	2,234	*3.6%*	81	E	E	yes	no change
150th Ave - east of E.14th St	1,645	1,663	*1.1%*	18	E	**E**	**no**	**no change**	1,270	1,280	*0.8%*	10	D	D	no	no change
San Leandro Blvd - north of Davis St	1,516	1,576	*3.8%*	60	E	E	yes	no change	1,223	1,435	*14.7%*	212	D	E	yes	change

Source: Dowling Associates, Inc., 2009

Table 45: MTS Transit Analysis – AC Transit Ridership Comparison

Scenario	No-Project Trips Daily	With Project Trips Daily	No-Project Trips Peak Hour	With Project Trips Peak Hour	Difference Peak Hour	Percent Difference Peak Hour	Model Peak Bus Frequency (in minutes)	Total Buses Peak Hour	Project Trips Per bus Peak Hour	Existing Load Peak Hour	Maximum Load at capacity Peak Hour	Maximum Load with Project Peak Hour
Baseline - 2015												
AC Route												
AC 55	5,602	5,664	1,401	1,416	16	1%	15	8	2	19	40	21
AC 81	1,361	1,546	340	386	46	14%	15	8	6	18	40	24
AC 84	10,468	11,253	2,617	2,813	196	7%	10	12	16	19	40	35
AC S	527	562	132	141	9	7%	30	2	4	15	40	19
	17,958	**19,025**	**4,490**	**4,756**	**267**	6%						
Cumulative - 2030 with Phase 1 Project												
AC Route												
AC 55	5,935	6,427	1,484	1,607	123	8%	15	8	15	19	40	34
AC 81	1,366	1,697	342	424	83	24%	15	8	10	18	40	28
AC 84	11,300	12,165	2,825	3,041	216	8%	10	12	18	19	40	37
AC S	263	286	66	72	6	9%	30	2	3	15	40	18
	18,864	**20,576**	**4,716**	**5,144**	**428**	9%						
Cumulative - 2030 with Buildout												
AC Route												
AC 55	5,935	6,429	1,484	1,607	124	8%	15	8	15	19	40	34
AC 81	1,366	1,738	342	434	93	27%	15	8	12	18	40	30
AC 84	11,300	12,262	2,825	3,066	241	9%	10	12	20	19	40	39
AC S	263	292	66	73	7	11%	30	2	4	15	40	19
	18,864	**20,721**	**4,716**	**5,180**	**464**	10%						

Source: Dowling Associates, Inc. 2009

Note:

Differences between the no-project and with-project scenarios are attributed to the project

Daily transit trips obtained from ACCMA Countywide Model

Peak Hour transit trips conservatively assumed as 25% of daily

Existing bus loads obtained from AC Transit and are the maximum loads near the project site

Maximum bus loads are averaged based on 30 seat buses with 10 standing passengers

Table 46: MTS Transit Analysis - BART Transit Ridership Comparison

BART Station	No-Project 2015	No-Project 2030	With-Project 2015 Phase I	With-Project 2030 Phase I	With-Project 2030 Buildout	Increase between No-Project and Project 2015 Phase I	Increase between No-Project and Project 2030 Phase I	Increase between No-Project and Project 2030 Buildout	Percent Growth between No-Project and Project 2015 Phase I	Percent Growth between No-Project and Project 2030 Phase I	Percent Growth between No-Project and Project 2030 Buildout
Daily Trips (from Travel Model Forecasts)											
San Leandro Station	10,833	14,944	11,130	15,427	15,541	297	483	597	2.7%	3.2%	4.0%
Peak Hour Trips (estimated as 25% of daily trips)											
San Leandro Station	2,708	3,736	2,783	3,857	3,885	74	121	149	2.7%	3.2%	4.0%
Number of BART lines crossing Study area						3	3	3			
Bart Frequency in Study area (in minutes)						15	15	15			
Number of BART Trains in Peak Hour - both directions						24	24	24			
Average New Project trips per train						3	5	6			
Estimated Average Load factor - average for both directions						1.0	1.0	1.0			
Average seated capacity of BART train at load						700	700	700			
Percent increase Load Factor with Project						0.4%	0.7%	0.9%			
Load Factor with Project trips						100.4%	100.7%	100.9%			

Source: Dowling Associates, Inc. 2009

Note:

Differences between the no-project and with-project scenarios are attributed to the project

Daily transit trips obtained from ACCMA Countywide Model

Peak Hour transit trips conservatively assumed as 25% of daily

Existing BART train loads obtained from BART and are the average loads near the project site

Maximum loads are average based on 700 passengers

Cumulative (2030) Conditions plus Kaiser Medical Center Build-Out plus Mixed-Use Retail Development

Under Cumulative plus Project Build-Out, the addition of project trips on the AC buses in the study area, no bus route would operate over capacity (capacity is reached at a load of 40). As a result, the project related increase would not result in an impact to the peak hour bus service in terms of the 15-30 minute headway standard, and is therefore not considered significant.

Transit Ridership on BART

Future growth and development within the project area would increase ridership on BART trains as shown in Table 46 . The impacts of the project on the BART system were assessed based on the ridership derived from the Countywide Model. The project site is served by BART via the San Leandro BART station which can be accessed by walk, bike or a transfer to three AC bus lines. BART has three lines that access the San Leandro station (Fremont to San Francisco, Fremont to Richmond and Dublin/Pleasanton to San Francisco) and in 2030 some lines may be extended. The model was used to quantify the change in transit trips associated with the project on these BART routes at the San Leandro Station, and impacts are assessed using assumptions on load factors based on information obtained from BART, as shown in Table 46.

Baseline (2015) Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

Under Baseline plus Kaiser Medical Center Phase 1 and Mixed-Use Retail, the project has the potential to generate an increase in overall daily BART ridership at the San Leandro station of 297 daily trips or 74 peak hour trips. The existing BART frequency of 15 minutes on the three lines equates to 24 trains per hour (includes both directions) and therefore averages to 3 new riders per train. Conservatively assuming a load factor approaching capacity, the 0.4% increase in trips per train would not cause an impact to the BART service in terms of change to the 3.75-15.0 minute peak headway standard, and is therefore considered less than significant.

Cumulative (2030) Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

Under Cumulative plus Kaiser Medical Center Phase 1 and Mixed Use Retail, the project has the potential to generate an increase in overall daily BART ridership at the San Leandro station of 483 daily trips or 121 peak hour trips. The existing BART frequency of 15 minutes on the three lines equates to 24 trains per hour (includes both directions) and therefore averages about 5 new riders per train. Conservatively assuming a load factor approaching capacity, the 0.7% increase in trips per train would not cause an impact to the BART service in terms of change to

the 3.75-15.0 minute peak headway standard, and is therefore considered less than significant.

Cumulative (2030) Conditions plus Kaiser Medical Center Build-Out plus Mixed-Use Retail Development

Under Cumulative plus Kaiser Medical Center Build-Out plus Mixed Use Retail Development, the project has the potential to generate an increase in overall daily BART ridership at the San Leandro station of 597 daily trips or 149 peak hour trips. The existing BART frequency of 15 minutes on the three lines equates to 24 trains per hour (includes both directions) and therefore averages about 6 new riders per train. Conservatively assuming a load factor approaching capacity, the 0.9% increase in trips per train would not cause an impact to the BART service in terms of change to the 3.75-15 minute peak headway standard, and is therefore considered less than significant.

Site Access and Circulation

A proposed site plan for the Project was reviewed for this analysis, in addition to an analysis of the plan prepared by Fehr & Peers Transportation Consultants and presented in a memorandum dated July 18, 2008 and addressed to Kaiser Permanente.

The analysis supporting this section included both quantitative and qualitative analyses.

A quantitative analysis was conducted at the major driveways for the Project as part of the intersection level of service calculations. That analysis found that all of the major site access intersections would operate at LOS D or better with the exception of the Republic Avenue driveway at Merced Street where it would operate at LOS E in the PM peak hour under both Cumulative with Aladdin Avenue Extension scenarios with Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development and with Kaiser Medical Center Build-Out plus Mixed-Use Development. The improvements proposed in the Impacts and Mitigation Measures section would fully mitigate these significant impacts.

Qualitative analyses were conducted for most site circulation characteristics. More detailed quantitative analyses of, for example, adequacy of roadways for large vehicle turns, is normally not conducted at this stage of site review because the detailed designs of intersections, driveways, or related features is not far enough along. Instead, these features were reviewed in the context of whether they appear to be of a standard layout, whether there are major obstacles that might prevent designs to accommodate larger vehicles, etc.

The proposed site plan includes an access roadway on the I-880 (east) edge of the site. This roadway is intended for use by trucks serving the large retail stores on that portion of the site. The roadway appears to be of a typical layout, and does not appear to have any features that might constitute an environmental impact. The

central portion of the northern half of the site, where smaller retail stores are proposed, appears to have dense parking areas with no clearly labeled loading areas. While it may be possible for trucks to navigate through this area, it appears as if it could be difficult. If the intent is for trucks to serve the businesses via this central area, the route should be clearly indicated with signs. If there is, in fact, no intent to allow trucks in this area, signs prohibiting them should be posted at the entry into the site.

The main hospital building has a loading dock shown on the southern edge of the building, and a "service ramp" is adjacent. It appears that trucks would travel west, down this ramp, turn left into a "hammerhead," then back into the loading dock. This configuration appears to be of a typical shape for this function, and no environmental impact requiring mitigation is identified. For trucks exiting the loading dock, they would apparently turn left from the loading dock onto the service ramp and travel east up the ramp. There is an opportunity for vehicles to make an approximately 180° turn to the right and follow the circulation roadway south to Fairway Drive, but this turn appears to be too sharp for trucks. Trucks would more likely continue east to the edge of the site where the continuation of the service roadway discussed above continues to the south to Fairway Drive.

For trucks exiting the site from the service roadway onto Fairway Drive, the route is somewhat unusual. There is an existing overcrossing of I-880 that touches down just east of the Fairway Drive/Miller Street intersection, which is one of the proposed major access points for the Project. Because of the overcrossing, a single-lane one-way (westbound) roadway exists at grade between I-880 and Miller Street (there is a similar roadway segment eastbound, south of Fairway Drive - the two one-way segments meet underneath the Fairway overcrossing). Trucks would exit the project site onto the one-way westbound segment of Fairway Drive and travel to the Fairway Drive/Miller Street intersection. The trucks exiting the site along this route may not be able to see other westbound Fairway Drive traffic descending the overcrossing, so the new traffic signal at this intersection should have a separate signal phase serving the westbound one-way segment of Fairway Drive that ends here. Based on the level of service calculations, the movements from the westbound frontage road should adequately be accommodated by the proposed signal and phasing without degrading the LOS to less than significant levels.

One type of quantitative analysis was conducted for the evaluation of internal site circulation. There are three intersections within the Project for which level of service was calculated. One intersection is located where circulation roadways serving the existing retail development on the site and the proposed retail development meet. This intersection is identified as having a traffic signal. The other two intersections are along the proposed extension of Republic Way. One of the Republic intersections would serve both the smaller retail and medical center parts of the project, while the other would serve the larger retail and medical center parts of the site.

Emergency vehicles would appear to have adequate access to and within the site, especially due to multiple access options that would be available, as noted in the Fehr & Peers memo.

Parking

According to the site plan, The Kaiser Medical Center Phase 1 would provide 2,100 on-site parking for medical office and hospital use. At this stage, the retail site is planned at a programmatic level and has therefore not been evaluated for parking. The adequacy of these provisions is discussed below.

Zoning Code Requirements

For Medical Office, the Code calls for one parking space for each 200 square feet of medical office. Kaiser Medical Center Phase 1 would therefore be required to provide 1,375 parking spaces for the 275,000 square feet of medical office. The 264-bed hospital would be required to provide 175 off-street parking spaces in order to comply with Code requirement, which stipulates that one parking space per 1.5 licensed beds.

Proposed Parking Supply

Under Baseline Conditions plus project, the Kaiser Medical Center Phase 1 requires a total of 1,550 parking spaces in order to comply with Code requirement. Because 2,100 spaces are proposed, Kaiser Medical Center Phase 1 would comply with City requirement with a surplus of 550 spaces. The Project should be required to prepare a parking demand study and provide sufficient parking as specified by the study; or shall demonstrate its ability to meet the City's parking requirements stated in Zoning Code Article 17 and provide adequate parking spaces.

Impacts and Mitigation Measures

The significant impacts of the Kaiser Medical Center and Mixed-Use Retail Development Project and the recommended mitigation measures are summarized below for each analyzed scenario. Detailed tables showing the mitigated LOS are provided in the appendix. Detailed queuing analysis was conducted for selected intersections on Marina Boulevard and Merced Street to identify the potential queuing effects of the mitigation measures. The results are summarized in Table 50 through Table 55 contained in the Queuing Analysis Chapter.

Baseline plus Kaiser Medical Center Phase 1

This traffic analysis assumes the completion of the Marina Boulevard/I-880 Interchange Reconfiguration Project by Year 2015. If the interchange reconfiguration project is not completed by the baseline year, the ramp intersections would remain unsignalized. The effects of this potential delay on the study locations are unknown.

Intersection Impacts: Under Baseline plus Kaiser Medical Center Phase 1 scenario, project trips would cause significant impacts at the following intersection:

- Marina Boulevard and Merced Street intersection (PM)

The intersection of Marina Boulevard and Merced Street would degrade from LOS D to LOS E during the PM peak hour. This would be considered a significant impact.

> MITIGATION MEASURE. Implementation of Mitigation Measure 1 would reduce the project impact at the Marina Boulevard/Merced Street intersection under Baseline plus Kaiser Medical Center Phase 1 conditions to a less-than-significant level; however, its implementation requires Caltrans' approval. Therefore, it remains significant and unavoidable. (SU)
>
> Mitigation Measure 1 - Marina Boulevard/Merced Street. Develop traffic signal timing plans through an adaptive traffic signal system along the Marina Boulevard corridor between Merced Street and Alvarado Street and along the Merced Street corridor between Marina Boulevard and Fairway Drive and implementing the measure that allows for modification of signal cycle lengths and optimized actuated signal phasing sequence and timings would improve the intersection operations to LOS D with 38 seconds of average delay in the PM peak period. Upon implementation of this measure, the project impact would be reduced to a less-than-significant level. However, because the two I-880 ramp intersections along Marina Boulevard are under Caltrans' jurisdiction, any signal timing changes would require

Caltrans' approval. Because such approval is uncertain, the project impact would remain **significant and unavoidable**.

Recommendations to Improve Traffic Operations (Non-CEQA requirement)

Table 51 provides a summary of queuing analysis. As shown in the table, at the intersection of Marina Boulevard and Merced Street, westbound left turn, northbound left turn, and southbound left turn movements would result in traffic queues extending beyond available storage even with the proposed Mitigation Measure 1, which would result in impedance to through traffic operations. In addition, even though Mitigation Measure 1 would improve the average and certain individual movement delays, as shown in the appendices, the movements listed above would still experience potential delays greater than the average delay for the intersection. To further help improve traffic operations and reduce vehicle delays and vehicle queues at this intersection, it is recommended to provide an additional point of access to and from the project site to Marina Boulevard, thus diverting a portion of traffic away from the Marina Boulevard/Merced Street intersection and the single access at Republic Avenue/Merced Street. However, vehicles exiting the project site from this new driveway onto Marina Boulevard would be restricted to right turn out only.

Freeway Impacts: Under Baseline conditions with the Kaiser Medical Center Phase 1 Development, the Project would add traffic on I-880. However, the project traffic would not result in a significant impact.

Table 47: Mitigated Intersection Level of Service for Baseline plus Kaiser Medical Center Phase 1 with and without Mixed-Use Retail Development

		2015 Kaiser Medical Center Phase 1 - Peak-Hour (Mitigated)							2015 Kaiser Phase 1 plus Mixed-Use Retail Development - Peak-Hour (Mitigated)						
		AM		PM			Saturday		AM		PM			Saturday	
Signalized Intersections [1]		LOS	Delay	LOS	Delay	V/C	LOS	Delay	LOS	Delay	LOS	Delay	V/C	LOS	Delay
1	Davis St & Doolittle Dr	D	40.2	E	74.4	**1.02**	D	37.4	D	41.5	**E**	**76.4**	**1.02**	D	39.1
2	Davis St & Phillips Ln	B	15.7	D	48.0		C	31.2	B	15.9	D	48.0		C	31.1
3	Davis St & Warden Ave	C	21.1	C	33.6		C	32.0	C	21.1	C	34.5		D	36.8
4	Davis St & I-880 SB ramps	C	34.7	B	11.9		B	16.6	D	36.8	B	12.0		B	19.2
5	Westgate Shopping Drwy & Westgate Pk	B	12.0	C	20.8		B	19.5	B	11.9	C	20.7		C	23.1
6	Williams St & Doolittle Dr	B	11.2	A	9.8		A	7.0	B	11.6	A	10.0		A	7.1
7	Williams St & Westgate Pkwy	B	17.8	B	12.6		A	8.6	C	20.9	B	12.6		B	10.2
8	Williams St & Merced St	C	30.8	C	29.8		B	19.7	C	29.8	C	30.0		C	24.1
9	Marina Blvd & Doolittle Dr	C	30.1	C	30.6		D	38.8	C	30.8	C	29.5		D	40.9
10	Marina Blvd & Merced St	D	35.4	D	38.2		C	29.4	C	28.7	*D*	*53.6*		*D*	*36.4*
11	Marina Blvd & Teagarden St	C	25.5	C	29.5		C	30.4	C	26.8	D	35.1		C	31.5
12	Marina Blvd & Alvarado St	C	32.0	C	27.5		C	28.6	C	32.1	C	28.8		C	30.9
13	Republic Ave & Merced St	C	21.7	B	19.7		A	9.4	B	16.2	*C*	*22.9*		B	13.8
14	Fairway Dr & Doolittle Dr	B	17.0	B	14.4		B	13.5	B	17.3	B	15.7		B	13.9
15	Fairway Dr & Merced Street	C	34.4	D	41.9		C	28.4	D	36.5	D	47.1		D	37.7
16	Fairway Dr & Miller Street	B	15.4	C	26.7		A	9.7	C	22.3	C	33.7		B	15.0
17	Aladdin Ave & Teagarden St	C	30.6	B	17.6		B	13.0	D	45.9	C	25.6		B	17.0
18	Aladdin Ave & Alvarado St	D	41.3	C	23.7		B	18.8	D	46.2	C	25.4		C	25.1
19	West Ave 140th & Merced St	A	2.5	A	4.3		A	4.1	A	2.6	A	3.4		A	4.0
20	Marina Blvd & I-880 SB Ramps	C	21.4	C	28.2		C	22.6	C	23.8	D	39.7		D	39.3
21	Marina Blvd & I-880 NB Ramps	A	6.2	A	4.3		A	4.3	A	6.6	A	4.9		C	21.7
22	Marina Blvd & San Leandro Blvd	D	49.5	D	40.8		C	27.4	D	52.6	D	51.7		D	38.7
23	Wells Fargo driveway & Merced St	A	2.5	A	4.6		A	3.8	A	2.4	A	5.1		A	3.8
24	Fairway Dr & Kaiser West Drwy	A	3.6	A	9.7		A	2.8	A	4.8	B	17.7		A	4.9
25	Marina Blvd & Marina Access Drwy			***Intersection does not exist***					A	4.6	B	10.2		A	9.3

Source: Dowling Associates, Inc., March 2010.

LOS = Level of Service; **Delay** = Weighted average seconds of delay per vehicle; V/C = volume to capacity ratio; **BOLD** denotes locations with sub-standard operations

Boxed & *Italic* denotes locations where the mitigated results are achieved only upon acquisition of right-of-way and/or permits or other criteria. These impacts are potentially significant and unavoidable.

1 LOS and delay at signalized intersections are based on weighted average delay of all intersections approaches.

2 The Highway Capacity Manual calculates LOS and delay at side-street stop-controlled intersections as approach delay of the intersection leg with the worst LOS.

Baseline plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

Intersection Impacts: Under Baseline plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development scenario, project trips would cause significant impacts at the following three intersections:

- Marina Boulevard and Merced Street intersection (PM and Saturday)
- Republic Avenue and Merced Street (PM)
- Aladdin Avenue and Alvarado Street (AM)

MITIGATION MEASURES. Implementation of the following mitigation measures would reduce baseline impacts related to the Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development to less-than-significant levels. However, because the acquisition of the necessary encroachment permit and the availability of right-of-way are uncertain, the project impacts at the Marina Boulevard and Merced Street intersection and the Republic Avenue and Merced Street intersection would potentially be significant and unavoidable. (SU)

Mitigation Measure 3 – Marina Boulevard/Merced Street. Construct a new signalized Marina Access Driveway along Marina Boulevard, prohibit right-turn-on-red for the southbound approach at the Marina Boulevard/ I-880 southbound ramps intersection, and employ Mitigation Measure 1 by implementing an adaptive signal system along the Marina Boulevard and Merced Street corridors which allows for instant cycle length modifications and optimized phasing sequences and timings. To mitigate the impacts at the Marina Boulevard/Merced Street intersection, a new signalized driveway into the northern portion of the project site shall be constructed along Marina Boulevard between the I-880 southbound ramps and Merced Street. This new signalized driveway would permit left turns and right turns into the new access driveway from westbound and eastbound Marina Boulevard, respectively. However, vehicles exiting the project site from this new driveway onto Marina Boulevard would be restricted to right turns only.

The traffic signal at the Marina Boulevard/Merced Street intersection would be coordinated with the new traffic signal at the new driveway as well as other intersections along the two corridors and the signal cycle lengths, phasing sequences and timings along the coordinated corridors would be optimized through the adaptive signal system. A detailed queuing analysis indicated that queues at the westbound left-turn to the new Marina Access driveway at the 95th percentile could be accommodated with a 300-foot long left-turn lane.

Due to the close proximity between the new signalized driveway and the Marina Boulevard/I-880 southbound ramps intersection, right-turn on red should be prohibited from the ramps intersections. The prohibition would minimize

conflicts between off-ramp vehicles desiring to enter the left-turn lane at the new signalized intersection and through vehicles.

The proposed access mitigation at Marina Boulevard would not have any additional on-site impacts to the proposed development. The new driveway road width is proposed with a right of way of 60 feet for two directional traffic lanes with parking restrictions on both sides. The internal signalized intersection to the south would not be adversely impacted by this volume as it is estimated about half of the 500 vehicles would travel south with the remaining half diverting into the adjacent parking lot. The Marina Boulevard driveway would not be impacted by the existing Denny's right-in right-out driveway at the Reynolds and Brown property to the west and therefore would not need to be consolidated into a single driveway.

Implementation of this mitigation measure would lessen the demand on the Marina Boulevard/Merced Street intersection and would reduce the average delay to 53.6 seconds and 36.4 seconds during the PM and Saturday peak hours, respectively. Queuing on the westbound left-turn movement at the Marina Boulevard/Merced Street intersection would also be reduced due to diverted left turn traffic to the new signalized driveway. Therefore, the impacts at this location would be considered less than significant with mitigation. However, because the left-turn lane proposed for the new signalized Marina Access Driveway along Marina Boulevard could encroach into Caltrans right-of-way and any signal timing changes at the two I-880 ramp intersections along Marina Boulevard would require approval from Caltrans, and it is uncertain if an encroachment permit/approval can be acquired, implementation of this mitigation measure may not be feasible. As such, the project impacts would potentially be **significant and unavoidable**.

Mitigation Measure 4 – Republic Avenue/Merced Street. Implement Mitigation Measure 3 by implementing an adaptive signal system along the Marina Boulevard and Merced Street corridors which allows for cycle length modifications and optimized phasing sequences, timings and constructing a new Marina Boulevard access to the project site would lessen the demand on the Republic Avenue and Merced Street intersection and improve the intersection operation to LOS C with an average delay of 24.7 seconds in the PM peak hour. However, because it is uncertain if the encroachment permit to construct the new Marina Access Driveway can be acquired, implementation of the mitigation measures may not be feasible.

Furthermore, a residual queuing impact has been identified for the southbound left-turn movement in the PM peak hour as shown in Table 52, the Queuing Analysis section of this report. While the mitigation measure would shorten the 95th percentile queue by 728 feet, the mitigated queue length of 566 feet would exceed the storage capacity of 400 feet, and may block through traffic on the southbound approach and affect upstream operations on Merced Street. To mitigate this residual impact, widen the north leg of the intersection to provide an additional southbound left-turn lane to provide two left-turn lanes, one through lane, and one shared-through-right lane on the southbound approach.

With this measure, the southbound left-turn queue would be reduced to 253 feet, which could be accommodated by the proposed storage. However, the proposed widening would require acquisition of right-of-way, which may not be feasible because right-of-way acquisition is beyond the control of the applicant or the City.

If Merced Street is to be widened to provide the additional left-turn lane, sufficient right-of-way shall also be allocated to provide for the planned Class II bike lanes along Merced Street between Republic Avenue and Marina Boulevard as specified in the adopted San Leandro Bicycle and Pedestrian Master Plan.

Because of the uncertainty regarding the required encroachment permit and availability of right-of-way, the project impacts would potentially be **significant and unavoidable**.

Mitigation Measure 5 – Aladdin Avenue/Alvarado Street. Optimize the traffic signal phasing splits would improve the intersection operations to LOS D with an average delay of 46.2 seconds. Upon implementation, the project impact would be reduced to a **less-than-significant** level.

Freeway Impacts: Under Baseline conditions with the Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development, the Project would add traffic on I-880. However, the project traffic would not result in a significant impact.

Cumulative Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development

Intersection Impacts: The Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development portion of the Project would cause significant impacts at nine study intersections:

- Davis Street and Doolittle Drive (AM and PM)
- Marina Boulevard and Merced Street (AM, PM and Saturday)
- Marina Boulevard and Teagarden Street (PM)
- Marina Boulevard and Alvarado Street (AM and PM)
- Republic Avenue and Merced Street (PM and Saturday)
- Fairway Drive and Merced Street (PM)
- Aladdin Avenue and Alvarado Street (AM)
- Marina Boulevard and I-880 Southbound ramps (AM, PM and Saturday)
- Marina Boulevard and San Leandro Boulevard (AM, PM and Saturday)

MITIGATION MEASURES. Implementation of the following mitigation measures would reduce the cumulative impacts related to Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development to less-than-significant levels at the Aladdin Avenue and Alvarado Street intersection and the Marina Boulevard and San Leandro Boulevard intersection. All remaining impacts would potentially remain significant and unavoidable.

Encroachment permits and/or approvals would be required from Caltrans in order to implement the proposed mitigation measure for the Davis Street/Doolittle Drive intersection, the Marina Boulevard intersections of Merced Street, Teagarden Street Alvarado Streets, and I-880 southbound ramps, and the Republic Avenue/Merced Street intersection. Furthermore, the Marina Boulevard/Teagarden Street intersection, the Republic Avenue/Merced Street intersection as well as the Fairway Drive/Merced Street intersection would also require increases in roadway capacity (widening) in order to mitigate the project impacts, but these increases are constrained by the availability of right-of-way. Because permit issuance and right-of-way availability are uncertain, these mitigation measures are potentially uncertain. Therefore the impacts would potentially be significant and unavoidable. (SU)

Mitigation Measure 6 – Davis Street/Doolittle Drive. Restripe lanes at the Davis Street/Doolittle Drive intersections. At the intersection of Davis Street and Doolittle Drive, the westbound lanes shall be restriped to provide one left-turn lane, one through lane, and two right-turn lanes. With this improvement, the intersection operations would improve from LOS F to LOS E in the AM peak hour with the V/C improving by 0.07 to 1.07. While the operations would remain at LOS F in the PM peak hour, the V/C would improve by 0.31 to 1.17. The improved V/C would be lower than those of the No Project conditions; therefore, the project impacts at this intersection would be reduced to less-than-significant levels. Implementation of this mitigation measure would not require the acquisition of new right-of-way; thus, this mitigation measure would not result in any secondary impacts. However, an encroachment permit would be required from Caltrans in order to implement the proposed mitigation measure because the intersection is under Caltrans jurisdiction. Because it is uncertain if an encroachment permit can be acquired, implementation of this mitigation measure may not be feasible. Therefore, the project impacts would potentially remain **significant and unavoidable**.

Mitigated Measure 7 - Marina Boulevard/Merced Street. Construct a new signalized Marina Access Driveway along Marina Boulevard and implement an adaptive signal system along the Marina Boulevard and Merced Street corridors. Implementation of Mitigation Measure 2 by providing a new Marina Access Driveway, prohibit right-turn-on-red for the southbound approach at the Marina Boulevard/ I-880 southbound ramps intersection, and implementing the adaptive traffic signal system, which features instant cycle lengths, phasing sequences and timing modifications along the two corridors would reduce the project impact at the Marina Boulevard/Merced Street intersection during the three peak hours. Upon implementation of this measure, the operations would improve to LOS D with an average delay of 42.5 seconds, 52.6 seconds, and 45.3 seconds in the AM,

PM and Saturday peak hours. Therefore the project impacts would be reduced to less-than-significant levels. However, as detailed under Mitigation Measure 2, Caltrans permit and approval are required for implementation of these measures. Because it is uncertain if such permit and approval can be acquired, implementation of this mitigation measure may not be feasible. As such, the project impacts would potentially remain **significant and unavoidable**.

Mitigation Measure 8 - Marina Boulevard/Teagarden Street. Implement the adaptive traffic signal system for the Marina Boulevard and Merced Street corridors as described under Mitigation Measure 7 and restripe the eastbound approach lanes. Implement the adaptive signal system to instantly optimize the cycle lengths, phasing sequences and timings along Marina Boulevard and Merced Street corridors in the PM peak hour; and convert the eastbound right-turn lane to a shared through-right lane and provide an additional receiving lane on the east leg. This would reduce the project impact at the Marina Boulevard and Teagarden Street intersection to a less-than-significant level with an average delay of 39.9 seconds at LOS D.

Implementation of this mitigation measure would require the acquisition of new right-of-way on the east leg of the intersection and/or may require the relocation of a utility pole as well as approval from Caltrans to adopt the adaptive traffic signal system along the Marina Boulevard corridor. The feasibility of the measure is uncertain at this time. Therefore, the project impact would potentially be **significant and unavoidable**.

Mitigation Measure 9 - Marina Boulevard/Alvarado Street. Implement the adaptive traffic signal system for the Marina Boulevard and Merced Street corridors as described under Mitigation Measure 7. Implement the adaptive signal system to instantly optimize cycle lengths, phasing sequence and timings along Marina Boulevard and Merced Street corridors in the AM and PM peak periods would improve the intersection operations to LOS D with average delays of 49.0 seconds and 42.5 seconds during the AM and PM peak hours, respectively. Therefore, the project impact would be less-than-significant. However, implementation of this mitigation measure would require approval from Caltrans to adopt the adaptive traffic signal system along the Marina Boulevard corridor. Because the feasibility of the measure is uncertain at this time, the project impact would potentially be **significant and unavoidable**.

Mitigation Measure 10 – Republic Avenue/Merced Street. Implement Mitigation Measure 7 by constructing a new Marina Boulevard access to the project site and implementing the adaptive traffic signal system would improve the intersection operation to LOS C in the PM peak hour with an average delay of 34.6 seconds and to LOS D in the Saturday peak hour with an average delay of 42.4 seconds. However, because it is uncertain if the encroachment permit to construct the new Marina Access Driveway can be acquired, implementation of this mitigation measure may not be feasible.

Furthermore, residual queuing impacts have been identified for the southbound left-turn movement as shown in Table 54 in the Queuing Analysis section of this report. While the mitigation measure would shorten the 95th percentile queues

during all study periods, the mitigated queue length of 751 feet and 428 feet in the PM and Saturday peak hours, respectively, would exceed the storage capacity of 400 feet, and may block through traffic on the southbound approach and affect upstream operations on Merced Street. To mitigate this residual impact, widen the north leg of the intersection to provide an additional left-turn lane to provide two left-turn lanes, one through lane, and one shared-through-right lane on the southbound approach. With this measure, the southbound left-turn queue would be reduced to under 300 feet for both peak hours, which could be accommodated by the proposed storage. However, the proposed widening would require acquisition of right-of-way, which may not be feasible because right-of-way acquisition is beyond the control of the applicant or the City.

If Merced Street is to be widened to provide the additional left-turn lane, sufficient right-of-way shall also be allocated to provide for the planned Class II bike lanes along Merced Street between Republic Avenue and Marina Boulevard as specified the adopted San Leandro Bicycle and Pedestrian Master Plan. Failure to do so would conflict with the City's adopted plans and policies related to alternative modes and would therefore be considered a secondary impact.

Because of the uncertainty regarding the required encroachment permit and availability of right-of-way, the project impacts would potentially be **significant and unavoidable**.

Mitigation Measure 11 - Fairway Drive/Merced Street. Add a travel lane and modify lane geometries at the Fairway Drive/Merced Street intersection. On the eastbound approach, add one left-turn lane to provide two left-turn lanes, one through lane and one right-turn lane. On the westbound approach, restripe the right-turn lane to a shared through-right lane to provide one left-turn lane, one through lane and one through-right lane. This mitigation measure would require the widening of the west leg of the intersection to allow for the additional eastbound left-turn lane and the additional westbound receiving lane. With these improvements, the average delay would be improved to 53.0 seconds and would operate at LOS D during the PM peak hour.

Implementation of this mitigation measure would require the acquisition of new right-of-way. The addition of one eastbound left-turn lane and one westbound receiving lane would require about 24 feet of additional right-of-way on the west leg of the intersection for a distance of approximately 260 feet (the approximate distance of the existing single left-turn lane). Up to 12 feet of the required right-of-way (the equivalent of one lane) may be accommodated on the northern side of Fairway Drive. This right-of-way would encroach into a 10-foot strip of landscaping and parking stalls in the parking lots to two businesses. However, it is possible to relocate the lost parking to remove the right-of-way constraint. Utility poles associated with high voltage transmission lines present in the required right-of-way may not be able to be relocated and would therefore be considered infeasible. There are also two driveways to the businesses that would be impacted by this right-of-way addition but the location of these driveways would not require relocation. The right-of-way required for an addition 12 feet for the second lane on the west leg could result in the acquisition of commercial

structures and/or the taking of businesses and may be uncertain. Therefore, the impacts at this intersection would remain **significant and unavoidable**.

Mitigation Measure 12 - Aladdin Avenue/Alvarado Street. Increase the cycle length of the actuated-uncoordinated signal timing at the intersection in the AM peak hour. At the intersection of Aladdin Avenue and Alvarado Street, the cycle length and signal timings of the traffic signal shall be optimized. This modification would improve the operation to LOS D with an average delay of 54.1 seconds and would reduce the project impact to a **less-than-significant** level.

Mitigation Measure 13 - Marina Boulevard/ I-880 southbound ramps. Modify the signal phasing and implement the adaptive traffic signal system for the Marina Boulevard and Merced Street corridors as described under Mitigation Measure 7 and provide an additional southbound right-turn lane. Modify the traffic signal phasing to allow eastbound right-turn and through movements to proceed simultaneously with the southbound right-turn movement; and modify the traffic signal timing to optimize cycle lengths, phasing sequences and timings through the adaptive signal system along Marina Boulevard and Merced Street corridors. These improvements would improve the operation to LOS D in the AM peak hour and to LOS C in the PM peak hour. However, while this improvement would reduce the average delay by 54.3 seconds to 75.2 seconds in the Saturday peak hour, the intersection would continue to operate at substandard level at LOS E. Adding a third southbound lane for the I-880 off-ramp would reduce the average delay to 50.3 seconds and the intersection would operate at LOS D in the Saturday peak hour. However, this improvement requires additional right-of-way as well as an encroachment permit from Caltrans. As the availability of right-of-way and permit acquisition are uncertain, the project impact during the Saturday peak hour would remain **significant-and-unavoidable**.

Mitigation Measure 14 - Marina Boulevard/San Leandro Boulevard. Add lanes to the intersection. At the intersection of Marina Boulevard and San Leandro Boulevard, one northbound left-turn lane shall be added to provide two left-turn lanes, two through lanes and one right-turn lane. This modification would improve the intersection operation to LOS D during the PM and Saturday peak hours with an average delay of 45.1 seconds and 40.3 seconds, respectively and to within the City's operation standards. During the AM peak hour, while the intersection would continue to operate at LOS F, the improvement would reduce the V/C by 0.28 to better than Cumulative No Project conditions. Therefore, the project impacts would be **less-than-significant** with mitigation.

Implementation of this mitigation measure would require the acquisition of additional right-of-way. The addition of a second northbound left-turn lane on the south leg of the intersection would require about a 12-foot wide strip of right-of-way from the property on the east side of San Leandro Boulevard. This can be accommodated by reducing the bike lane and sidewalk right-of-way. The additional northbound left-turn lane would require restriping the west leg of Marina Boulevard. There is sufficient roadway width to accommodate this restriping, but reconfiguration of the channeling island may be required.

Modification of the intersection is not expected to impact the railroad right-of-way and crossing located 450 feet west on Marina Boulevard.

Freeway Impacts: Under Cumulative conditions with the Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development, the Project would add traffic on I-880 and would result in significant impacts on the following three segments:

1. Southbound segment between Marina Boulevard and Washington Avenue during the AM peak hour.
2. Northbound segment between Washington Avenue and Marina Boulevard during the PM peak
3. Northbound segment between Davis Street and 98th Avenue during the AM and PM peaks.

No feasible mitigation measure was identified that would reduce the impacts of the project on I-880. Widening the freeway would reduce the impact but was not considered feasible. Therefore, the project impact would remain **significant and unavoidable.**

Cumulative Conditions plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development with the Aladdin Avenue Extension

Impacts: Under Cumulative plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development with Aladdin Avenue Extension, the project would contribute to substandard conditions at ten intersections:

- Davis Street and Doolittle Drive (AM and PM)
- Marina Boulevard and Merced Street (AM, PM and Saturday)
- Marina Boulevard and Teagarden Street (PM)
- Marina Boulevard and Alvarado Street (AM and PM)
- Republic Avenue and Merced Street (PM and Saturday)
- Fairway Drive and Merced Street (PM)
- Aladdin Avenue and Teagarden Street (AM)
- Aladdin Avenue and Alvarado Street (AM)
- Marina Boulevard and I-880 Southbound ramps (AM, PM and Saturday)
- Marina Boulevard and San Leandro Boulevard (AM, PM and Saturday)

In additional to the nine intersections that would be impacted without Aladdin Avenue Extension, the project would also cause significant impact at the Aladdin Avenue and Teagarden Street intersection in the AM peak hour under this scenario.

MITIGATION MEASURE. Implementation of the mitigation measure for the Aladdin Avenue and Teagarden Street intersection described below would mitigate the project impact at this location to less-than-significant level under Cumulative plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development with Aladdin Avenue Extension conditions. Implementation of Mitigation Measures 6 to 14 would also reduce the project impact at the Aladdin /Alvarado Street intersection and the Marina Boulevard/San Leandro Boulevard intersection to less-than-significant and would lessen the project impacts at the remaining impacted intersections but the project impact would potentially remain significant and unavoidable.

As some of the traffic would be diverted to the Aladdin Extension, the Marina Boulevard/Teagarden Street intersection would not require the conversion of the eastbound right-turn lane to a shared-through-right-lane and the Marina Boulevard/I-880 southbound ramp intersection would not require an additional southbound right-turn lane as previously proposed. However, a significant impact was identified for the Aladdin Avenue/Teagarden Street intersection under Cumulative plus Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development with Aladdin Avenue Extension conditions.

Encroachment permits would be required from Caltrans in order to implement the proposed mitigation measures for the Davis Street and Doolittle Drive intersection, the Marina Boulevard/Merced Street intersection, the Marina Boulevard/I-880 southbound ramp intersection and the Republic Avenue/Merced Street intersection. Increases in roadway capacity (widening) would mitigate the project impact at the Fairway Drive/Merced Street intersection and the Republic Avenue/Merced Street intersection but this increase is constrained by the availability of right-of-way. Because permit issuance and right-of-way availability are uncertain , these mitigation measures may potentially be uncertain. Therefore the impacts would potentially be significant and unavoidable. (SU)

Mitigation Measure 15 – Davis Street/Doolittle Drive. Restripe lanes at the Davis Street/Doolittle Drive intersections. At the intersection of Davis Street and Doolittle Drive, implement Mitigation Measure 6 by restriping the westbound lanes to provide one left-turn lane, one through lane, and two right-turn lanes. While the operations would remain at LOS F upon implementation of this improvement, the V/C would improve to 1.12 in the AM peak hour and to 1.17 in the PM peak hour. The improved V/C would be lower than those of the No Project conditions; therefore, the project impacts at this intersection would be reduced to less-than-significant levels. Implementation of this mitigation measure would not require the acquisition of new right-of-way; thus, this mitigation measure would not result in any secondary impacts. However, an encroachment permit would be required from Caltrans in order to implement the proposed mitigation measure because the intersection is under Caltrans

jurisdiction. Because it is uncertain if an encroachment permit can be acquired, implementation of this mitigation measure may not be feasible. Therefore, the project impacts would potentially remain **significant and unavoidable**.

Mitigation Measure 16 – Marina Boulevard/Merced Street. Implement Mitigation Measure 6 by constructing a new signalized Marina Access Driveway along Marina Boulevard, prohibit right-turn-on-red for the southbound approach at the Marina Boulevard/ I-880 southbound ramps intersection, and implement an adaptive traffic signal system along the Marina Boulevard and Merced Street corridors would improve the intersection operations to within City standards. Upon implementation of this measure, the operations would improve to LOS D with an average delay of 37.3 seconds, 52.3 seconds, and 45.3 seconds in the AM, PM and Saturday peak hours. However, as described under Mitigation Measure 7, improvement is contingent upon acquisition of encroachment permit and approval from Caltrans, which is uncertain. Therefore, the impact would potentially remain **significant and unavoidable**.

Mitigation Measure 16 - Marina Boulevard/Teagarden Street. Implement the adaptive traffic signal system for the Marina Boulevard and Merced Street corridors as described under Mitigation Measure 7. Modify the traffic signal timing to optimize cycle lengths, phasing sequences and timings through the adaptive signal system along Marina Boulevard and Merced Street corridors in the PM peak period would improve the intersection operations to LOS D with an average delay of 53.8 seconds. Therefore, upon implementation, the project impact would be less-than-significant. However, implementation of this mitigation measure would require approval from Caltrans to adopt the adaptive traffic signal system along the Marina Boulevard corridor. Because the feasibility of the measure is uncertain at this time, the project impact would potentially be **significant and unavoidable**.

Mitigation Measure 18 – Republic Avenue/Merced Street. Implement Mitigation Measure 6 by constructing a new Marina Boulevard access to the project site and implementing the optimized signal timing plan through the adaptive traffic signal system would improve the intersection operation to LOS D in the PM and Saturday peak hours with average delays of 44.4 seconds and 42.8 seconds, respectively. However, because it is uncertain if the encroachment permit to construct the new Marina Access Driveway can be acquired, implementation of this mitigation measure may not be feasible.

Furthermore, residual Queuing impacts have been identified for the southbound left-turn movement. While the mitigation measure would shorten the 95th percentile queues during all study periods, the mitigated queue length of 730 feet and 556 feet in the PM and Saturday peak hours, respectively, would exceed the storage capacity of 400 feet, and may block through traffic on the southbound approach and affect upstream operations on Merced Street. To mitigate this residual impact, widen the north leg of the intersection to provide an additional left-turn lane to provide two left-turn lanes, one through lane, and one shared-through-right lane on the southbound approach. With this measure, the southbound left-turn queue would be reduced to 300 feet or less for both peak

hours, which could be accommodated by the proposed storage. However, the proposed widening would require acquisition of right-of-way, which may not be feasible because right-of-way acquisition is beyond the control of the applicant or the City.

If Merced Street is to be widened to provide the additional left-turn lane, sufficient right-of-way shall also be allocated to provide for the planned Class II bike lanes along Merced Street between Republic Avenue and Marina Boulevard as specified the adopted San Leandro Bicycle and Pedestrian Master Plan. Failure to do so would conflict with the City's adopted plans and policies related to alternative modes and would therefore be considered a secondary impact.

Because of the uncertainty regarding the required encroachment permit and availability of right-of-way, the project impacts would potentially be **significant and unavoidable**.

Mitigation Measure 19 - Fairway Drive/Merced Street. Implement Mitigation Measure 11 by adding eastbound left-turn lane and restriping the westbound right-turn lane to a shared through-right lane would improve the intersection operations to within City standards. Upon implementation, the intersection would operate at LOS D with an average delay of 52.5 seconds. However, as described under Mitigation Measure 11, these improvements would acquisition of right-of-way in order to widen the west leg of the intersection, which may be uncertain. Therefore, the project impact at this intersection would remain **significant and unavoidable**.

Mitigation Measure 20 - Aladdin Avenue/Teagarden Street. Increase the actuated-uncoordinated cycle length at the intersection of Aladdin Avenue and Teagarden Street. At the intersection of Aladdin Avenue and Teagarden Street, the actuated-uncoordinated cycle length and timings of the traffic signal shall be optimized by updating the maximum extension parameters. This modification would improve the operation to LOS D with an average delay of 51.8 seconds in the AM peak hour. The project impact would be **less than significant**.

Mitigation Measure 21 - Marina Boulevard/ I-880 southbound ramps. Modify the signal phasing and implement the adaptive traffic signal system for the Marina Boulevard and Merced Street corridors as described under Mitigation Measure 7. Modify the traffic signal phasing to allow eastbound right-turn and through movements to proceed simultaneously with the southbound right-turn movement; and modify the traffic signal timing to optimize cycle lengths, phasing sequences and timings through the adaptive signal system along Marina Boulevard and Merced Street corridors. These improvements would improve the operation to LOS C in the AM and PM peak hours and to LOS D in the Saturday peak hour and reduce the project impact to less than significant level. However, implementation of this mitigation measure would require approval from Caltrans to adopt the adaptive traffic signal system along the Marina Boulevard corridor. Because the feasibility of the measure is uncertain at this time, the project impact would potentially be **significant and unavoidable**.

Freeway Impacts: Under Cumulative conditions with the Kaiser Medical Center Phase 1 plus Mixed-Use Retail Development with Aladdin Avenue Extension, the Project would add traffic on I-880 and would result in significant impacts on the following three segments:

1. Southbound segment between Marina Boulevard and Washington Avenue during the AM peak hour.
2. Northbound segment between Washington Avenue and Marina Boulevard during the PM peak
3. Northbound segment between Davis Street and 98th Avenue during the AM and PM peaks.

No feasible mitigation measure was identified that would reduce the impacts of the project on I-880. Widening the freeway would reduce the impact but was not considered feasible. Therefore, the project impact would remain **significant and unavoidable.**

A summary of intersection level of service at the study intersections after implementation of the proposed mitigation measures for the Cumulative scenarios are shown in Table 48.

Table 48: Mitigated Intersection Level of Service for Cumulative plus Kaiser Medical Center Phase 1 & Mixed-Use Retail Development with and without the Aladdin Avenue Extension

		Cumulative 2030 Kaiser Medical Center Phase 1 & Mixed-Use Retail Development - Peak-Hour (Mitigated)								Cumulative 2030 Kaiser Medical Center Phase 1 & Mixed-Use Retail Development with Aladdin Avenue Extension - Peak-Hour (Mitigated)							
		AM			PM			Saturday		AM			PM			Saturday	
	Signalized Intersections [1]	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay
1	Davis St & Doolittle Dr	***E***	***79.2***	***1.07***	***F***	***132.1***	***1.17***	D	53.1	***F***	***91.0***	***1.12***	***F***	***132.6***	***1.17***	D	53.1
2	Davis St & Phillips Ln	B	19.1		**E**	**76.2**	**1.07**	D	39.6	C	20.0		**E**	**81.5**	**1.09**	D	39.6
3	Davis St & Warden Ave	C	21.6		D	51.3		D	40.6	C	21.4		D	52.0		D	40.6
4	Davis St & I-880 SB ramps	A	9.7		B	12.0		B	17.5	A	9.2		B	12.6		B	17.5
5	Westgate Shpping Drwy & Westgate Pkwy	B	11.7		C	23.1		B	19.2	B	11.9		C	21.9		B	19.2
6	Williams St & Doolittle Dr	B	15.6		C	25.2		A	7.8	B	18.1		C	21.5		A	7.8
7	Williams St & Westgate Pkwy	B	18.4		B	14.0		A	8.6	B	15.5		B	14.6		A	8.6
8	Williams St & Merced St	D	47.7		C	32.0		C	25.3	C	34.1		C	31.5		C	25.3
9	Marina Blvd & Doolittle Dr	C	34.0		D	37.3		D	53.2	D	45.8		D	37.5		D	53.2
10	Marina Blvd & Merced St	*D*	*42.5*		*D*	*52.6*		*D*	*45.3*	*D*	*37.3*		*D*	*52.3*		*D*	*45.3*
11	Marina Blvd & Teagarden St	C	28.8		*D*	*39.9*		C	39.2	C	26.7		*D*	*53.8*		D	39.0
12	Marina Blvd & Alvarado St	*D*	*49.0*		*D*	*42.5*		C	34.8	*D*	*54.3*		*D*	*38.7*		C	34.8
13	Republic Ave & Merced St	C	20.6		*C*	*28.3*		*C*	*30.9*	C	22.2		*C*	*33.4*		*C*	*31.0*
14	Fairway Dr & Doolittle Dr	B	19.3		C	26.4		B	17.5	B	19.2		C	26.2		B	17.5
15	Fairway Dr & Merced Street	D	40.4		*D*	*53.0*		C	34.2	D	36.4		*D*	*52.5*		C	34.8
16	Fairway Dr & Miller Street	C	22.4		C	27.3		B	14.3	C	21.3		C	29.7		B	14.3
17	Aladdin Ave & Teagarden St	D	50.6		C	30.3		B	15.1	D	51.8		C	34.3		B	15.1
18	Aladdin Ave & Alvarado St	D	54.1		D	38.0		D	37.3	D	54.0		D	42.4		C	31.2
19	West Ave 140th & Merced St	A	3.5		A	4.8		A	4.2	A	3.3		A	4.8		A	4.2
20	Marina Blvd & I-880 SB Ramps	*D*	*36.4*		*C*	*23.9*		*D*	*50.3*	*C*	*32.9*		*C*	*22.9*		*D*	*49.3*
21	Marina Blvd & I-880 NB Ramps	A	10.2		A	5.0		D	47.1	A	8.8		A	6.9		D	35.7
22	Marina Blvd & San Leandro Blvd	**F**	**106.0**	**1.31**	D	45.1		D	40.3	**F**	**97.6**	**1.29**	D	48.5		D	40.3
23	Wells Fargo driveway & Merced St	A	1.5		B	6.9		A	3.9	A	1.6		A	9.2		A	3.9
24	Fairway Dr & Kaiser West Drwy	A	5.7		B	17.1		A	6.2	A	5.6		B	13.6		A	5.4
25	Marina Blvd & Marina Access Drwy	A	4.2		B	10.1		A	8.0	A	4.2		B	11.0		A	9.0

Source: Dowling Associates, Inc., March 2010.

LOS = Level of Service; **Delay** = Weighted average seconds of delay per vehicle; V/C = volume to capacity ratio; **BOLD** denotes sub-standard operations;

Boxed & Italic denotes locations where the mitigated results are achieved only upon acquisition of right-of-way, acquisition of permits and/or other criteria. These impacts are potentially significant and unavoidable.

1 LOS and delay at signalized intersections are based on weighted average delay of all intersections approaches.

2 The Highway Capacity Manual calculates LOS and delay at side-street stop-controlled intersections as approach delay of the intersection leg with the worst LOS. Synchro also reports the weighted average delay of all movements at side-street stop-controlled intersections. This table displays both values as "all legs/ worst leg" for LOS and delay.

Cumulative Conditions plus Kaiser Medical Center Build-Out plus Mixed-Use Retail Development

Impacts: Under Cumulative plus Kaiser Medical Center Build-Out plus Mixed-Use Retail Development conditions, the Project traffic would contribute to substandard conditions and cause significant impacts at 11 intersections:

- Davis Street and Doolittle Drive (AM and PM)
- Davis Street and Phillips Lane (PM)
- Marina Boulevard and Merced Street (AM, PM and Saturday)
- Marina Boulevard and Teagarden Street (PM)
- Marina Boulevard and Alvarado Street (AM and PM)
- Republic Avenue and Merced Street (AM, PM and Saturday)
- Fairway Drive and Merced Street (PM)
- Aladdin Avenue and Teagarden Street (AM)
- Aladdin Avenue and Alvarado Street (AM)
- Marina Boulevard and I-880 Southbound ramps (AM, PM and Saturday)
- Marina Boulevard and San Leandro Boulevard (AM, PM and Saturday)

MITIGATION MEASURES. Implementation of Mitigation Measures 6 to 14 and 20 would reduce the impacts at the Aladdin Avenue/Teagarden Street intersection, the Aladdin Avenue/Alvarado Street intersection, and the Marina Boulevard/San Leandro Boulevard intersection under the Cumulative plus Kaiser Medical Center Build-Out plus Mixed-Use Retail Development conditions to less-than-significant levels. However, while it would also lessen the project effects at the remaining intersections, the project impacts would potentially remain significant and unavoidable at these intersections.

For the Merced Street intersections of Marina Boulevard and Republic Avenue, the Davis Street intersections of Doolittle Drive and Phillips Lane, and the Marina Boulevard intersections of Merced Street, Teagarden Street, Alvarado Street and I-880 southbound ramps, encroachment permits would be required from Caltrans in order to implement the proposed mitigation measures. Increases in roadway capacity (widening) would mitigate the project impact at the Fairway Drive/Merced Street intersection and the Marina Boulevard/Teagarden Street intersection but such increases are constrained by the availability of right-of-way. Because permit issuance and right-of-way availability are uncertain, these mitigation measures may potentially be

uncertain. Therefore the impacts would potentially be significant and unavoidable. (SU)

Mitigation Measure 22 – Davis Street/Doolittle Drive. Restripe lanes at the Davis Street/Doolittle Drive intersections. At the intersection of Davis Street and Doolittle Drive, implement Mitigation Measure 6 by restriping the westbound lanes to provide one left-turn lane, one through lane, and two right-turn lanes. While the operations would remain at LOS F upon implementation of this improvement, the V/C would improve to 1.08 in the AM peak hour and to 1.17 in the PM peak hour. The improved V/C would be lower than those of the No Project conditions; therefore, the project impacts at this intersection would be reduced to less-than-significant levels. Implementation of this mitigation measure would not require the acquisition of new right-of-way; thus, this mitigation measure would not result in any secondary impacts. However, an encroachment permit would be required from Caltrans in order to implement the proposed mitigation measure because the intersection is under Caltrans jurisdiction. Because it is uncertain if an encroachment permit can be acquired, implementation of this mitigation measure may not be feasible. Therefore, the project impacts would potentially remain **significant and unavoidable**.

Mitigation Measure 23 – Davis Street/Phillips Lane. Restripe the westbound approach lanes. Convert the westbound shared through-right lane to an exclusive through lane to provide one left-turn lane, two through lanes and one right-turn lane would improve the intersection operations from LOS F to LOS E in the PM peak hour and reduce the V/C to the same as Cumulative No Project conditions. The project impacts would be less-than-significant upon implementation. However, implementation of this measure would require an encroachment permit from Caltrans. Because permit issuance is uncertain, the project impact would remain **significant and unavoidable**.

Mitigation Measure 24 – Marina Boulevard/Merced Street. Implement Mitigation Measure 7 by constructing a new signalized Marina Access Driveway along Marina Boulevard, prohibit right-turn-on-red for the southbound approach at the Marina Boulevard/ I-880 southbound ramps intersection, and implement a traffic signal timing plan through the adaptive signal system along the Marina Boulevard and Merced Street corridors would improve the intersection operations to within City standards during the AM and Saturday peak hours. Upon implementation of this measure, the operations would improve to LOS D with average delays of 52.5 seconds and 53.8 seconds in the AM and Saturday peak hours, respectively. While the project impact during the PM peak hour would also be lessened, the intersection would continue to operate at substandard level at LOS E with an average delay reduction by 122.4 seconds to 63.8 seconds. Increasing roadway capacity by adding a third left-turn lane on the westbound approach to Marina Boulevard and a third receiving southbound through lane on Merced Street would further improve the intersection operations. However, widening at this location is not considered feasible. Furthermore, as described under Mitigation Measure 7, improvement is contingent upon acquisition of encroachment permit from Caltrans, which is

uncertain. Therefore, the impact would potentially remain **significant and unavoidable**.

Mitigation Measure 25 - Marina Boulevard/Teagarden Street. Implement the traffic signal timing plan through the adaptive traffic signal system for the Marina Boulevard and Merced Street corridors as described under Mitigation Measure 7 and restripe the eastbound approach lanes as described under Mitigation Measure 8. Modify the traffic signal timing to allow for cycle length modification and optimized actuated-coordinated phasing along Marina Boulevard and Merced Street corridors and convert the eastbound right-turn lane to a shared through-right lane would reduce the project impact at the Marina Boulevard and Teagarden Street intersection to a less-than-significant level with an average delay of 49.0 seconds at LOS D.

Implementation of this mitigation measure would require the acquisition of new right-of-way on the east leg of the intersection and/or may require the relocation of a utility pole as well as Caltrans approval for implementing the adaptive traffic signal system along the Marina Boulevard corridor. The feasibility of the measure is uncertain at this time. Therefore, the project impact would potentially be **significant and unavoidable**.

Mitigation Measure 26 - Marina Boulevard/Alvarado Street. Implement the adaptive traffic signal system for the Marina Boulevard and Merced Street corridors as described under Mitigation Measures 7 and 16. Implement the adaptive signal system to instantly optimize cycle lengths, and phasing sequences and timings along Marina Boulevard and Merced Street corridors in the AM and PM peak periods would improve the intersection operations to LOS D with average delays of 54.7 seconds and 47.8 seconds, respectively. Therefore, the project impact would be less-than-significant. However, implementation of this mitigation measure would require approval from Caltrans to adopt the adaptive traffic signal system along the Marina Boulevard corridor. Because the feasibility of the measure is uncertain at this time, the project impact would potentially be **significant and unavoidable**.

Mitigation Measure 27 – Republic Avenue/Merced Street. Implement Mitigation Measure 7 by constructing a new Marina Boulevard access to the project site and implementing the traffic signal timing plan through the adaptive signal system would improve the intersection operation to LOS D in the AM, PM and Saturday peak hours with average delays of 40.1 seconds, 43.2 and 38.8 seconds, respectively. However, because it is uncertain if the encroachment permit to construct the new Marina Access Driveway can be acquired, implementation of this mitigation measure may not be feasible.

Furthermore, residual Queuing impacts have been identified for the southbound left-turn movement. While the mitigation measure would shorten the 95th percentile queues during all study periods, the mitigated queue length of 1,138 feet, 801 feet and 667 feet in the AM, PM and Saturday peak hours, respectively, would exceed the storage capacity of 400 feet, and would block through traffic on the southbound approach and affect upstream operations on Merced Street. To mitigate this residual impact, widen the north leg of the intersection to provide

an additional left-turn lane to provide two left-turn lanes, one through lane, and one shared-through-right lane on the southbound approach. With this measure, the southbound left-turn queue would be reduced to less than 400 feet for all the study periods and could be accommodated by the proposed storage. However, the proposed widening would require acquisition of right-of-way, which may not be feasible because right-of-way acquisition is beyond the control of the applicant or the City.

If Merced Street is to be widened to provide the additional left-turn lane, sufficient right-of-way shall also be allocated to provide for the planned Class II bike lanes along Merced Street between Republic Avenue and Marina Boulevard as specified the adopted San Leandro Bicycle and Pedestrian Master Plan. Failure to do so would conflict with the City's adopted plans and policies related to alternative modes and would therefore be considered a secondary impact.

Because of the uncertainty regarding the required encroachment permit and availability of right-of-way, the project impacts would potentially be **significant and unavoidable**.

Mitigation Measure 28 - Fairway Drive/Merced Street. Increase intersection capacity by adding lanes. Implementation of Mitigation Measure 11 by providing additional eastbound and westbound lanes and also add an additional northbound through lane to provide one left-turn lane, two through lanes and one shared through-right lane would improve the intersection level of service to LOS D with an average delay of 52.2 seconds in the PM peak hour.

The addition of one northbound through lane to the south leg of the intersection would require about 12 feet of additional right-of-way from the eastern side of Merced Street for a distance of approximately 250 to 300 feet. The right-of-way would encroach into what is now about 20-foot wide strip of landscaping bordering a parking lot to a business at the southeast corner of the Merced Street/Fairway Drive intersection. Acquisition of this right-of-way would not affect the business or the parking lot. There is one driveway to the business along Merced Street about 350 feet south of Fairway Drive. However, this driveway is outside the area required for the additional lane and would not be impacted. Utility poles present in the required right-of-way would be relocated underground.

However, as discussed under Mitigation Measure 11, the addition westbound and eastbound lanes would require the widening of the west leg of the intersection by about 24 feet to allow for the additional eastbound left-turn lane and the additional westbound receiving lane. While an additional lane (12 feet) may be accommodate by encroaching onto existing landscaping and parking stalls, right-of-way for the additional lane may not be available. Therefore, the mitigation measure may be uncertain and the project impact would be **significant and unavoidable**.

Mitigation Measure 29 - Marina Boulevard/I-880 southbound ramps. Implement Mitigation Measure 13 by modifying the signal phasing and implement the traffic signal timing plan for the Marina Boulevard and Merced Street corridors; change the traffic signal phasing to allow eastbound right-turn and through movements to proceed simultaneously with the southbound right-turn movement, and provide an additional southbound right-turn lane. These improvements would improve the operation to LOS D in the AM peak hour and to LOS C in the PM peak hour. However, while this improvement would reduce the average delay by 49.4 seconds to 83.2 seconds in the Saturday peak hour, the intersection would continue to operate at substandard level at LOS F. Adding a third southbound lane for the I-880 off-ramp would further reduce the average delay to 57.5 seconds but the intersection would continue to operate at substandard level at LOS E during the Saturday peak hour. However, this improvement requires additional right-of-way as well as an encroachment permit from Caltrans. As the availability of right-of-way and permit acquisitions are uncertain, the project impact during the Saturday peak hour would remain **significant and unavoidable**.

Freeway Impacts: Under Cumulative conditions with the Kaiser Medical Center Build-Out and Mixed-Use Retail Development, the Project would add traffic on I-880 and would result in significant impacts on the following four segments:

1. Southbound segment between Marina Boulevard and Washington Avenue during the AM peak hour.
2. Southbound segment between 98th Avenue and Davis Street during the PM peak hour.
3. Northbound segment between Washington Avenue and Marina Boulevard during the PM peak
4. Northbound segment between Davis Street and 98th Avenue during the AM and PM peaks.

No feasible mitigation measure was identified that would reduce the impacts of the project on I-880. Widening the freeway would reduce the impact but was not considered feasible. Therefore, the project impact would remain **significant and unavoidable.**

Cumulative Year (2030) Conditions with Kaiser Medical Center Build-Out plus Mixed-Use Retail Development with the Aladdin Avenue Extension

Impacts: Under Cumulative plus Kaiser Build-Out plus Mixed-Use Retail Development with the Aladdin Avenue extension, the project the project would cause several intersections to degrade to substandard levels of service or increase traffic at locations that are already operating at substandard levels, thereby resulting in

significant impacts under cumulative conditions. The result shows that the same 11 intersections that would be impacted under Cumulative plus Kaiser Medical Center Build-Out plus Mixed-Use Retail Development conditions would also be impacted with the installation of the Aladdin Avenue Extension:

- Davis Street and Doolittle Drive (AM and PM)
- Davis Street and Phillips Lane (PM)
- Marina Boulevard and Merced Street (AM, PM and Saturday)
- Marina Boulevard and Teagarden Street (PM)
- Marina Boulevard and Alvarado Street (AM and PM)
- Republic Avenue and Merced Street (AM, PM and Saturday)
- Fairway Drive and Merced Street (PM)
- Aladdin Avenue and Teagarden Street (AM)
- Aladdin Avenue and Alvarado Street (AM)
- Marina Boulevard and I-880 Southbound ramps (AM, PM and Saturday)
- Marina Boulevard and San Leandro Boulevard (AM, PM and Saturday)

MITIGATION MEASURES. Implementation of Mitigation Measures 6 to 10, 12 to 14, 20, 23, and 28 would reduce the impacts at the Aladdin Avenue/ Teagarden Street intersection and the Marina Boulevard/San Leandro Boulevard intersection under Cumulative Kaiser Medical Center Build-Out plus Mixed-Use Retail Development with Aladdin Avenue Extension conditions to less-than-significant levels. These measures would also lessen the project impacts at the remaining intersections but the impacts would potentially remain significant and unavoidable. The Aladdin Avenue/Alvarado Street intersection would require additional measure than previously proposed. Upon implementation, the project impact at this intersection under Cumulative Kaiser Medical Center Build-Out plus Mixed-Use Retail Development with Aladdin Avenue Extension conditions would be reduced to less-than-significant level.

For the Davis Street intersections of Doolittle Drive and Phillips Lane, the Merced Street/Republic Avenue intersections, and the Marina Boulevard intersections of Merced Street, I-880 southbound ramps, Teagarden Street, and Alvarado Street, encroachment permits would be required from Caltrans in order to implement the proposed mitigation measure. Increases in roadway capacity (widening) would mitigate the project impacts at the Fairway Drive/Merced Street intersection, the Marina Boulevard/Teagarden Street intersection and the Marina Boulevard/Alvarado Street intersection but such increases are constrained by the availability of right-of-way. Because permit issuance and right-of-way availability are uncertain or infeasible, these mitigation measures may potentially be infeasible. Therefore the impacts would potentially be **significant and unavoidable**. (SU)

Mitigation Measure 30 – Davis Street/Doolittle Drive. Restripe lanes at the Davis Street/Doolittle Drive intersections. At the intersection of Davis Street and Doolittle Drive, implement Mitigation Measure 6 by restriping the westbound lanes to provide one left-turn lane, one through lane, and two right-turn lanes. While the operations would remain at LOS F upon implementation of this improvement, the V/C would improve to 1.12 in the AM peak hour and to 1.19 in the PM peak hour. The improved V/C would be within acceptable tolerance under the City's significance criteria; therefore, the project impacts at this intersection would be reduced to less-than-significant levels. Implementation of this mitigation measure would not require the acquisition of new right-of-way; thus, this mitigation measure would not result in any secondary impacts. However, an encroachment permit would be required from Caltrans in order to implement the proposed mitigation measure because the intersection is under Caltrans jurisdiction. Because it is uncertain if an encroachment permit can be acquired, implementation of this mitigation measure may not be feasible. Therefore, the project impacts would potentially remain **significant and unavoidable**.

Mitigation Measure 31 – Davis Street/Phillips Lane. Restripe the westbound approach lanes. Implement Mitigation Measure 22 by converting the westbound shared through-right lane to an exclusive through lane to provide one left-turn lane, two through lanes and one right-turn lane would improve the intersection operations from LOS F to LOS E in the PM peak hour and reduce the V/C to the same as Cumulative No Project conditions. The project impacts would be less-than-significant upon implementation. However, implementation of this measure would require an encroachment permit from Caltrans. Because permit issuance is uncertain, the project impact would remain **significant and unavoidable**.

Mitigation Measure 32 – Marina Boulevard/Merced Street. Implement Mitigation Measure 7 by constructing a new signalized Marina Access Driveway along Marina Boulevard, prohibit right-turn-on-red for the southbound approach at the Marina Boulevard/ I-880 southbound ramps intersection, and implement traffic signal timing plans with an adaptive signal system along the Marina Boulevard and Merced Street corridors would improve the intersection operations to within City standards during the AM and Saturday peak hours. Upon implementation of this measure, the operations would improve to LOS D with average delays of 48.5 seconds and 53.8 seconds in the AM and Saturday peak hours, respectively. While the project impact during the PM peak hour would also be lessened, the intersection would continue to operate at substandard level at LOS E with an average delay reduction by 118.3 seconds to 62.9 seconds. Increasing roadway capacity by adding a third left-turn lane on the westbound approach to Marina Boulevard and a third receiving southbound through lane on Merced Street would further improve the intersection operations. However, widening at this location is not considered feasible. Furthermore, as described under Mitigation Measure 6, improvement is contingent upon acquisition of encroachment permit from Caltrans, which is

uncertain. Therefore, the impact would potentially remain **significant and unavoidable**.

Mitigation Measure 33 - Marina Boulevard/Teagarden Street. Implement the traffic signal timing plan through the adaptive signal system for the Marina Boulevard and Merced Street corridors as described under Mitigation Measure 7 and restripe the eastbound approach lanes as described under Mitigation Measure 8. Modify the traffic signal timing to optimize cycle lengths, and phasing sequences and timings through the adaptive signal system along Marina Boulevard and Merced Street corridors and convert the eastbound right-turn lane to a shared through-right lane would reduce the project impact at the Marina Boulevard and Teagarden Street intersection to a less-than-significant level with an average delay of 54.7 seconds at LOS D.

Implementation of this mitigation measure would require the acquisition of new right-of-way on the east leg of the intersection and/or may require the relocation of a utility pole for an electrical transmission line. The feasibility of the measure is uncertain at this time. Therefore, the project impact would potentially be **significant and unavoidable**.

Mitigation Measure 34 - Marina Boulevard/Alvarado Street. Implement the traffic signal timing plan through the adaptive signal system for the Marina Boulevard and Merced Street corridors as described under Mitigation Measure 7and add an additional westbound lane. Modify the traffic signal timing to optimize cycle lengths, and phasing sequences and timings along Marina Boulevard and Merced Street corridors in the AM and PM peak periods and widen the east leg of the intersection to add one westbound through lane to provide one left-turn lane, two through lanes and one shared through-right lane. This would improve the operations to LOS D during both peak periods with average delays of 48.0 seconds and 46.9 seconds in the AM and PM peak hours, respectively, and reduce the project impacts at the Marina Boulevard and Alvarado Street intersection to less-than-significant levels.

Implementation of this mitigation measure would require the acquisition of new right-of-way on the east leg of the intersection and/or may require the relocation of a utility pole for an electrical transmission line. The availability of right-of-way to implement this measure is uncertain at this time. Therefore, the project impact remains **significant and unavoidable**.

Mitigation Measure 35 – Republic Avenue/Merced Street. Implement Mitigation Measure 7 by constructing a new Marina Boulevard access to the project site and implementing the traffic signal timing plan through adaptive signal system would improve the intersection operation to LOS D in the AM, PM and Saturday peak hours with average delays of 40.2 seconds, 46.3 and 39.4 seconds, respectively. However, because it is uncertain if the encroachment permit to construct the new Marina Access Driveway can be acquired, implementation of this mitigation measure may not be feasible.

Furthermore, residual queuing impacts have been identified for the southbound left-turn movement. While the mitigation measure would shorten the 95th

percentile queues during all study periods, the mitigated queue length of 1165 feet, 739 feet and 667 feet in the AM, PM and Saturday peak hours, respectively, would exceed the storage capacity of 400 feet, and would block through traffic on the southbound approach and affect upstream operations on Merced Street. To mitigate this residual impact, widen the north leg of the intersection to provide an additional left-turn lane to provide two left-turn lanes, one through lane, and one shared-through-right lane on the southbound approach. With this measure, the southbound left-turn queue would be reduced to less than 400 feet for all the study periods and could be accommodated by the proposed storage. However, the proposed widening would require acquisition of right-of-way, which may not be feasible because right-of-way acquisition is beyond the control of the applicant or the City.

If Merced Street is to be widened to provide the additional left-turn lane, sufficient right-of-way shall also be allocated to provide for the planned Class II bike lanes along Merced Street between Republic Avenue and Marina Boulevard as specified the adopted San Leandro Bicycle and Pedestrian Master Plan. If this is not implemented, it would conflict with the City's adopted plans and policies related to alternative modes and would therefore be considered a secondary impact.

Because of the uncertainty regarding the required encroachment permit and availability of right-of-way, the project impacts would potentially be **significant and unavoidable**.

Mitigation Measure 36 - Fairway Drive/Merced Street. Increase intersection capacity by adding lanes and implement the traffic signal timing plan through adaptive signal system described in Mitigation Measure 7. Modify the traffic signal timing to optimize cycle lengths, phasing sequences and timings along Marina Boulevard and Merced Street corridors in the PM peak period and implementation of Mitigation Measure 26 by providing additional eastbound, westbound and northbound lanes would improve the intersection level of service to LOS D with an average delay of 51.2 seconds in the PM peak hour and reduce the project impact to less-than-significant level.

As discussed in Mitigation Measure 26, implementation of this mitigation measure would require the acquisition of new right-of-way. As the availability of right-of-way to implement this measure is uncertain at this time, the project impact remains **significant and unavoidable**.

Mitigation Measure 37 - Aladdin Avenue/Alvarado Street. Modify the cycle length of the traffic signal in the AM peak hour and add a dedicated southbound right turn lane. Implement Mitigation Measure 12 by modifying the cycle length and timings of the actuated-uncoordinated traffic signal; and widen the north leg to add a dedicated southbound right turn lane to provide one left-turn lane, two through lanes and one right-turn lane. This modification would improve the operation to LOS D with an average delay of 47.4 seconds in the AM peak hour and reduce the impact to a **less-than-significant** level.

Implementation of this mitigation measure would require the acquisition of new right-of-way but would not result in secondary impacts. The addition of a southbound right-turn lane on the north leg of the intersection would require an approximately 12-foot wide strip from the western side of Alvarado Street for a distance of approximately 120 feet. This right-of-way is located on a property with light industrial use. There are no nearby driveways to the property that would be impacted. However, a portion of an unoccupied building would require demolition.

Mitigation Measure 38 - Marina Boulevard/ I-880 southbound ramps. Modify the signal phasing and implement the adaptive traffic signal system for the Marina Boulevard and Merced Street corridors as described under Mitigation Measure 7. Modify the traffic signal phasing to allow eastbound right-turn and through movements to proceed simultaneously with the southbound right-turn movement; and modify the traffic signal timing to optimize cycle lengths, phasing sequences and timings through the adaptive signal system along Marina Boulevard and Merced Street corridors. These improvements would improve the operation to LOS D in the AM and Saturday peak hours and to LOS C in the PM peak hour and reduce the project impact to less than significant level. However, implementation of this mitigation measure would require approval from Caltrans to adopt the adaptive traffic signal system along the Marina Boulevard corridor. Because the feasibility of the measure is uncertain at this time, the project impact would potentially be **significant and unavoidable**.

Freeway Impacts: Under Cumulative conditions with the Kaiser Medical Center Build-Out and Mixed-Use Retail Development and with Aladdin Avenue Extension, the Project would add traffic on I-880 and would result in significant impacts on the following four segments:

1. Southbound segment between Marina Boulevard and Washington Avenue during the AM peak hour.
2. Southbound segment between 98th Avenue and Davis Street during the PM peak hour.
3. Northbound segment between Washington Avenue and Marina Boulevard during the PM peak
4. Northbound segment between Davis Street and 98th Avenue during the AM and PM peaks.

No feasible mitigation measure was identified that would reduce the impacts of the project on I-880. Widening the freeway would reduce the impact but was not considered feasible. Therefore, the project impact would remain **significant and unavoidable.**

A summary of intersection level of service at the study intersections after implementation of the proposed mitigation measures for the Cumulative scenarios are shown in Table 49.

Table 49: Mitigated Intersection Level of Service for Cumulative plus Kaiser Medical Center Build-Out and Mixed-Use Retail Development with and without the Aladdin Avenue Extension

		2030 Kaiser Medical Center Build-Out & Mixed-Use Retail Development - Peak-Hour (Mitigated)								2030 Kaiser Build-Out & Mixed-Use Retail Development with Aladdin Avenue Extension - Peak-Hour (Mitigated)							
		AM			PM			Saturday		AM			PM			Saturday	
	Signalized Intersections [1]	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay
1	Davis St & Doolittle Dr	***E***	***77.7***	***1.08***	***F***	***131.4***	***1.17***	D	53.5	***F***	***89.8***	***1.12***	***F***	***134.7***	***1.19***	D	53.5
2	Davis St & Phillips Ln	B	19.0		***E***	***70.1***	***1.05***	C	34.1	B	18.9		***E***	***71.3***	***1.05***	C	34.1
3	Davis St & Warden Ave	C	22.9		D	53.5		D	41.4	C	23.9		D	53.7		D	41.4
4	Davis St & I-880 SB ramps	B	14.9		B	12.6		B	17.8	B	15.3		B	12.8		B	17.8
5	Westgate Shpping Drwy & Westgate	B	11.6		C	23.1		B	19.6	B	11.6		C	21.8		B	19.6
6	Williams St & Doolittle Dr	B	16.4		C	25.7		A	7.9	B	18.8		C	28.2		A	7.9
7	Williams St & Westgate Pkwy	D	38.2		B	14.4		A	8.8	D	45.5		B	15.4		A	8.8
8	Williams St & Merced St	D	45.2		C	32.8		C	25.4	C	34.1		C	34.2		C	25.4
9	Marina Blvd & Doolittle Dr	D	46.5		D	39.7		D	54.8	D	48.3		D	39.3		D	54.8
10	Marina Blvd & Merced St	*D*	*52.5*		***E***	***63.8***		*D*	*53.8*	*D*	*48.5*		***E***	***62.9***		*D*	*53.8*
11	Marina Blvd & Teagarden St	*D*	*36.8*		*D*	*49.0*		*D*	*39.4*	C	32.8		*D*	*54.7*		D	39.4
12	Marina Blvd & Alvarado St	*D*	*54.7*		*D*	*47.8*		D	36.5	*D*	*48.0*		*D*	*46.9*		D	35.3
13	Republic Ave & Merced St	*C*	*28.7*		*C*	*34.5*		*C*	*26.0*	*C*	*28.0*		*D*	*36.2*		*C*	*26.0*
14	Fairway Dr & Doolittle Dr	C	22.0		C	27.5		B	17.6	C	20.4		C	26.2		B	17.6
15	Fairway Dr & Merced Street	D	37.6		*D*	*52.2*		D	35.1	D	37.7		*D*	*51.2*		D	35.1
16	Fairway Dr & Miller Street	C	32.5		D	38.2		B	16.0	C	31.5		D	38.4		B	16.0
17	Aladdin Ave & Teagarden St	D	51.8		D	39.0		B	15.4	D	54.8		D	40.1		B	15.4
18	Aladdin Ave & Alvarado St	D	54.3		D	43.4		D	40.1	D	47.4		D	41.3		C	28.5
19	West Ave 140th & Merced St	A	3.5		A	4.9		A	4.2	A	3.4		A	4.8		A	4.2
20	Marina Blvd & I-880 SB Ramps	*D*	*44.9*		*C*	*27.9*		***E***	***57.5***	*D*	*36.8*		*C*	*23.2*		*D*	*52.5*
21	Marina Blvd & I-880 NB Ramps	B	12.1		A	8.5		D	39.5	B	12.7		A	7.7		D	45.9
22	Marina Blvd & San Leandro Blvd	**F**	**116.3**	**1.37**	D	49.7		D	44.5	**F**	**110.2**	**1.36**	D	49.8		D	44.5
23	Wells Fargo driveway & Merced St	A	2.1		B	12.9		A	4.0	A	2.1		B	17.0		A	4.0
24	Fairway Dr & Kaiser West Drwy	A	8.1		B	18.9		A	7.6	A	8.0		B	18.4		A	7.6
25	Marina Blvd & Marina Access Drwy	A	3.4		B	10.9		A	7.5	A	3.6		B	10.5		A	7.5

Source: Dowling Associates, Inc., March 2010

LOS = Level of Service; **Delay** = Weighted average seconds of delay per vehicle; V/C = volume to capacity ratio; BOLD denotes sub-standard operations; **BOLD** denotes locations with sub-standard operations

Boxed & Italized denotes locations where the mitigated results are achieved only upon acquisition of right-of-way and/or permits or other criteria. These impacts are potentially significant and unavoidable.

1 LOS and delay at signalized intersections are based on weighted average delay of all intersections approaches.

2 The Highway Capacity Manual calculates LOS and delay at side-street stop-controlled intersections as approach delay of the intersection leg with the worst LOS. Synchro also reports the weighted average delay of all mov side-street stop-controlled intersections. This table displays both values as "all legs/ worst leg" for LOS and delay.

Queuing Analysis

A queuing analysis was conducted using Synchro software for selected intersections on Marina Boulevard and Merced Street using the Highway Capacity Manual (HCM) method. It was done for No Project, with Project, and mitigated scenarios under baseline and cumulative conditions. The results of the 95th percentile queues are provided in Table 50 through Table 55.

Intersection level of service mitigations developed for most project scenarios included an addition of the new signalized Marina Access Driveway into the project site. The distance between Marina Boulevard/ Marina Access Driveway and the Marina Boulevard/ Merced Street intersection is approximately 350 feet. As the queuing analysis has indicated, the westbound queues at the Merced Street intersection would exceed available storage. Of particular concern are the westbound left turn queue estimates, which are long enough to potentially extend to the I-880 interchange and block the Marina Access driveway. The Project causes queuing issues at the northbound left turn lane. Queue spillover is also exacerbated by the Project at the southbound left turn lane and eastbound through lanes.

The Marina Boulevard/ Marina Access Driveway in the PM peak hour has a northbound right turn queue of 408 feet in the PM peak hour for baseline with the project, but the queue is not quite as long in cumulative. This may result in some queuing in the parking areas of the site at this driveway's exit if not designed for 95th percentile queues.

The analysis indicated that the southbound left turn queues at the Merced Street/ Republic Avenue intersection would exceed the storage capacity of 400 feet, even with the addition of the Marina Boulevard/ Marina Access Driveway in most project scenarios. Additional mitigation would include a second southbound left turn lane for a total of 800 feet of queue storage (400 feet each lane). The 95th percentile queue tables assume the installation of this second southbound left turn lane at this intersection for the mitigated scenarios. Westbound through-right traffic at this intersection may occasionally block the on-site parking lot entrances in the PM peak for the cumulative project scenarios, as it's currently designed.

The Wells Fargo Driveway/ Merced Street intersection has maximum southbound left turn queues of roughly 200 feet with the project mitigations already proposed. The turn bay may be extended from the 150 feet to 200 feet in order to minimize the potential of obstructing the southbound through traffic and spilling back onto Marina Boulevard. This will further exacerbate queue spillover at Marina

Boulevard/ Merced Street's northbound left turn pocket, which may create operational issues at the Wells Fargo intersection.

Queuing issues are found at the Marina Boulevard/ I-880 southbound ramps intersection. The southbound right turn off-ramp's queues will improve with the mitigated Project in the AM, but grow longer on Saturday. The Project also causes queuing issues in the eastbound and westbound directions, with some queues that will spillover into the neighboring intersections on Marina Boulevard at the I-880 northbound ramps and the new Marina Access driveway.

Table 50: Queuing Analysis on Marina Boulevard and Merced Street – Baseline No Project

			Eastbound			Westbound			Northbound			Southbound		
Intersection		Time	L	T	R	L	T	R	L	T	R	L	T	R
10	Merced St & Marina Blvd	**Capacity**	**75**	**586**	**200**	**360**	**800**	**–**	**150**	**443**	**275**	**110**	**309**	**100**
		AM	52	155	22	**m#335**	327	–	80	153	158	108	76	20
		PM	**#123**	213	30	**#322**	316	–	97	151	126	**#227**	80	**m11**
		Sat	**75**	146	29	**#314**	328	–	**#106**	94	97	**#114**	57	16
23	Merced St & Wells Farge Drwy	**Capacity**	**–**	**–**	**–**	**–**	**217**	**217**	**115**	**650**	**–**	**150**	**443**	**–**
		AM	–	–	–	–	31	18	**m0**	69	–	37	157	–
		PM	–	–	–	–	67	45	0	20	–	**m18**	**m37**	–
		Sat	–	–	–	–	19	23	0	50	–	74	86	–
13	Merced St & Republic Av	**Capacity**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		AM	–	–	–	–	–	–	–	–	–	–	–	–
		PM	–	–	–	–	–	–	–	–	–	–	–	–
		Sat	–	–	–	–	–	–	–	–	–	–	–	–
15	Merced St & Fairway Dr	**Capacity**	**240**	**385**	**200**	**230**	**1126**	**100**	**200**	**956**	**–**	**150**	**727**	**–**
		AM	166	185	45	130	263	64	146	22	–	70	203	–
		PM	**#267**	255	36	99	206	46	155	291	–	96	158	–
		Sat	131	150	35	78	153	38	110	205	–	72	228	–
25	Marina Blvd & Marina Access Driveway	**Capacity**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		AM	–	–	–	–	–	–	–	–	–	–	–	–
		PM	–	–	–	–	–	–	–	–	–	–	–	–
		Sat	–	–	–	–	–	–	–	–	–	–	–	–
20	I 880 SB Ramps & Marina Blvd	**Capacity**	**–**	**800**	**800**	**420**	**920**	**–**	**–**	**–**	**–**	**–**	**–**	**450**
		AM	–	373	9	119	299	–	–	–	–	–	–	**#312**
		PM	–	239	38	154	282	–	–	–	–	–	–	171
		Sat	–	197	15	224	280	–	–	–	–	–	–	259
21	I 880 NB Ramps & Marina Blvd	**Capacity**	**390**	**920**	**–**	**–**	**660**	**660**	**–**	**–**	**–**	**–**	**–**	**800**
		AM	**m146**	0	–	–	**m15**	**m61**	–	–	–	–	–	0
		PM	105	0	–	–	32	**m49**	–	–	–	–	–	0
		Sat	154	0	–	–	38	129	–	–	–	–	–	0

Capacity = Turn bay lengths or distance to the closest intersection

Queue lengths that are at or over-capacity are highlighted

m indicates volume for 95th percentile queue is metered by upstream traffic signal

# indicates 95th percentile volume exceeds capacity, queue may be longer (queue length shown is maximum after two signal cycles).

Intersection movements: L=Left Turn, T=Through, R=Right Turn

Source: Dowling Associates, Inc.

Table 51: Queuing Analysis on Marina Boulevard and Merced Street – Baseline Kaiser Medical Center Phase 1 with and without Mitigations

Intersection		Baseline plus Kaiser Medical Phase 1												Baseline plus Kaiser Medical Phase 1 Mitigated											
		Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
10 Merced St & Marina Blvd	**Capacity**	**75**	**586**	**200**	**360**	**800**	**–**	**150**	**443**	**275**	**110**	**309**	**100**	**75**	**586**	**200**	**360**	**800**	**–**	**150**	**443**	**275**	**110**	**309**	**100**
	AM	52	155	39	**#500**	327	–	85	153	244	108	143	20						–						
	PM	**#123**	213	34	**#570**	311	–	**#263**	210	**462**	**#226**	80	**m11**	**106**	236	36	**#491**	242	–	**#232**	206	180	**#265**	120	21
	Sat	75	146	31	**#403**	325	–	**#154**	97	143	**#117**	66	16						–						
23 Merced St & Wells Farge Drwy	**Capacity**	**–**	**–**	**–**	**–**	**217**	**217**	**115**	**650**	**–**	**150**	**443**	**–**	**–**	**–**	**–**	**–**	**217**	**217**	**115**	**650**	**–**	**150**	**443**	**–**
	AM	–	–	–	–	31	18	**m0**	76	–	43	253	–	–	–	–	–					–			–
	PM	–	–	–	–	67	75		32	–	**m60**	**m32**	–	–	–	–	–	72	76		29	–	**m#82**	**m22**	–
	Sat	–	–	–	–	22	25		67	–	85	103	–	–	–	–	–					–			–
13 Merced St & Republic Av	**Capacity**	**–**	**387**	**–**	**–**	**301**	**250**	**155**	**727**	**727**	**400**	**650**	**–**	**–**	**387**	**–**	**–**	**301**	**250**	**155**	**727**	**727**	**400**	**650**	**–**
	AM	–	59	–	–	47	41	**m5**	336	**m8**	368	85	–	–		–	–								–
	PM	–	94	–	–	131	52	**m3**	263	**m7**	338	150	–	–	102	–	–	139	53	**m3**	158	**m4**	228	206	–
	Sat	–	35	–	–	51	38	**m1**	57	1	23	87	–	–		–	–								–
15 Merced St & Fairway Dr	**Capacity**	**240**	**385**	**200**	**230**	**1126**	**100**	**200**	**956**	**–**	**150**	**727**	**–**	**240**	**385**	**200**	**230**	**1126**	**100**	**200**	**956**	**–**	**150**	**727**	**–**
	AM	166	195	48	141	**#344**	44	147	245	–	72	235	–									–			–
	PM	**#282**	273	39	112	**#369**	79	**#156**	307	–	103	215	–	**#299**	285	39	117	**#330**	46	**#188**	387	–	**#150**	330	–
	Sat	135	149	35	53	165	64	110	222	–	85	243	–									–			–
20 I 880 SB Ramps & Marina Blvd	**Capacity**	**–**	**800**	**800**	**420**	**920**	**–**	**–**	**–**	**–**	**–**	**–**	**450**	**–**	**800**	**800**	**420**	**920**	**–**	**–**	**–**	**–**	**–**	**–**	**450**
	AM	–	**#407**	18	119	302	–	–	–	–	–	–	**#325**	–					–	–	–	–	–	–	
	PM	–	394	25	165	321	–	–	–	–	–	–	244	–	**m410**	**m48**	121	186	–	–	–	–	–	–	261
	Sat	–	321	28	224	309	–	–	–	–	–	–	289	–					–	–	–	–	–	–	
21 I 880 NB Ramps & Marina Blvd	**Capacity**	**390**	**920**	**–**	**–**	**660**	**660**	**–**	**–**	**–**	**–**	**–**	**800**	**390**	**920**	**–**	**–**	**660**	**660**	**–**	**–**	**–**	**–**	**–**	**800**
	AM	**m156**	**m0**	–	–	**m16**	**m58**	–	–	–	–	–	0			–	–			–	–	–	–	–	
	PM	**m179**	0	–	–	**m38**	**m72**	–	–	–	–	–	0	209	0	–	–	11	**m29**	–	–	–	–	–	0
	Sat	173	0	–	–	43	150	–	–	–	–	–	0			–	–			–	–	–	–	–	

Capacity = Turn bay lengths or distance to the closest intersection

Queue lengths that are at or over-capacity are highlighted

Intersection movements: L=Left Turn, T=Through, R=Right Turn

# indicates 95th percentile volume exceeds capacity, queue may be longer (queue length shown is maximum after two signal cycles).

m indicates volume for 95th percentile queue is metered by upstream traffic

Source: Dowling Associates, Inc.

Table 52: Queuing Analysis on Marina Boulevard and Merced Street – Baseline Kaiser Medical Center Phase 1 & Mixed-Use Retail Development with and without Mitigations

Intersection		Baseline plus Kaiser Phase 1 + Mixed Use												Baseline plus Kaiser Phase 1 + Mixed Use Mitigated											
		Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
10 Merced St & Marina Blvd	**Capacity**	**75**	**586**	**200**	**360**	**800**	**–**	**150**	**443**	**275**	**110**	**309**	**100**	**75**	**586**	**200**	**360**	**800**	**–**	**150**	**443**	**275**	**110**	**309**	**100**
	AM	52	155	43	**#554**	327	–	89	153	220	108	167	20	52	158	41	**#396**	322	–	89	153	220	108	167	20
	PM	**#123**	213	39	**m#1047**	**m284**	–	**#386**	240	**384**	**#226**	82	**m11**	**107**	248	32	**#633**	342	–	**#353**	271	172	**#277**	128	22
	Sat	**#85**	146	38	**m#910**	**m305**	–	**#309**	109	139	**#135**	128	18	**#97**	176	35	**#567**	371	–	**#287**	132	152	**113**	156	21
23 Merced St & Wells Farge Drwy	**Capacity**	**–**	**–**	**–**	**–**	**217**	**217**	**115**	**650**	**–**	**150**	**443**	**–**	**–**	**–**	**–**	**–**	**217**	**217**	**115**	**650**	**–**	**150**	**443**	**–**
	AM	–	–	–	–	31	18	**m0**	44	–	41	295	–	–	–	–	–	31	18	**m0**	84	–	41	225	–
	PM	–	–	–	–	67	68	0	**m21**	–	**m20**	**m50**	–	–	–	–	–	67	70	0	86	–	**#203**	211	–
	Sat	–	–	–	–	21	25	0	79	–	**#115**	**#305**	–	–	–	–	–	22	25	0	79	–	**#115**	144	–
13 Merced St & Republic Av	**Capacity**	**–**	**387**	**–**	**–**	**301**	**250**	**155**	**727**	**727**	**400**	**650**	**–**	**–**	**387**	**–**	**–**	**301**	**250**	**155**	**727**	**727**	**400**	**650**	**–**
	AM	–	59	–	–	71	36	**m6**	**#421**	**m10**	**#501**	103	–	–	59	–	–	71	36	**m3**	101	**m0**	200	40	–
	PM	–	**#128**	–	–	**#280**	50	**m3**	**#552**	**m44**	**#1294**	280	–	–	93	–	–	208	44	**m3**	154	**m9**	253	115	–
	Sat	–	32	–	–	**#171**	42	**m2**	213	**#224**	**#880**	113	–	–	31	–	–	155	40	**m1**	74	0	48	126	–
15 Merced St & Fairway Dr	**Capacity**	**240**	**385**	**200**	**230**	**1126**	**100**	**200**	**956**	**–**	**150**	**727**	**–**	**240**	**385**	**200**	**230**	**1126**	**100**	**200**	**956**	**–**	**150**	**727**	**–**
	AM	166	198	49	147	**#421**	54	148	254	–	72	249	–	166	198	49	147	**#420**	56	148	254	–	69	231	–
	PM	**#320**	311	43	**#129**	**#496**	85	156	**#362**	–	**m104**	**m294**	–	**#307**	311	43	**#96**	**#468**	3	156	**#362**	–	**m111**	321	–
	Sat	159	149	35	83	203	**187**	113	287	–	**m69**	272	–	159	149	35	102	193	**139**	113	287	–	**m93**	179	–
25 Marina Blvd & Marina Access Drwy	**Capacity**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**388**	**–**	**252**	**252**	**–**	**–**	**–**	**337**	**–**	**–**	**–**
	AM	–	–	–	–	–	–	–	–	–	–	–	–	–	142	–	88	0	–	–	–	72	–	–	–
	PM	–	–	–	–	–	–	–	–	–	–	–	–	–	**m259**	–	**m197**	**m0**	–	–	–	**#248**	–	–	–
	Sat	–	–	–	–	–	–	–	–	–	–	–	–	–	182	–	**m132**	**m0**	–	–	–	247	–	–	–
20 I 880 SB Ramps & Marina Blvd	**Capacity**	**–**	**800**	**800**	**420**	**920**	**–**	**–**	**–**	**–**	**–**	**–**	**800**	**–**	**367**	**367**	**420**	**920**	**–**	**–**	**–**	**–**	**–**	**–**	**800**
	AM	–	**#482**	14	119	303	–	–	–	–	–	–	**#325**	–	**#484**	22	119	303	–	–	–	–	–	–	**#397**
	PM	–	**#700**	43	174	462	–	–	–	–	–	–	**#455**	–	**505**	175	184	482	–	–	–	**–**	–	–	**#561**
	Sat	–	**m#562**	**m30**	223	**m578**	–	–	–	–	–	–	**#534**	–	**#368**	26	**#179**	**m355**	–	–	–	–	–	–	**#426**
21 I 880 NB Ramps & Marina Blvd	**Capacity**	**390**	**920**	**–**	**–**	**660**	**660**	**–**	**–**	**–**	**–**	**–**	**800**	**390**	**920**	**–**	**–**	**660**	**660**	**–**	**–**	**–**	**–**	**–**	**800**
	AM	**m163**	**m0**	–	–	**m16**	**m57**	–	–	–	–	–	0	**m163**	**m0**	–	–	**m16**	**m57**	–	–	–	–	–	0
	PM	**m#174**	**m10**	–	–	**m35**	**m71**	–	–	–	–	–	0	**m179**	0	–	–	**m65**	**m91**	–	–	–	–	–	0
	Sat	**m214**	**m0**	–	–	77	208	–	–	–	–	–	**#226**	**m169**	**m0**	–	–	158	219	–	–	–	–	–	**#254**

Capacity = Turn bay lengths or distance to the closest intersection

Queue lengths that are at or over-capacity are highlighted

Intersection movements: L=Left Turn, T=Through, R=Right Turn

# indicates 95th percentile volume exceeds capacity, queue may be longer (queue length shown is maximum after two signal cycles).

m indicates volume for 95th percentile queue is metered by upstream traffic

Source: Dowling Associates, Inc.

Table 53: Queuing Analysis on Marina Boulevard and Merced Street – Cumulative No Project

Intersection		Time	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
10	Merced St & Marina Blvd	**Capacity**	**75**	**586**	**200**	**360**	**800**	**–**	**150**	**443**	**275**	**110**	**309**	**100**
		AM	56	175	23	**m#394**	**m414**	–	103	197	118	**117**	98	26
		PM	**111**	**250**	35	**371**	322	–	117	264	175	**228**	115	19
		Sat	**83**	208	36	**397**	512	–	110	158	94	**125**	83	20
23	Merced St & Wells Farge Drwy	**Capacity**	**–**	**–**	**–**	**–**	**217**	**217**	**115**	**650**	**–**	**150**	**443**	**–**
		AM	–	–	–	–	31	18	**m0**	63	–	43	222	–
		PM	–	–	–	–	67	45	0	18	–	108	141	–
		Sat	–	–	–	–	21	25	0	62	–	80	106	–
13	Merced St & Republic Av	**Capacity**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		AM	–	–	–	–	–	–	–	–	–	–	–	–
		PM	–	–	–	–	–	–	–	–	–	–	–	–
		Sat	–	–	–	–	–	–	–	–	–	–	–	–
15	Merced St & Fairway Dr	**Capacity**	**240**	**385**	**200**	**230**	**1126**	**100**	**200**	**956**	**–**	**150**	**727**	**–**
		AM	**#218**	199	68	**#244**	**#411**	82	**#284**	228	–	70	237	–
		PM	**#365**	384	45	**#121**	**#297**	62	**#309**	**#471**	–	**#157**	**#369**	–
		Sat	160	184	46	106	209	40	169	241	–	75	306	–
25	Marina Blvd & Marina Access Driveway	**Capacity**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		AM	–	–	–	–	–	–	–	–	–	–	–	–
		PM	–	–	–	–	–	–	–	–	–	–	–	–
		Sat	–	–	–	–	–	–	–	–	–	–	–	–
20	I 880 SB Ramps & Marina Blvd	**Capacity**	**–**	**800**	**800**	**420**	**920**	**–**	**–**	**–**	**–**	**–**	**–**	**450**
		AM	–	**#470**	21	189	349	–	–	–	–	–	–	**#510**
		PM	–	324	81	209	103	–	–	–	–	–	–	235
		Sat	–	415	49	381	424	–	–	–	–	–	–	**#513**
21	I 880 NB Ramps & Marina Blvd	**Capacity**	**390**	**920**	**–**	**–**	**660**	**660**	**–**	**–**	**–**	**–**	**–**	**800**
		AM	**m222**	**m0**	–	–	**m175**	**m87**	–	–	–	–	–	0
		PM	179	6	–	–	**m2**	**m58**	–	–	–	–	–	0
		Sat	221	0	–	–	233	483	–	–	–	–	–	0

Capacity = Turn bay lengths or distance to the closest intersection

Queue lengths that are at or over-capacity are highlighted

m indicates volume for 95th percentile queue is metered by upstream traffic signal

# indicates 95th percentile volume exceeds capacity, queue may be longer (queue length shown is maximum after two signal cycles).

Intersection movements: L=Left Turn, T=Through, R=Right Turn

Source: Dowling Associates, Inc.

Table 54: Queuing Analysis on Marina Boulevard and Merced Street – Cumulative Kaiser Medical Center Phase 1 & Mixed-Use Retail Development with and without Mitigations

Intersection			Cumulative plus Kaiser Phase 1 & Mixed Use												Cumulative plus Kaiser Phase 1 + Mixed Use Mitigated											
			Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
10	Merced St & Marina Blvd	**Capacity**	**75**	**586**	**200**	**360**	**800**	**–**	**150**	**443**	**275**	**110**	**309**	**100**	**75**	**586**	**200**	**360**	**800**	**–**	**150**	**443**	**275**	**110**	**309**	**100**
		AM	56	181	33	**m#727**	**m419**	–	**#167**	205	142	**#152**	223	33	70	249	35	**#686**	594	0	**#204**	298	249	**#185**	305	50
		PM	**111**	250	44	**m#931**	**m258**	–	**#633**	**#363**	224	**228**	115	19	**120**	**#307**	37	**#710**	370	0	**#518**	341	176	**#308**	150	24
		Sat	**85**	217	55	**#1321**	547	–	**#384**	183	115	**129**	135	19	**85**	230	48	**#795**	547	0	**#384**	183	115	**129**	135	19
23	Merced St & Wells Farge Drwy	**Capacity**	**–**	**–**	**–**	**–**	**217**	**217**	**115**	**650**	**–**	**150**	**443**	**–**	**–**	**–**	**–**	**–**	**217**	**217**	**115**	**650**	**–**	**150**	**443**	**–**
		AM	–	–	–	–	31	18	**m0**	**m112**	–	47	**636**	–	–	–	–	–	39	21	m0	85	–	m2	17	–
		PM	–	–	–	–	67	87	0	**m53**	–	**#157**	398	–	–	–	–	–	84	99	0	28	–	m#124	m13	–
		Sat	–	–	–	–	21	25	0	90	–	**#125**	**#501**	–	–	–	–	–	22	25	0	90	–	#125	229	–
13	Merced St & Republic Av	**Capacity**	**–**	**387**	**–**	**–**	**301**	**250**	**155**	**727**	**727**	**400**	**650**	**–**	**–**	**387**	**–**	**–**	**301**	**250**	**155**	**727**	**727**	**400**	**650**	**–**
		AM	–	58	–	–	88	34	**m19**	**#586**	**m12**	**#809**	143	–	–	71	–	–	108	38	m24	251	m4	271	2	–
		PM	–	**#144**	–	–	**#321**	51	**m3**	**m#518**	**m8**	**#1337**	140	–	–	123	–	–	#304	52	m3	623	m41	296	393	–
		Sat	–	33	–	–	**#308**	40	**m5**	**#473**	144	**#1301**	147	–	–	28	–	–	213	34	m7	330	107	248	207	–
15	Merced St & Fairway Dr	**Capacity**	**240**	**385**	**200**	**230**	**1126**	**100**	**200**	**956**	**–**	**150**	**727**	**–**	**240**	**385**	**200**	**230**	**1126**	**100**	**200**	**956**	**–**	**150**	**727**	**–**
		AM	**#218**	214	89	**#223**	**#548**	62	**#307**	284	–	**m69**	**#572**	–	**#120**	**#292**	85	**#267**	321	0	**#314**	460	0	79	512	–
		PM	**#443**	**#446**	59	**#169**	**#744**	18	**#353**	**#647**	–	**m#129**	**m#458**	–	**#240**	**#630**	110	**#216**	366	0	**#390**	645	0	**m#173**	318	–
		Sat	**#192**	195	47	154	224	**109**	**#173**	320	–	**m95**	**m336**	–	87	197	48	154	153	0	171	320	0	**m82**	381	–
25	Marina Blvd & Marina Access Driveway	**Capacity**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**388**	**–**	**252**	**252**	**–**	**–**	**–**	**337**	**–**	**–**	**–**
		AM	–	–	–	–	–	–	–	–	–	–	–	–	–	165	–	m78	m0	–	–	–	93	–	–	–
		PM	–	–	–	–	–	–	–	–	–	–	–	–	–	m268	–	m227	0	–	–	–	285	–	–	–
		Sat	–	–	–	–	–	–	–	–	–	–	–	–	–	188	–	224	0	–	–	–	253	–	–	–
20	I 880 SB Ramps & Marina Blvd	**Capacity**	**–**	**800**	**800**	**420**	**920**	**–**	**–**	**–**	**–**	**–**	**–**	**800**	**–**	**367**	**367**	**420**	**920**	**–**	**–**	**–**	**–**	**–**	**–**	**800**
		AM	–	**#596**	61	**m#466**	#471	–	–	–	–	–	–	**#619**	–	373	264	m489	#1165	–	–	–	–	–	–	403
		PM	–	**#880**	160	**#346**	157	–	–	–	–	–	–	**#706**	–	439	59	#372	440	–	–	–	–	–	–	383
		Sat	–	**#834**	273	**m349**	m686	–	–	–	–	–	–	**#1077**	–	411	363	m312	m#973	–	–	–	–	–	–	**#664**
21	I 880 NB Ramps & Marina Blvd	**Capacity**	**390**	**920**	**–**	**–**	**660**	**660**	**–**	**–**	**–**	**–**	**–**	**800**	**390**	**920**	**–**	**–**	**660**	**660**	**–**	**–**	**–**	**–**	**–**	**800**
		AM	**m227**	**m0**	–	–	**m293**	**m93**	–	–	–	–	–	**#25**	234	0	–	–	276	**m166**	–	–	–	–	–	**#86**
		PM	**m290**	**m0**	–	–	**m5**	**m37**	–	–	–	–	–	0	196	0	–	–	165	**m139**	–	–	–	–	–	0
		Sat	**m274**	**m0**	–	–	285	530	–	–	–	–	–	**#678**	373	0	–	–	359	645	–	–	–	–	–	**#678**

Capacity = Turn bay lengths or distance to the closest intersection

Queue lengths that are at or over-capacity are highlighted

Intersection movements: L=Left Turn, T=Through, R=Right Turn

# indicates 95th percentile volume exceeds capacity, queue may be longer (queue length shown is maximum after two signal cycles).

m indicates volume for 95th percentile queue is metered by upstream traffic signal

Source: Dowling Associates, Inc.

Table 55: Queuing Analysis on Marina Boulevard and Merced Street – Cumulative Kaiser Medical Center Build-Out & Mixed-Use Retail Development with and without Mitigations

Intersection			Cumulative plus Kaiser Buildout & Mixed Use												Cumulative plus Kaiser Buildout + Mixed Use Mitigated											
			Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
10	Merced St & Marina Blvd	Capacity	75	586	200	360	800	–	150	443	275	110	309	100	75	586	200	360	800	–	150	443	275	110	309	100
		AM	56	181	44	m#842	m406	–	#298	205	144	#152	224	33	70	249	50	#897	515	0	#350	183	27	#207	#347	52
		PM	111	250	53	m#965	m260	–	#757	#403	268	228	115	19	120	#319	49	#789	387	0	#620	#388	41	#274	150	24
		Sat	85	217	56	#1413	548	–	#410	187	126	129	135	19	85	230	49	#890	548	0	#410	187	126	129	135	19
23	Merced St & Wells Farge Drwy	Capacity	–	–	–	–	217	217	115	650	–	150	443	–	–	–	–	–	217	217	115	650	–	150	443	–
		AM	–	–	–	–	31	18	m0	m87	–	48	773	–	–	–	–	–	39	21	m0	187	–	m2	m26	–
		PM	–	–	–	–	67	96	0	m43	–	#204	445	–	–	–	–	–	83	112	0	383	–	m#189	m48	–
		Sat	–	–	–	–	21	29	0	96	–	#131	#541	–	–	–	–	–	22	29	0	96	–	#131	258	–
13	Merced St & Republic Av	Capacity	–	387	–	–	301	250	155	727	727	400	650	–	–	387	–	–	301	250	155	727	727	400	650	–
		AM	–	57	–	–	87	40	m0	#601	m12	#1287	169	–	–	72	–	–	107	45	m29	590	m56	395	502	–
		PM	–	#145	–	–	#322	58	m3	m#517	m8	#1427	198	–	–	123	–	–	#305	176	m4	702	m37	315	107	–
		Sat	–	33	–	–	#308	43	m0	#457	110	#1443	147	–	–	29	–	–	217	37	m9	184	20	286	201	–
15	Merced St & Fairway Dr	Capacity	240	385	200	230	1126	100	200	956	–	150	727	–	240	385	200	230	1126	100	200	956	–	150	727	–
		AM	#218	222	172	#234	#557	86	#336	292	–	m69	#573	–	#120	#288	157	#271	317	0	#337	270	0	83	135	–
		PM	#443	#446	70	#262	#808	53	#396	#646	–	m#119	m#458	–	#240	#642	143	#279	380	0	#428	395	0	m131	#300	–
		Sat	#192	198	47	167	283	116	#173	329	–	m96	m367	–	87	200	47	167	193	0	171	196	0	m100	377	–
25	Marina Blvd & Marina Access Driveway	Capacity	–	–	–	–	–	–	–	–	–	–	–	–	–	388	–	252	252	–	–	–	337	–	–	–
		AM	–	–	–	–	–	–	–	–	–	–	–	–	–	122	–	m85	m0	–	–	–	100	–	–	–
		PM	–	–	–	–	–	–	–	–	–	–	–	–	–	329	–	m223	m0	–	–	–	#308	–	–	–
		Sat	–	–	–	–	–	–	–	–	–	–	–	–	–	191	–	232	0	–	–	–	257	–	–	–
20	I 880 SB Ramps & Marina Blvd	Capacity	–	800	800	420	920	–	–	–	–	–	–	800	–	367	367	420	920	–	–	–	–	–	–	800
		AM	–	#596	62	m#522	m#880	–	–	–	–	–	–	#627	–	316	238	m#601	m#1227	–	–	–	–	–	–	#436
		PM	–	#1058	211	#450	188	–	–	–	–	–	–	#722	–	517	60	#462	#916	–	–	–	–	–	–	396
		Sat	–	#861	286	m335	m742	–	–	–	–	–	–	#1083	–	444	378	m376	m#999	–	–	–	–	–	–	#682
21	I 880 NB Ramps & Marina Blvd	Capacity	390	920	–	–	660	660	–	–	–	–	–	800	390	920	–	–	660	660	–	–	–	–	–	800
		AM	m227	m0	–	–	m322	m95	–	–	–	–	–	#175	227	0	–	–	293	m135	–	–	–	–	–	#183
		PM	m#340	m0	–	–	m8	m65	–	–	–	–	–	0	222	0	–	–	553	m609	–	–	–	–	–	0
		Sat	m287	m0	–	–	301	532	–	–	–	–	–	#771	191	0	–	–	229	#491	–	–	–	–	–	#495

Capacity = Turn bay lengths or distance to the closest intersection

Queue lengths that are at or over-capacity are highlighted

Intersection movements: L=Left Turn, T=Through, R=Right Turn

# indicates 95th percentile volume exceeds capacity, queue may be longer (queue length shown is maximum after two signal cycles).

m indicates volume for 95th percentile queue is metered by upstream traffic signal

Source: Dowling Associates, Inc.

Alternatives

In addition to the project and no-project, three alternatives to the project development have been analyzed, as follows:

- Alt 1 - No-Project (do nothing) – no land use on site (previously analyzed)
- Alt 2 - No-Project (existing zoning) – build out of existing zoning (light industrial and warehousing)
- Alt 3 - Reduced Project by 20%
- Alt 4 – Project with additional access on Merced Street (north of Republic Avenue)

For more detailed description of the alternatives, refer to the Project EIR section on Alternatives.

Trip Generation

Table 1 summarizes the number of trips that would be generated by each of the project alternatives. The Project trips are also included for comparison.

Trip Distribution and Assignment

The trip distribution and trip assignment assumptions for the project alternatives are the same as for the Project as described previously.

Impacts and Mitigation

The identification of impacts was conducted qualitatively based on interpolation of the LOS and delay to account for the percent reduction in trips for each alternative between the No-Project and Project.

1. Study Intersections

The intersections listed below would be significantly impacted by the additional traffic generated by the project alternatives.

Baseline Conditions (2015)

Alternative 1 – No-Project

Two intersections identified as impacted under Project conditions likely improved to less than significant. No project impacts are identified.

Table 56: Alternative Analysis - Trip Generation

Kaiser Medical Center Phase 1 & Mixed-Use Retail Development – The Project

							Weekday										Weekend				
							A.M. Peak Hour Traffic					P.M. Peak Hour Traffic					Saturday Peak Hour Traffic				
Phase	Use	Size	Units	ITE Code	Daily Rate	Daily Trips	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out
Retail	Retail	387	ksf	820	42.94	16,618	1.03	0.61	0.39	243	155	3.75	0.48	0.52	697	755	4.97	0.61	0.39	1,173	750
Multi-family Apts	Housing	250	HH	220	6.72	1,680	0.55	0.29	0.71	40	98	0.67	0.61	0.39	102	65	0.71	0.29	0.71	51	126
Mixed Use - Total						18,298				283	253				799	820				1,225	876
Kaiser Phase 1	HSB	275	ksf	720	38.33	10,541	2.30	0.79	0.21	500	133	3.46	0.27	0.73	257	695	0.95	0.47	0.53	123	138
Kaiser Phase 1	Hospital	436	ksf	610	19.13	8,342	1.12	0.59	0.41	288	200	1.14	0.33	0.67	164	333	0.47	0.47	0.53	96	109
Kaiser - Total						18,883				788	333				421	1,028				219	247
Mixed Use + Kaiser Phase 1 - Total						37,181				1,071	586				1,220	1,848				1,444	1,123

Alternative 1: No Project

							Weekday										Weekend				
							A.M. Peak Hour Traffic					P.M. Peak Hour Traffic					Saturday Peak Hour Traffic				
Phase	Use	Size	Units	ITE Code	Daily Rate	Daily Trips	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out
Retail	Retail	-	ksf	820	42.94	-	1.03	0.61	0.39	-	-	3.75	0.48	0.52	-	-	4.97	0.61	0.39	-	-
Multi-family Apts	Housing	-	HH	220	6.72	-	0.55	0.29	0.71	-	-	0.67	0.61	0.39	-	-	0.71	0.29	0.71	-	-
Mixed Use - Total						-				-	-				-	-				-	-
Kaiser Phase 1	HSB	-	ksf	720	38.33	-	2.30	0.79	0.21	-	-	3.46	0.27	0.73	-	-	0.95	0.47	0.53	-	-
Kaiser Phase 1	Hospital	-	ksf	610	19.13	-	1.12	0.59	0.41	-	-	1.14	0.33	0.67	-	-	0.47	0.47	0.53	-	-
Kaiser - Total						-				-	-				-	-				-	-
Mixed Use + Kaiser Phase 1 - Total						-				-	-				-	-				-	-

Alternative 2: No Project - Existing Zoning (Light Industrial & Warehousing)

							Weekday										Weekend				
							A.M. Peak Hour Traffic					P.M. Peak Hour Traffic					Saturday Peak Hour Traffic				
Phase	Use	Size	Units	ITE Code	Daily Rate	Daily Trips	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out
Light Industrial	LI	-	KSF	110	6.97	-	0.92	0.83	0.17	-	-	0.97	0.22	0.78	-	-	0.14	0.50	0.50	-	-
Warehousing	WH	840	KSF	150	3.56	2,990	0.30	0.79	0.21	199	53	0.32	0.25	0.75	67	202	0.13	0.64	0.36	70	39
Total						2,990				199	53				67	202				70	39

Alternative 3: Project Reduced by 20 Percent

							Weekday										Weekend				
							A.M. Peak Hour Traffic					P.M. Peak Hour Traffic					Saturday Peak Hour Traffic				
Phase	Use	Size	Units	ITE Code	Daily Rate	Daily Trips	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out	Rate	%In	%Out	In	Out
Retail	Retail	310	ksf	820	42.94	13,294	1.03	0.61	0.39	195	124	3.75	0.48	0.52	557	604	4.97	0.61	0.39	939	600
Multi-family Apts	Housing	200	HH	220	6.72	1,344	0.55	0.29	0.71	32	78	0.67	0.61	0.39	82	52	0.71	0.29	0.71	41	101
Mixed Use - Total						14,638				226	202				639	656				980	701
Kaiser Phase 1	HSB	220	ksf	720	38.33	8,433	2.30	0.79	0.21	400	106	3.46	0.27	0.73	206	556	0.95	0.47	0.53	98	111
Kaiser Phase 1	Hospital	349	ksf	610	19.13	6,674	1.12	0.59	0.41	230	160	1.14	0.33	0.67	131	266	0.47	0.47	0.53	77	87
Kaiser - Total						15,107				630	266				337	822				175	198
Mixed Use + Kaiser Phase 1 - Total						29,745				857	469				976	1,478				1,155	899

Alternative 2 – No Project - Existing Zoning

Two intersections identified as impacted under Project conditions likely improved to less than significant. No impact is identified.

Alternative 3-Reduced Project by 20%

Two intersections were identified as impacted under Project conditions, and with the alternative, one intersection likely remained impacted. The mitigations are likely similar to the Project.

Alternative 4- Existing Site Plan (Additional Access on Merced Road)

Two intersections were identified as impacted under Project conditions, and with the alternative, one intersection likely remained impacted. The mitigations are likely similar to the Project.

Cumulative Conditions (2030)

Alternative 1– No-Project

Nine intersections identified as impacted under Project conditions likely improved to less than significant. No impacts are identified.

Alternative 2– No Project - Existing Zoning

Six intersections identified as impacted under Project conditions likely improved to less than significant. Two intersections likely remain impacted under Cumulative conditions. The mitigations are likely similar to the Project.

Alternative 3-Reduced Project by 20%

Of the nine intersections identified as impacted under Project conditions, only one intersection improved to less than significant. The remaining eight intersections identified as impacted under Project conditions likely remained impacted under Cumulative conditions. The mitigations are likely similar to the Project.

Alternative 4- Existing Site Plan (Additional Access on Merced Road)

Of the nine intersections identified as impacted under Project conditions, only one intersection improved to less than significant. The remaining eight intersections identified as impacted under Project conditions likely remained impacted under Cumulative conditions. The mitigations are likely similar to the Project.

2. Freeway Impacts

Baseline Conditions

No freeway impacts were identified for the project under Baseline Conditions, so it is likely there are no freeway section impacts for the alternatives.

Cumulative Conditions

No additional new impacts to freeway sections are likely with the alternatives. Three freeway locations were identified as impacted under Cumulative with Phase 1 of the Project. With the alternatives, the impacted locations would be less that significant under Alternatives 1 and 2 but would remain significant under Alternatives 3 and 4.

3. Freeway Ramp Queuing

Baseline Conditions

No freeway ramp impacts were identified for the project under Baseline Conditions, so it is likely there are no freeway ramp queuing impacts for the alternatives.

Cumulative Conditions

No freeway ramp impacts were identified for the project under Cumulative Conditions, so it is likely there are no freeway ramp queuing impacts for the alternatives.

4. CMP Highway Impacts

Baseline Conditions

Under Baseline with project conditions, no highway impacts were identified for the Phase 1 project, so it is likely there are no CMP highway impacts for the alternatives.

Cumulative Conditions

Under Cumulative with project conditions, there were three CMP roadway locations identified as impacted with Phase 1 of the Project, as follows:

1. I-880 south of Marina Boulevard, southbound direction
2. I-238 east of Hesperian Boulevard, northbound direction
3. East 14th Street south of San Leandro Boulevard, southbound direction

No additional new impacts to CMP sections are likely with the alternatives. With the alternatives to the project, the impacted locations would be less that significant under Alternatives 1 and, 2.

All three identified impacted locations would remain significant under Alternatives 3 and 4.

5. CMP Transit Impacts

Baseline Conditions

Under Baseline with project conditions, no transit impacts were identified for the Phase 1 project, so it is likely there are no CMP transit impacts for the alternatives.

Cumulative Conditions

Under Cumulative with project conditions, no transit impacts were identified for the Phase 1 project, so it is likely there are no CMP transit impacts for the alternatives.

Glossary

ABAG – Association of Bay Area Governments

ACCMA – Alameda County Congestion Management Agency

AC Transit – Bus service system operated by the Alameda Contra Costa Transit District

BART – Bay Area Rapid Transit

BRT – Bus Rapid Transit

Caltrans – State of California Department of Transportation

CMP – Congestion Management Program

CUBE – Cube travel demand model software developed by Citilabs

HCM – Highway Capacity Manual

ITE – Institute of Transportation Engineers

LOS – Level of Service

MTC – Metropolitan Transportation Commission

MTS – Metropolitan Transportation Systems

NOP – Notice of Preparation

PHF – Peak hour Factor

Synchro – Intersection operations analysis software developed by Trafficware, Inc.

TAZ – Traffic Analysis Zone

TRAFFIX –Intersection level of service analysis software developed by Dowling Associates, Inc.

V/C Ratio – Volume to Capacity Ratio

References

Technical Appendix

- **Appendix A – Intersection Volume Graphics (all scenarios)**
- **Appendix B – SYNCHRO LOS Worksheets**
    1. Existing 2007
    2. 2015 Baseline
    3. 2030 Cumulative
    4. Mitigated
- **Appendix C – Highway Capacity Software Freeway Analysis**
    1. Existing 2007
    2. 2015 Baseline
    3. 2015 Baseline + Kaiser Phase 1
    4. 2015 Baseline + Kaiser Phase 1 + Mixed Use Retail
    5. 2030 Cumulative
    6. 2030 Cumulative + Kaiser Phase 1 + Mixed Use Retail
    7. 2030 Cumulative + Kaiser BuildOut + Mixed Use Retail
- **Appendix D – Highway Design Manual – Freeway Weaving Analysis Nomographs**