4.13 Transportation, Circulation and Parking

This section describes the transportation, circulation, and parking conditions, including transit services and pedestrian and bicycle facilities in the project area and its vicinity, and provides an analysis of the Specific Plan's potential impacts. This section summarizes the findings of the *Revised Draft Menlo Park El Camino Real / Downtown Specific Plan Transportation Impact Analysis* (Fehr and Peers, 2010). **Appendix E** contains the full traffic impact study, with technical background information relating to transportation, circulation and parking.

The analysis evaluates the traffic-related impacts of the Specific Plan during both the weekday morning and evening peak hours. Traffic conditions are assessed for study intersections and roadways segments for the following four scenarios:

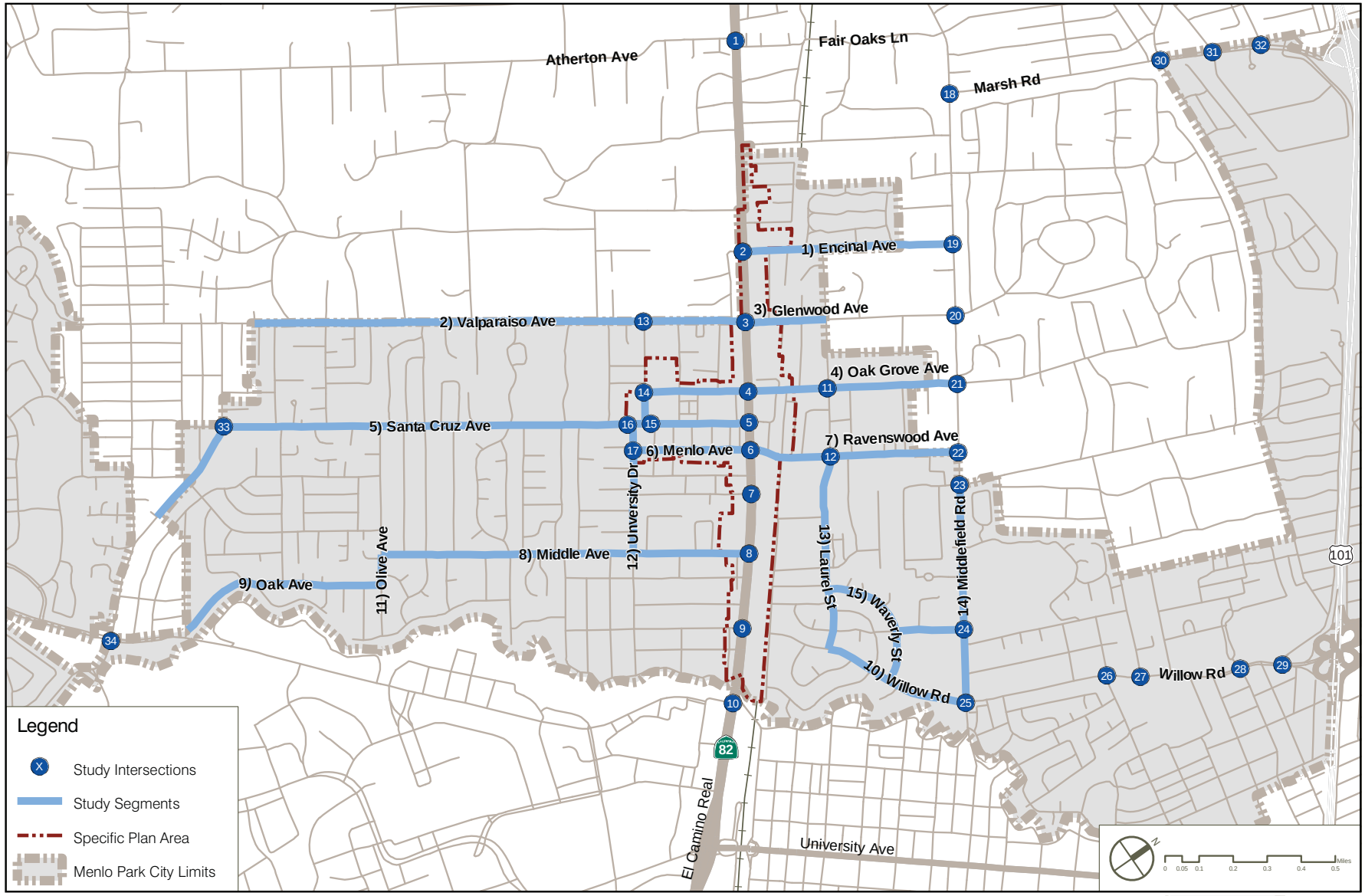
- ***Existing*** – Represents existing conditions with volumes obtained from recent traffic counts and the existing roadway system.
- ***Existing With Project Buildout*** – Existing conditions plus project-related traffic under full buildout conditions.
- ***2035 No Project –***This scenario represents long range conditions and includes existing peak-hour volumes multiplied by a twenty-year growth factor to represent regional growth plus traffic generated by approved and pending development projects in Menlo Park.
- ***2035 With Project Buildout –*** Future forecasted conditions for the year 2035, as determined in the 2035 No Project scenario, plus project-related traffic under full buildout conditions.

4.13.1 Existing Setting

The existing transportation-related context for the proposed Specific Plan is described below, beginning with a description of the study area and the street network that serves the Plan area. Existing transit service, bicycle and pedestrian facilities, and on- and off-street parking in the vicinity of the Plan area are also described. Intersection and roadway levels of service are then defined and current conditions for roadways and intersections in the Plan area vicinity are summarized. This subsection also discusses planned transportation improvements in the Plan area vicinity as well as the applicable planning policies.

Existing Roadway Network

Regional vehicular access to the Plan area is provided by U.S. Route 101, Interstate 280 (I-280), State Route (SR) 84 (Bayfront Expressway) and SR 82 (El Camino Real). Local access is also provided via El Camino Real, as well as Ravenswood/Menlo Avenues, Santa Cruz Avenue and Oak Grove Avenue. These and other major roadways in the study area are described below and are illustrated in **Figure 4.13-1**.



SOURCE: Fehr & Peers

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Figure 4.13-1

Study Intersections and Roadway Segments

Freeways

U.S. Route 101 (Bayshore Freeway) is an eight-lane north-south freeway that connects Menlo Park with San Jose (and points south) and with San Francisco (and points north). It has two interchanges that serve Menlo Park – Willow Road and Marsh Road. There are high occupancy vehicle (HOV) lanes on this freeway in the Menlo Park area. The average daily traffic (ADT) volume for this roadway is approximately 178,000 vehicles.

I-280 (Junipero Serra Freeway) is also an eight-lane north-south freeway that connects San Jose with San Francisco. Its interchanges with Alpine Road and Sand Hill Road provide access to Menlo Park. There are no HOV lanes on this freeway in the Menlo Park area. The ADT for this roadway is approximately 98,000 vehicles.

Arterial Roadways

El Camino Real (SR 82) is a primary north-south arterial that connects San Jose with San Francisco. It enters the City just north of Sand Hill Road as a six-lane arterial, becomes a four-lane arterial near downtown Menlo Park, and exits the City as a five-lane arterial (three southbound lanes and two northbound lanes) north of Encinal Avenue. The ADT for this roadway is approximately 38,000 vehicles.

Bayfront Expressway (SR 84) is a primary east-west expressway that connects both Marsh Road and Willow Road to the cities on the east side of San Francisco Bay via Dumbarton Bridge. This roadway is six-lanes throughout its entire length. The ADT for this roadway is approximately 52,000 vehicles.

Marsh Road is an east-west arterial roadway that connects Bayfront Expressway with Middlefield Road. It enters the City as a six-lane primary arterial at Bayfront Expressway and becomes a minor four-lane arterial at the U.S. Route 101 interchange. The ADT for this roadway ranges from approximately 21,500 to 33,500 vehicles depending on the location.

Middlefield Road is a minor north-south arterial roadway that extends from Sunnyvale to Redwood City. It enters the City at San Francisquito Creek south of Willow Road as a four-lane arterial and narrows to a two-lane arterial at Ravenswood Avenue. The ADT for this roadway is approximately 20,000 vehicles.

Ravenswood Avenue is a minor east-west two-lane arterial roadway. It extends between Middlefield Road and El Camino Real near downtown Menlo Park. This roadway is one of four east-west roadways in the City that crosses the Caltrain railroad tracks. The ADT for this roadway is approximately 20,000 vehicles. Ravenswood Avenue becomes Menlo Avenue west of El Camino Real and is discussed in further detail below.

Sand Hill Road is a primary east-west arterial roadway that connects I-280 with El Camino Real. It enters the City west of I-280 as a two-lane arterial and widens to a four-lane arterial between I-280 and Arboretum Road. It is two lanes wide between Arboretum Road and El Camino Real. The ADT for the portion of this roadway in Menlo Park is approximately 30,000 vehicles.

Santa Cruz Avenue is a minor east-west two-lane arterial roadway. It extends between Sand Hill Road and the Menlo Park Caltrain Station. This roadway serves as the "main street" in downtown Menlo Park. The ADT for this roadway in the downtown area is approximately 8,000 vehicles.

Valparaiso Avenue is a minor east-west two-lane arterial roadway extending from approximately Alameda de las Pulgas to El Camino Real. This roadway serves as the northern City boundary between El Camino Real and Delfino Way. The ADT for this roadway is about 13,000 vehicles. Valparaiso Avenue becomes Glenwood Avenue east of El Camino Real and is discussed below.

Willow Road is an east-west arterial roadway. It extends from Bayfront Expressway, as a primary four-lane arterial, becomes a minor two-lane arterial at the U.S. Route 101 interchange, and ends as a two-lane collector at Alma Street. The ADT for this roadway east of Middlefield Road is approximately 26,000 vehicles.

Collector Roadways

Alma Street is a north-south two-lane collector roadway. It extends from south of Willow Road, parallels the Caltrain railroad tracks on the east side of the railway, to Oak Grove Avenue. The ADT for this roadway between Oak Grove Avenue and Ravenswood Avenue is approximately 1,500 vehicles.

Encinal Avenue is an east-west two-lane collector roadway. It extends from Middlefield Road in the Town of Atherton to El Camino Real. This roadway is one of four east-west roadways in the City that cross the Caltrain railroad tracks. The ADT for this roadway is about 4,500 vehicles.

Glenwood Avenue is an east-west two-lane collector roadway. It extends from east of Middlefield Road in the Town of Atherton to El Camino Real. This roadway is one of four east-west roadways in the City that cross the Caltrain railroad tracks. The ADT for this roadway is approximately 5,800 vehicles. Glenwood Avenue becomes Valparaiso Avenue west of El Camino Real.

Menlo Avenue is an east-west two-lane collector roadway. It extends between University Drive and El Camino Real. The ADT for this roadway is approximately 8,000 vehicles. Menlo Avenue becomes Ravenswood Avenue east of El Camino Real.

Middle Avenue is an east-west two-lane collector roadway. It extends between Olive Street and El Camino Real. The ADT for this roadway is approximately 8,000 vehicles.

Oak Grove Avenue is an east-west two-lane collector roadway. It extends from east of Middlefield Road in the Town of Atherton to University Drive in downtown Menlo Park. This roadway is one of four east-west roadways in the City that cross the Caltrain railroad tracks. The ADT for this roadway is approximately 7,000 vehicles west of El Camino Real and 9,000 vehicles to the east.

University Drive is a north-south two-lane collector roadway that has two discrete segments on the west side of downtown. The first segment extends from south of Middle Avenue to Santa Cruz Avenue. The second segment extends from Santa Cruz Avenue approximately 150 feet east of the first segment to Valparaiso Avenue. The ADT for this roadway is about 7,000 vehicles.

Existing Transit Service

The City of Menlo Park is served by two major transit providers. San Mateo County Transit District (SamTrans) provides local and regional bus service, and Caltrain provides commuter rail service. Local shuttles are also provided in Menlo Park during commute hours by Caltrain and during mid-day hours by the City. Both shuttles operate on weekdays (Monday through Friday) only. Transit service and facilities – bus routes, major bus stops, Caltrain tracks, and the Caltrain station – are shown on **Figure 4.13-2**. For FY2011-2012, Caltrain has proposed a service reduction that could eliminate weekend and off-peak service, among other changes. However, Menlo Park would retain commute-hour service on a par with current service, which would help limit the potential immediate impact on the City. Caltrain and associated transit agencies are currently investigating both short- and long-term solutions to restore service to current levels.

SamTrans Bus Service

SamTrans operates bus service in San Mateo County. There are 54 routes in the county that can be categorized as community, express, BART connection, Caltrain connection, and BART and Caltrain connection routes. These routes serve approximately 14,630,000 annual riders. Most bus routes typically operate along major arterial corridors and operate from early morning into the late evening.

Route KX provides service between Palo Alto and San Francisco via El Camino Real and U.S. Route 101. Headways are between approximately 15 to 60 minutes on weekdays and 20 to 60 minutes on weekends.

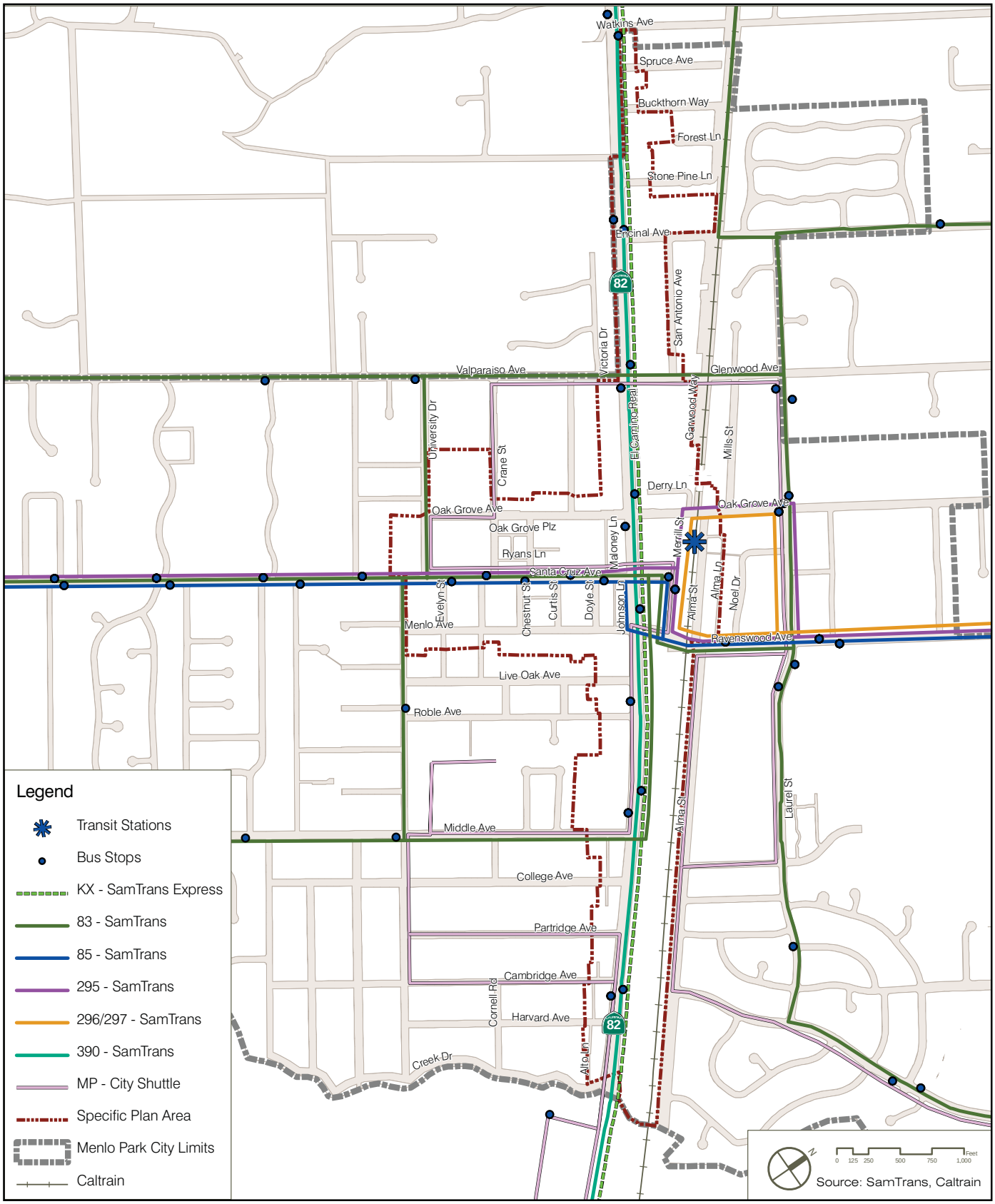
Route 83 provides service within the City of Menlo Park via a variety of roadways, providing service to all local public schools. This route operates on school days only, and headways vary between 2 and 75 minutes.

Route 85 provides service between Menlo Park and Woodside via Santa Cruz Avenue, Alpine Road, and Portola Road. Headways are between approximately 30 to 120 minutes on weekdays. This route only operates in the morning between 6:30 a.m. and 8:00 a.m. and in the afternoon between 12:00 p.m. and 4:30 p.m.

Route 295 provides service between San Mateo and Menlo Park via a variety of roadways. Headways are between approximately 15 to 60 minutes on weekdays and this route does not operate on weekends.

Route 296 provides service between East Palo Alto and Redwood City via Clarke Avenue, Bay Road, Willow Road, and Middlefield Road. Headways are between approximately 30 to 60 minutes on weekdays and approximately 60 minutes on weekends.

Route 297 provides service between Palo Alto and Redwood City via University Avenue, Bay Road, and Middlefield Road. Headways are approximately 60 minutes on both weekdays and weekends. This route only operates during the late evening, overnight and early morning hours. The route does not operate mid-day.



SOURCE: Fehr & Peers

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Figure 4.13-2
Existing Transit Service

Route 390 provides service between Palo Alto and Daly City via El Camino Real. Headways are between approximately 30 to 60 minutes on both weekdays and weekends.

Route 397 provides service between Palo Alto and San Francisco via University Avenue, Bay Road, Middlefield Road, El Camino Real, Millbrae Avenue, Bayshore Boulevard, and Mission Street. Headways are approximately 60 minutes on both weekdays and weekends. This route only operates to San Francisco during the overnight and early morning hours. This route is an extension of Route 297, and it does not operate mid-day.

SamTrans Short Range Transit Plan

Planned short-range improvements to SamTrans service focus on optimizing the current system's condition and performance.[1] These planned improvements include vehicle replacement, vehicle expansion, adding Clipper (formerly TransLink) and other fare collection equipment, installing information technology, and planning for transit oriented development (TOD), defined as being within a reasonable walking distance of a transit station. SamTrans planning efforts are being curtailed by their current financial constraints.

Planned development envisioned in the Specific Plan and located in the Menlo Park Caltrain Station area or in the Downtown near El Camino Real (clustered around SamTrans bus stations) is a TOD (as defined above).

Caltrain

Caltrain operates 50 miles of commuter rail between San Francisco and San José, and limited service trains to Morgan Hill and Gilroy during weekday commute periods. Caltrain is owned by the Peninsula Corridor Joint Powers Board, operated under contract with Amtrak, and managed under contract with SamTrans.

On weekdays, Caltrain operates approximately 100 trains per day of local, limited stop, and express services in both directions. Travel time between Menlo Park and San Francisco is approximately 60 minutes and travel time between Menlo Park and San Jose is approximately 40 minutes for local and limited stop services. Caltrain's express service travels between Menlo Park and San Francisco or San Jose in less than 45 minutes or 25 minutes, respectively. Caltrain offers 22 weekday commute-hour express trains, some of which serve Menlo Park southbound in the a.m. peak period and northbound in the p.m. peak period.

The Menlo Park Caltrain Station is located east of El Camino Real between Ravenswood Avenue and Santa Cruz Avenue. Lockable, sheltered bike parking is provided adjacent to the station platform, and bus and shuttle access is provided at the nearby bus transfer facility. On weekends, Caltrain operates approximately 30 trains per day with local stops only. Currently, approximately 1,400 passengers board and alight daily at the Menlo Park Caltrain station, including approximately 100 daily passengers with bikes (Peninsula Joint Powers Board, 2008).

[1] San Mateo County Transit District (SamTrans), *Short Range Transit Plan 2008-2017* (January, 2008).

Caltrain Short-Range Transit Plan

Planned short-range improvements to Caltrain focus on a strategy called the State of Good Repair which will concentrate on a systematic approach in optimizing the current system's condition and performance.[2] These planned improvements include upgrading signaling and communications systems, replacing old bridges, enhancing approach speeds and flexibility at the San Francisco terminus, and eliminating all of the remaining hold-out stations. Hold-out stations are areas where trains are required to wait while another train is in the main station and therefore increase service delays. Planned long-range improvements to Caltrain include electrification of the entire line to improve operating efficiency and provide environmental benefits. Caltrain planning efforts are being curtailed by their current financial constraints.

Shuttle Service

Local shuttle service in Menlo Park is provided by Caltrain and the City of Menlo Park. Each shuttle service is described below.

Caltrain Shuttles

Free shuttles are provided between the Menlo Park Caltrain Station and employment centers east of U.S. Route 101 on either Marsh Road or Willow Road. These shuttles are also open to the public. Headways are based on train arrivals and departures at the Menlo Park Caltrain Station and the shuttles operate during commute periods on weekdays only.

City of Menlo Park Shuttles

Free shuttles are provided via the Menlo Park Mid-day Shuttle service within Menlo Park and adjacent cities. These shuttles serve the Stanford Medical Center, Stanford Shopping Center, downtown Menlo Park, Menlo Park Caltrain Station, Menlo Park Library, Veterans Administration Medical Center, and Menlo Park Senior Center. The shuttles are open to the public. Headways are approximately 60 minutes and the shuttles operate during mid-day hours on weekdays only.

Existing Bicycle / Pedestrian Network

Bicycle Facilities

Bikeway planning and design in California typically relies on the guidelines and design standards established by California Department of Transportation (Caltrans) in the Highway Design Manual (Chapter 1000: Bikeway Planning and Design).[3,4] Chapter 1000 follows standards developed by the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA), and identifies specific design standards for various conditions and bikeway-to-roadway relationships. Under California Law, bicyclists are allowed to use all roadways in California unless posted as closed. Therefore, even for the roadways that have no designated (or planned) bikeways identified, a majority are open for cycling.

[2] Peninsula Corridor Joint Powers Board (Caltrain), *Short Range Transit Plan 2008-2017* (February, 2008).
[3] California Department of Transportation. *Guide for the Preparation of Traffic Impact Studies* (December, 2002).
[4] California Department of Transportation. Highway Design Manual, 6th Edition (September, 2006).

Caltrans standards provide for three distinct types of bikeway facilities, as generally described below.

- **Class I Bikeway (Bike Path)** provides a completely separate right-of-way and is designated for the exclusive use of bicycles and pedestrians with vehicle and pedestrian cross-flow minimized.

- **Class II Bikeway (Bike Lane)** provides a restricted right-of-way and is designated for the use of bicycles with a striped lane on a street or highway. Bicycle lanes are generally five feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted.

- **Class III Bikeway (Bike Route)** provides for a right-of-way designated by signs or pavement markings for shared use with pedestrians or motor vehicles.

Existing and Planned Bicycle Facilities

Figure 4.13-3 shows the existing and planned bicycle facilities in and near the Plan area as identified in the *Menlo Park Comprehensive Bicycle Development Plan*.[5] There are no Class I bike paths in the project vicinity. Class II bike lanes are located or proposed along segments of major roadways in the study area, as listed below.

Existing Class II Bike Lanes

- Valparaiso Avenue, between Alameda de las Pulgas and El Camino Real
- Glenwood Avenue, between El Camino Real and Laurel Street
- Santa Cruz Avenue, between Orange Avenue and University Drive
- Encinal Avenue, between Caltrain tracks and Middlefield Road
- Laurel Street, between Encinal Avenue and north of Burgess Avenue
- Ravenswood Avenue, between Noel Drive and Middlefield Road
- Alma Street, between Ravenswood Avenue and San Francisquito Creek (south City limit)
- Willow Road, between Alma Street and Durham Street

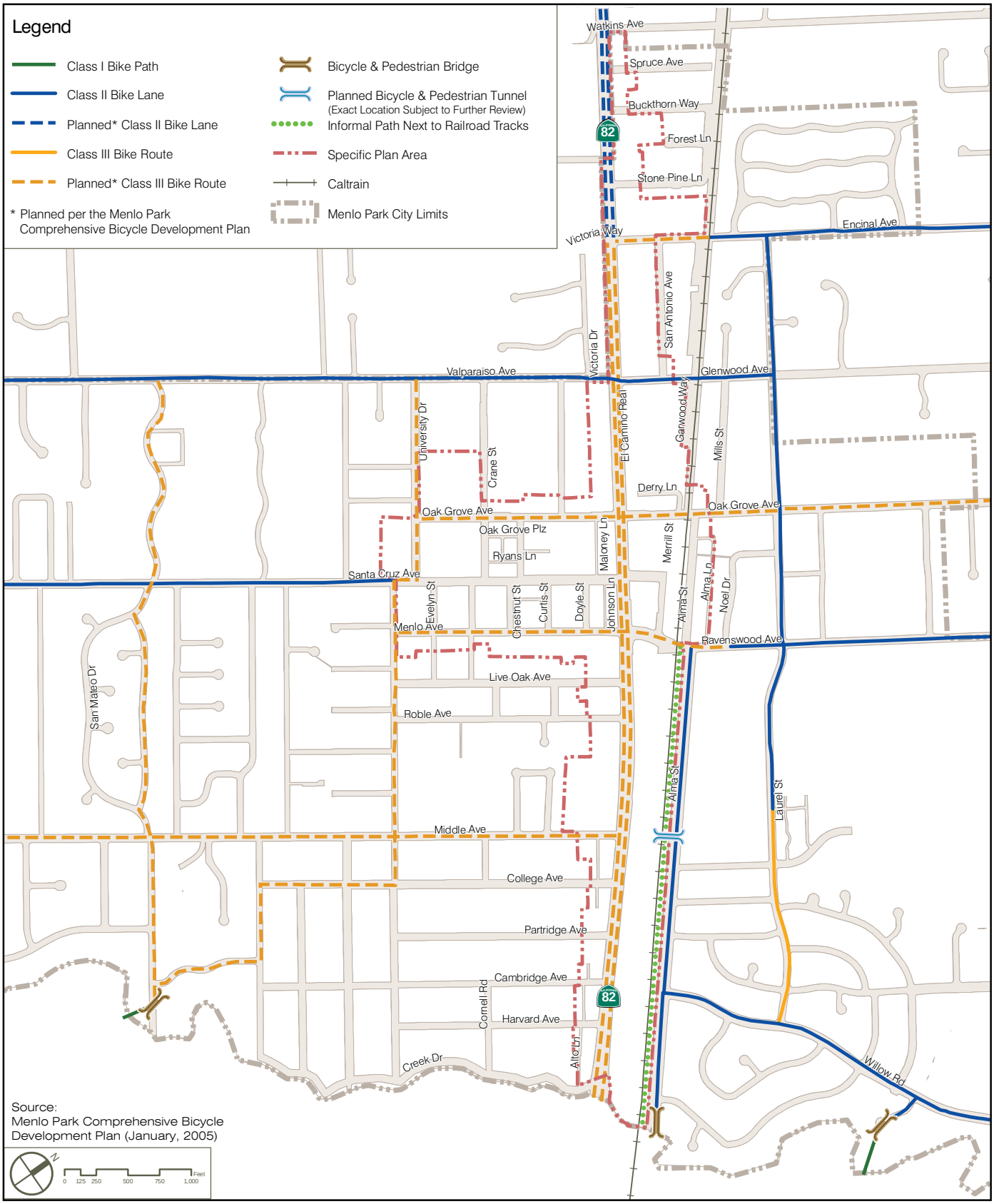
Planned Class II Bike Lanes

- El Camino Real, between Encinal Avenue and north City limit

A Class III bike route is provided on Laurel Street between Willow Road and north of Burgess Avenue. Class III bike routes are planned along the following segments.

- El Camino Real, between Encinal Avenue and south City limit
- Encinal Avenue, between El Camino Real and Caltrain tracks
- Glenwood Avenue
- Oak Grove Avenue, between University Drive and Middlefield Road
- University Drive, between Valparaiso Avenue and College Avenue

[5] City of Menlo Park, *Menlo Park Comprehensive Bicycle Development Plan* (January, 2005).



SOURCE: Fehr & Peers

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Figure 4.13-3

Existing and Planned Bicycle Facilities

- Middle Avenue, between Olive Street and El Camino Real
- College Avenue, between Arbor Road and University Drive
- San Mateo Drive, between Valparaiso Avenue and San Francisquito Creek (south City limit)

Several bicycle and pedestrian bridges/undercrossings also are provided or planned near the Plan area. Existing bridges are provided at San Mateo Drive, Alma Street and Willow Place over San Francisquito Creek along the south edge of the City. A planned undercrossing of the Caltrain tracks is under consideration near Middle Avenue.

Pedestrian Facilities

The pedestrian facilities within the study area are off-street paths, sidewalks along roadways, pedestrian signals, and crosswalks. Two main types of crosswalks exist: marked (striped) crosswalks and unmarked (no striping) crosswalks. Controlled, marked crosswalks include those striped and controlled by traffic/pedestrian signals or stop signs. Uncontrolled, marked crosswalks can exist mid-block or at intersections with side-street stop control only (or all-way yield control intersection with low volumes).

Existing Pedestrian Facilities

The sidewalk network is nearly complete within the downtown area along Santa Cruz Avenue and the area to the south (see **Figure 4.13-4**). These areas have the most concentrated centers of pedestrian activity. The section of El Camino Real north of Valparaiso Avenue fronting Menlo College has no sidewalks. An informal off-street path is provided along the east side of the Caltrain tracks from the San Francisquito Creek bicycle/pedestrian bridge at Alma Street to Ravenswood Avenue

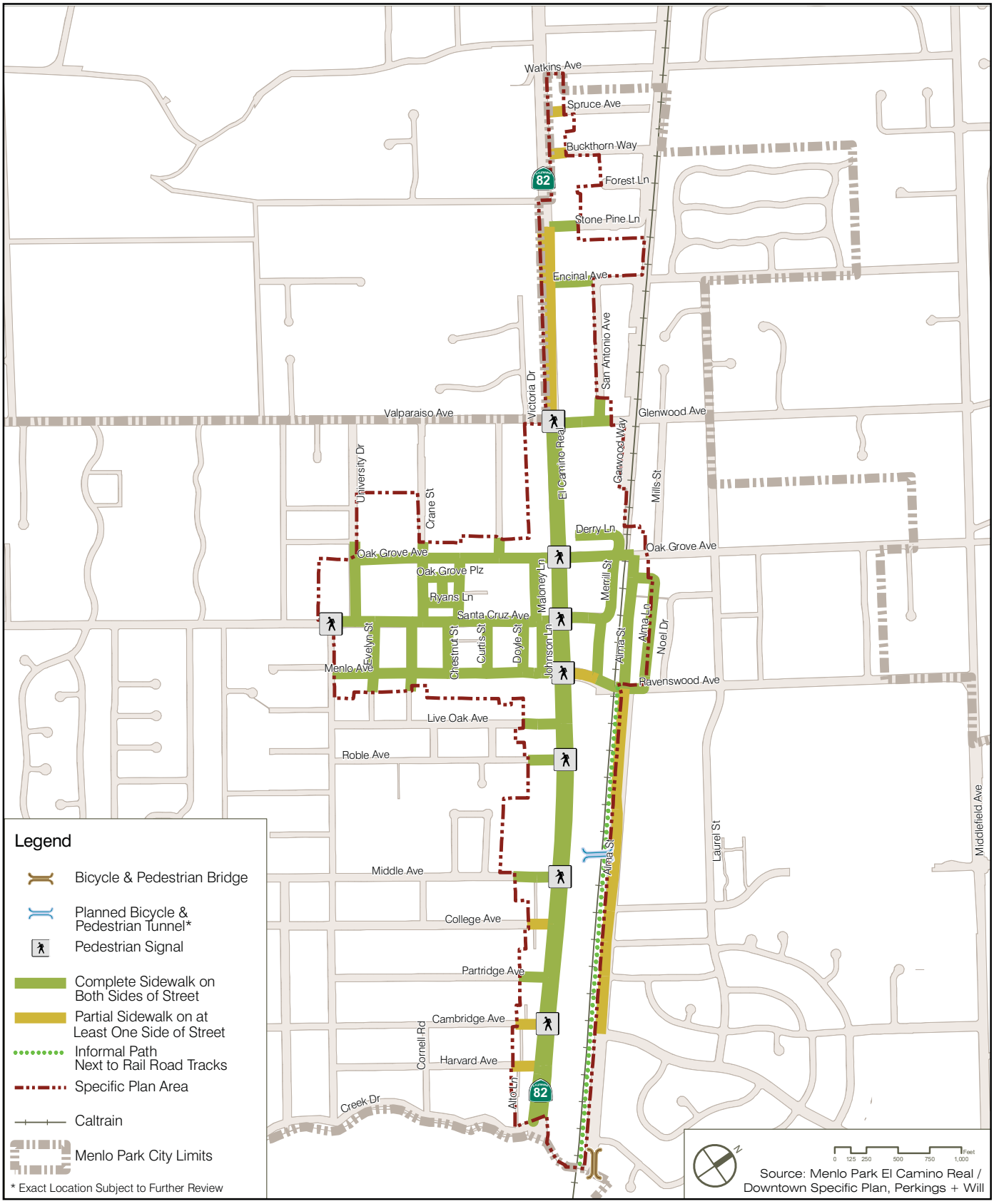
Signalized Crosswalks

Pedestrian signals exist at all of the signalized intersections within the study area, along El Camino Real and at Santa Cruz Avenue/University Drive. Traffic signals at the El Camino Real intersections at Oak Grove Avenue, Santa Cruz Avenue, and Menlo Avenue-Ravenswood Avenue also include audible pedestrian signals.

Crosswalks are marked at all signalized intersections, although crossings on some legs of the signalized intersections have been closed to reduce vehicular delays, as listed below.[6]

- El Camino Real/Encinal Avenue – south leg
- El Camino Real/Menlo Avenue-Ravenswood Avenue – south leg
- El Camino Real/Roble Avenue – north leg
- El Camino Real/Middle Avenue – south leg

[6] Intersections typically have three or four legs, where a leg comprises both the lanes approaching the intersection and departing the intersection from one direction.



SOURCE: Fehr & Peers

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Figure 4.13-4

Existing Pedestrian Facilities Inside Specific Plan Area

- El Camino Real/Cambridge Avenue – south leg
- Santa Cruz Avenue/University Drive – west leg

Average pedestrian crossing times for the El Camino Real intersections at Oak Grove Avenue, Santa Cruz Avenue, and Menlo Avenue were estimated based on field observations completed in March 2009. Pedestrian delays crossing El Camino Real at these three intersections were just over one-and-a-half minutes; pedestrians crossing the side-streets (Oak Grove Avenue, Santa Cruz Avenue, and Menlo Avenue-Ravenswood Avenue) also experienced delays of approximately one-and-a-half minutes.

Uncontrolled Crosswalks

Within the Specific Plan area, several marked, uncontrolled (mid-block) crosswalks exist, as listed below.

- Across El Camino Real near Stone Pine Lane-Alejandra Avenue and Watkins Avenue-Isabella Lane
- Across Ravenswood Avenue at Alma Street (in-pavement lighting is provided)
- Across Santa Cruz Avenue, near Curtis Street, Crane Street, and Evelyn Street
- Across Oak Grove Avenue near Hoover Street (in-pavement lighting is provided) and Merrill Street
- Across Menlo Avenue near Chestnut Street and Doyle Street
- Across Alma Street near Library and Civic Center entrance

While several of the uncontrolled crosswalks on City streets include high visibility striping and advance signage, the uncontrolled El Camino Real crossings are striped in the standard style (two parallel lines) with no advance warning signs or other enhancements to increase visibility.

Santa Cruz Avenue Crosswalks

Marked crosswalks (both controlled and uncontrolled) within the downtown core along Santa Cruz Avenue are enhanced with colored, stamped pavement and are striped with two parallel lines. Many of these crossing locations include curb extensions to improve lines of sight between drivers and pedestrians and to shorten the pedestrian crossing distance. Along Santa Cruz Avenue and adjacent streets, pedestrian activity is frequent; thus, crossings are anticipated by most drivers, who were observed generally to yield to pedestrians.

Bridges/Undercrossings

Several bicycle and pedestrian bridges/undercrossings are provided or planned near the Plan area. Existing bridges are provided at San Mateo Drive, Alma Street and Willow Place over San Francisquito Creek. A planned undercrossing of the Caltrain tracks is currently under consideration near of Middle Avenue.

Existing Parking Characteristics

The downtown area of Menlo Park is defined as the areas fronting El Camino Real, Oak Grove Avenue, Santa Cruz Avenue, Menlo Avenue, University Drive, and Alma Street between Oak Grove Avenue and Ravenswood/Menlo Avenues. The existing downtown parking supply and demand was surveyed by Wilbur Smith Associates for the downtown parking study recently completed and is summarized in this section.[7] The existing public parking supply in the downtown core area consists of 1,186 spaces in the public parking plazas and 409 spaces on-street, for a total of 1,595 public spaces (**Table 4.13-1**).[8] Additional spaces are provided in private parking lots. The parking plaza locations are shown on **Figure 4.13-5**.

TABLE 4.13-1
EXISTING DOWNTOWN PUBLIC PARKING SUPPLY (spaces)

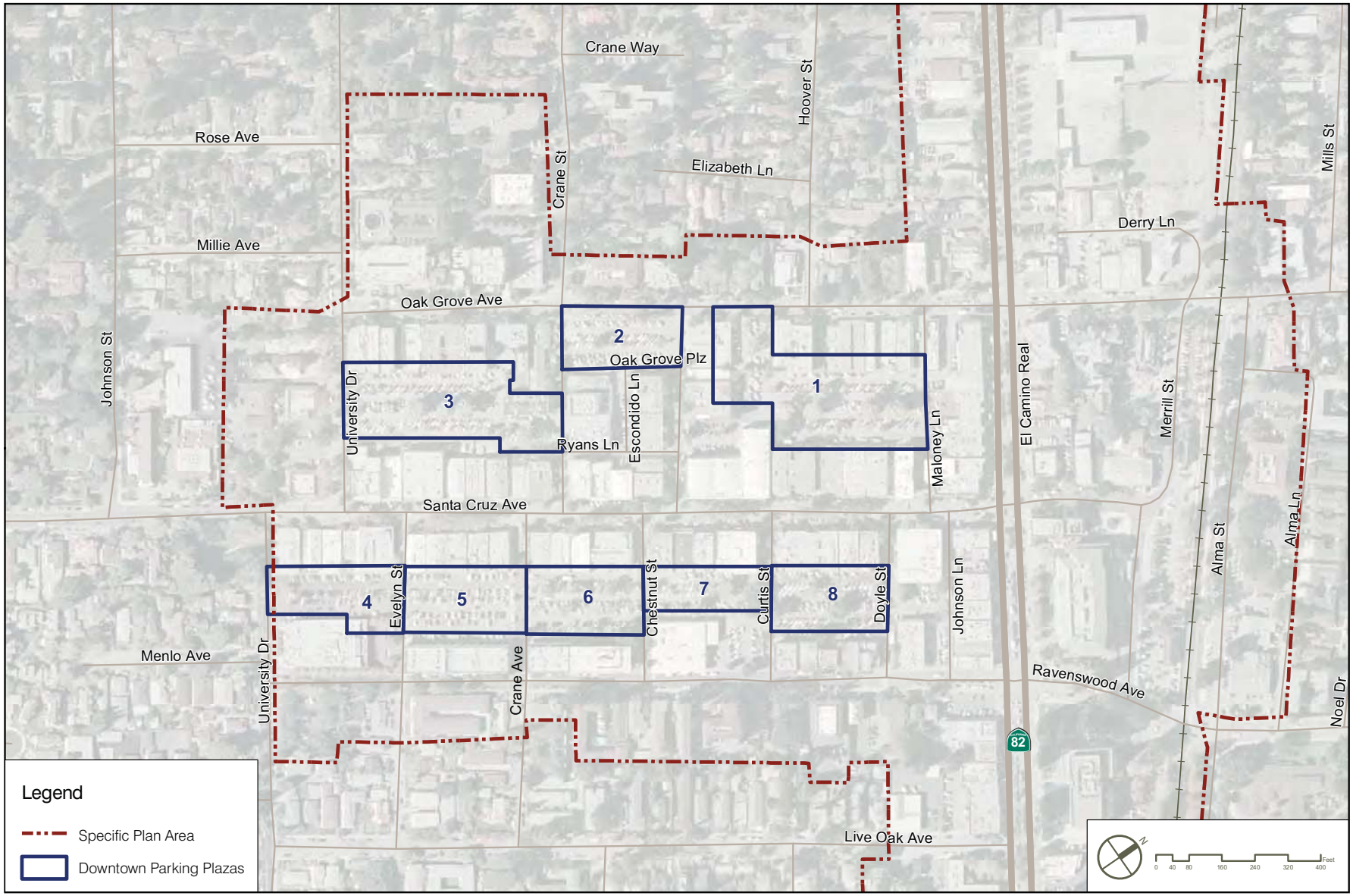
Parking Location		Supply[a]
Parking Plazas		
Parking Plaza 1		249
Parking Plaza 2		95
Parking Plaza 3		212
Parking Plaza 4		105
Parking Plaza 5		150
Parking Plaza 6		136
Parking Plaza 7		94
Parking Plaza 8		145
	Total	1,186
On-Street Spaces		
Santa Cruz Avenue		116
Chestnut Street North		26
Chestnut Street South		17
Oak Grove Avenue		80
Other Streets		170
	Total	409
	Downtown Core Area Total	**1,595**

[a] *2009-2010 Downtown Menlo Park Parking Study*, Wilbur Smith Associates.

Management

Parking at City lots currently is free, but restricted to two hours from 9:00 a.m. to 6:00 p.m., Monday through Friday. Annual passes at a cost of $569 (and temporary full- and half-day permits, at a cost of $10 and $5, respectively) are available for downtown employees to park for longer than the two-hour limit in all parking plazas except #4.

7 Wilbur Smith Associates, *2009-2010 Downtown Menlo Park Parking Study*.
8 The downtown core area is bounded by Oak Grove Avenue, El Camino Real, Menlo Avenue, and University Drive.



SOURCE: Fehr & Peers

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Figure 4.13-5
Downtown Parking Plazas

On-street parking is comprised entirely of unmetered spaces, with time limits (in effect from 7:00 a.m. to 6:00 p.m., Monday through Friday, except holidays) that vary by street in Menlo Park. Santa Cruz Avenue currently is time-limited to two hours, most side-streets such as Crane Street and Oak Grove Avenue are restricted to one hour, and some spaces are restricted to as short as 15 minutes. Lastly, there are spaces that are not time-limited, such as those on Alma Street. In 2010, the Menlo Park City Council approved the recommendations in the Downtown Menlo Park Parking Study, and authorized funding to implement changes to parking time restrictions, effective early 2011. Among the recommended changes are shortening the time limit for free parking in some locations (primarily for Santa Cruz Avenue street spaces, in order to increase turnover of these highest-demand spaces), and instituting pay for-parking options that would allow drivers at some lots to pay for time after the initial free 2-hour time limit.

Supply and Demand

The existing peak parking demand for the public spaces in the downtown core measured by Wilbur Smith Associates on weekdays is 1,260 parked vehicles (or occupied spaces). The percent of occupied spaces steadily increases during the morning, reaches a peak of about 80 percent between 12:00 noon and 2:00 pm and then steadily decreases. Approximately 65 percent of spaces are occupied at 5:00 pm. The peak occupancy measured on a Saturday was 63 percent at 1:00 pm. The practical capacity of downtown areas is usually between 85 and 90 percent occupied spaces. Downtown Menlo Park approaches this limit for a few hours each weekday, based on data collected in November 2009 (**Appendix E**).

The parking demand in downtown Menlo Park may be higher during more robust economic conditions. For example, according to the 2007 *MTC Smart Growth Parking Policy Study*, the weekday midday peak parking occupancy in the downtown commercial core was approximately 84 percent.[9] The 1999 *Downtown Parking Study* reported a peak occupancy rate of 89 percent.[10]

Existing Traffic Conditions

Intersection Level of Service Analysis Methodologies

The operation of a local roadway network is commonly measured and described using a grading system called Level of Service (LOS). The LOS grading system qualitatively characterizes traffic conditions associated with varying levels of vehicle traffic, ranging from LOS A (indicating free-flow traffic conditions with little or no delay experienced by motorists) to LOS F (indicating congested conditions where traffic flows exceed design capacity and result in long delays). This LOS grading system applies to both roadway segments and intersections. **Table 4.13-2** summarizes the relationship between delay and LOS and signalized and unsignalized intersections.

9 Metropolitan Transportation Commission (MTC), *MTC Smart Growth Parking Policy Study* (June 2007).
10 City of Menlo Park, *Downtown Parking Study* (March, 1999).

TABLE 4.13-2
DEFINITIONS FOR INTERSECTION LEVEL OF SERVICE

Unsignalized Intersections		Level of Service Grade	Signalized Intersections	
Description	Average Total Vehicle Delay (Seconds)		Average Control Vehicle Delay (Seconds)	Description
No delay for stop-controlled approaches.	≤10.0	A	≤10.0	Free Flow or Insignificant Delays: Operations with very low delay, when signal progression is extremely favorable and most vehicles arrive during the green light phase. Most vehicles do not stop at all.
Operations with minor delay.	>10.0 and ≤15.0	B	>10.0 and ≤20.0	Stable Operation or Minimal Delays: Generally occurs with good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average delay. An occasional approach phase is fully utilized.
Operations with moderate delays.	>15.0 and ≤25.0	C	>20.0 and ≤35.0	Stable Operation or Acceptable Delays: Higher delays resulting from fair signal progression and/or longer cycle lengths. Drivers begin having to wait through more than one red light. Most drivers feel somewhat restricted.
Operations with increasingly unacceptable delays.	>25.0 and ≤35.0	D	>35.0 and ≤55.0	Approaching Unstable or Tolerable Delays: Influence of congestion becomes more noticeable. Longer delays result from unfavorable signal progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop. Drivers may have to wait through more than one red light. Queues may develop, but dissipate rapidly, without excessive delays.
Operations with high delays, and long queues.	>35.0 and ≤50.0	E	>55.0 and ≤80.0	Unstable Operation or Significant Delays: Considered to be the limit of acceptable delay. High delays indicate poor signal progression, long cycle lengths and high volume to capacity ratios. Individual cycle failures are frequent occurrences. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
Operations with extreme congestion, and with very high delays and long queues unacceptable to most drivers.	>50.0	F	>80.0	Forced Flow or Excessive Delays: Occurs with oversaturation when flows exceed the intersection capacity. Represents jammed conditions. Many cycle failures. Queues may block upstream intersections.

SOURCE: Transportation Research Board, Special Report 209, *Highway Capacity Manual*, updated 2000.

Signalized Intersections

At signalized intersections, traffic conditions are evaluated using the 2000 *Highway Capacity Manual* (HCM) operations methodology and the Synchro traffic analysis software program.[11] The operation analysis uses various intersection characteristics (e.g., traffic volumes, lane geometry, and signal phasing/timing) to estimate the average control delay experienced by motorists traveling through an intersection.

Unsignalized Intersections

For unsignalized (all-way stop-controlled and side-street stop-controlled) intersections, traffic conditions are evaluated using the HCM operations methodology and the Synchro traffic analysis software program. With this methodology, the LOS is related to the total delay per vehicle for the intersection as a whole (for all-way stop-controlled intersections), and for each stop-controlled movement or approach only (for side-street stop-controlled intersections). Total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. This time includes the time required for a vehicle to travel from the last-in-queue position to the first-in-queue position.

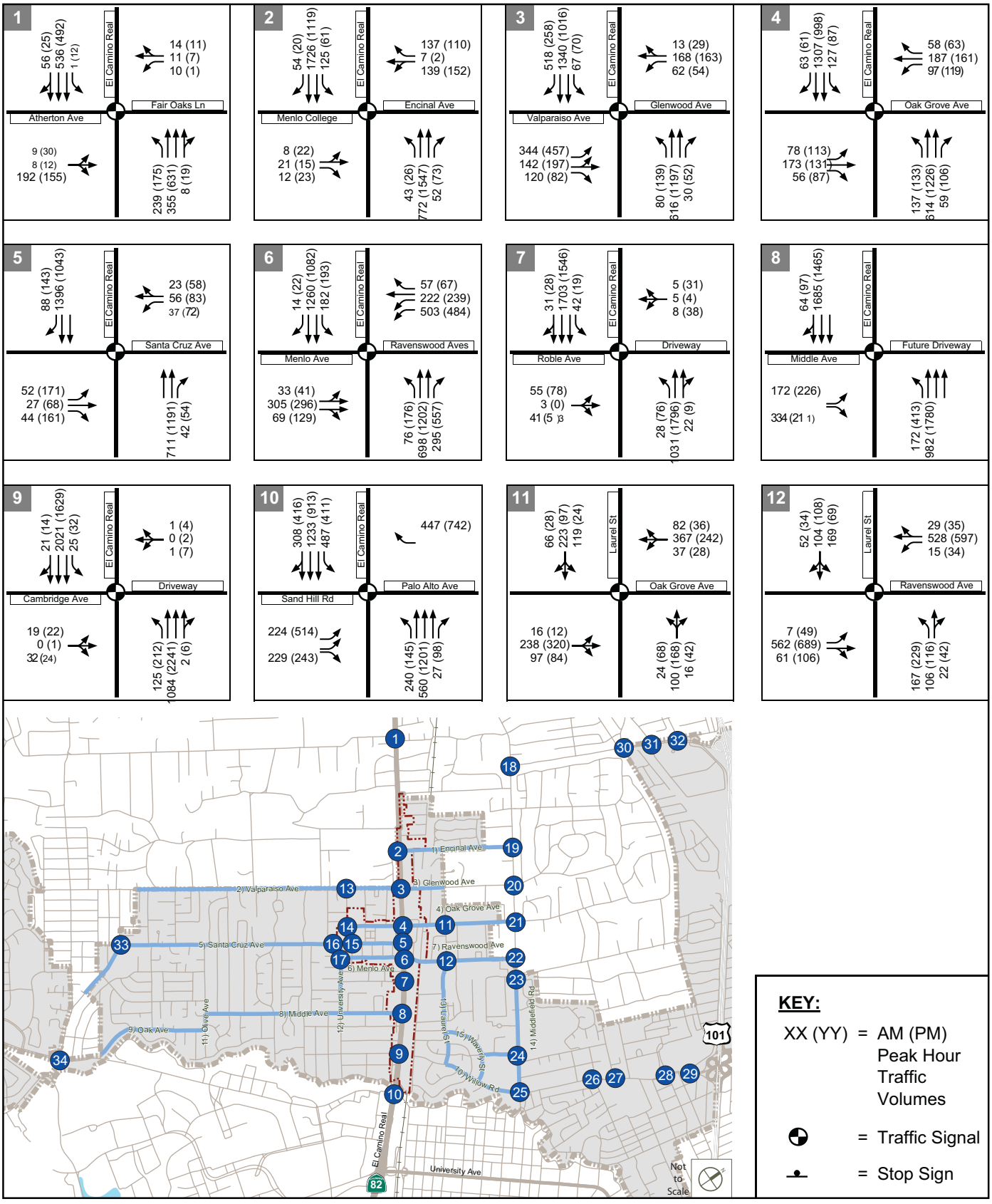
Existing Traffic Volumes and Intersection Levels of Service

Study Intersections

Operations at 34 intersections in the vicinity of the Plan area, listed below (with controlling jurisdiction[s]) and illustrated in Figure 4.13-1, were evaluated during the weekday morning (a.m.) and evening (p.m.) peak periods for Existing and 2035 conditions. The City of Menlo Park conducted traffic counts for the two two-hour peak periods, 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m., in 2009 and early 2010. The highest one-hour measured volumes during each of these periods were used in the intersection analysis. The peak-hour traffic volumes and existing lane configurations at the study intersections are shown on **Figures 4.13-6a** through **4.13-6c**.

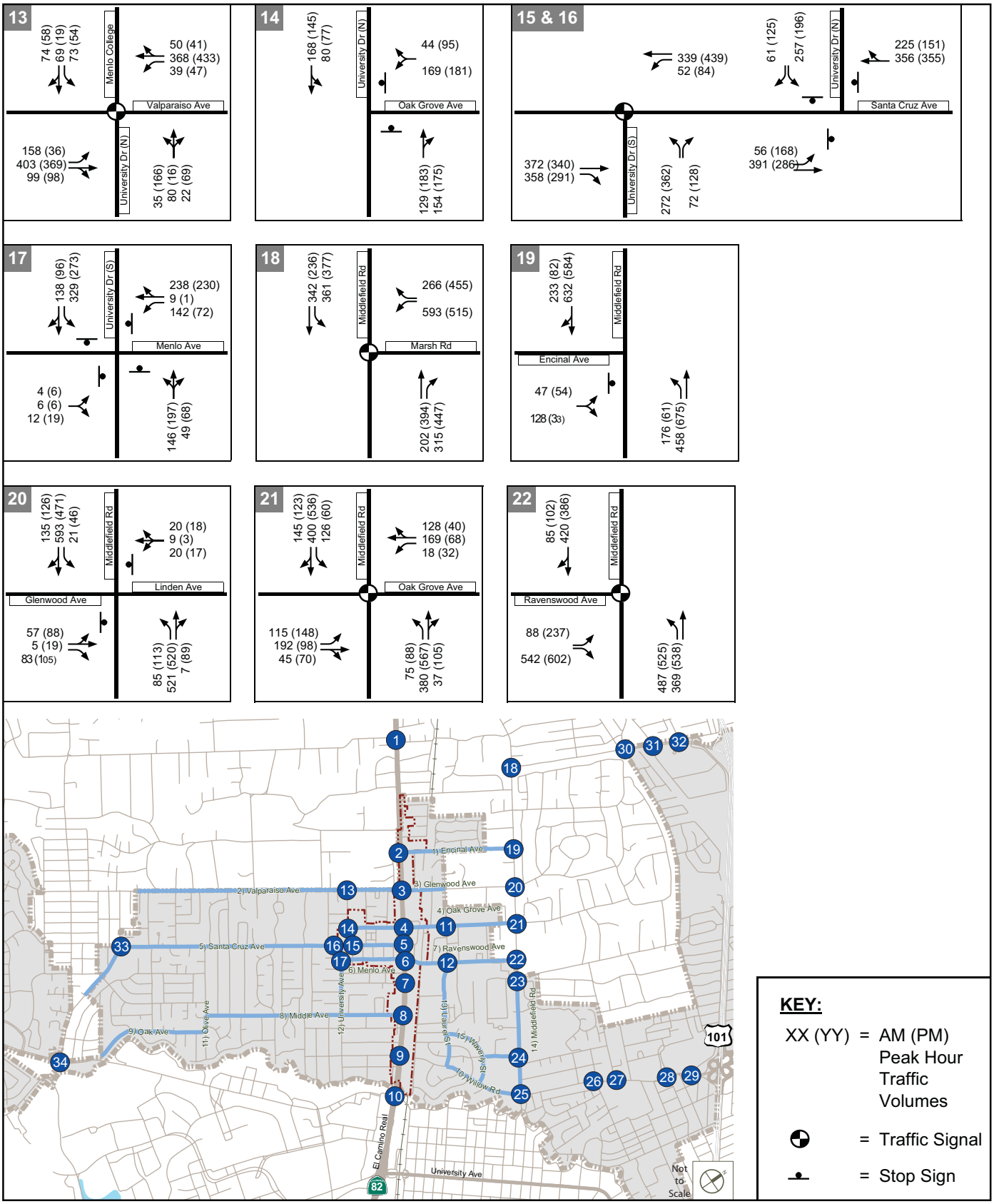
1. El Camino Real and Atherton Avenue/Fair Oaks Lane (Caltrans/Atherton)
2. El Camino Real and Encinal Avenue (Caltrans/Atherton/Menlo Park)
3. El Camino Real and Glenwood Ave./Valparaiso Ave. (Caltrans/Atherton/Menlo Park)
4. El Camino Real and Oak Grove Avenue (Caltrans/Menlo Park)
5. El Camino Real and Santa Cruz Avenue (Caltrans/Menlo Park)
6. El Camino Real and Menlo Avenue/Ravenswood Avenues (Caltrans/Menlo Park)
7. El Camino Real and Roble Avenue (Caltrans/Menlo Park)
8. El Camino Real and Middle Avenue (Caltrans/Menlo Park)
9. El Camino Real and Cambridge Avenue (Caltrans/Menlo Park)
10. El Camino Real and Sand Hill Road (Caltrans/Palo Alto)
11. Laurel Street and Oak Grove Avenue (Menlo Park)
12. Laurel Street and Ravenswood Avenue (Menlo Park)
13. University Drive and Valparaiso Avenue (Menlo Park/Atherton)
14. University Drive and Oak Grove Avenue (Menlo Park)
15. University Drive (N) and Santa Cruz Avenue (Menlo Park)
16. University Drive (S) and Santa Cruz Avenue (Menlo Park)
17. University Drive and Menlo Avenue (Menlo Park)

[11] Transportation Research Board. *Highway Capacity Manual* (2000).



SOURCE: Fehr & Peers

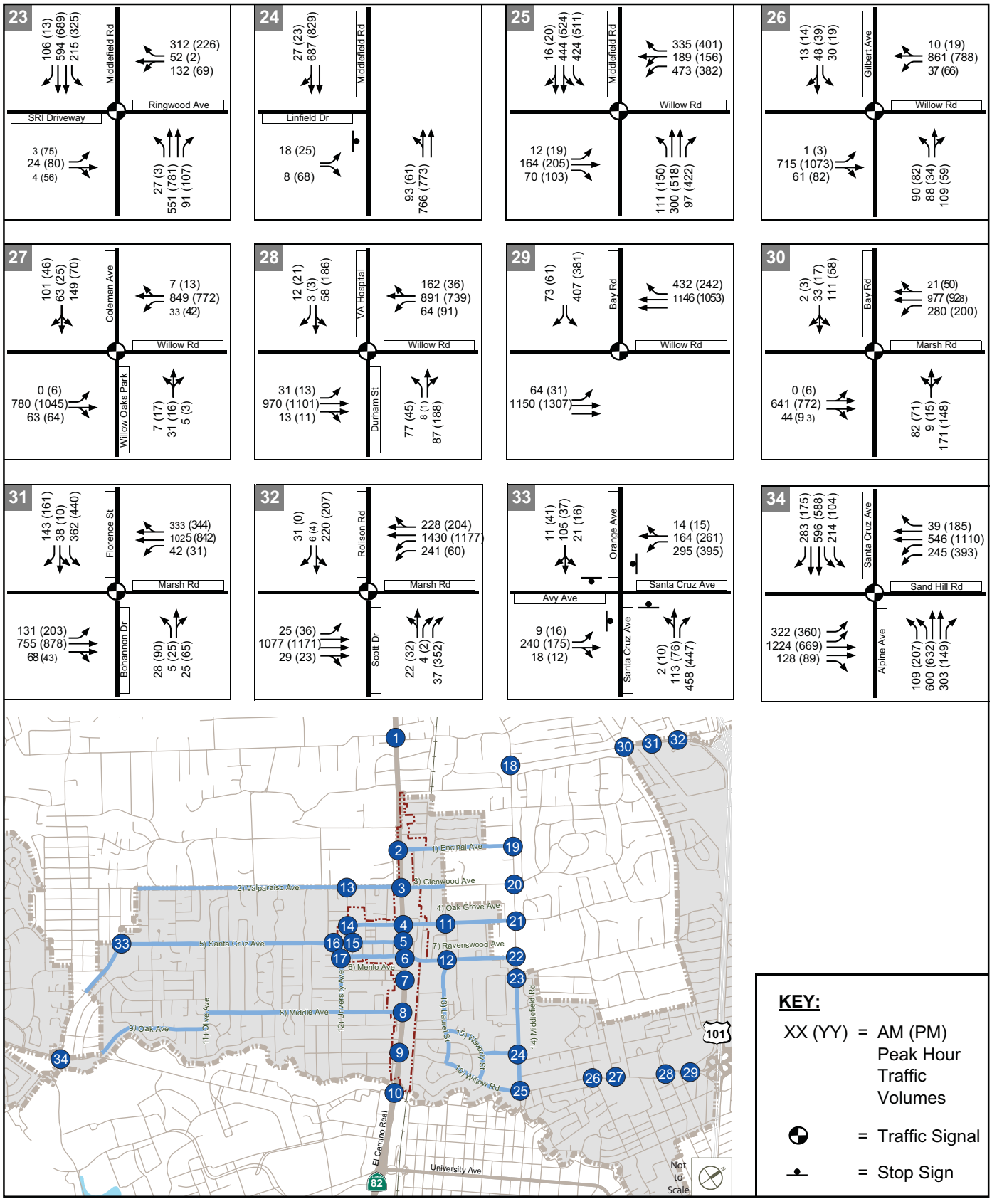
Figure 4.13-6a
Existing Lane Configurations,
Traffic Control Devices and Intersection Volumes



SOURCE: Fehr & Peers

Menlo Park El Camino Real/Downtown Specific Plan EIR . 208581

Figure 4.13-6b
Existing Lane Configurations,
Traffic Control Devices and Intersection Volumes



Menlo Park El Camino Real/Downtown Specific Plan EIR . 208581

SOURCE: Fehr & Peers

Figure 4.13-6c
Existing Lane Configurations,
Traffic Control Devices and Intersection Volumes

18. Middlefield Road and Marsh Road (Atherton)
19. Middlefield Road and Encinal Avenue (Atherton)
20. Middlefield Road and Glenwood Avenue/Linden Avenue (Atherton)
21. Middlefield Road and Oak Grove Avenue (Atherton)
22. Middlefield Road and Ravenswood Avenue (Menlo Park/Atherton)
23. Middlefield Road and Ringwood Avenue (Menlo Park/Atherton)
24. Middlefield Road and Linfield Drive (Menlo Park)
25. Middlefield Road and Willow Road (Menlo Park)
26. Gilbert Avenue and Willow Road (Menlo Park)
27. Coleman Avenue and Willow Road (Menlo Park)
28. Durham Street and Willow Road (Menlo Park)
29. Bay Road and Willow Road (Caltrans/Menlo Park)
30. Bay Road and Marsh Road (Menlo Park)
31. Florence Street/Bohannon Drive and Marsh Road (Menlo Park)
32. Scott Drive and Marsh Road (Menlo Park)
33. Orange Avenue/Santa Cruz Avenue and Avy Avenue/Santa Cruz Avenue (Menlo Park)
34. Santa Cruz Avenue/Alpine Avenue and Sand Hill Road (Menlo Park)

The results of the baseline intersection LOS analysis are presented in **Table 4.13-3**, and the corresponding calculation sheets are contained in the technical appendices of the transportation impact analysis (**Appendix E**). The focus of the EIR is on potential impacts associated with the proposed project (i.e., changes from existing baseline conditions), but to provide information on the acceptability of the existing conditions, Table 4.13-3 shows the LOS threshold (i.e., minimum acceptable service level for the study intersections). See Significance Criteria (page 4.13-33) for a full discussion of the thresholds of significance for intersections under the different jurisdictions.

All study intersections currently operate at an acceptable LOS under existing conditions, except those listed below.

- Eastbound Encinal Avenue approach to Middlefield Road (a.m. and p.m. peak hours)
- Eastbound Glenwood Avenue approach to Middlefield Road (a.m. and p.m. peak hours)

Field observations of traffic conditions found moderate to high levels of congestion along El Camino Real during the peak hours, although queues typically cleared within one signal cycle. The signals along El Camino Real benefit from adaptive signal timing, where the timing 'adapts' to the prevailing traffic conditions and responds to increased queues on a given approach by increasing the amount of green time assigned to that approach.

Study Freeway Segments

Freeway segments on U.S. Route 101 and I-280 were evaluated per the San Mateo County Congestion Management Program (CMP) requirements. Existing peak-hour volumes were obtained from Caltrans' 2008 Annual Average Daily Traffic volume counts and adjusted using Caltrans' Peak Hour Volume Data Report. Existing freeway segment levels of service were obtained from the *San Mateo County Congestion Management Program 2009 Traffic Level of Service and Performance Measure Monitoring Report.*[12]

[12] City and County Association of Governments of San Mateo County (C/CAG), *San Mateo County Congestion Management Program 2009 Traffic Level of Service and Performance Measure Monitoring Report* (2009).

TABLE 4.13-3
EXISTING INTERSECTION LEVELS OF SERVICE

Intersection (Jurisdiction)[a]	Traffic Control	Peak Hour	Average Delay[b]	LOS[c]	LOS Threshold
El Camino Real & Atherton Avenue/Fair Oaks Lane (Ct/At)	Signal	AM PM	39.8 35.9	D D	D
El Camino Real & Encinal Avenue (Ct/At/MP)	Signal	AM PM	18.3 17.8	B B	D
El Camino Real & Glenwood Ave./Valparaiso Ave. (Ct/At/MP)	Signal	AM PM	35.5 42.8	D D	D
El Camino Real & Oak Grove Avenue (Ct/MP)	Signal	AM PM	31.8 29.7	C C	D
El Camino Real & Santa Cruz Avenue (Ct/MP)	Signal	AM PM	10.6 24.2	B C	D
El Camino Real & Menlo Ave./Ravenswood Ave. (Ct/MP)	Signal	AM PM	40.5 44.1	D D	D
El Camino Real & Roble Avenue (Ct/MP)	Signal	AM PM	11.0 14.3	B B	D
El Camino Real & Middle Avenue (Ct/MP)	Signal	AM PM	29.0 27.6	C C	D
El Camino Real & Cambridge Avenue (Ct/MP)	Signal	AM PM	11.2 12.3	B B	D
El Camino Real & Sand Hill Road (Ct/PA)	Signal	AM PM	26.5 34.0	C C	D
Laurel Street & Oak Grove Avenue (MP)	Signal	AM PM	13.4 11.5	B B	C
Laurel Street & Ravenswood Avenue (MP)	Signal	AM PM	13.7 11.9	B B	D
University Drive & Valparaiso Avenue (MP/At)	Signal	AM PM	13.6 15.4	B B	D
University Drive & Oak Grove Avenue (MP)	All-way Stop	AM PM	10.0 11.2	B B	C
University Drive (N) & Santa Cruz Avenue (MP)	All-way Stop	AM PM	31.5 19.0	D C	D
University Drive (S) & Santa Cruz Avenue (MP)	Signal	AM PM	12.2 15.0	B B	D
University Drive & Menlo Avenue (MP)	All-way Stop	AM PM	13.5 12.4	B B	C
Middlefield Road & Marsh Road (At)	Signal	AM PM	34.0 29.0	C C	D
Middlefield Road & Encinal Avenue (At)	Side Street Stop	AM PM	**72.6** **50.3**	**F** **E**	D
Middlefield Road & Glenwood Avenue/Linden Avenue (At)	Side Street Stop	AM PM	**56.1** **>150**	**F** **F**	D
Middlefield Road & Oak Grove Avenue (At)	Signal	AM PM	11.6 10.8	B B	D
Middlefield Road & Ravenswood Avenue (MP/At)	Signal	AM PM	22.7 28.1	C C	D
Middlefield Road & Ringwood Avenue (MP/At)	Signal	AM PM	27.7 26.4	C C	D
Middlefield Road & Linfield Drive (MP)	Side Street Stop	AM PM	21.4 15.9	C C	D
Middlefield Road & Willow Road (MP)	Signal	AM PM	41.6 53.5	D D	D
Gilbert Avenue & Willow Road (MP)	Signal	AM PM	13.1 13.5	B B	D

TABLE 4.13-3 (Continued)
EXISTING INTERSECTION LEVELS OF SERVICE

Intersection (Jurisdiction) [a]	Traffic Control	Peak Hour	Average Delay[b]	LOS[c]	LOS Threshold
Coleman Avenue & Willow Road (MP)	Signal	AM PM	22.5 10.9	C B	D
Durham Street & Willow Road (MP)	Signal	AM PM	27.3 45.0	C D	D
Bay Road & Willow Road (Ct/MP)	Signal	AM PM	20.7 18.6	C B	D
Bay Road & Marsh Road (MP)	Signal	AM PM	16.1 14.3	B B	D
Florence Street/Bohannon Drive & Marsh Road (MP)	Signal	AM PM	16.4 20.7	B C	D
Scott Drive & Marsh Road (MP)	Signal	AM PM	22.6 26.6	C C	D
Orange Avenue/Santa Cruz Avenue & Avy Avenue/Santa Cruz Avenue (MP)	All-way Stop	AM PM	21.6 24.1	C C	D
Santa Cruz Avenue/Alpine Avenue & Sand Hill Road (MP)	Signal	AM PM	42.8 44.7	D D	D

[a] Jurisdictions: Ct - Caltrans, At - Atherton, MP - Menlo Park, PA - Palo Alto
[b] Whole intersection weighted average total delay for signalized and all-way stop-controlled intersections (expressed in seconds per vehicle). For side-street stop controlled intersections, delays for worst approach are shown.
[c] LOS calculations performed using the 2000 *Highway Capacity Manual - Special Report 209* delay methods for signalized and unsignalized intersections.

Unacceptable operations are indicated in **bold** type.

SOURCE: Fehr & Peers, 2010.

The study freeway segments are listed below.[13]

1. U.S. Route 101 North of Marsh Road
2. U.S. Route 101 South of Willow Road
3. I-280 North of Sand Hill Road
4. I-280 South of Alpine Road

The levels of service were based on average speeds obtained from travel time surveys. The study segments of U.S. Route 101 are currently operating at LOS F (with the exception of northbound U.S. Route 101 during the a.m. peak hour, which is operating at LOS D). Northbound I-280 in the study area is operating at LOS A/B during the a.m. peak hour and LOS D during the p.m. peak hour. In the southbound direction, I-280 is operating at LOS C during the a.m. peak hour and LOS A/B during the p.m. peak hour. As reported by San Mateo City/County Association of Governments (C/CAG) in their monitoring report, the selected segments affected by the Specific Plan-generated trips are currently operating at, or better than, their CMP LOS standards.

[13] Specific Plan traffic approaching from or departing to the north on US 101 will use the Marsh Road exit and conversely Specific Plan traffic approaching from or departing to the south on US 101 will use the Willow Road or University Avenue exit. Therefore the segment of US 101 between Marsh Road and Willow Road was not evaluated as the Specific Plan will not add traffic to this segment. A similar rationale was used to determine that Specific Plan traffic would not be added to the segment on I-280 between Sand Hill Road and Alpine Road.

4.13.2 Regulatory Setting

There are a number of agencies (regional, county, and local) whose policies apply to the Plan area. The policies listed below pertain to transportation and circulation.

California Department of Transportation (Caltrans)

The Caltrans has authority over the State highway system, including freeways, interchanges, and arterial State routes. Caltrans approves the planning, design, and construction of improvements for all State-controlled facilities including I-280, U.S. Route 101, SR 82 (El Camino Real), and the associated interchanges for these facilities located in Menlo Park. Caltrans strives to maintain LOS C operations on all state facilities. Caltrans considers any increase in traffic to a state-operated facility operating at an unacceptable level of service to be a significant impact.

For the purpose of the Specific Plan transportation analysis, mainline segments of U.S. Route 101 and I-280 are evaluated based on the Congestion Management Program threshold, and the El Camino Real intersections are evaluated based on the City of Menlo Park's thresholds.

Context Sensitive Solutions

Caltrans advocates enhancements to state facilities, such as SR 82 – El Camino Real that promote a community's vision and needs. Recognizing that meeting these needs may require flexibility; Caltrans has developed a process for approving alternative designs to their standards. This process evaluates each requested deviation for its potential effects on highway safety, regional needs, and the surrounding environment. Deviations from Caltrans policy or standards to meet community requests may require approval of an exception to a policy or nonstandard feature. The Main Streets: Flexibility in Design and Operations document provides possible solutions to the communities' needs.

Complete Streets

Caltrans issued a Deputy Directive noting that Caltrans develops integrated multimodal projects in balance with community goals, plans, and values. This is facilitated by creating "complete streets", which recognize that transportation corridors have multiple users with different abilities and mode preferences. The complete streets directive was used in the planning process for the Specific Plan in identifying changes to El Camino Real.

Metropolitan Transportation Commission (MTC)

The MTC is the Bay Area's regional transportation planning agency and federally-designated Metropolitan Planning Organization (MPO). MTC is responsible for preparing the Regional Transportation Plan, a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle, and pedestrian facilities within the nine county Bay Area region. The Regional Transportation Plan is a 20-year plan and is updated every three years to reflect new planning priorities and changing projections of growth and travel demand. The long-range plan must be based on a realistic forecast of future revenues and taken as a whole; the

improvement projects included must help improve regional air quality. MTC also screens requests from local agencies for state and federal grants for transportation projects to determine compatibility with the Regional Transportation Plan.

In recent years, state and federal laws have given MTC an increasingly important role in financing Bay Area transportation improvements. Most significant was the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA), which increased the powers of Metropolitan Planning Organizations like MTC to determine the mix of transportation projects best suited to meet their region's needs. MTC also administers state monies, including those provided by the Transportation Development Act. Legislation passed in 1997 gives MTC increased decision-making authority over the selection of projects and allocation of funds for the State Transportation Improvement Program (STIP). The current federal funding program is known as Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

San Mateo City/County Association of Governments (C/CAG)

C/CAG serves as the Congestion Management Agency (CMA) of San Mateo County.[14] As the County's CMA, C/CAG is responsible for managing the county's blueprint to reduce congestion and improve air quality. C/CAG is authorized to set state and federal funding priorities for transportation improvements affecting the San Mateo County Congestion Management Program (CMP) transportation system. El Camino Real is the only roadway within the Plan area that is designated as a part of the CMP roadway system. C/CAG forwards on the County's prioritized list of projects to MTC for incorporation into the regional list to receive state and federal funding. C/CAG administers three primary programs and plans relevant to the Specific Plan; these programs are discussed below.

Congestion Management Program

The CMP specifies a system of highways and roadways for which traffic level of service standards are established. The San Mateo County system includes all freeways, state highways, and principal arterials in the county. The program sets level of service standards for all CMP roadway segments and intersections. El Camino Real has a level of service standard of LOS E. The CMP also contains an element promoting the use of alternative transportation modes and ways to reduce future travel demand. Improving the county's jobs/housing balance and implementing travel demand management strategies are specifically mentioned as ways of attaining the objectives of this element of the CMP. C/CAG requires local jurisdictions to analyze impacts of new developments or land use policy changes on CMP facilities. C/CAG has adopted a biennial schedule for monitoring the CMP Roadway System. The last monitoring report was completed in 2009.

[14] City/County Association of Governments of San Mateo County, *San Mateo County Congestion Management Program 2009* (September, 2009).

Countywide Bicycle Transportation Plan

The *San Mateo Countywide Bicycle Transportation Plan* details a set of policies, goals and objectives designed to be in concert with the county's and cities' general plans, the cities' bicycle plans, and other relevant regional plans.[15] These policies address important issues related to San Mateo County's bikeways such as planning, community involvement, utilization of existing resources, facility design, multi-modal integration, safety and education, support facilities and programs, funding, implementation and maintenance.

Along with the completion of a comprehensive countywide bikeway network that is coordinated with the individual city bicycle plans, the plan calls for new educational and promotional programs to be implemented over the 20-year life of the plan. The plan provides a detailed proposal for enhancements to safety education and marketing, including strategies to educate both bicyclists and motorists, improvements to curriculum, and marketing techniques to raise public awareness to the rules of the road. The plan also recommends that the implementation of bikeways, facilities and signage follow adopted Caltrans standards. C/CAG implements the countywide bicycle plan.

Countywide Transportation Plan

The *Countywide Transportation Plan* was adopted by C/CAG in 2001.[16] It seeks to reduce traffic congestion, increase demand for transit, decrease demand for automobile travel, and increase capacity for all modes. The plan also seeks to increase the safety, reliability, and convenience of all transportation systems. It discuses grade separations and Intelligent Transportation Systems, but does not note specific improvements for Menlo Park. The plan covers San Mateo County and includes improvements that are beyond cities' jurisdictions. The goal is for the countywide plan and city plans to be consistent.

San Mateo County Transit District (SamTrans)

SamTrans serves as primary transit operator for San Mateo County and is responsible for the development, operation, and maintenance of the transit system within the county. SamTrans operates over 50 bus lines in addition to shuttle and paratransit service.

Grand Boulevard Initiative

The Grand Boulevard Initiative is a collaboration of 19 cities, two counties, and several regional and local agencies and other stakeholders united in an effort to transform the El Camino Real corridor, which stretches from Daly City to San Jose.[17] The vision adopted by the Grand Boulevard Task Force is:

[15] City and County Association of Governments of San Mateo County, *San Mateo County Bicycle Route Plan* (October 2000).
[16] City and County Association of Governments of San Mateo County, San *Mateo County Countywide Transportation Plan* (April 2001).
[17] *Grand Boulevard Multimodal Transportation Corridor Plan* (October 2010).

> El Camino Real will achieve its full potential as a place for residents to work, live, shop and play, creating links between communities that promote walking and transit and an improved and meaningful quality of life.

The initiative seeks to improve the performance, safety, and aesthetics of El Camino Real. It challenges communities to rethink the corridor's potential for housing and urban development, balancing the need for cars and parking with viable options for transit, walking and biking. The initiative's guiding principles are listed below.

- Target housing and job growth in strategic areas along the corridor.
- Encourage compact mixed-use development and high-quality urban design and construction.
- Create a pedestrian-oriented environment and improve streetscapes, ensuring full access to and between public areas and private developments.
- Develop a balanced multi-modal corridor to maintain and improve mobility of people and vehicles along the corridor.
- Manage parking assets.
- Provide vibrant public spaces and gathering places.
- Preserve and accentuate unique and desirable community character and the existing quality of life in adjacent neighborhoods.
- Improve safety and public health.
- Strengthen pedestrian and bicycle connections with the corridor.
- Pursue environmentally sustainable and economically viable development patterns.

City of Menlo Park General Plan

The City of Menlo Park's General Plan provides a blueprint for growth within the City, and sets the goals, policies, and programs that apply to the Plan area.[18] Goals and policies related to transportation, circulation, and parking are primarily found in the circulation and land use elements.

Circulation Element

The Circulation Element includes specific goals and policies for motor vehicle, public, and non-motorized transportation, as well as overall transportation systems management. Given the length of the goal and policy statements, selected policies from the Circulation Element are summarized below. Reference to the specific goal or policy is provided in parenthesis to enable the reader to refer to the exact language in the Circulation Element.

[18] City of Menlo Park, *General Plan* (December, 1994).

Thoroughfares

- Maintain a circulation system that will provide for the safe and efficient movement of people and goods throughout Menlo Park for residential and commercial purposes. (Goal II-A)

- Level of Service D or better shall be maintained at all City-controlled signalized intersections during peak hours, except at the intersection of Ravenswood Avenue and Middlefield Road and at intersections along Willow Road from Middlefield Road to U.S. Route 101. (Policy II-A-1)

- The City should attempt to achieve and maintain average travel speeds of 14 miles per hour or better on El Camino Real and other arterial roadways controlled by the State and at 46 miles per hour or better on U.S. Route 101 (Level of Service D). (Policy II-A-2)

- The City shall work with Caltrans to ensure that average stopped delay on local approaches to State-controlled signalized intersections does not exceed Level of Service E. (Policy II-A-3)

- New development shall be restricted or required to implement mitigation measures in order to maintain the levels of service and travel speeds specified in Policies II-A-1 through II-A-3. (Policy II-A-4)

- The City shall employ appropriate modern technology traffic signal equipment with the objective of limiting average vehicle delay to Level of Service E on any approach to a City-controlled signalized intersection during peak hour periods and attempt to approach demand control during off-peak periods. (Policy II-A-5)

- The City shall work with Caltrans to ensure they use appropriate modern traffic technology traffic equipment on State routes with the objective of limiting average vehicle delay to Level of Service E on all minor approaches during peak hour periods and attempt to approach demand control during off-peak periods. (Policy II-A-6)

- All streets should operate consistent with the Roadway Classification System Guidelines in Part II of the General Plan, that presents a hierarchy of street classifications reflecting trade-offs between traffic flow and property access (i.e., primary arterials, minor arterials, collectors and local streets). (Policy II-A-7)

- The City should provide safe, efficient, and equitable use of streets by pedestrians and bicyclists through good roadway design, maintenance, and effective traffic law enforcement. (Policy II-A-12)

- The City should cooperate with other jurisdictions to secure funding for improvements and develop methods to reduce traffic impacts on a regional and subregional basis. (Policy II-A-13)

Impacts on Local Neighborhoods

- New development shall be reviewed for its potential to generate significant traffic volumes on local streets in residential areas and shall be required to mitigate potential significant traffic problems. (Policy II-A-8)

- Neighborhood streets should be protected from excessive speeds and excessive volumes of through traffic. (Policy II-A-9)

Transit Facilities

- The City should consider transit modes in the design of transportation improvements and the review and approval of development projects. (Policy II-B-1)

- As many activities as possible should be located within easy walking distance of transit stops, and transit stops should be convenient and close to as many activities as possible. (Policy II-B-2)

Transportation Systems Management/Transportation Demand Management

- The City should work with employers to encourage employees to use alternatives to the single occupant automobile in their commute to work. (Policy II-C-1)

- Commuter shuttle service should be maintained and improved. (Policy II-C-7)

Bicycling

- The City should work to complete a system of bikeways within Menlo Park. (Policy II-D-2)

- The design of streets should consider the impact of street cross section, intersection geometrics, and traffic control devices on bicyclists. (Policy II-D-3)

- Bicycle storage should be provided at new commercial and industrial developments. It should also be provided at transit stations. (Policy II-D-4)

Pedestrians

- The City shall endeavor to maintain safe sidewalks and walkways where existing within the public right-of-way. (Policy II-E-2)

- Appropriate traffic control should be provided for pedestrians at intersections. (Policy II-E-3)

- The City shall incorporate appropriate pedestrian facilities, traffic control, and street lighting within street improvement projects to maintain or improve pedestrian safety. (Policy II-E-4)

- The City should support full pedestrian access across all legs of an intersection at all signalized intersections which are City-controlled and at the signalized intersections along El Camino Real. (Policy II-E-5)

Parking

- Adequate off-street parking should be required for all new development in the downtown area. (Policy II-F-1)

- Short-term retail customer parking shall be first priority for the allocation of parking spaces in downtown parking plazas. Long-term employee parking shall be located in such a manner that it does not create a shortage of customer parking adjacent to retail shops. (Policy II-F-2)

Land Use Element

The following policies of the land use element are applicable to transportation, circulation and parking.

- Parking which is sufficient to serve the retail needs of the downtown area and which is attractively designed to encourage retail patronage shall be provided. (Policy I-B-2)

- New development shall not reduce the number of existing parking spaces in the Assessment District, on P-zoned parcels, or on private property where parking is provided in lieu of Assessment District participation. (Policy I-B-3)

- New and upgraded retail development shall be encouraged along El Camino Real near downtown, especially stores that will complement the retailing mix of downtown. Adequate parking must be provided and the density, location, and site design must not aggravate traffic at congested intersections. (Policy I-C-1)

- Any new or expanded office use must include provisions for adequate off-street parking, mitigating traffic impacts, and developing alternatives to auto commuting. (Policy I-E-4)

- Well-designed pedestrian facilities should be included in areas of intensive pedestrian facilities. (Policy I-G-11)

Menlo Park Comprehensive Bicycle Development Plan

The Comprehensive Bicycle Development Plan recommends the enhancement of the existing network with the addition of approximately 0.3 miles of new Class I Bike Paths, 3.6 miles of new Class II Bike Lanes, and 16.8 miles of new Class III Bike Routes.[19] Several long-term projects are also identified; including two short Class I connector segments near the Bayfront Expressway and two new bicycle/pedestrian undercrossings including the Caltrain crossing near Middle Avenue.

The plan outlines new educational and promotional programs aimed at bicyclists and motorists. These programs include bicycle parking improvements, multi-modal (transit) support facilities, bicycle safety and education programs for cyclists and motorists, safe routes to schools programs, community and employer outreach programs, continued development of bikeway network maps, and bike-to-work and school day events, among others. The prioritization and budgeting of individual bicycle improvements takes place through City Council approval of the five-year CIP (Capital Improvement Program). This process incorporates public comment.

Sidewalk Master Plan

The *Sidewalk Master Plan* identifies segments with no standard walkway or discontinuous walkway facilities; identifies opportunities and constraints for future walkway facilities; recommends changes and additions to existing programs, policies, and municipal codes; and develops prioritization criteria and procedures for installing standard sidewalks.[20] The Sidewalk Master Plan identified priority streets as those roadways that provide network connectivity and

[19] City of Menlo Park, *Menlo Park Comprehensive Bicycle Development Plan* (January, 2005).
[20] City of Menlo Park, *Sidewalk Master Plan* (January 2009).

access to important pedestrian destinations, such as schools, parks, and downtown. The priority streets make up over a third of the roadways under Menlo Park's jurisdiction. As with bicycle improvements, the prioritization and budgeting of individual sidewalk improvements takes place through City Council approval of the five-year CIP (Capital Improvement Program) which incorporates public comment.

Transportation Impact Fee (TIF)

The City levies a Transportation Impact Fee (TIF), the current version of which was developed in 2009 by establishing a nexus among the trips associated with development projects, their impacts on the transportation system, and the cost to improve the City's impacted transportation system. The detailed TIF study looked at projected growth, and then examined potential intersection mitigation measures identified in the General Plan, new intersection mitigation measures not previously identified, and other measures to improve the traffic flow within the City and reduce the impacts to the intersections and roadways. The total cost of these improvements was then estimated, and the developer/City shares were calculated to generate specific fees that will be required for new development.

The TIF study reviewed the improvement measures on a preliminary level. The adoption of the TIF ordinance does not require the City to construct all of the improvements in the plan. The mix of projects and the details related to each individual project can be modified and prioritized by Council over time. A more detailed design would need to be developed for each improvement measure prior to implementation. Not every mitigation measure may ultimately be feasible, depending on variables such as right-of-way acquisition.

El Camino Real/Downtown Vision Plan

The vision of the Menlo Park community for the El Camino Real corridor and downtown is expressed as 12 goals in the *El Camino Real/Downtown Vision Plan* unanimously accepted by the Menlo Park City Council on July 15, 2008.[21] Selected transportation-related goals from the Vision Plan are listed below.

- Provide greater east-west town-wide connectivity.
- Improve circulation and streetscape conditions on El Camino Real.
- Protect and enhance pedestrian amenities on Santa Cruz Avenue.
- Provide an integrated, safe and well-designed pedestrian and bicycle network.
- Develop parking strategies and facilities that meet the commercial and residential needs of the community.

[21] City of Menlo Park, *El Camino Real/Downtown Vision Plan* (July, 2008).

4.13.3 Impacts and Mitigation Measures

Significance Criteria

a) Implementation of the Plan would have a significant impact on intersection operations if it would result in the following.

- *At arterial signalized intersections in Menlo Park,* the addition of project traffic causes an intersection operating at LOS D or better to operate at LOS E or F; or an increase of 23 seconds or greater in average vehicle delay; or an increase of more than 0.8 seconds of delay to vehicles on the most critical movements of an arterial intersection operating at LOS E or F prior to the addition of project traffic.
- *At local approaches to State controlled signalized intersections in Menlo Park,* the addition of project traffic causes an intersection operating at LOS D or better to operate at LOS E or F; or an increase of 23 seconds or greater in average vehicle delay; or causes an increase of more than 0.8 seconds of delay to vehicles on local approaches to State controlled signalized intersections operating at LOS E or F prior to the addition of project traffic.
- *At other signalized intersections (collector or local streets),* the addition of project traffic causes an intersection operating at LOS C or better to operate at LOS D, E or F; or an increase of 23 seconds or greater in average vehicle delay; or an increase of more than 0.8 seconds of delay to vehicles on the most critical movements of a collector or local street intersection operating at LOS D, E or F prior to the addition of project traffic.
- *At signalized intersections within the City of Palo Alto,* the addition of project traffic causes a regional intersection operating at LOS E or better to operate at LOS F; or cause an intersection currently operating at LOS F to increase in critical movement delay of four seconds or more; and increase the critical volume-to-capacity (v/c) ratio by 0.01 or more.
- *At signalized intersections within the Town of Atherton,* the addition of project traffic causes an intersection operating at LOS D or better to operate at LOS E or F; or cause an intersection currently operating at LOS E to operate at LOS F; or cause an intersection currently operating at LOS F to increase delay by more than 4 seconds.
- *On minor arterial streets,* if the existing Average Daily Traffic Volume (ADT) is: (1) greater than 18,000 (90% of capacity) and there is a net increase of 100 trips or more in ADT due to project related traffic; (2) the ADT is greater than 10,000 (50% of capacity) but less than 18,000, and the project related traffic increases the ADT by 12.5% or the ADT becomes 18,000 or more; or (3) the ADT is less than 10,000, and the project related traffic increases the ADT by 25%.
- *On collector streets,* if the existing ADT is: (1) greater than 9,000 (90% of capacity) and there is a net increase of 50 trips or more in ADT due to project related traffic; (2) the ADT is greater than 5,000 (50% of capacity) but less than 9,000, and the project related traffic increases the ADT by 12.5% or the ADT becomes 9,000 or more; or (3) the ADT is less than 5,000, and the project related traffic increases the ADT by 25%.
- *On local streets,* a traffic impact may be considered potentially significant if the existing ADT is: (1) greater than 1,350 (90% of capacity) and there is a net increase of 25 trips or more in ADT due to project related traffic; (2) the ADT is greater than

750 (50% of capacity) but less than 1,350, and the project related traffic increases the ADT by 12.5% or the ADT becomes 1,350; or (3) the ADT is less than 750, and the project related traffic increases the ADT by 25%.

- *On freeway segments*, the addition of project traffic causes a freeway segment to operate worse than its adopted CMP LOS standard, or adds traffic equivalent to one percent of the segment's capacity for segments violating the CMP LOS standard prior to the addition of project traffic.

b) Implementation of the Plan would have a significant impact on transit operations if:

- The proposed project would generate a substantial increase in transit riders that cannot be adequately served by the existing transit services; or
- The proposed project would generate demand for transit services in an area that is more than ¼-mile from existing transit routes.

c) Implementation of the Plan would have a significant impact on pedestrian or bicycle circulation if:

- The project would not provide adequate pedestrian or bicycle facilities to connect to the area circulation system; or
- Vehicles would cross pedestrian facilities on a regular basis without adequate design and/or warning systems, causing safety hazards; or
- The project design would cause increased potential for bicycle/vehicle conflicts.

d) Implementation of the Plan would have a significant impact on parking if:

- The project fails to provide a sufficient quantity of parking for vehicles;
- The project increases off-site parking demand above that which is provided in the immediate project area; or
- The project fails to provide a sufficient quantity of parking for bicycles.

Comments received in response to the Notice of Preparation (NOP) included a concern with the potential impacts of the proposed parking garages on the ability of delivery and garbage vehicles to serve the adjacent properties. The Specific Plan requires a 25-foot setback between the garages and any adjacent private property for the express intent of providing services and emergency access. As a result, there would not be an impact from the parking garages on access to adjacent property, and this topic is not analyzed further.

There was also an NOP comment regarding vehicle queuing across the Caltrain tracks. This topic is not analyzed further due to the fact that there is not a specific threshold of impact and the fact that the Specific Plan would not substantially modify the existing conditions. Vehicle queues currently cross the Caltrain tracks during peak hours at the Ravenswood Avenue grade crossing, but warning devices and signage currently prevent most drivers from stopping directly on the tracks, and should continue to do so in the future. Turn restrictions at the adjacent intersection of Ravenswood Avenue and Alma Street during the PM peak hours also serve to improve traffic flow and limit the potential for cars stopping on the tracks.

Approach to Analysis

The Specific Plan would affect travel in Menlo Park in two general ways: (1) the new development that would occur because of the land use changes would increase travel demand, particularly vehicle traffic which is the primary travel mode in Menlo Park; and (2) the transportation system changes would cause some minor mode shifts and traffic diversions.[22] The increases in travel demand due to the new land uses and the associated amount of added traffic to the study locations on surrounding roadway system are addressed first, followed by a discussion on mode shift and traffic diversion.

Land Use Travel Demand and Traffic Projections

The Specific Plan's land use program includes both new development and redevelopment, which replaces existing land uses with, in some cases, different land uses or larger amounts of the same land use. The potential maximum amount of land use changes within the Plan area are summarized below:

- 680 multi-family dwelling units (apartments, condominiums, and townhouses);
- 91,800 square feet of retail space;
- 240,820 square feet of commercial (office) space; and
- 380 hotel rooms.

Trip Generation Rates

The amount of travel generated by the land use changes was estimated by applying trip generation rates and equations from the Institute of Transportation Engineers (ITE) Trip Generation, 8th edition.[23] The resulting trip generation rates are presented in **Table 4.13-4**.[24] This table also identifies the ITE land use associated with the rates. The rates were selected to reflect that this is an analysis of a land use plan and does not include specific land use developments. For example, general office rates were used to estimate trips generated by the commercial space, even though other uses, such as medical office space which has a slightly higher trip generation rate, are allowed. Using more land-use-specific rates was deemed to be overly speculative, especially as the City has discretion to require more detailed analyses of specific land use projects when they are proposed.

The ITE rates are derived from surveys of stand-alone uses in suburban locations with little to no transit access or opportunity for trips to be made between nearby uses via walking, bicycling, or very short vehicle trips. Therefore they are not reflective of the types of uses and development patterns of the Specific Plan. Trip reductions were applied to account for the infill and mixed-use nature of the land use plan and to account for transit trips due to the close proximity of the Menlo Park Caltrain station.

22 City of Menlo Park, *Transportation Impact Analysis Guidelines.*
23 Institute of Transportation Engineers (ITE), *Trip Generation, 8th Edition* (2008).
24 The equations for all uses (except retail, motel, and auto dealership uses, in which average rates were used) were applied to the total amount of each use in each subarea to obtain subarea specific rates. Therefore there are some slight variations in the rates. Apartment rates were selected for the residential uses as they are higher than condominium/townhouse rates and are therefore more conservative.

TABLE 4.13-4
TRIP GENERATION RATES

Specific Plan Land Use	ITE Land Use	ITE Land Use Code	Unit	Rates						
					AM Peak Hour			PM Peak Hour		
				Daily	In	Out	Total	In	Out	Total
Residential	Apartment	220	du	6.07[a] / 6.09[b] / 6.08[c] / 6.10[d]	0.10[a] / 0.10[b] / 0.10[c] / 0.11[d]	0.41[a] / 0.42[b] / 0.41[c] / 0.42[d]	0.50[a] / 0.52[b] / 0.51[c] / 0.53[d]	0.40[a] / 0.44[b] / 0.42[c] / 0.47[d]	0.22[a] / 0.24[b] / 0.22[c] / 0.26[d]	0.62[a] / 0.68[b] / 0.64[c] / 0.73[d]
Retail	Shopping Center	820	sf	42.94	0.61	0.39	1.00	1.83	1.90	3.73
Auto Dealership	New Car Sales	841	sf	33.34	1.50	0.53	2.03	1.01	1.58	2.59
Commercial	Office	710	sf	11.01 / 11.17[c]	1.36 / 1.42[c]	0.19	1.55 / 1.61[c]	1.25	1.23	1.49 / 1.48[c]
Motel	Motel	320	rm	5.63	0.16	0.29	0.45	0.25	0.29	0.47
Hotel	Hotel	310	rm	8.17 / 7.71[c]	0.34	0.22	0.56	0.31	0.22	0.59

[a] Downtown Area
[b] Station Area
[c] El Camino Real South Area
[d] El Camino Real North Area

SOURCE: Institute of Transportation Engineers, *Trip Generation*, 8th Edition (2008).

Infill/Mixed Use Development and Transit Trip Reductions

There are few methodologies available to estimate the unique trip generation characteristics of mixed-use and infill developments. One of the most commonly used methods is to use trip generation rates or equations from the Institute of Transportation Engineers (ITE) Trip Generation and apply reductions from the mixed-use internalization spreadsheet from the *ITE Trip Generation Handbook*.[25] This method has some shortcomings in that it is based on a limited sample size of six mixed-use sites in Florida, it is not recommended for town center projects such as the land uses changes proposed in Menlo Park's El Camino Real/Downtown Specific Plan, it is limited to three land use types (residential, retail, and office), and it does not take into account the influence of nearby land uses.

A more comprehensive analysis of mixed-use and infill trip generation was developed and is presented in the paper, *Traffic Generated by Mixed-Use Developments – A Six-Region Study Using Consistent Built Environmental Measures.*[26] The study gathered data from 239 sites/data sources, developed a trip internalization methodology (MXD model), and validated the methodology at 16 sites. Among the validation sites, use of the MXD model produced superior statistical performance of estimated versus observed external vehicle trips when compared to applications of the ITE rates alone or application of the ITE rates with the ITE trip internalization technique.

[25] Institute of Transportation Engineers (ITE), *Trip Generation Handbook, 2nd Edition* (March, 2004).
[26] Ewing, Reid, Michael Greenwald, Ming Zhang, Jerry Walters, et. al., *Traffic Generated by Mixed-Use Developments – A Six-Region Study Using Built Environmental Measures* (September, 2008).

Internalization reductions were estimated using both methods. The ITE reductions ranged from 0 to 13 percent, and the MXD reductions ranged from 10 to 16 percent. It was determined that a 10 percent reduction was appropriate to account for the infill and mixed-use nature of the land use plan where vehicle trips would be linked and/or replaced with walk and bicycle trips to nearby land uses.

Reductions in vehicle trips due to transit usage are based on the proposed transit mode share. Transit mode shares for mixed-use developments near transit stations were obtained from a January 2004 report titled *Travel Characteristics of Transit-Oriented Development in California*.[27] Transit use information for employment sites near rail stations was also obtained from Transportation Research Record 1835, Paper No. 03-4352, *Transit Use and Proximity to Rail – Results from Large Employment Sites in the San Francisco, California, Bay Area*, by Jennifer Dill.[28] This information, plus 2000 Census data, was used to develop transit use reductions for this analysis due to the proximity of the Caltrain station and bus routes on El Camino Real. Anticipated transit trip reductions for potential land use developments in the Plan area are presented in **Table 4.13-5**.

TABLE 4.13-5
TRANSIT TRIP REDUCTIONS

Location	Residential	Commercial (Office)	Retail	Hotel
Downtown Area[a]	5%	3%	2%	1%
Station Area[b]	10%	5%	3%	1%
El Camino Real South Area	2%	1%	0%	0%
El Camino Real North Area	2%	1%	0%	0%

NOTE: The reductions presented in Table 4.13-6 refer to the amount of vehicle trips being replaced by transit trips, primarily rail due to the proximity of the Caltrain station.

[a] Also includes adjacent parcels in the El Camino Real North and South Areas on the west side on El Camino Real
[b] Also includes adjacent parcels in the El Camino Real North and South Areas on the east side on El Camino Real

SOURCE: Fehr & Peers, 2010

Trip Generation Estimates

The trip generation estimates were summarized by subarea and for the Plan area as a whole as presented in **Table 4.13-6**. Rates based on land use type were applied to the new uses to be added and the existing occupied space to be removed to estimate the amount of net added traffic. It should be reiterated that these estimates represent an analysis of a land use plan and do not pertain to particular land use developments.[29]

[27] Lund, Hollie, Robert Cervero, Richard Wilson, *Travel Characteristics of Transit-Oriented Development in California* (January, 2004).
[28] Dill, Jennifer, *Transit Use and Proximity to Rail – Results from Large Employment Sites in the San Francisco, California, Bay Area* (January, 2003)
[29] The City has discretion to require more detailed analyses of specific land use projects when they are proposed and if their trip estimates differ from those in Table 4.13-7.

TABLE 4.13-6
SUMMARY OF TRIP GENERATION ESTIMATES BY SUB AREA

Area	Number of Trips						
	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Downtown							
Vehicle Trips Generated by Added Uses	5,243	133	137	270	243	239	482
Vehicle Trips Subtracted from Existing Uses being Removed	-643	-34	-8	-42	-23	-44	-67
Net Added Vehicle Trips	**4,600**	**99**	**129**	**228**	**220**	**195**	**415**
Station Area							
Vehicle Trips Generated by Added Uses	1,837	28	55	83	97	79	176
Vehicle Trips Subtracted from Existing Uses being Removed	-374	-46	-7	-53	-8	-43	-51
Net Added Vehicle Trips	**1,463**	**-18**	**48**	**30**	**89**	**36**	**125**
El Camino Real South							
Vehicle Trips Generated by Added Uses	8,221	429	190	619	327	482	809
Vehicle Trips Subtracted from Existing Uses being Removed	-1,814	-61	-31	-92	-66	-86	-152
Net Added Vehicle Trips	**6,407**	**368**	**159**	**527**	**261**	**396**	**657**
El Camino Real North							
Vehicle Trips Generated by Added Uses	1,410	77	49	126	70	95	165
Vehicle Trips Subtracted from Existing Uses being Removed	-495	-7	-5	-12	-21	-22	-43
Net Added Vehicle Trips	915	70	44	114	49	73	122
Plan Area							
Vehicle Trips Generated by Added Uses	16,711	667	431	1,098	737	895	1,632
Vehicle Trips Subtracted from Existing Uses being Removed	-3,326	-148	-51	-199	-118	-195	-313
Total Net Added Vehicle Trips	**13,385**	**519**	**380**	**899**	**619**	**700**	**1,319**

SOURCES: ITE *Trip Generation*, 8th Edition (2008); Fehr & Peers, 2010.

Trip Distribution and Assignment

The traffic generated by the Specific Plan land uses would be distributed on the roadway system based on the locations of complementary land uses. For example, the outbound residential vehicle trips during the a.m. peak hour would primarily comprise residents driving to work and school. Therefore these trips would be headed to employment centers and schools. The City of Menlo Park has developed directions of approach and departure for residential, employment, and commercial (retail) uses to be used to assign traffic generated by proposed developments to the City's roadway system. These directions are presented in the Circulation System Assessment document and were obtained from household interview surveys conducted in 1999, the City of Menlo Park *Employee Transportation Survey*, and pedestrian interviews conducted in 1998.[30] They vary based on the general locations within the city: Sharon Heights; West Menlo Park; West

[30] *City of Menlo Park, Circulation System Assessment Document (February, 2010) and City of Menlo Park, Menlo Park Employee Transportation Survey (1999).*

of U.S. Route 101; and East of U.S. Route 101. The Plan area is in West Menlo Park. Directions of approach and departure for the hotels were developed based on the relative locations of the San Francisco and San Jose Mineta International airports, major employment areas, and other nearby destinations. The directions of approach and departure are presented in **Table 4.13-7**. These directions of approach and departure were used to assign the Specific Plan added traffic to the study intersections, roadway segments, and freeway segments.

TABLE 4.13-7
DIRECTIONS OF APPROACH AND DEPARTURE

Gateway	Residential	Commercial (Office)	Retail	Hotel
I-280 North	5%	12%	7%	5%
I-280 South	9%	16%	3%	5%
Sand Hill West	1%	1%	1%	0%
SR 84 East	2%	20%	1%	10%
U.S. Route 101 South	9%	17%	3%	15%
U.S. Route 101 North	2%	4%	2%	15%
Alameda North	6%	4%	4%	0%
El Camino Real North	10%	7%	6%	10%
Junipero South	5%	3%	4%	0%
Sand Hill East	3%	1%	3%	0%
El Camino South	14%	7%	15%	17%
Sharon Heights	5%	1%	8%	3%
Downtown	26%	6%	38%	20%
Willows	3%	1%	5%	0%
Total	100%	100%	100%	100%

SOURCE: Circulation System Assessment Document, City of Menlo Park and Fehr & Peers, 2010.

Specific Plan Transportation Improvements

The Specific Plan contains transportation improvements aimed to make walking and bicycling more attractive modes of transportation. These include widened sidewalks on El Camino Real and Santa Cruz Avenue, potential curb extensions on El Camino Real to shorten pedestrian crossing distances, new pedestrian/bicycle underpasses at the Caltrain tracks near Santa Cruz Avenue and near Middle Avenue dependent on final design of high speed rail or Caltrain track grades and new bike lanes on Oak Grove Avenue. Many of these improvements would help pedestrian travel between destinations in the Plan area and between the downtown and the Caltrain Station. The added bicycle routes and lanes, plus support facilities such as new bicycle parking facilities in the downtown, would allow some people to ride their bikes to the downtown instead of driving. Therefore, there would be some decreases in vehicle travel, especially in the downtown and station areas. For the purposes of this analysis, no reductions were taken. Therefore, the analysis is conservative.

The following impact analysis focuses on potential impacts of the Plan related to transportation, circulation, and parking. The evaluation considered the Specific Plan, current conditions, and applicable regulations and guidelines.

Impacts

Intersection Operations

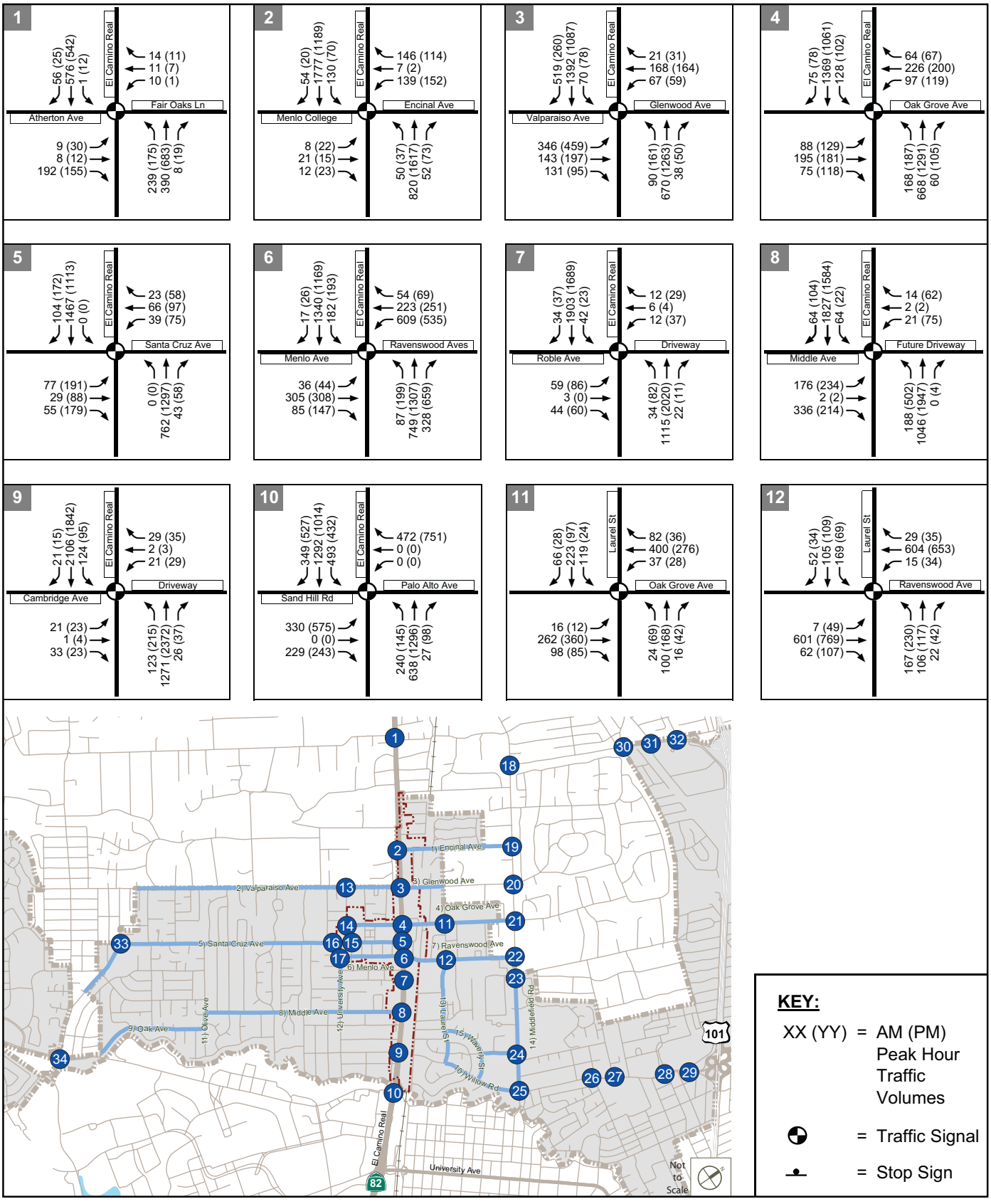
Impact TR-1: Traffic from future development in the Plan area would adversely affect operation of area intersections. (Significant)

Intersection service levels at the 34 study locations in Menlo Park and adjacent jurisdictions (described in the Setting) were calculated for Existing Plus Project Conditions. The resulting volumes are shown on **Figures 4.13-7a** through **4.13-7c**. The intersection LOS results are summarized in **Table 4.13-8**. For the study intersections on El Camino Real, delays and LOS on the side-street approaches also are shown. The corresponding LOS calculation sheets are included in technical appendices of the transportation impact analysis (**Appendix E**).

For the three intersections with potential right-turn lane removal to accommodate sidewalk extensions (Numbers 4, 5 and 6), the LOS analysis was conducted both with and without the lane change. The calculated intersection levels of service do not vary with the removal of the right-turn lanes. The right-turn lanes carry few vehicles in comparison to the through movements so adding those vehicles to the through lane (i.e., in a restriped shared through/right-turn lane) would not substantially increase the delay. There would be some approach delay changes, and the calculated intersection queues would vary with the removal of the right-turn lanes. Although the right-turn lanes carried few vehicles in comparison to the through movements, adding those movements to the through lane (a restriped shared through/right lane) would increase the queues by up to about a few hundred feet depending upon the intersection, direction, and peak hour. The corresponding LOS calculation sheets are included in technical appendices of the transportation impact analysis (**Appendix E**).

Some intersections show an improvement (reduction) in average delay with the addition of project traffic, which is counter-intuitive. The average delay values in the table are weighted averages, which are reduced when traffic is added to a movement with a low delay, such as the through movements in the non-peak direction on El Camino Real.[31] Conversely, relatively small volume increases to movements with high delays can increase the weighted average delay substantially.

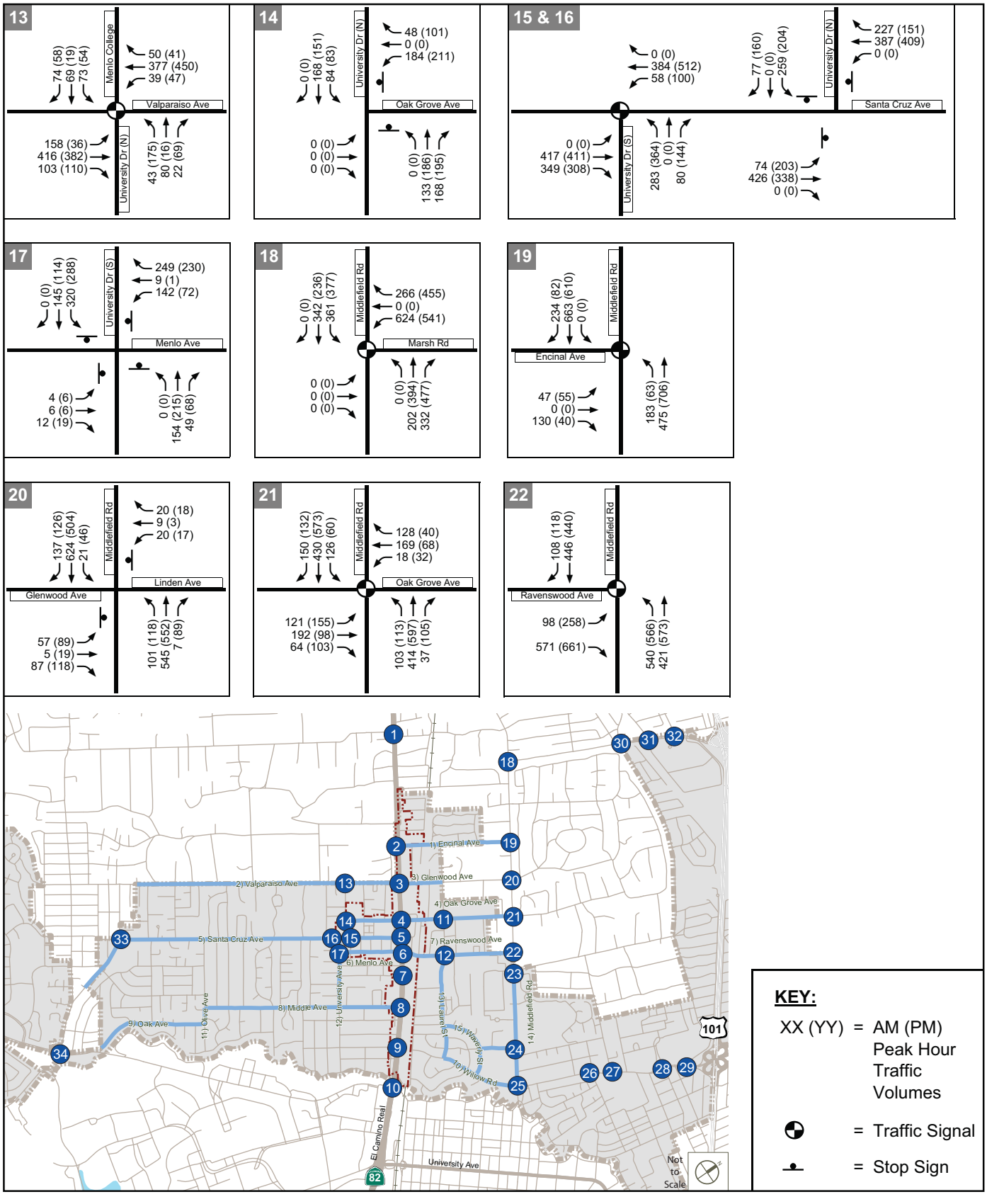
[31] For example, if you have one movement with 10 vehicles with a delay of 100 seconds and another movement with 400 vehicles and 10 seconds of delay, the weighted average delay is calculated as (100 seconds X 10 vehicles + 10 seconds X 400 vehicles) / 410 vehicles = 12.2 seconds per vehicle. Now if you add 100 vehicles to the movement with 10 seconds of delay, the weight average is calculated as (100 seconds X 10 vehicles + 10 seconds X 500 vehicles) / 510 vehicles = 11.8 seconds per vehicle. The weighted average delay improves, even though more vehicles are added.



SOURCE: Fehr & Peers

Menlo Park El Camino Real/Downtown Specific Plan EIR . 208581

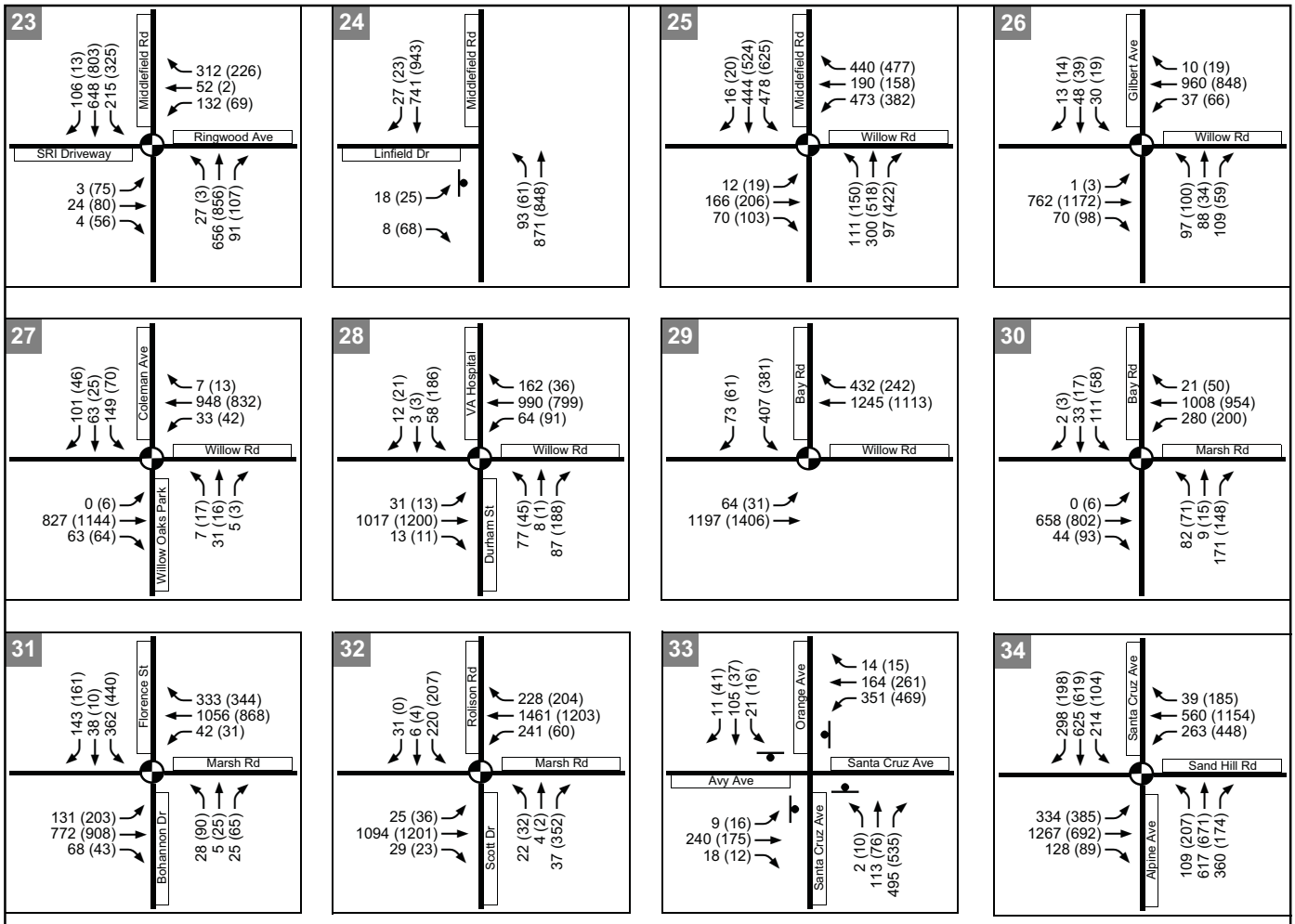
Figure 4.13-7a
Existing Plus Project
Traffic Control Devices and Intersection Volumes

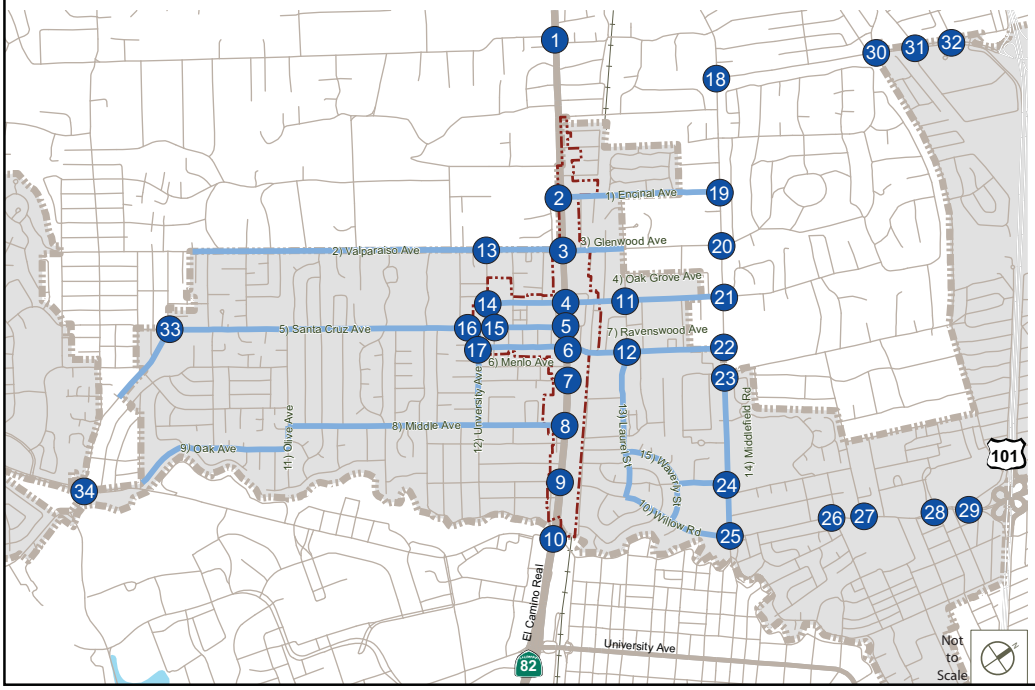


SOURCE: Fehr & Peers

Menlo Park El Camino Real/Downtown Specific Plan EIR . 208581

Figure 4.13-7b
Existing Plus Project
Traffic Control Devices and Intersection Volumes





KEY:

XX (YY) = AM (PM) Peak Hour Traffic Volumes

= Traffic Signal

= Stop Sign

SOURCE: Fehr & Peers

Menlo Park El Camino Real/Downtown Specific Plan EIR . 208581

Figure 4.13-7c
Existing Plus Project
Traffic Control Devices and Intersection Volumes

TABLE 4.13-8
EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE

Intersection and Approach	Traffic Control	Peak Hour	LOS Threshold	Existing Conditions			Existing Plus Project Conditions			
				Critical Delay[a]	Average Delay[b]	LOS[c]	Critical Delay	Average Delay[b]	LOS[c]	Δ in Delay[d]
#1 El Camino Real & Atherton Avenue/ Fair Oaks Lane (Ct/At)	Signal	AM PM	D	42.1 40.7	39.8 35.9	D D	41.7 40.1	39.1 35.0	D D	-0.7 -0.9
Eastbound Approach		AM PM		40.7 36.6	40.7 36.6	D D	41.5 37.7	41.5 37.7	D D	0.8 1.1
Westbound Approach		AM PM		**64.6** **64.1**	**64.3** **64.0**	**E** **E**	**64.6** **64.1**	**64.3** **64.0**	**E** **E**	**0.0** **0.0**
#2 El Camino Real & Encinal Avenue (Ct/At/MP)	Signal	AM PM	D	14.7 19.3	18.3 17.8	B B	15.6 20.2	19.0 18.5	B B	0.7 0.7
Eastbound Approach		AM PM		- -	49.8 48.6	D D	- -	49.8 48.6	D D	0.0 0.0
Westbound Approach		AM PM		**61.2** **60.8**	**58.2** **57.0**	**E** **E**	**61.2** **60.8**	**58.4** **57.0**	**E** **E**	**0.2** **0.0**
#3 El Camino Real & Glenwood Avenue/ Valparaiso Avenue (Ct/At/MP)	Signal	AM PM	D	39.1 42.9	35.5 42.8	D D	40.9 48.7	36.6 45.5	C D	1.1 2.7
Eastbound Approach		AM PM		45.9 38.6	45.3 38.0	D D	45.9 38.6	45.3 37.9	D D	0.0 0.0
Westbound Approach		AM PM		**71.7** **71.5**	**68.0** **68.0**	**E** **E**	**75.2** **72.7**	**70.5** **68.8**	**E** **E**	**2.5** **0.8**
#4 El Camino Real & Oak Grove Avenue (Ct/MP) w/RT lanes	Signal	AM PM	D	29.5 27.2	31.8 29.7	C C	32.6 30.0	34.2 32.4	C C	2.4 2.7
Eastbound Approach		AM PM		**61.5** **64.4**	**63.0** **55.6**	**E** **E**	**78.5** **68.2**	**66.5** **57.4**	**E** **E**	**3.5** **1.8**
Westbound Approach		AM PM		**70.4** **59.4**	**61.2** **67.1**	**E** **E**	**65.3** **65.6**	**64.5** **69.4**	**E** **E**	**3.3** **2.3**
Without northbound and southbound right- turn lane	Signal	AM PM	D	N/A	N/A	N/A	32.9 30.2	35.0 33.5	C C	3.2 3.8
Eastbound Approach		AM PM					**78.5** **68.2**	**66.5** **57.4**	**E** **E**	**3.5** **1.8**
Westbound Approach		AM PM					**65.3** **65.6**	**64.5** **69.4**	**E** **E**	**3.3** **2.3**
#5 El Camino Real & Santa Cruz Avenue (Ct/MP) w/ RT lanes	Signal	AM PM	D	10.6 25.3	10.6 24.2	B C	11.9 26.6	11.5 25.3	B C	0.9 1.1
Eastbound Approach		AM PM		**62.7** 56.0	**62.3** 54.6	**E** D	**64.6** 58.3	**63.6** **56.3**	**E** **E**	**1.3** **1.7**

TABLE 4.13-8 (Continued)
EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE

Intersection and Approach	Traffic Control	Peak Hour	LOS Threshold	Existing Conditions			Existing Plus Project Conditions			
				Critical Delay[a]	Average Delay[b]	LOS[c]	Critical Delay	Average Delay[b]	LOS[c]	Δ in Delay[d]
Westbound Approach		AM PM		**64.7** **60.1**	**63.7** **58.6**	**E** **E**	**66.4** **62.0**	**65.0** **60.0**	**E** **E**	**1.3** **1.4**
Without southbound right-turn lane	Signal	AM PM	D	N/A	N/A	N/A	11.9 26.8	11.9 26.2	B C	1.3 2.0
Eastbound Approach		AM PM					**64.6** **58.3**	**63.6** **56.3**	**E** **E**	**1.3** **1.7**
Westbound Approach		AM PM					**66.4** **62.0**	**65.0** **60.0**	**E** **E**	**1.3** **1.4**
#6 El Camino Real & Menlo Avenue/ Ravenswood Avenues (Ct/MP) w/RT lanes	Signal	AM PM	D	41.0 54.8	40.5 44.1	D D	44.6 61.2	42.9 48.1	D D	2.4 4.0
Eastbound Approach		AM PM		**59.4** **61.9**	**59.4** **61.9**	**E** **E**	**60.7** **65.4**	**60.7** **65.4**	**E** **E**	**1.3** **3.5**
Westbound Approach		AM PM		**55.1** **61.3**	53.7 **60.3**	D **E**	**62.1** **66.7**	**58.8** **64.4**	**E** **E**	**5.0** **4.0**
Without southbound right-turn lane	Signal	AM PM	D	N/A	N/A	N/A	44.7 **61.2**	43.1 48.3	D D	2.6 4.2
Eastbound Approach		AM PM					**60.7** **65.4**	**60.7** **65.4**	**E** **E**	**1.3** **3.5**
Westbound Approach		AM PM					**62.1** **66.7**	**58.8** **64.4**	**E** **E**	**5.0** **4.0**
#7 El Camino Real & Roble Avenue (Ct/MP)	Signal	AM PM	D	10.9 13.9	11.0 14.3	B B	11.4 16.1	11.5 15.5	B B	0.5 1.2
Eastbound Approach		AM PM		**57.7** **64.5**	**57.7** **64.5**	**E** **E**	**58.2** **69.5**	**58.2** **69.5**	**E** **E**	**0.5** **5.0**
Westbound Approach		AM PM		- -	52.8 54.4	D D	- -	53.0 54.3	D D	0.2 -0.1
#8 El Camino Real & Middle Avenue (Ct/MP)	Signal	AM PM	D	35.5 40.8	29.0 27.6	C C	40.6 53.1	36.3 38.8	D D	7.3 11.2
Eastbound Approach		AM PM		49.8 67.5	46.4 **65.8**	D **E**	**58.1** **85.2**	**56.9** **82.4**	**E** **F**	**10.5** **16.6**
Westbound Approach		AM PM		N/A	N/A	N/A	**68.0** **73.2**	**62.6** **82.9**	**E** **F**	N/A

TABLE 4.13-8 (Continued)
EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE

Intersection and Approach	Traffic Control	Peak Hour	LOS Threshold	Existing Conditions			Existing Plus Project Conditions			
				Critical Delay[a]	Average Delay[b]	LOS[c]	Critical Delay	Average Delay[b]	LOS[c]	Δ in Delay[d]
#9 El Camino Real & Cambridge Ave (Ct/MP)	Signal	AM PM	D	13.5 6.6	11.2 12.3	B B	13.7 21.0	14.0 21.0	B B	2.8 8.7
Eastbound Approach		AM PM		**66.8** **66.4**	**66.8** **66.4**	**E** **E**	**67.5** **67.5**	**67.5** **67.5**	**E** **E**	**0.7** **1.1**
Westbound Approach		AM PM		**-** **-**	**62.0** **62.8**	**E** **E**	**-** **74.4**	**67.2** **74.4**	**E** **E**	**5.2** **11.6**
#10 El Camino Real & Sand Hill Road (Ct/PA)	Signal	AM PM	E	24.3 41.8	26.5 34.0	C C	26.9 43.3	28.7 34.7	C C	2.2 0.7
#11 Laurel Street & Oak Grove Avenue (MP)	Signal	AM PM	C	14.3 12.1	13.4 11.5	B B	14.6 12.2	13.6 11.6	B B	0.2 0.1
#12 Laurel Street & Ravenswood Avenue (MP)	Signal	AM PM	D	14.8 11.6	13.7 11.9	B B	15.2 12.1	14.2 12.1	B B	0.5 0.2
#13 University Dr (N) & Valparaiso Ave (MP/At)	Signal	AM PM	D	13.7 15.6	13.6 15.4	B B	13.9 15.8	13.7 15.6	B B	0.1 0.2
#14 University Dr (N) & Oak Grove Ave (MP)	All-way Stop	AM PM	C	10.0 11.2	10.0 11.2	B B	10.4 12.1	10.4 12.1	B B	0.4 0.9
#15 University Dr (N) & Santa Cruz Ave (MP)	All-way Stop	AM PM	D	31.5 19.0	31.5 19.0	D C	***41.9*** 26.9	***41.9*** 26.9	***E*** D	***10.4***[e] 7.9
#16 University Dr (S) & Santa Cruz Ave (MP)	Signal	AM PM	D	15.3 16.8	12.2 15.0	B B	15.2 17.8	12.3 15.8	B B	0.1 0.8
#17 University Drive (S) & Menlo Avenue (MP)	All-way Stop	AM PM	C	13.5 12.4	13.5 12.4	B B	13.5 12.9	13.5 12.9	B B	0.0 0.5
#18 Middlefield Road & Marsh Road (At)	Signal	AM PM	D	61.1 44.5	34.0 29.0	C C	70.6 48.0	39.4 30.9	D C	5.4 1.9
#19 Middlefield Road & Encinal Avenue (At)	Signal	AM PM	D	22.3 12.4	17.2 9.1	B A	23.8 12.9	18.2 9.4	B B	1.0 0.3
#20 Middlefield Road & Glenwood Avenue /Linden Avenue (At)	Side Street Stop	AM PM	D	7.5 25.1	**56.1** **>150**	**F** **F**	***10.1*** ***34.1***	***79.4*** ***>150***	***F*** ***F***	***2.6***[e] ***9.1***[e]
#21 Middlefield Road & Oak Grove Avenue (At)	Signal	AM PM	D	12.1 10.7	11.6 10.8	B B	12.3 11.2	11.8 11.3	B B	0.2 0.5
#22 Middlefield Road & Ravenswood Ave (MP/At)	Signal	AM PM	D	30.1 38.3	22.7 28.1	C C	32.5 43.0	24.3 31.6	C C	1.6 3.5
#23 Middlefield Road & Ringwood Ave (MP/At)	Signal	AM PM	D	32.9 32.6	27.7 26.4	C C	33.9 33.1	28.3 26.3	C C	-0.6 -0.1

TABLE 4.13-8 (Continued)
EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE

Intersection and Approach	Traffic Control	Peak Hour	LOS Threshold	Existing Conditions			Existing Plus Project Conditions			
				Critical Delay[a]	Average Delay[b]	LOS[c]	Critical Delay	Average Delay[b]	LOS[c]	Δ in Delay[d]
#24 Middlefield Road & Linfield Drive (MP)	Side Street Stop	AM PM	D	0.9 1.2	21.4 15.9	C C	0.8 1.2	24.3 18.2	C C	2.9 2.3
#25 Middlefield Road & Willow Road (MP)	Signal	AM PM	D	43.2 **62.2**	41.6 53.5	D D	45.1 ***78.9***	42.9 ***64.5***	D ***E***	1.3 ***16.7***[e]
#26 Gilbert Avenue & Willow Road (MP)	Signal	AM PM	D	13.9 15.5	13.1 13.5	B B	14.9 22.7	13.9 19.4	B B	0.8 5.9
#27 Coleman Avenue & Willow Road (MP)	Signal	AM PM	D	33.0 13.9	22.5 10.9	C B	32.2 16.6	22.4 12.7	C B	-0.1 1.8
#28 Durham Street & Willow Road (MP)	Signal	AM PM	D	39.1 44.2	27.3 45.0	C D	61.5 44.1	38.9 45.7	D D	11.6 0.7
#29 Bay Road & Willow Road (Ct/MP)	Signal	AM PM	D	24.5 18.3	20.7 18.6	C B	24.7 18.5	20.5 18.4	C B	-0.2 -0.2
#30 Bay Road & Marsh Road (MP)	Signal	AM PM	D	22.7 19.9	16.1 14.3	B B	22.8 20.0	16.1 14.4	B B	0.0 0.1
#31 Florence St/ Bohannon Dr & Marsh Rd (MP)	Signal	AM PM	D	17.9 23.6	16.4 20.7	B C	17.9 23.6	16.3 20.6	B C	-0.1 -0.1
#32 Scott Drive & Marsh Road (MP)	Signal	AM PM	D	25.7 36.3	22.6 26.6	C C	27.1 36.2	23.4 26.5	C C	0.8 -0.1
#33 Orange Avenue/Santa Cruz Avenue & Avy Avenue/Santa Cruz Avenue (MP)	All-way Stop	AM PM	D	21.6 24.1	21.6 24.1	C C	28.7 ***46.1***	28.7 ***46.1***	D ***E***	7.1 ***22.0***[e]
#34 Santa Cruz Avenue/ Alpine Avenue & Sand Hill Road (MP)	Signal	AM PM	D	41.2 45.9	42.8 44.7	D D	43.9 46.9	44.1 45.6	D D	1.3 0.9

NOTES:
Jurisdictions: Ct - Caltrans, At - Atherton, MP - Menlo Park, PA - Palo Alto
* Denotes Caltrans intersection. Unacceptable operations are indicated in **bold** type, and significant impacts are indicated in ***bold & Italic*** type
a Average control delay (expressed in seconds per vehicle) for the critical movements only.
b Whole intersection weighted control total delay for signalized and all-way stop-controlled intersections (expressed in seconds per vehicle). For side-street stop controlled intersections, delays for worst approach are shown.
c LOS calculations performed using the methodology outlines in the 2000 *Highway Capacity Manual – Special Report 209*.
d Change in average delay between Existing and Existing Plus Project Conditions (unless otherwise noted).
e Average Critical Delay Change

SOURCE: Fehr & Peers, 2010

The results in Table 4.13-8 indicate that the Specific Plan would result in significant traffic impacts at the following intersections under Existing Plus Project Conditions:

Intersection Number	Impact
15	University Drive (North) and Santa Cruz Avenue would degrade from LOS D to LOS E in the a.m. peak hour (see Mitigation Measure TR-1a)
20	Middlefield Road and Glenwood Avenue/Linden Avenue would worsen the prevailing LOS F conditions (exceeding the threshold of significance) in both the a.m. and p.m. peak hours (see Mitigation Measure TR-1b)
25	Middlefield Road and Willow Road would degrade from LOS D to LOS E in the p.m. peak hour (see Mitigation Measure TR-1c)
33	Orange Avenue/Santa Cruz Avenue and Avy Avenue/Santa Cruz Avenue would degrade from LOS C to LOS E in the p.m. peak hour (see Mitigation Measure TR-1d)

Mitigation Measure TR-1a: The individual project applicant(s) shall contribute fair-share funding towards the following improvements at the intersection of University Drive (North) and Santa Cruz Avenue:

- Signalization when investigation of the full set of traffic signal warrants indicate that signalization is warranted; and
- Interconnecting the new signal with the existing signal at the University Drive (South) and Santa Cruz Avenue.

With Mitigation TR-1a, the intersection improves the level of service to LOS C during the a.m. peak hour under Existing plus Project Conditions, and the impact would be reduced to a less-than-significant level.

The new signal would increase queuing in all directions. Based on the westbound through and right-turn maximum queue estimates, the right-turn pocket at the University Drive (South) and Santa Cruz Avenue intersection should be at minimum 500 feet long. The distance between the University Drive (South) and Santa Cruz Avenue intersection and the upstream intersection at Johnson Street is approximately 300 feet; therefore, the eastbound right-turn pocket should extend beyond Johnson Street. This turn pocket extension would require the removal of several parking spaces on the south side of Santa Cruz Avenue.

Based on the southbound left-turn and right-turn maximum queue estimates, the right-turn pocket at the University Drive (North) and Santa Cruz Avenue intersection should be approximately 150 feet long. This turn pocket extension would require the removal of two parking spaces on the west side of University Drive.[32] Long queues would also extend into the downtown area of Menlo Park. However, due to the pedestrian-oriented nature of this area, no modifications are proposed.

[32] The two parking spaces that would be removed for the turn pocket extension are in addition to those identified in the Specific Plan.

This intersection (University Drive (North) and Santa Cruz Avenue) currently meets the peak-hour traffic signal warrant (see **Appendix E**). However, the peak-hour signal warrant analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on a thorough study of traffic and roadway conditions.

The decision to install a signal should not be based solely upon the warrants, because the installation of signals can lead to certain types of collisions, such as rear end collisions. Regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants should be considered to prioritize and program intersections for signalization.

While this improvement is not in the City's Transportation Impact Fee program (TIF), the TIF includes several funded signal installations, but with unspecified locations. Therefore, the City would consider this as a candidate for use of TIF funds. Without a funding mechanism, this impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-1b: The individual project applicant(s) shall contribute fair-share funding towards the following improvement at the intersection of Middlefield Road and Glenwood Avenue/Linden Avenue:

- Signalization when investigation of the full set of traffic signal warrants indicate that signalization is warranted.

Signalizing the intersection of Middlefield Road and Glenwood Avenue improves the level of service to LOS B and LOS C during the a.m. and p.m. peak hour, respectively under Existing Plus Project conditions. Therefore, the impact would be reduced to a less-than-significant level.

The recently-completed signal at Middlefield Road and Encinal Avenue is projected to shift some traffic that would otherwise use the Middlefield Road and Glenwood Avenue/ Linden Avenue intersection. That signal should also create gaps in the traffic stream that would allow side street traffic to more easily turn onto or cross Middlefield Road. However, although the degree of impact would be reduced, the traffic shifts and additional gaps of the Middlefield Road and Encinal Avenue intersection are not projected to fully mitigate the impact at the Middlefield Road and Glenwood Avenue/Linden Avenue intersection because the intersection would still operate at an unacceptable level of service. Therefore, the additional mitigation measure of a signal at Middlefield Road and Glenwood Avenue/Linden Avenue would still be needed. This improvement is not in the City's TIF. Therefore, the City could consider adding it to the TIF. Without a funding mechanism, this impact is considered to be significant and unavoidable. In addition, the intersection is under the City of Atherton's jurisdiction, therefore the City cannot guarantee its implementation and the impact remains significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-1c: The individual project applicant(s) shall contribute fair-share funding towards the following improvements at the intersection of Middlefield Road and Willow Road, as identified in the City's TIF program:

- Adding a second westbound left-turn lane;
- Modifying the westbound approach to two left-turn lanes, one through lane, and one right-turn lane; and
- Changing the signal phasing on the eastbound and westbound approaches from split phasing (each approach has a separate green phase) to protected left-turn phasing (with left-turn arrows).

These improvements are identified in the City's TIF program and would reduce the average intersection delay to an acceptable level. However, the improvements may not be feasible due to ROW acquisition needs (constrained by the presence of buildings). Therefore, the impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-1d: The individual project applicant(s) shall contribute fair-share funding towards the following improvements at the intersection of Orange Avenue/Santa Cruz Avenue and Avy Avenue/Santa Cruz Avenue:

- Signalization when investigation of the full set of traffic signal warrants indicate that signalization is warranted.

Signalizing the intersection of Orange Avenue/Santa Cruz Avenue and Avy Avenue/Santa Cruz Avenue would improve the level of service to LOS C during both the a.m. and p.m. peak hours under Existing Plus Project conditions. Therefore, the impact would be less than significant level, if the City can guarantee its implementation.

This improvement is not in the City's TIF. Therefore, the City could consider adding it to the TIF. Without a funding mechanism, this impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable

Roadway Segment Operations

Impact TR-2: Traffic from future development in the Plan area would adversely affect operation of local roadway segments. (Significant)

The roadway segments listed below (with controlling jurisdiction[s]) were selected for analysis of potential project and cumulative impacts: The existing volumes used in the analysis are presented in the transportation impact analysis (**Appendix E**) of the EIR.

1. Encinal Avenue from El Camino Real to Laurel Street (Menlo Park)
2. Encinal Avenue from Laurel Street to Middlefield Road (Atherton/Menlo Park)
3. Valparaiso Avenue from Delfino Way to San Mateo Drive (Atherton/ Menlo Park)
4. Glenwood Avenue from El Camino Real to Laurel Street (Menlo Park)
5. Oak Grove Avenue from Middlefield Road to Laurel Street (Atherton /Menlo Park)
6. Oak Grove Avenue from Laurel Street to El Camino Real (Menlo Park)
7. Oak Grove Avenue from El Camino Real to Crane Street (Menlo Park)
8. Oak Grove Avenue from University Drive (North) to Crane Street (Menlo Park)
9. Santa Cruz Avenue from El Camino Real to Crane Street (Menlo Park)
10. Santa Cruz Avenue from University Drive (South) to Crane Street (Menlo Park)
11. Santa Cruz Avenue from Olive Street to University Drive (South) (Menlo Park)
12. Santa Cruz Avenue from Olive Street to Orange Avenue/Avy Avenue (Menlo Park)
13. Santa Cruz Avenue from Orange Ave./Avy Ave. to Alameda de las Pulgas (Menlo Park)
14. Menlo Avenue from Crane Street to El Camino Real (Menlo Park)
15. Menlo Avenue from University Drive (South) to Crane Street (Menlo Park)
16. Ravenswood Avenue from Middlefield Road to Laurel Street (Atherton/Menlo Park)
17. Ravenswood Avenue from Laurel Street to Alma Street (Menlo Park)
18. Ravenswood Avenue from Alma Street to El Camino Real (Menlo Park)
19. Middle Avenue from El Camino Real to University Drive (South) (Menlo Park)
20. Middle Avenue from University Drive (South) to Olive Street (Menlo Park)
21. Oak Avenue from Sand Hill Road to Olive Street (Menlo Park)
22. Willow Road from Laurel Street to Middlefield Road (Menlo Park)
23. Olive Street from Oak Avenue to Middle Avenue (Menlo Park)
24. University Drive (North) from Oak Grove Avenue to Santa Cruz Avenue (Menlo Park)
25. University Drive (South) from Santa Cruz Avenue to Menlo Avenue (Menlo Park)
26. University Drive (South) from Menlo Avenue to Middle Avenue (Menlo Park)
27. Laurel Street from Ravenswood Avenue to Willow Road (Menlo Park)
28. Middlefield Road from Ringwood Avenue to Willow Road (Menlo Park)
29. Waverley Street from Laurel Street to Linfield Drive (Menlo Park)
30. Linfield Drive from Waverley Street to Middlefield Road (Menlo Park)

Estimates of the amount of daily traffic generated by the Specific Plan land uses were added to the existing roadway segment daily volumes. The results are presented in **Table 4.13-9**. The City of Menlo Park's roadway segment significance criteria was used to identify potentially significant impacts.[33] The results indicate that the Specific Plan would result in significant traffic impacts at the following roadway segments under Existing Plus Project Conditions:

[33] Analysis of a proposed project's impact on Menlo Park roadway segments is based on project-generated changes to average daily traffic volumes, not on changes to LOS conditions (see Significance Criteria for Street Segments in the technical appendices of the transportation impact analysis [**Appendix E]**).

TABLE 4.13-9
EXISTING PLUS PROJECT ROADWAY LEVELS OF SERVICE

Roadway Segment	Classification	Existing ADT	Added Daily Volume	Existing Plus Project ADT	Impact?
1. Encinal Avenue - Laurel to Middlefield (At/MP)	Collector	3,359	80	3,439	No
2. Encinal Avenue - El Camino to Laurel (MP)	Collector	4,540	86	4,626	No
3. Valparaiso Avenue - Delfino Way to El Camino (At/MP)	Minor Arterial	10,208	488	10,696	No
4. Glenwood Avenue - El Camino to Laurel (MP)	Collector	5,766	130	5,896	No
5. Oak Grove Avenue - Middlefield to Laurel (At/MP)	Collector	8,650	***847***	***9,497***	***Yes***
6. Oak Grove Avenue - Laurel to El Camino (MP)	Collector	9,590	***861***	***10,451***	***Yes***
7. Oak Grove Avenue - El Camino to Crane (MP)	Collector	8,367	***699***	***9,066***	***Yes***
8. Oak Grove Avenue - Crane to University (MP)	Collector	5,842	699	6,541	No
9. Santa Cruz Avenue - El Camino to Crane (MP)	Minor Arterial	7,351	1,134	8,485	No
10. Santa Cruz Avenue - Crane to University (MP)	Minor Arterial	8,603	1,134	9,737	No
11. Santa Cruz Avenue - University to Olive (MP)	Minor Arterial	15,445	1,694	17,139	No
12. Santa Cruz Avenue - Olive to Avy/Orange (MP)	Minor Arterial	15,135	1,694	16,829	No
13. Santa Cruz Avenue - Avy/Orange to Alameda de las Pulgas (MP)	Minor Arterial	10,522	***1,451***	***11,973***	***Yes***
14. Menlo Avenue - El Camino to Crane (MP)	Collector	8,675	***787***	***9,462***	***Yes***
15. Menlo Avenue - Crane to University (MP)	Collector	6,881	202	7,083	No
16. Ravenswood Avenue - Middlefield to Laurel (At/MP)	Minor Arterial	16,833	***1,348***	***18,181***	***Yes***
17. Ravenswood Avenue - Laurel to Alma (MP)	Minor Arterial	18,250	***1,822***	***20,072***	***Yes***
18. Ravenswood Avenue - Alma to El Camino (MP)	Minor Arterial	22,345	***1,822***	***24,167***	***Yes***
19. Middle Avenue - El Camino to University (MP)	Collector	8,608	222	8,830	No
20. Middle Avenue - University to Olive (MP)	Collector	6,622	52	6,674	No
21. Oak Avenue - Sand Hill Road to Olive Street (MP)	Local	2,549	17	2,566	No
22. Willow Road - Laurel to Middlefield (MP)	Collector	4,963	32	4,995	No
23. Olive Street - Oak to Middle (MP)	Local	2,641	16	2,657	No
24. University Drive - Oak Grove to Santa Cruz (MP)	Collector	6,658	774	7,432	No
25. University Drive - Santa Cruz to Menlo (MP)	Collector	8,117	613	8,730	No
26. University Drive - Menlo to Middle (MP)	Collector	5,038	438	5,476	No
27. Laurel Street - Ravenswood to Willow (MP)	Collector	5,313	32	5,345	No
28. Middlefield Road - Ringwood to Willow (MP)	Minor Arterial	20,027	***1,822***	***21,849***	***Yes***
29. Waverley Street - Laurel to Linfield (MP)	Local	1,478	4	1,482	No
30. Linfield Drive - Waverley to Middlefield (MP)	Local	1,583	4	1,587	No

NOTES:
Potentially significant impacts are indicated in ***bold and Italic*** type
Jurisdictions: Ct - Caltrans, At - Atherton, MP - Menlo Park, PA - Palo Alto

SOURCE: Fehr & Peers, 2010.

5. Oak Grove Avenue - Middlefield Road to Laurel Street
6. Oak Grove Avenue - Laurel Street to El Camino Real
7. Oak Grove Avenue - El Camino Real to Crane Street
13. Santa Cruz Avenue - Avy/Orange to Alameda de las Pulgas
14. Menlo Avenue - El Camino to Crane
16. Ravenswood Avenue - Middlefield Road to Laurel Street
17. Ravenswood Avenue - Laurel Street to Alma Street
18. Ravenswood Avenue - Alma Street to El Camino Real
28. Middlefield Road - Ringwood Avenue to Willow Road

Mitigations for roadway segment impacts would require adding travel lanes and widening roadways throughout Menlo Park. As the City is built out, there is little opportunity to widen roadways within the available right-of-way. Therefore any widening would require property acquisition. Due to the number of affected properties and financial implications, roadway segment impacts are significant and unavoidable. Implementation of **Mitigation Measure TR-2** would help reduce traffic volumes and therefore minimize the impacts from the Specific Plan.

> **Mitigation Measure TR-2:** The Specific Plan includes provisions for new developments within the Specific Plan area, regardless of the amount of new traffic they would generate, to have in-place a City-approved Transportation Demand Management (TDM) program prior to project occupancy. TDM programs could include the following measures for site users (taken from the C/CAG CMP), as applicable:
>
> - Commute alternative information;
> - Bicycle storage facilities;
> - Showers and changing rooms;
> - Pedestrian and bicycle subsidies;
> - Operating dedicated shuttle service (or buying into a shuttle consortium);
> - Subsidizing transit tickets;
> - Preferential parking for carpoolers;
> - Provide child care services and convenience shopping within new developments;
> - Van pool programs;
> - Guaranteed ride home program for those who use alternative modes;
> - Parking cashout programs; and/or
> - Car share programs.

However, because the effectiveness of a TDM program cannot be guaranteed, the impact to roadway segments is considered to be significant and unavoidable.

> **Significance after Mitigation:** Significant and Unavoidable.

Freeway Segment Operations

Impact TR-3: Traffic from future development in the Plan area would increase traffic volumes on local freeway segments. (Less than Significant)

Freeway operations were evaluated using the 2000 HCM volume-to-capacity ratio method, per C/CAG guidelines. In this method, the peak hour volume on a segment is compared to the

segment's vehicle carrying capacity and a volume-to-capacity ratio, or V/C, is calculated. The level of service descriptions and the maximum volume-to-capacity (V/C) ratio for each LOS designation are presented in **Table 4.13-10**.

TABLE 4.13-10
LEVEL OF SERVICE CRITERIA FOR FREEWAY SEGMENTS

Level of Service[a]	Description	Volume-to-Capacity Ratio
A	Free flow operations with average operating speeds at, or above, the speed limit. Vehicles are unimpeded in their ability to maneuver.	0.30
B	Free flow operations with average operating speeds at the speed limit. Ability to maneuver is slightly restricted. Minor incidents cause some local deterioration in operations.	0.50
C	Stable operations with average operating speeds near the speed limit. Freedom to maneuver is noticeably restricted. Minor incidents cause substantial local deterioration in service.	0.71
D	Speeds begin to decline slightly with increasing flows. Freedom to maneuver is more noticeably restricted. Minor incidents create queuing.	0.89
E	Operations at capacity. Vehicle spacing causes little room to maneuver but speeds exceed 50 mph. Any disruption to the traffic stream can cause a wave of delay that propagates throughout the upstream traffic flow. Minor incidents cause serious breakdown of service with extensive queuing. Maneuverability is extremely limited.	1.00
F	Operations with breakdowns in vehicle flow. Volumes exceed capacity causing bottlenecks and queue formation.	N/A

[a] Freeway mainline LOS based on a 65 mph free-flow speed.

SOURCE: *Highway Capacity Manual – Special Report 209* (Transportation Research Board, 2000).

For Congestion Management Program (CMP) facilities, the significance test is whether the addition of project traffic causes a segment to exceed its LOS threshold or if it adds an amount of traffic greater than one percent of the segment's capacity. The CMP LOS threshold on U.S. Route 101 is LOS F. According to the 2009 CMP Monitoring Report, it is operating at LOS F based on average speeds. The capacities of the analysis segments and the amount of added project traffic are shown in **Table 4.13-11**. The amount of project traffic is less than one percent of the capacity. Therefore, the project would have no impact on U.S. Route 101 according to the significance criteria used in this analysis.[34]

[34] The CMP LOS standard on U.S. Route 101 is LOS F and according to the 2009 CMP Monitoring Report, it is operating at LOS F based on average speeds. Therefore, it will operate at LOS F under Existing plus Project conditions (and under Cumulative and Cumulative plus Project conditions when the demand is projected to be higher). When freeway segments operate at congested LOS F conditions, the traffic is moving slowly and the counted volume is very low. A low volume in the V/C analysis would reflect a low V/C which would correlate to a better LOS. As such a V/C analysis was not appropriate for U.S. Route 101.

TABLE 4.13-11
EXISTING PLUS PROJECT FREEWAY LEVELS OF SERVICE

Segment	Direction	Peak Hour	Ex. Volume[a]	Capacity[b]	Ex. V/C[c]	Ex. LOS[4]	Project Volume	% of Capacity	E+P Volume[a]	E+P V/C[c]	E+P LOS[d]	LOS Threshold
U.S. Route 101, North of Marsh Road (mixed-flow lanes)	NB	AM	-	8,340	-	D	17	0.20%	-	-	D	F
		PM	-	7,780	-	**F**	30	0.39%	-	-	**F**	
	SB	AM	-	7,740	-	**F**	31	0.40%	-	-	**F**	
		PM	-	8,110	-	**F**	26	0.32%	-	-	**F**	
U.S. Route 101, South of Willow Road (mixed-flow lanes)	NB	AM	-	6,470	-	D	38	0.59%	-	-	D	F
		PM	-	6,470	-	**F**	36	0.56%	-	-	**F**	
	SB	AM	-	6,470	-	**F**	29	0.45%	-	-	**F**	
		PM	-	6,470	-	**F**	43	0.66%	-	-	**F**	
I-280, North of Sand Hill Road	NB	AM	4,814	9,000	0.53	C	23	0.26%	4,837	0.54	C	D
		PM	7,699	9,000	0.86	D	56	0.62%	7,755	0.86	D	
	SB	AM	8,201	9,000	**0.91**	**E**	47	0.52%	**8,248**	**0.92**	**E**	
		PM	5,092	9,000	0.57	C	38	0.42%	5,130	0.57	C	
I-280, South of Alpine Road	NB	AM	4,862	9,000	0.54	C	60	0.67%	4,922	0.55	C	D
		PM	7,774	9,000	0.86	D	42	0.47%	7,816	0.87	D	
	SB	AM	8,281	9,000	**0.92**	**E**	32	0.36%	**8,313**	**0.92**	**E**	
		PM	5,142	9,000	0.57	C	64	0.71%	5,206	0.58	C	

[a] Peak hour volumes obtained from Caltrans data
[b] Capacity based on number of lanes and per lane capacity of 2,300 vehicles per hour per lane (vphpl) for I-280 and 2,200 vphpl for U.S. Route 101, per the 2000 *Highway Capacity Manual - Special Report 209,* and the lower of adjacent ramp volumes for auxiliary lanes – all adjusted for trucks.
[c] Volume-to-Capacity ratio (V/C)
[d] LOS calculations performed using the 2000 *Highway Capacity Manual - Special Report 209* methods for freeway segments

Unacceptable operations are indicated in **bold** type. Significant impacts are shown in ***bold italics*** type.

SOURCE: Fehr & Peers, 2010.

The CMP LOS threshold on I-280 is LOS D. According to the 2009 CMP Monitoring Report (discussed on page 4.13-24), it is currently operating at LOS D (based on average speeds obtained from travel time surveys). For the impact analysis, a volume-to-capacity ratio analysis was conducted to determine whether the addition of project traffic would cause a segment to exceed the threshold. As presented in Table 4.13-11, based on volume-to-capacity calculations, portions of I-280 in the study area exceed the threshold and operate at LOS E. However, the amount of project traffic added to the LOS E segments would be less than one percent of the capacity. Therefore, the project would have no impact on I-280 according to the significance criteria used in this analysis.

Mitigation: None required.

Transit Operations

Impact TR-4: Transit ridership generated by future development in the Plan area would affect transit operations. (Less than Significant)

The number of added transit riders was estimated based on applying the transit mode share estimates for the land use program to the trip generation estimates. The daily ridership estimates are 330 riders on Caltrain and 80 bus riders. Both Caltrain and the buses have available capacity to accommodate these additional riders. All of the potential developments in the land use program are within ¼ mile of a transit stop (including the Caltrain station and bus stops). Many of the new riders would be able to walk or bike to the Caltrain station, therefore parking impacts would be less than significant. As noted previously, Caltrain has proposed service reductions for FY2011-2012. However, Menlo Park would retain commute-hour service on a par with current service, which would help limit the potential immediate impact on the City. In addition, Caltrain and associated transit agencies are currently investigating both short- and long-term solutions to restore service to current levels. The Specific Plan would have a less-than-significant impact to transit.

Mitigation: None required.

Pedestrian and Bicycle

Impact TR-5: Future development in the Plan area would affect pedestrian and bicycle operations and safety. (Less than Significant)

Bicycle System

The Specific Plan provides new bicycle facilities (bike routes and bike lanes) and does not contain design aspects that would cause an increased potential for bicycle/vehicle conflicts. Specifically, the Specific Plan would not remove any existing bicycle facilities (paths, lanes, or routes), nor would it increase the number of street intersections or bicycle access points at which

bicycle/vehicle conflicts might take place. Existing vehicle speed limits would remain in effect. The potential new corner bulb-outs on El Camino Real would not intrude into a dedicated bicycle lane and would adhere to Caltrans standards that require a minimum of 4 feet separation between the curb and the shared bicycle/vehicle lane. New dedicated bicycle/pedestrian grade-separated crossings of the train tracks at Middle Avenue and the Caltrain station would provide new, direct bicycle routes that would reduce the travel distance between many east-west destinations. Therefore the Specific Plan has less-than-significant bicycle impacts. The effects of new bicycle facilities on on-street parking are described on page 4.13-59.

Pedestrian System

The Specific Plan would enhance pedestrian facilities in the plan area with such amenities as wider sidewalks, marked crosswalks, special pavement treatments, and curb extensions. The potential parking structures located in downtown Menlo Park would have driveways that cross sidewalks. Individual project review currently requires analysis by the Transportation Division for compliance with relevant safety codes, in particular for sight distance triangles for vehicles exiting parking areas which might be partly obscured. This project-specific analysis would continue under the Specific Plan. Thus, future City review of applications for project developments within the Specific Plan area would specify design changes to parking structures, as needed, to ensure that vehicle drivers can see pedestrians as they exit (and vice versa), and that adequate pedestrian warning systems (such as signs/lights and/or audible warnings) would be provided. Therefore the Specific Plan has less-than-significant pedestrian impacts.

Mitigation: None required.

Parking

Impact TR-6: Development under the Plan area would affect parking supply in the downtown, but would not result in inadequate parking capacity. (Less than Significant)

The proposed downtown parking supply with the Specific Plan includes a net increase of spaces when balancing the loss of parking spaces needed to accommodate public space improvements, such as widened sidewalks and pocket parks, with new structured parking. Potential future development in the non-downtown areas within the Plan area will provide parking on-site according to the adopted code or rates in the Specific Plan or supported by a shared parking study approved by the City's Transportation Manager. Parking impacts in the non-downtown areas will be less than significant and no additional parking analyses for those areas were conducted.

The existing and future downtown parking supply is summarized in **Table 4.13-12**. It indicates the number of existing public parking spaces in each Parking Plaza and on each block face in the downtown core area (area bounded by Oak Grove Avenue, El Camino Real, Menlo Avenue, and University Drive). It also describes the types of changes that are proposed by the Specific Plan and the resulting change in number of spaces, and the resulting future supply. For Parking Plaza 1, the Specific Plan proposes a 5-level garage with 650 publicly accessible spaces. For Parking

TABLE 4.13-12
EXISTING AND FUTURE DOWNTOWN PUBLIC PARKING SUPPLY

Parking Location	Existing Supply[a]	Specific Plan Change	Change in Spaces	Future Supply
Parking Plazas				
Parking Plaza 1	249	Added Parking Garage[b]	+446	695[d]
Parking Plaza 2	95	Development Site	-95	0
Parking Plaza 3	212	Added Parking Garage[c] and Pocket Park	+158/+438[e]	370/650[e]
Parking Plaza 4	105	Pedestrian Link, Development Site	-31	74
Parking Plaza 5	150	Pedestrian Link, Development Site	-42	108
Parking Plaza 6	136	Pedestrian Link, Flex Space, Market Place	-32	104
Parking Plaza 7	94	Pedestrian Link, Market Place	-36	58
Parking Plaza 8	145	Pedestrian Link	-7	138
Total	1,186		**+361/+641**	**1,547/1,827**
On-Street Spaces				
Santa Cruz Avenue	116	Sidewalk Widening	-48	68
Chestnut Street North	26	Sidewalk Widening	-11	15
Chestnut Street South	17	Chestnut Paseo	-11	6
Oak Grove Avenue	80	Added Bike Lanes	-35	45
Other Streets	170	No Change	0	170
Total	409		-105	304
Downtown Core Area Total	**1,595**		**+256/+536**	**1,851/2,131**

NOTES:
a *2009-2010 Downtown Menlo Park Parking Study*, Wilbur Smith Associates.
b A new parking garage on Plaza 1 would displace 204 spaces.
C A new parking garage on Plaza 1 would displace 187 existing spaces.
d Future supply of 695 spaces on Plaza 1 includes both the parking structure with 650 publicly accessible spaces and a small surface parking lot on the same plaza with 45 spaces.
e The two numbers for "change in spaces" and "future supply" refers to the two options for a parking garage on Plaza 3.

SOURCE: Fehr & Peers, 2010

Plaza 3, the plan proposes two options: a 3.5 level garage, with housing on top, providing 370 publicly accessible spaces (Option 1) or a 5 level garage providing 650 publicly accessible spaces (Option 2). The future public parking supply is estimated to be approximately 1,850 spaces with Option 1 and 2,130 spaces with Option 2.

The existing peak parking demand for public spaces in the downtown core measured by Wilbur Smith Associates for the 2009/2010 Downtown Menlo Park Parking Study is 1,260 spaces. The land use program envisions that up to approximately 68,000 square feet of retail space and 13,000 square feet of office space could be added to the downtown area. (The remaining retail and office uses would be located on El Camino Real.) The parking for this space would be provided either on-site or in public parking areas. All other uses added to the downtown (e.g.,

hotel and residential uses) would provide parking on site and could only use up spaces in the public parking facilities if excess capacity were available based on a monitoring program.

The peak parking demand generated by potential new development in the downtown area is estimated to be 295 spaces, based on the Specific Plan parking rates that include parking for both employees and customers. The combined parking demand of the existing (1,260 spaces) and potential new development (295 spaces) is estimated to be 1,555 spaces. The proposed public parking supply of 1,850 spaces with Option 1 for Plaza 3 (or 2,130 spaces with Option 2) is more than sufficient to accommodate the added parking demand generated by the downtown Specific Plan uses plus an increase in demand reflecting stronger economic times, as the existing demand surveys were done in Fall of 2009 with a slow economy.

The Specific Plan requires that the City set up a system to monitor parking supply and demand. Public parking plaza spaces can only be used for new downtown development if there is sufficient available parking (per the monitoring system). If a sufficient number of spaces is not available, then the amount of new development would be constrained.

Potential Neighborhood Parking Intrusion

The intensification of uses in the Plan area will generate new parking demand as described above. If adequate parking is not provided to accommodate the new uses, then parking spillover into the adjacent neighborhoods could occur. New development intending to use public parking spaces can only be approved if there is a sufficient number of available spaces per the above-referenced City monitoring system. Plus the Specific Plan contains a parking management plan to manage parking in the downtown. The management plan would further minimize the potential for neighborhood parking intrusion by responding to parking shortages with the construction of additional supply or through improved management practices.

Bicycle Parking

The Specific Plan contains recommendations for bicycle parking facilities in the proposed parking garages, in new pocket parks, and along Santa Cruz Avenue. Therefore, adequate bicycle parking would be provided.

Removal of Parking Spaces on Oak Grove Avenue

Parking spaces will be removed on Oak Grove Avenue to accommodate bike lanes. Replacement parking for the spaces to the west of El Camino Real would be provided in the parking plazas, if there are available spaces based on periodic monitoring, or in the new parking garages. A survey was conducted to determine the number of vehicles parking in the spaces on Oak Grove Avenue, between El Camino Real and Laurel Street. During the survey, 33 parked vehicles were observed in approximately 45 spaces (not all spaces are marked). It was also observed that there were an equivalent number of available parking spaces on other nearby roadways such as Laurel Street, Mills Street, Derry Lane (proposed to be realigned into a Garwood Way extension but still with on-street parking), and El Camino Real (within approximately two-tenths of a mile) that could accommodate the displaced parking.

The Specific Plan provides adequate parking for both vehicles and bicycles. Therefore, the Specific Plan's parking impact is less-than-significant.

Mitigation: None required.

4.13.4 Cumulative (2035) Conditions

The Cumulative Conditions analysis presents the results of the level of service calculations in 2035 with and without the Specific Plan. Cumulative (2035) No Project Conditions were estimated by multiplying existing volumes by a 25 year growth factor and adding traffic from approved and pending developments in Menlo Park. The growth factor accounts for development projects outside of Menlo Park and general regional growth. Cumulative (2035) With Project Conditions include 2035 No Project Conditions plus traffic generated by the Specific Plan land uses. The procedure used to determine the Cumulative traffic volumes and the results of the LOS analysis for Cumulative (2035) No Project and Cumulative (2035) Plus Project Conditions is described below.

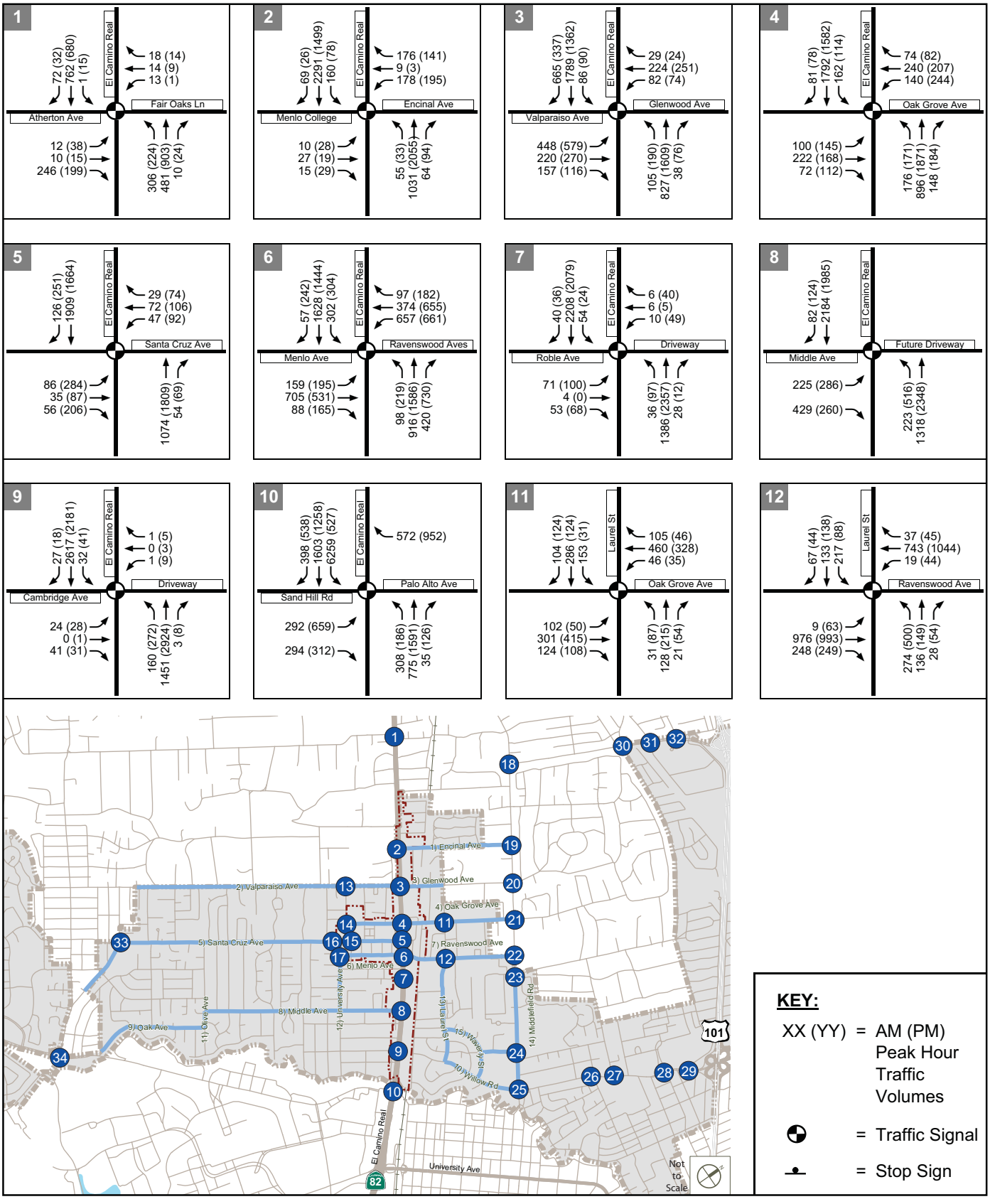
Cumulative Traffic Estimates

The City of Menlo Park monitors traffic volumes on city streets and has determined that traffic grows at an average rate of one percent per year. Therefore, the intersection volumes were multiplied by one percent per year compounded over 25 years, or 28.24 percent to represent growth between 2010 and 2035. The City has traffic assignments for approved and pending developments in its Traffix model. The growth rate plus these assignments were used to develop Cumulative No Project traffic volumes at the study intersections as shown on **Figures 4-12-8a** through **4.13-8c**.

Table 4.13-13 presents the LOS calculation results for the study intersections under Cumulative (2035) Conditions without and with the project. The LOS calculation sheets are contained in the technical appendices of the transportation impact analysis (**Appendix E**). The calculated intersection levels of service do not vary with the removal of the right-turn lanes. The right-turn lanes carried few vehicles in comparison to the through movements so adding those movements to the through lane (a restriped shared through/right lane) did not substantially increase the delay. However, as presented in Table 4.13-13, there are some changes in the approach delays for these intersections between conditions with and without the right-turn lanes.

The process used to develop Cumulative No Project intersection volumes was used to develop roadway segment volumes. Annual growth rates on the freeways were developed by comparing 2030 and 2005 projections for the C/CAG model. Growth for 25 years was added to the existing volumes, traffic from Menlo Park approved and pending developments was added. The Cumulative Plus Project volumes for the freeway segments were estimated in a similar way.

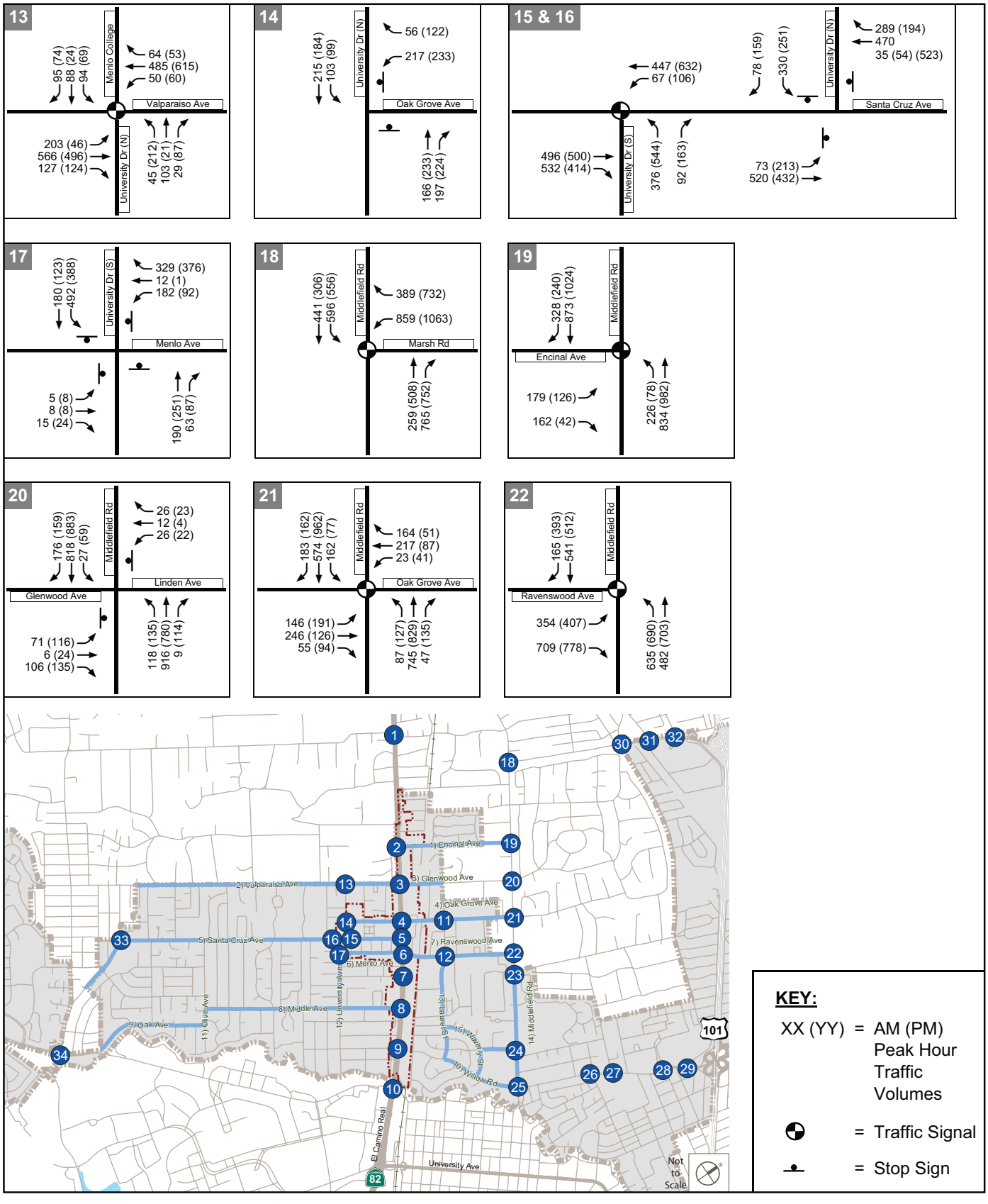
The resulting estimates represent the increased traffic demand. When the roadway system reaches capacity, it cannot accommodate new trips. Congestion occurs, causing some people to alter their travel behavior by traveling at less congested times of the day (for discretionary trips) or by



SOURCE: Fehr & Peers

Menlo Park El Camino Real/Downtown Specific Plan EIR . 208581

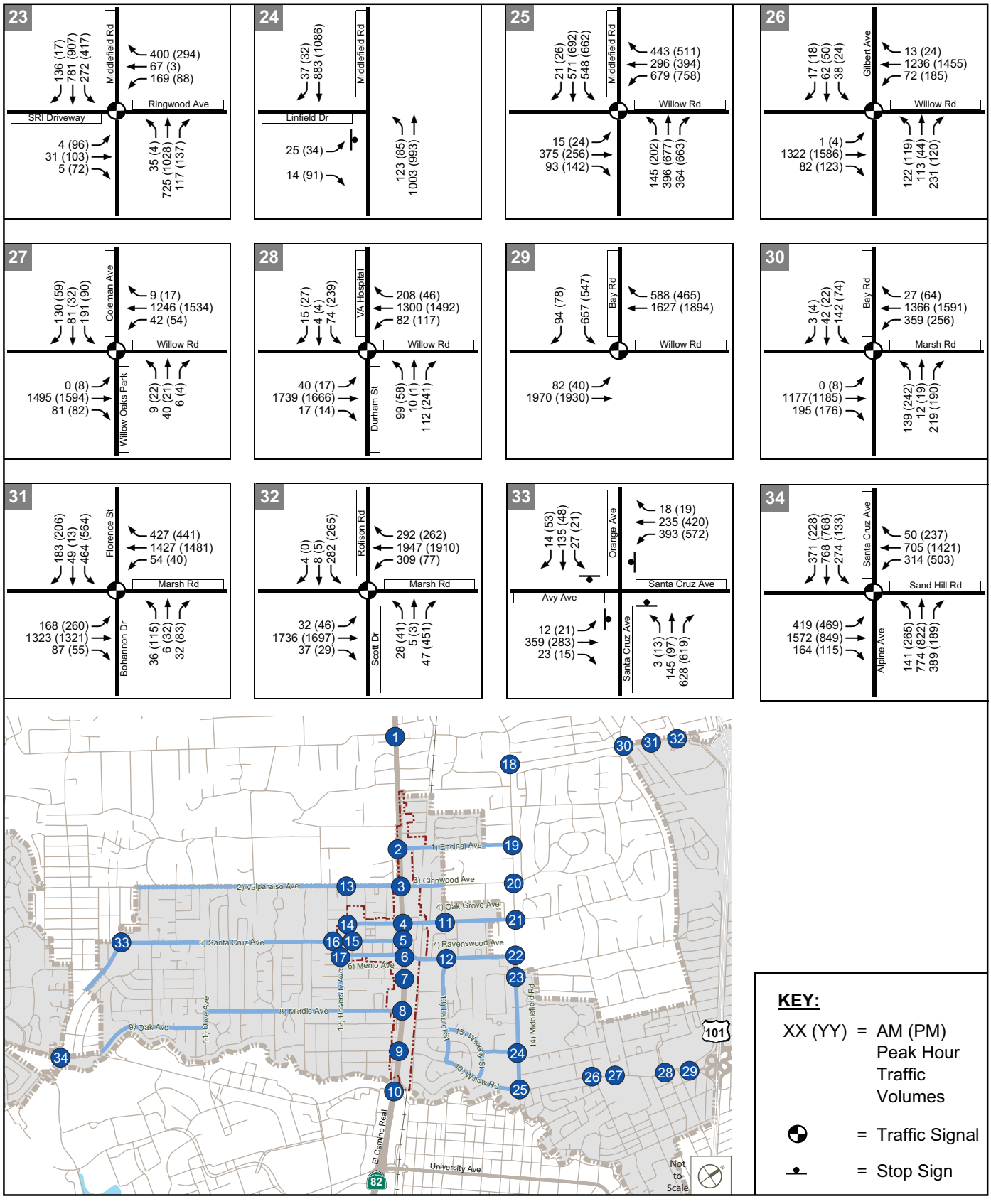
Figure 4.13-8a
Cumulative (No Project)
Traffic Control Devices and Intersection Volumes



SOURCE: Fehr & Peers

Menlo Park El Camino Real/Downtown Specific Plan EIR . 208581

Figure 4.13-8b
Cumulative (No Project)
Traffic Control Devices and Intersection Volumes



SOURCE: Fehr & Peers

Menlo Park El Camino Real/Downtown Specific Plan EIR . 208581

Figure 4.13-8c
Cumulative (No Project)
Traffic Control Devices and Intersection Volumes

TABLE 4.13-13
CUMULATIVE INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	LOS Standard	Cumulative No Project Conditions			Cumulative Plus Project Conditions			
				Critical Delay[a]	Average Delay[b]	LOS[c]	Critical Delay[a]	Average Delay[b]	LOS[c]	Δ in Delay[d]
#1 El Camino Real & Atherton Avenue/ Fair Oaks Lane (Ct/At)	Signal	AM PM	D	43.7 41.8	40.0 35.3	D D	43.5 41.4	39.5 34.7	D C	-0.5 -0.6
Eastbound Approach		AM PM		42.8 39.1	44.3 39.1	D D	45.0 40.0	45.0 40.0	D D	0.7 0.9
Westbound Approach		AM PM		**65.2** **64.5**	**64.8** **64.4**	**E** **E**	**65.2** **64.5**	**64.8** **64.4**	**E** **E**	**0.0** **0.0**
#2 El Camino Real & Encinal Avenue (Ct/At/MP)	Signal	AM PM	D	22.5 24.1	23.6 20.3	C C	24.0 25.7	24.6 21.3	C C	1.0 1.0
Eastbound Approach		AM PM		- -	50.2 47.6	D D	- -	50.6 48.4	D D	0.4 0.8
Westbound Approach		AM PM		**84.0** **73.6**	**72.2** **64.4**	**E** **E**	**88.4** **78.5**	**75.5** **67.5**	**E** **E**	**3.3** **3.1**
#3 El Camino Real & Glenwood Avenue/ Valparaiso Avenue (Ct/At/MP)	Signal	AM PM	D	53.3 **56.7**	44.3 52.4	D D	**57.7** ***65.6***	46.9 ***56.8***	D ***E***	2.6 ***4.4***
Eastbound Approach		AM PM		**72.5** **65.9**	**68.7** **63.2**	**E** **E**	**77.9** ***70.2***	**73.1** ***66.8***	**E** ***E***	**4.5** ***4.3***[e]
Westbound Approach		AM PM		**93.0** **90.8**	**83.8** **82.9**	**F** **F**	**99.1** ***96.5***	**88.3** ***87.1***	**F** ***F***	**4.5** ***5.7***[e]
#4 El Camino Real & Oak Grove Avenue (Ct/MP) w/RT lanes	Signal	AM PM	D	38.6 38.4	37.6 37.4	D D	44.0 45.9	42.3 44.7	D D	4.7 7.3
Eastbound Approach		AM PM		**79.0** **90.3**	**77.8** **79.6**	**E** **E**	**85.4** **94.8**	**86.5** **83.5**	**F** **F**	**8.7** **3.9**
Westbound Approach		AM PM		**91.6** **78.7**	**73.5** **70.4**	**E** **E**	**102.9** **90.5**	**83.6** **76.4**	**F** **E**	**10.1** **6.0**
Without northbound and southbound right-turn lane	Signal	AM PM	D	N/A	N/A	N/A	46.5 53.7	45.2 51.1	D D	7.6 13.7
Eastbound Approach		AM PM					**92.6** **112.0**	**92.9** **95.2**	**F** **F**	**15.1** **15.6**
Westbound Approach		AM PM					**111.4** **107.5**	**90.1** **87.3**	**F** **F**	**16.7** **16.9**
#5 El Camino Real & Santa Cruz Avenue (Ct/MP) w/RT lanes	Signal	AM PM	D	12.3 31.5	11.3 27.6	B C	14.7 34.9	13.0 30.0	B C	1.7 2.4
Eastbound Approach		AM PM		**77.7** **67.0**	**72.0** **61.0**	**E** **E**	**77.8** **72.6**	**71.3** **64.4**	**E** **E**	**-0.7** **3.4**
Westbound Approach		AM PM		**74.7** **79.0**	**71.1** **72.3**	**E** **E**	**77.6** **85.8**	**73.2** **77.0**	**E** **E**	**2.0** **4.8**
Without southbound right-turn lane	Signal	AM PM	D	N/A	N/A	N/A	15.2 37.5	13.7 32.8	B C	2.4 5.2
Eastbound Approach		AM PM					**84.4** **80.5**	**75.3** **69.6**	**E** **E**	**3.4** **8.7**
Westbound Approach		AM PM					**84.1** **95.0**	**78.0** **83.5**	**E** **F**	**6.9** **11.2**

TABLE 4.13-13
CUMULATIVE INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	LOS Standard	Cumulative No Project Conditions			Cumulative Plus Project Conditions			
				Critical Delay[a]	Average Delay[b]	LOS[c]	Critical Delay[a]	Average Delay[b]	LOS[c]	Δ in Delay[d]
#6 El Camino Real & Menlo Avenue/ Ravenswood Avenues (Ct/MP) w/ RT lanes	Signal	AM PM	D	**82.2** **>150**	**74.7** **141.7**	**E** **F**	***101.2*** ***>150***	***87.8*** ***>150***	***F*** ***F***	***13.1*** ***15.6***
Eastbound Approach		AM PM		**87.5** **>150**	**87.5** **>150**	**F** **F**	***106.9*** ***>150***	***107.0*** ***>150***	***F*** ***F***	***19.4***[e] ***35.8***[e]
Westbound Approach		AM PM		**110.0** **>150**	**90.8** **112.0**	**F** **F**	***114.4*** ***>150***	***104.0*** ***128.7***	***F*** ***F***	***4.4***[e] ***37.0***[e]
Without southbound right-turn lane	Signal	AM PM	D	N/A	N/A	N/A	***108.2*** ***>150***	***92.7*** ***>150***	***F*** ***F***	***18.0*** ***35.9***
Eastbound Approach		AM PM					***114.8*** ***>150***	***114.9*** ***>150***	***F*** ***F***	***27.3***[e] ***35.8***[e]
Westbound Approach		AM PM					***122.1*** ***>150***	***110.4*** ***128.7***	***F*** ***F***	***12.1***[e] ***37.0***[e]
#7 El Camino Real & Roble Avenue (Ct/MP)	Signal	AM PM	D	12.5 22.2	12.4 19.2	B B	13.4 32.2	13.1 24.9	B C	0.7 5.7
Eastbound Approach		AM PM		**62.0** **95.5**	**62.0** **95.5**	**E** **F**	**65.3** **116.4**	**65.3** **116.4**	**E** **F**	**3.3** **20.9**
Westbound Approach		AM PM		- -	53.0 **56.0**	D **E**	- -	53.7 **56.1**	D **E**	0.7 **0.1**
#8 El Camino Real & Middle Avenue (Ct/MP)	Signal	AM PM	D	47.9 56.0	37.4 37.5	D D	67.6 ***106.1***	53.7 ***69.0***	D ***E***	16.3 ***31.5***
Eastbound Approach		AM PM		**70.0** **97.0**	**60.2** **94.0**	**E** **F**	**96.6** ***147.2***	**82.3** ***129.1***	**F** ***F***	**22.1** ***50.2***[e]
Westbound Approach		AM PM		N/A	N/A	N/A	***68.0*** ***73.2***	***63.7*** ***99.6***	***E*** ***F***	***63.7*** ***99.6***
#9 El Camino Real & Cambridge Avenue (Ct/MP)	Signal	AM PM	D	16.5 8.5	13.0 14.8	B B	16.7 14.2	16.0 18.7	B B	3.0 3.9
Eastbound Approach		AM PM		**71.7** **-**	**71.7** **70.0**	**E** **E**	**76.1** -	**76.1** **76.8**	**E** **E**	**4.4** **6.8**
Westbound Approach		AM PM		- **63.1**	**62.1** **63.1**	**E** **E**	- **81.5**	**68** **81.5**	**E** **F**	**5.9** **18.4**
#10 El Camino Real & Sand Hill Road (Ct/PA)	Signal	AM PM	E	27.9 49.5	29.7 39.2	C D	31.0 53.8	32.2 41.8	C D	2.5 2.6
#11 Laurel Street & Oak Grove Avenue (MP)	Signal	AM PM	C	19.9 14.1	18.5 13.3	B B	20.7 14.5	19.1 13.5	B B	0.6 0.2
#12 Laurel Street & Ravenswood Avenue (MP)	Signal	AM PM	D	**72.1** **78.8**	47.1 52.4	D D	**81.2** ***93.0***	52.0 ***61.1***	D ***E***	4.9 ***8.7***
#13 University Drive (N) & Valparaiso Avenue (MP/At)	Signal	AM PM	D	15.2 18.4	14.2 17.5	B B	12.2 19.0	14.4 18.1	B B	0.2 0.6
#14 University Drive (N) & Oak Grove Avenue (MP)	All-way Stop	AM PM	C	12.3 15.1	12.3 15.1	B C	12.9 17.2	12.9 17.2	B C	0.6 2.1

TABLE 4.13-13
CUMULATIVE INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	LOS Standard	Cumulative No Project Conditions			Cumulative Plus Project Conditions			
				Critical Delay[a]	Average Delay[b]	LOS[c]	Critical Delay[a]	Average Delay[b]	LOS[c]	Δ in Delay[d]
#15 University Drive (N) & Santa Cruz Avenue (MP)	All-way Stop	AM PM	D	**109.7** 54.7	**109.7** **102.9**	**F** **F**	***128.5*** 35.2	***128.5*** **118.4**	***F*** **F**	***18.8***[e] -19.5[e]
#16 University Drive (S) & Santa Cruz Avenue (MP)	Signal	AM PM	D	18.0 16.7	13.7 18.4	B B	18.4 22.7	14.2 19.4	B B	0.5 1.0
#17 University Drive (S) & Menlo Avenue (MP)	All-way Stop	AM PM	C	29.9 21.3	29.9 21.3	D C	29.1 23.1	29.1 23.1	D C	-0.8[e] 1.8
#18 Middlefield Road & Marsh Road (At)	Signal	AM PM	D	**82.4** **>150**	51.3 **101.7**	D **F**	**87.7** ***>150***	54.3 ***105***	D ***F***	3.0 ***6.3***[e]
#19 Middlefield Road & Encinal Avenue (At)	Signal	AM PM	D	**84.0** 30.1	**59.6** 20.2	**E** C	***91.8*** 33.5	***65.0*** 22.3	***E*** C	***7.9***[e] 3.3[e]
#20 Middlefield Road & Glenwood Avenue/ Linden Avenue (At)	Side Street Stop	AM PM	D	**>150** **>150**	**>150** **>150**	**F** **F**	***>150*** ***>150***	***>150*** ***>150***	***F*** ***F***	***>150***[e] ***>150***[e]
#21 Middlefield Road & Oak Grove Avenue (At)	Signal	AM PM	D	38.7 **77.3**	16.8 18.8	B B	62.6 **115.1**	20.4 25.5	C C	3.6 6.7
#22 Middlefield Road & Ravenswood Avenue (MP/At)	Signal	AM PM	D	71.7 **135.2**	**56.8** **101.4**	**E** **F**	***89.7*** ***>150***	***70.3*** ***124.2***	***E*** ***F***	***18.0***[e] ***30.2***[e]
#23 Middlefield Road & Ringwood Avenue (MP/At)	Signal	AM PM	D	35.9 37.6	29.4 29.3	C C	36.1 38.0	29.2 29.0	C C	-0.2 -0.3
#24 Middlefield Road & Linfield Drive (MP)	Side Street Stop	AM PM	D	1.3 2.0	**37.8** 30.1	**E** D	***1.4*** ***2.4***	***46.6*** ***41.3***	***E*** ***E***	***8.8*** ***11.2***
#25 Middlefield Road & Willow Road (MP)	Signal	AM PM	D	**83.4** **>150**	**72.4** **>150**	**E** **F**	***107.9*** ***>150***	***83.5*** ***>150***	***F*** ***F***	***24.5***[e] ***32.0***[e]
#26 Gilbert Avenue & Willow Road (MP)	Signal	AM PM	D	**58.7** **>150**	43.8 **100.8**	D **F**	**68.8** **100.6**	53.2 **68.9**	D **E**	9.4 - >150[e]
#27 Coleman Avenue & Willow Road (MP)	Signal	AM PM	D	**125.3** **72.8**	**86.1** **55.3**	**F** **E**	***136*** ***94.9***	***97.8*** ***71.1***	***F*** ***E***	***10.7***[e] ***22.1***[e]
#28 Durham Street & Willow Road (MP)	Signal	AM PM	D	**55.1** **>150**	33.1 **93.2**	C **F**	69.4 ***>150***	42 ***101.4***	D ***F***	8.9 ***17.5***[e]
#29 Bay Road & Willow Road (Ct/MP)	Signal	AM PM	D	**62.1** **55.8**	49.9 40.5	D D	***66.8*** **61.8**	***55.3*** 46.1	***E*** D	***5.4*** 5.6
#30 Bay Road & Marsh Road (MP)	Signal	AM PM	D	36.1 48.6	25.1 32.8	C C	36.5 51.4	25.3 34.3	C C	0.2 1.5
#31 Florence Street/ Bohannon Drive & Marsh Road (MP)	Signal	AM PM	D	25.9 50	21.0 38.8	C D	26.5 52.0	21.4 40.0	C D	0.4 1.2
#32 Scott Drive & Marsh Road (MP)	Signal	AM PM	D	27.4 **59.5**	21.9 41.7	C D	28.9 **62.1**	22.7 43.1	C D	0.8 1.4
#33 Orange Avenue/ Santa Cruz Avenue & Avy Avenue/Santa Cruz Avenue (MP)	All-way Stop	AM PM	D	**82.9** **103.3**	**82.9** **103.3**	**F** **F**	***103.5*** ***147.9***	***103.5*** ***147.9***	***F*** ***F***	***20.6***[e] ***44.6***[e]

TABLE 4.13-13
CUMULATIVE INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	LOS Standard	Cumulative No Project Conditions			Cumulative Plus Project Conditions			
				Critical Delay[a]	Average Delay[b]	LOS[c]	Critical Delay[a]	Average Delay[b]	LOS[c]	Δ in Delay[d]
#34 Santa Cruz Avenue/ Alpine Avenue & Sand Hill Road (MP)	Signal	AM PM	D	53.9 **56.2**	50.6 51.9	D D	**63.7** **59.0**	54.3 54.0	D D	3.7 2.1

[a] Average control delay (expressed in seconds per vehicle) for the critical movements only.
[b] Whole intersection weighted average control delay for signalized and all-way stop-controlled intersections (expressed in seconds per vehicle). For side-street stop controlled intersections, delays for worst approach are shown.
[c] LOS calculations performed using the methodology outlines in the 2000 *Highway Capacity Manual – Special Report 209*.
[d] Change in average delay between Cumulative and Cumulative Plus Project Conditions (unless otherwise noted).
[e] Average Critical Delay Change

Jurisdictions: Ct - Caltrans, At - Atherton, MP - Menlo Park, PA - Palo Alto

* Denotes Caltrans intersection. Unacceptable operations are indicated in **bold** type, and significant impacts are indicated in ***bold & Italic*** type

SOURCE: Fehr & Peers, 2010.

linking trips. It also causes a spreading or lengthening of the peak periods of traffic flow. The peak-hour intersection, and road and freeway segment estimates used for the analysis of impacts presented below are conservative because they do not include adjustments to account for these travel behavior changes.

Cumulative (2035) Transportation Improvements

The City of Menlo Park has no planned and fully funded improvements for their roadway system[35]. Therefore, existing intersection lane configurations were used in the intersection and roadway segment analysis. Freeway improvements included under Cumulative Conditions include auxiliary lanes on U.S. Route 101 from Marsh Road to the Santa Clara County border and modifications to the U.S. Route 101/Willow Road interchange.[36] These improvements are included in the analysis.

High Speed Rail

The California High Speed Rail (HSR) project is proposed to link San Francisco and Los Angeles via high speed trains. Major cities served would include San Francisco, San José, Fresno, Bakersfield, Los Angeles, and Anaheim. Future expansion of the rail project would further link

[35] The City has a transportation impact fee (TIF) to pay for selected improvements, as presented in *City of Menlo Park Transportation Impact Fee Study*, September 9, 2009, TJKM Consultants. Because sufficient fees were not collected to fund improvements when this study was conducted, no improvements were included in the baseline condition. The TIF improvements were considered during the mitigation measure identification stage of the study.

[36] The U.S. Route 101 improvements are Caltrans projects identified in the 2035 Regional Transportation Plan developed by the Metropolitan Transportation Commission and adopted in December 2008 as a funded and programmed project. They are also included in the 2009 San Mateo County CMP's list of Capital Improvement Projects and are shown to be one of the San Mateo County State Transportation Improvement Program (STIP) projects as amended by the California Transportation Commission (CTC) on June 11, 2009. The funding is a combination of Proposition 1B Corridor Mobility Improvement Account (CMIA) funds and San Mateo County Measure A Funds.

additional areas of the state including Sacramento, Stockton, Modesto, San Diego, Riverside, and Ontario to the system. For the overall system, high speed rail service would be provided between about 5:00 a.m. and midnight daily and is projected to serve approximately 13.5 million riders annually by 2020 and 41 million riders annually by 2035. This project is currently in the conceptual design and environmental clearance stage. Although the high speed rail system would pass through Menlo Park, no station is planned within the city although possible stations may be located in Palo Alto, Redwood City, or Mountain View. The City is currently a part of a lawsuit challenging the environmental document for the HSR project. The HSR project was not directly included in the cumulative analysis. It could potentially reduce traffic volumes on U.S. Route 101 and I-280 and other parallel facilities. Therefore, not including the HSR project results in a conservative analysis of roadway impacts.

Cumulative Impacts

Intersections

Impact TR-7: Cumulative development, along with development in the Plan area, would adversely affect operation of local intersections. (Significant)

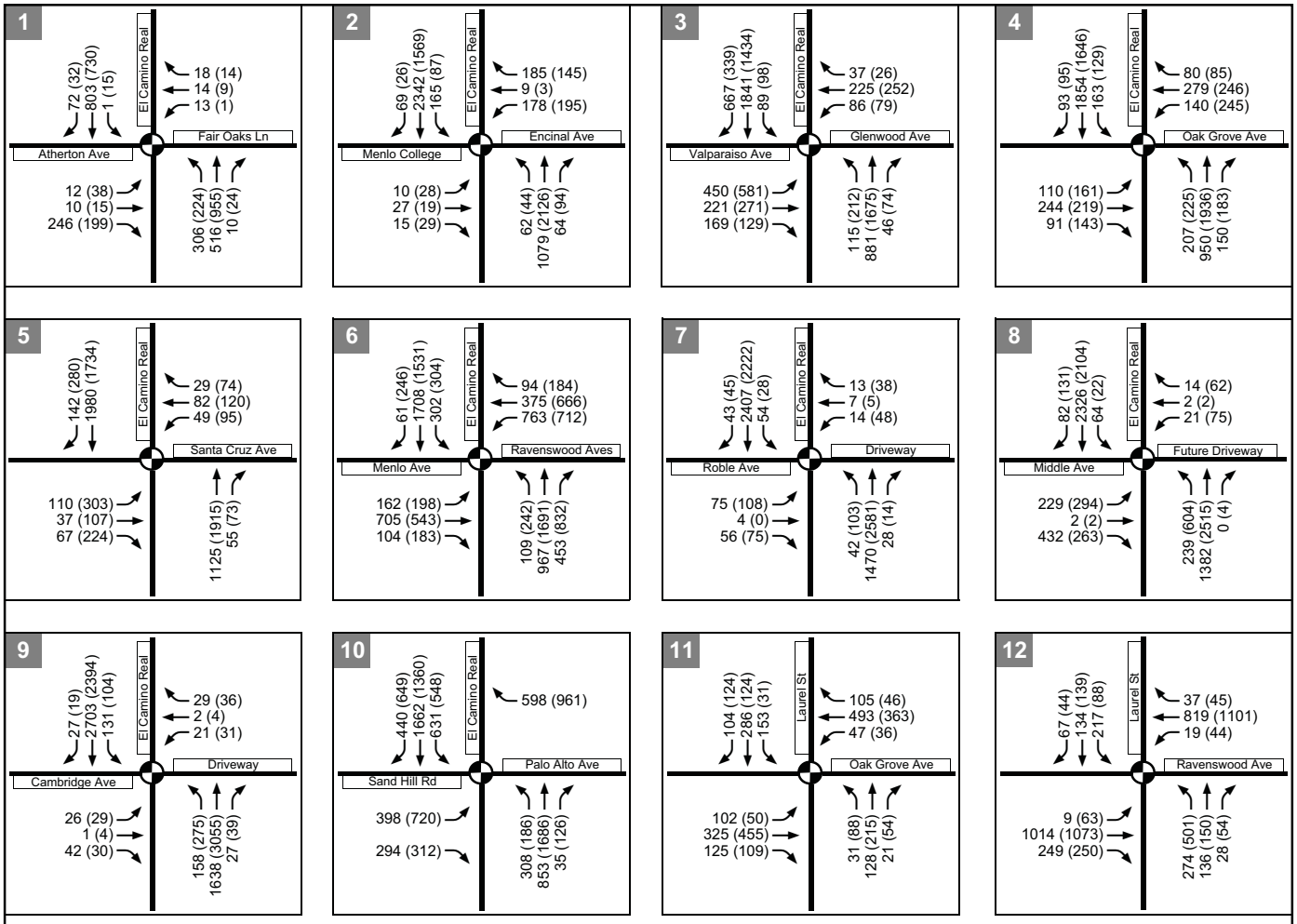
Cumulative Plus Project intersection volumes were estimated by adding the project trip assignments to the estimated cumulative volumes. The results are shown on **Figures 4.13-9a** through **4.13-9c**. Table 4.13-13 (page 4.13-64) presents the LOS calculation results for the study intersections under Cumulative (2035) Conditions both with and without the project. The LOS calculation sheets are contained in the technical appendices of the transportation impact analysis (**Appendix E**).

The calculated intersection levels of service do not vary with the removal of the right-turn lanes. The right-turn lanes carried few vehicles in comparison to the through movements so adding those movements to the through lane (a restriped shared through/right lane) did not substantially increase the delay. However, there are some changes in the approach delays for these intersections between conditions with and without the right-turn lanes. These changes in approach delay are described in more detail below:

3. El Camino Real and Glenwood Avenue/Valparaiso Avenue intersection in the eastbound and westbound approaches would increase in delay without the northbound and southbound right-turn lanes in the a.m. and p.m. peak hours;

5. El Camino Real and Santa Cruz Avenue intersection in the eastbound and westbound approaches would increase in delay without the southbound right-turn lane in the a.m. and p.m. peak hours; and

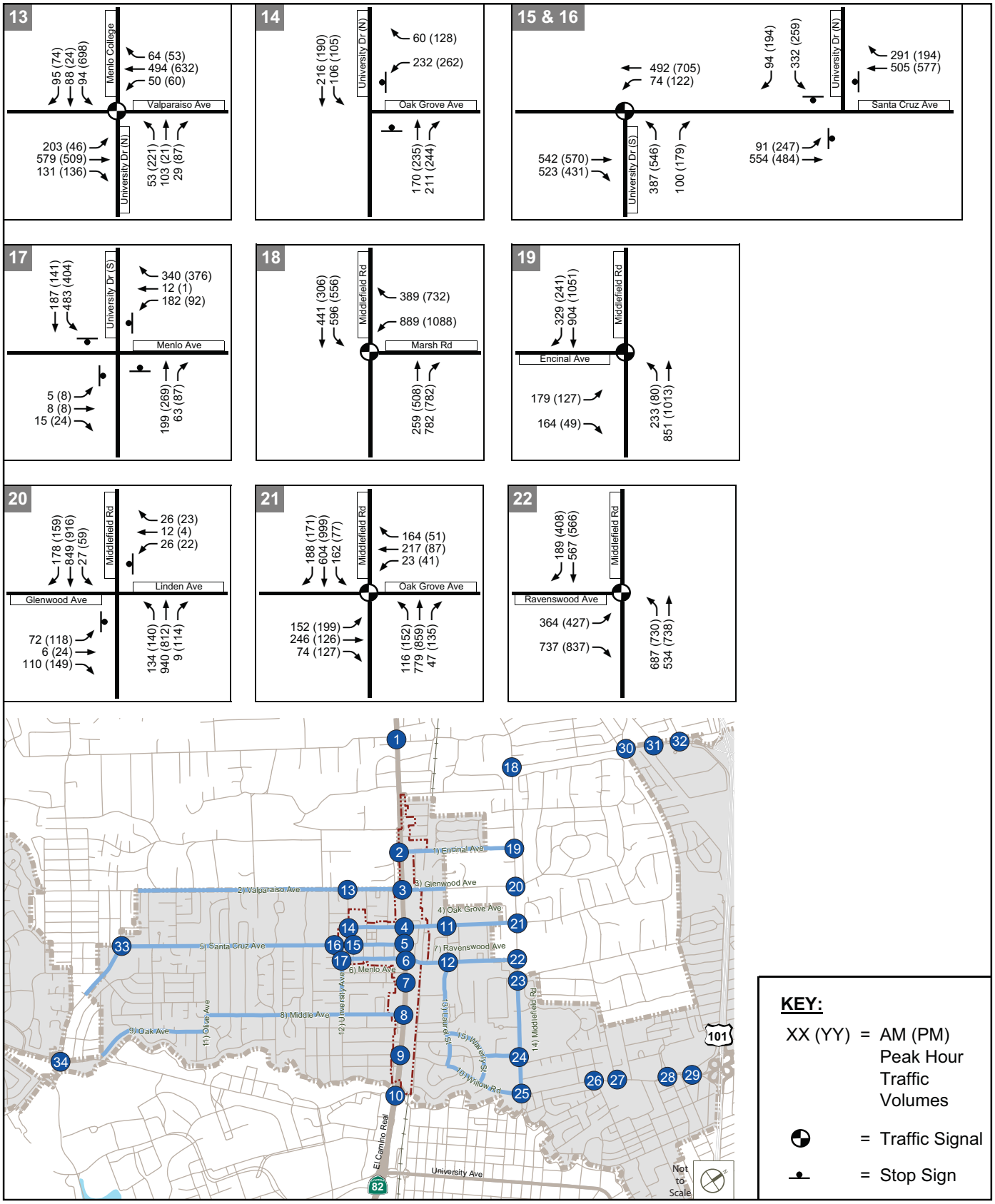
6. El Camino Real and Menlo Avenue/Ravenswood Avenue intersection in the eastbound and westbound approaches would increase in delay without the southbound right-turn lane in the a.m. and p.m. peak hours.



SOURCE: Fehr & Peers

Menlo Park El Camino Real/Downtown Specific Plan EIR . 208581

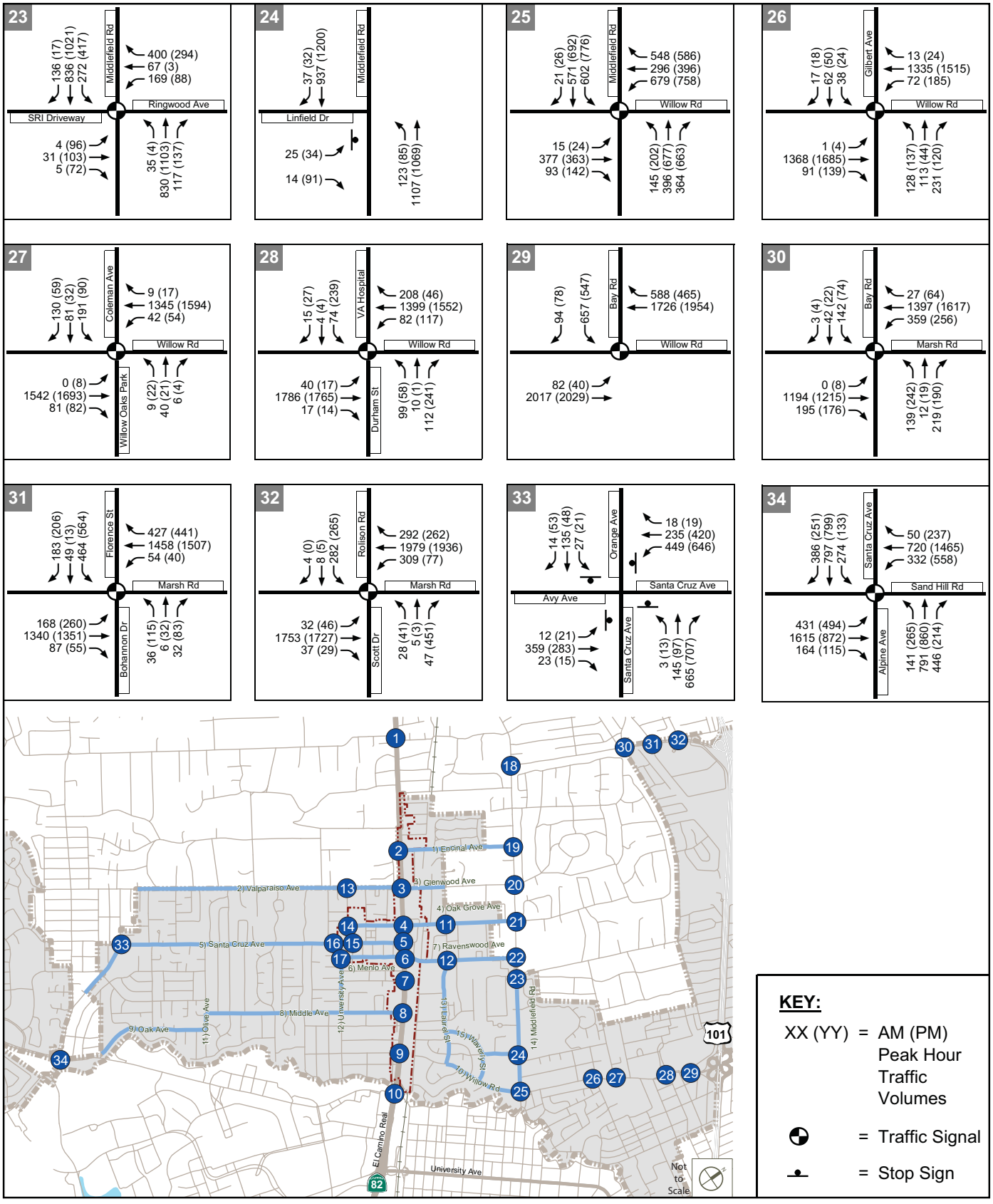
Figure 4.13-9a
Cumulative Plus Project
Traffic Control Devices and Intersection Volumes



SOURCE: Fehr & Peers

Menlo Park El Camino Real/Downtown Specific Plan EIR . 208581

Figure 4.13-9b
Cumulative Plus Project
Traffic Control Devices and Intersection Volumes



SOURCE: Fehr & Peers

Menlo Park El Camino Real/Downtown Specific Plan EIR . 208581

Figure 4.13-9c
Cumulative Plus Project
Traffic Control Devices and Intersection Volumes

The results in Table 4.13-13 indicate that the Specific Plan would result in significant traffic impacts at the following intersections under Cumulative Plus Project Conditions:

Intersection Number	Impact
3	El Camino Real and Glenwood Avenue/Valparaiso Avenue intersection as a whole in the p.m. peak hour and the eastbound and westbound approaches in the p.m. peak hour;
6	El Camino Real and Menlo Avenue/Ravenswood Avenue intersection as a whole and the eastbound and westbound approaches in both the a.m. and p.m. peak hours with and without the southbound right-turn lane;
8	El Camino Real and Middle Avenue intersection as a whole and the eastbound and westbound approaches in the p.m. peak hour and westbound approach in the a.m. peak hour;
12	Laurel Street and Ravenswood Avenue in the p.m. peak hour;
15	University Drive (North) and Santa Cruz Avenue in the a.m. peak hour;
18	Middlefield Road and Marsh Road in the p.m. peak hour;
19	Middlefield Road and Encinal Avenue in the a.m. peak hour;
20	Middlefield Road and Glenwood Avenue/Linden Avenue in both the a.m. and p.m. peak hours;
22	Middlefield Road and Ravenswood Avenue in both the a.m. and p.m. peak hours;
24	Middlefield Road and Linfield Drive in both the a.m. and p.m. peak hours;
25	Middlefield Road and Willow Road in p.m. peak hour;
27	Coleman Avenue and Willow Road in both the a.m. and p.m. peak hours;
28	Durham Street and Willow Road in the p.m. peak hour;
29	Bay Road and Willow Road in the a.m. peak hour; and
33	Orange Avenue/Santa Cruz Avenue and Avy Avenue/Santa Cruz Avenue in the a.m. and p.m. peak hours

Mitigation Measure TR-7a: The project applicant(s) shall contribute fair-share funding towards the following improvements at the intersection of El Camino Real and Glenwood Avenue/Valparaiso Avenue included in the City's Transportation Impact Fee program:

- Add a westbound right-turn lane; and
- Modifying the westbound approach to a left-turn lane, a through lane, and a right-turn lane

These modification would improve overall vehicular operations of this state-controlled intersection to LOS D in the p.m. peak hour under Cumulative Plus Project Conditions. This geometric modification would reduce the cumulative impact to a less-than-significant level.

The additional westbound right-turn lane will increase the crosswalk distance and duration of pedestrian and bicyclist exposure to motor vehicle traffic. This lane would also require ROW acquisition on the north side of Glenwood Avenue. In addition, the intersection modification would require coordination with, and approval by, Caltrans. Because of these constraints, and because the mitigation measure is not in the control of the City to implement, the impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-7b: The individual project applicant(s) shall contribute fair-share funding towards the following improvements at the intersection of El Camino Real and Menlo Avenue/Ravenswood Avenue:

- Add a second southbound left-turn lane;
- Modifying the southbound right-turn lane to a shared through/right-turn lane;
- Create a southbound receiving lane;
- Add a third northbound through lane;
- Add an eastbound left-turn lane, an eastbound right-turn lane, and modify the eastbound approach to one left-turn lane, two through lanes, and one right-turn lane; and
- Change the signal phasing on the eastbound and westbound approaches from split phasing to protected left-turn phasing.

This mitigation would not reduce the average intersection delay to an acceptable level of service. However, these improvements reduce the increase in average critical movement delay to less than 0.8 seconds, thereby reducing this impact to a less-than-significant level. All modifications are identified in the City's TIF program, except adding the third northbound through lane, which has been identified as mitigation for other pending development projects in the city.

For conditions where the southbound right-turn lane is removed to accommodate a sidewalk extension, the mitigation measure would include:

- Add a second southbound left-turn lane;
- Add a third northbound through lane;
- Add an eastbound left-turn lane, an eastbound right-turn lane, and modify the eastbound approach to one left-turn lane, two through lanes, and one right-turn lane; and

- Change the signal phasing on the eastbound and westbound approaches from split phasing to protected left-turn phasing.

This mitigation would not reduce the average intersection delay to an acceptable level, and would not reduce the increase in average critical movement delay to less than 0.8 seconds, thereby not reducing this impact to a less-than-significant level.

The additional southbound left-turn lane, northbound through lane, and eastbound lanes would increase the crosswalk distances and duration of pedestrian and bicyclist exposure to motor vehicle traffic. Also, the addition of the eastbound turn lanes could require ROW acquisition and parking space removal along Menlo Avenue. The second southbound left-turn and third northbound through lanes would require ROW acquisition on the east side of El Camino Real. Converting the southbound right-turn lane to a shared through/right-turn lane and adding the southbound receiving lane may require parking removal. In addition, the intersection modification would require coordination with, and approval by, Caltrans. Because of these constraints, and because the mitigation measure does not completely mitigate the impact, and the mitigation measure is not in the control of the City to implement, the impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-7c: The individual project applicant(s) shall contribute fair-share funding towards the following improvement at the intersection of Laurel Street and Ravenswood Avenue identified in the City's TIF program:

- Add an eastbound right-turn lane.

This modification would improve the p.m. peak-hour level of service to LOS D under Cumulative plus Project conditions. The additional eastbound lane would increase the crosswalk distance and duration of pedestrian and bicyclist exposure to motor vehicle traffic. Also, the addition of the eastbound right-turn lane would require ROW acquisition and tree removal along Ravenswood Avenue, the precise feasibility of which cannot be determined until detailed project design is completed. Because of these constraints and uncertainties, the impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-7d: Implement Mitigation Measure TR-1a (contribute fair-share funding towards signalization of the intersection of University Drive (North) and Santa Cruz Avenue [when investigation of the full set of traffic signal warrants indicate that signalization is warranted] and interconnection of the new signal with the existing signal at the University Drive (South) and Santa Cruz Avenue).

With Mitigation TR-1a, the intersection improves the level of service to LOS C during the a.m. peak hour under Cumulative Plus Project Conditions, and the impact would be reduced to a less-than-significant level. This improvement is not in the City's TIF. Therefore, the City could consider adding it to the TIF. Without a funding mechanism, this impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-7e: The individual project applicant(s) shall contribute fair-share funding towards the following improvements at the intersection of Middlefield Road and Marsh Road:

- Add a second westbound left-turn lane; and
- Provide a second receiving lane on the southern leg of the intersection.

This modification would improve the level of service to LOS D during the p.m. peak hour. However, the modification would increase the crosswalk distance and duration of pedestrian and bicyclist exposure to motor vehicle traffic. Also, the addition of the westbound left-turn lane and associated receiving lane may require ROW acquisition and tree removal along both Middlefield Road and Marsh Road. In addition, the intersection is under the City of Atherton's jurisdiction. Because of these constraints, and because the mitigation measure is not in the control of the City to implement, the impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-7f: Implement Mitigation Measure TR-1b (contribute fair-share funding towards signalization of the intersection of Middlefield Road and Glenwood Avenue/Linden Avenue [when investigation of the full set of traffic signal warrants indicate that signalization is warranted]).

With Mitigation TR-1b, the intersection improves the level of service to LOS B and LOS C during the a.m. and p.m. peak hour, respectively under Cumulative Plus Project Conditions, and the impact would be reduced to a less-than-significant level.

However, as noted in the discussion of Mitigation TR-1b, this intersection is under the City of Atherton's jurisdiction, therefore the City cannot guarantee its implementation and the impact remains significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-7g: The individual project applicant(s) shall contribute fair-share funding towards the following improvements at the intersection of Middlefield Road and Ravenswood Avenue, as identified in the City's TIF program:

- Add a southbound right-turn lane; and
- Modify the approach to a through lane and a right-turn lane.

These modifications would improve the level of service to LOS D during both the a.m. and p.m. peak hours. The addition of the southbound right-turn lane may require ROW acquisition and tree removal along Ravenswood Avenue, the precise feasibility of which cannot be determined until detailed project design is completed. Because of these constraints and uncertainties, the impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-7h: The individual project applicant(s) shall contribute fair-share funding towards the following improvement at the intersection of Middlefield Road and Linfield Drive:

- Signalization when investigation of the full set of traffic signal warrants indicate that signalization is warranted.

Signalizing the intersection of Middlefield Road and Linfield Drive would improve the level of service to LOS B during the a.m. peak hour and LOS C during the p.m. peak hour under Cumulative Plus Project conditions. Therefore, the impact would be reduced to a less-than-significant level, if the City could guarantee its implementation.

This improvement is not in the City's TIF. Therefore, the City could consider adding it to the TIF. Without a funding mechanism, this impact is considered to be significant and unavoidable.

This intersection meets peak-hour warrants. However, as mentioned previously, the peak-hour signal warrant analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on a thorough study of traffic and roadway conditions. The decision to install a signal should not be based solely upon the warrants, because the installation of signals can lead to certain types of collisions. Regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants should be considered to prioritize and program intersections for signalization.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-7i.1: Implement Mitigation Measure TR-1c (contribute fair-share funding towards adding a second westbound left-turn lane; modifying the westbound approach to two left-turn lanes, one through lane, and one right-turn lane; and changing the signal phasing on the eastbound and westbound approaches from split phasing to protected left-turn phasing at the intersection of Middlefield Road and Willow Road, as identified in the City's TIF program).

These improvements are identified in the City's TIF program and would reduce the average intersection delay to an acceptable level. However, the improvements may not be feasible due to ROW acquisition needs (constrained by the presence of buildings). Therefore, the impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-7i.2: In addition to Mitigation Measure TR-1c, the individual project applicant(s) shall contribute fair-share funding towards the following improvements at the intersection of Middlefield Road and Willow Road, as identified in the City's TIF program:

- Add a second southbound left-turn lane;
- Modify the southbound approach to two left-turn lanes, one through lane, and one through/right-turn lane; and
- Change the signal phasing on the northbound and southbound approaches from split phasing to protected left-turn phasing.

These improvements are identified in the City's TIF program and would reduce the average intersection delay to an acceptable level under Cumulative Plus Project Conditions. The additional southbound and westbound left-turn lanes would increase the crosswalk distance and duration of pedestrian and bicyclist exposure to motor vehicle traffic. Also, the addition of the left-turn lanes may require ROW acquisition. However, the improvements may not be feasible due to ROW acquisition needs. Because of these constraints, the impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-7j: The individual project applicant(s) shall contribute fair-share funding towards the following improvement at the intersection of Coleman Avenue and Willow Road:

- Restripe the southbound approach to one left-turn lane and one through/right-turn lane.

This modification would improve the level of service to LOS D during both the a.m. and p.m. peak hours.

Significance after Mitigation: Less than Significant.

Mitigation Measure TR-7k: The individual project applicant(s) shall contribute fair-share funding towards the following improvement at the intersection of Durham Street and Willow Road:

- Add a southbound left-turn lane.

This mitigation would not reduce the average intersection delay to an acceptable level. However, this improvement would reduce the increase in average critical movement delay to less than 0.8 seconds, thereby reducing this impact to a less-than-significant level. The addition of the southbound left-turn lane may require ROW acquisition and tree removal along the VA Hospital Driveway, which is not under the control of the City. Because of these constraints, and because the proposed mitigation measure would not reduce impacts to a level of insignificance, the impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-7l: The individual project applicant(s) shall contribute fair-share funding towards the following improvement at the intersection of Bay Road and Willow Road:

- Add a second southbound left-turn lane.

This modification would improve the level of service to LOS C during the a.m. peak hour under Cumulative Plus Project conditions. The addition of the second southbound left-turn lane may require ROW acquisition and tree removal. Because of these constraints, the impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation Measure TR-7m: Implement Mitigation Measure TR-1d (contribute fair-share funding towards signalization of the intersection of Orange Avenue/Santa Cruz Avenue and Avy Avenue/Santa Cruz Avenue, when investigation of the full set of traffic signal warrants indicate that signalization is warranted).

Signalizing the intersection of Orange Avenue/Santa Cruz Avenue and Avy Avenue/Santa Cruz Avenue would improve the level of service to LOS C during both the a.m. and p.m. peak hours

under Cumulative Plus Project conditions. Therefore, the impact would be less than significant level, if the City can guarantee its implementation.

This improvement is not in the City's TIF. Therefore, the City could consider adding it to the TIF. Without a funding mechanism, this impact is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Roadway Segments

Impact TR-8: Cumulative development, along with development in the Plan area would adversely affect operation of local roadway segments. (Significant)

The results in **Table 4.13-14** indicate that the Specific Plan would result in significant traffic impacts at the following roadway segments under Cumulative Plus Project Conditions.

5. Oak Grove Avenue – Middlefield to Laurel
6. Oak Grove Avenue – Laurel to El Camino
7. Oak Grove Avenue – El Camino to Crane
11. Santa Cruz Avenue - University to Olive
12. Santa Cruz Avenue - Olive to Avy/Orange
14. Menlo Avenue – El Camino to Crane
15. Menlo Avenue – Crane to University
16. Ravenswood Avenue – Middlefield to Laurel
17. Ravenswood Avenue – Laurel to Alma
18. Ravenswood Avenue – Alma to El Camino
19. Middle Avenue – El Camino to University
24. University Drive – Oak Grove to Santa Cruz
25. University Drive – Santa Cruz to Menlo
28. Middlefield Road - Ringwood to Willow

Mitigation Measure TR-8: Implement TR-2 (TDM Program).

As discussed under Impact TR-2, mitigations for roadway segment impacts would require adding travel lanes and widening roadways throughout Menlo Park, but as the City is built out, there is little opportunity to widen roadways within the available right-of-way, and any widening would require property acquisition. Due to the number of affected properties and financial implications, roadway segment impacts are significant and unavoidable. Implementation of Mitigation Measure TR-2 (page 4.13-51) would help reduce traffic volumes and minimize the impacts from the Specific Plan, but because the effectiveness of a TDM program cannot be guaranteed, the impact to roadway segments is considered to be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

TABLE 4.13-14
CUMULATIVE PLUS PROJECT ROADWAY LEVELS OF SERVICE

Roadway Segment	Classification	Cumulative ADT	Added Daily Volume	Cumulative Plus Project ADT	Impact ?
1. Encinal Avenue - Laurel to Middlefield (At/MP)	Collector	5,768	80	5,848	No
2. Encinal Avenue - El Camino to Laurel (MP)	Collector	6,292	86	6,378	No
3. Valparaiso Avenue - Delfino Way to El Camino (At/MP)	Minor Arterial	13,711	488	14,199	No
4. Glenwood Avenue - El Camino to Laurel (MP)	Collector	8,004	130	8,134	No
5. Oak Grove Avenue - Middlefield to Laurel (At/MP)	Collector	***10,943***	***847***	***11,790***	***Yes***
6. Oak Grove Avenue - Laurel to El Camino (MP)	Collector	***13,138***	***861***	***13,999***	***Yes***
7. Oak Grove Avenue - El Camino to Crane (MP)	Collector	***10,730***	***699***	***11,429***	***Yes***
8. Oak Grove Avenue - Crane to University (MP)	Collector	7,492	699	8,191	No
9. Santa Cruz Avenue - El Camino to Crane (MP)	Minor Arterial	9,747	1,134	10,881	No
10. Santa Cruz Avenue - Crane to University (MP)	Minor Arterial	11,352	1,134	12,486	No
11. Santa Cruz Avenue - University to Olive (MP)	Minor Arterial	***21,117***	***1,694***	***22,811***	***Yes***
12. Santa Cruz Avenue - Olive to Avy/Orange (MP)	Minor Arterial	***20,719***	***1,694***	***22,413***	***Yes***
13. Santa Cruz Avenue - Avy/Orange to Alameda de las Pulgas (MP)	Minor Arterial	14,053	1,451	15,504	No
14. Menlo Avenue - El Camino to Crane (MP)	Collector	***16,745***	***787***	***17,532***	***Yes***
15. Menlo Avenue - Crane to University (MP)	Collector	***9,764***	***202***	***9,966***	***Yes***
16. Ravenswood Avenue - Middlefield to Laurel (At/MP)	Minor Arterial	***24,797***	***1,348***	***26,145***	***Yes***
17. Ravenswood Avenue - Laurel to Alma (MP)	Minor Arterial	***28,904***	***1,822***	***30,726***	***Yes***
18. Ravenswood Avenue - Alma to El Camino (MP)	Minor Arterial	***34,155***	***1,822***	***35,977***	***Yes***
19. Middle Avenue - El Camino to University (MP)	Collector	***11,119***	***222***	***11,341***	***Yes***
20. Middle Avenue - University to Olive (MP)	Collector	8,552	52	8,604	No
21. Oak Avenue - Sand Hill Road to Olive Street (MP)	Local	3,309	17	3,326	No
22. Willow Road - Laurel to Middlefield (MP)	Collector	8,615	32	8,647	No
23. Olive Street - Oak to Middle (MP)	Local	3,427	16	3,443	No
24. University Drive - Oak Grove to Santa Cruz (MP)	Collector	***8,548***	***774***	***9,322***	***Yes***
25. University Drive - Santa Cruz to Menlo (MP)	Collector	***11,409***	***613***	***12,022***	***Yes***
26. University Drive - Menlo to Middle (MP)	Collector	6,551	438	6,989	No
27. Laurel Street - Ravenswood to Willow (MP)	Collector	9,113	32	9,145	No
28. Middlefield Road - Ringwood to Willow (MP)	Minor Arterial	***26,053***	***1,822***	***27,875***	***Yes***
29. Waverley Street - Laurel to Linfield (MP)	Local	1,955	4	1,959	No
30. Linfield Drive - Waverley to Middlefield (MP)	Local	2,090	4	2,094	No

NOTES:
Potentially significant impacts are indicated in ***bold and Italic*** type
Jurisdictions: Ct - Caltrans, At - Atherton, MP - Menlo Park, PA - Palo Alto

SOURCE: Fehr & Peers, 2010.

Freeway Segments

Impact TR-9: Cumulative development, along with development in the Plan area would increase traffic volumes on local freeway segments. (Less than Significant)

The freeway segment analysis for Cumulative Conditions is shown in **Table 4.13-15**. As described above under Cumulative Roadway Improvements, the freeway capacities on U.S. Route 101 include the planned auxiliary lanes from Marsh Road to the Santa Clara County line.

For Congestion Management Program (CMP) facilities, the significance test is whether the addition of project traffic causes a segment to exceed its LOS threshold or if it adds an amount of traffic greater than 1 percent of the segment's capacity. The CMP LOS threshold on U.S. Route 101 is LOS F. The southbound direction is currently operating at LOS F during both the a.m. and p.m. peak hours based on average speeds according to the 2009 CMP Monitoring Report. It is projected to continue to operate at LOS F due to the projected increase in traffic volumes even with the increase in capacity. The northbound direction is currently operating at LOS D during the a.m. peak hour and LOS F during the p.m. peak hour. It is projected to operate at LOS F in both directions under Cumulative Conditions.

The capacities of the analysis segments under Cumulative Conditions and the amount of added project traffic are shown in Table 4.13-15. The amount of project traffic would be less than one percent of the capacity. Therefore, the project would have no impact.

The CMP LOS threshold on I-280 is LOS D. According to the 2009 CMP Monitoring Report, it is operating at LOS D. Therefore, a volume-to-capacity ratio analysis was conducted to determine whether the addition of project traffic would cause a segment to exceed the threshold (LOS E). The results for cumulative conditions are presented in Table 4.13-15. Portions of I-280 in the study area are projected to exceed the threshold and operate at LOS F. The amount of project traffic added to the LOS F segments is less than one percent of the capacity. Therefore, the project would have no impact on I-280.

Mitigation: None required.

TABLE 4.13-15
CUMULATIVE PLUS PROJECT FREEWAY LEVELS OF SERVICE

Segment	Direction	Peak Hour	Cuml. Volume[a]	Cuml. Capacity[b]	Cuml. V/C[c]	Cuml. LOS[d]	Project Volume	% of Capacity	C+P Volume	C+P V/C[c]	C+P LOS[d]	LOS Threshold
U.S. Route 101, North of Marsh Road	NB	AM	-	8,340[e]	-	**F**	17	0.20%	-	-	**F**	F
		PM	-	7,780[e]	-	**F**	30	0.39%	-	-	**F**	
	SB	AM	-	7,740[e]	-	**F**	31	0.40%	-	-	**F**	
		PM	-	8,110[e]	-	**F**	26	0.32%	-	-	**F**	
U.S. Route 101, South of Willow Road	NB	AM	-	6,470[e]	-	**F**	38	0.59%	-	-	**F**	F
		PM	-	6,470[e]	-	**F**	36	0.56%	-	-	**F**	
	SB	AM	-	6,470[e]	-	**F**	29	0.45%	-	-	**F**	
		PM	-	6,470[e]	-	**F**	43	0.66%	-	-	**F**	
I-280, North of Sand Hill Road	NB	AM	6,187	9,000	0.69	C	23	0.26%	6,210	0.69	C	D
		PM	9,935	9,000	**1.10**	**F**	56	0.62%	**9,991**	**1.11**	**F**	
	SB	AM	10,563	9,000	**1.17**	**F**	47	0.52%	**10,610**	**1.18**	**F**	
		PM	6,560	9,000	0.73	D	38	0.42%	6,598	0.73	D	
I-280, South of Alpine Road	NB	AM	6,254	9,000	0.69	C	60	0.67%	6,314	0.70	C	D
		PM	9,982	9,000	**1.11**	**F**	42	0.47%	**10,024**	**1.11**	**F**	
	SB	AM	10,628	9,000	**1.18**	**F**	32	0.36%	**10,660**	**1.18**	**F**	
		PM	6,620	9,000	0.74	D	64	0.71%	6,684	0.74	D	

NOTES:
[a] Peak hour volumes obtained from Caltrans data and adjusted for corridor growth
[b] Capacity based on number of lanes and per lane capacity of 2,300 vehicles per hour per lane (vphpl) for I-280 and 2,200 vphpl for U.S. Route 101, per the 2000 *Highway Capacity Manual - Special Report 209,*and projected volumes for auxiliary lanes – all adjusted for trucks.
[c] Volume-to-Capacity ratio (V/C)
[d] LOS calculations performed using the 2000 *Highway Capacity Manual - Special Report 209* methods for freeway segments
[e] Future ramp volumes were not available to account for auxiliary lane capacities. Therefore, existing capacities were used in this analysis. These existing capacities would be lower than the future capacities and would represent a more conservative analysis.
Unacceptable operations are indicated in **bold** type. Significant impacts are shown in ***bold italics*** type.

SOURCE: Fehr & Peers, 2010.