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## 12. TRANSPORTATION, CIRCULATION, AND PARKING

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This SEIR chapter describes the transportation, circulation and parking implications of the proposed Stanford Outpatient Center project. As prescribed by the Redwood City Traffic Engineer, and based on changing conditions over the years since the 1996 EIR and 1998 SEIR were prepared, this chapter provides an evaluation of existing and projected traffic conditions compared to previous environmental documentation for the Midpoint Technology Park, and the effects of the proposed change in project site land use from office/R&D to outpatient medical center on these conditions. The chapter is based on a transportation impact analysis prepared for the applicant by Fehr & Peers, transportation consultants, and an independent "peer review" of the Fehr & Peers findings by the SEIR transportation consultant, George W. Nickelson, P.E. Complete copies of the Fehr & Peers transportation impact analysis report and George W. Nickelson, P.E., review are on file at the Redwood City Planning Department, 1017 Middlefield Road.

### 12.1 SETTING

This section describes the existing local and regional road network, transit services, pedestrian and bicycle facilities serving the project site, and associated existing and background traffic conditions.

#### 12.1.1 Roadway Network

Figure 12.1 presents the roadway network serving the project site. Regional access to the project site is provided by U.S. 101, I-280, El Camino Real (State Route 82), and Woodside Road (State Route 84). Local access is provided by Marsh Road, Bay Road, Broadway, Charter Street, Douglas Avenue, 2nd Avenue, 5th Avenue, Florence Street, Rolison Road, Scott Drive, and Veterans Boulevard. For the purpose of this SEIR chapter only, U.S. 101 was assumed to be oriented north-south, and all facilities running parallel to U.S. 101 were assumed to be oriented north-south.<sup>1</sup>

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<sup>1</sup>*Note:* The directions (north, east, south, west) used in this document are the "true" directions that correspond with the orientation of the maps, illustrations, and project plans included herein; i.e., this document uses the same directional adjectives as the project application materials submitted to the City in order to maintain consistency with the various project-specific documents and submittals that City staff will be reviewing. *References to traffic flow in this chapter, however, describe roadways in common regional nomenclature such as "U.S. 101 North" and "U.S. 101 South."* For example, common perception could conclude that U.S. 101 runs in a north-south direction adjacent to the project site; however, in the project vicinity, U.S. 101 truly runs west-east. Traffic engineering studies typically refer to "101 North" and "101 South" in descriptions of the regional transportation network, with descriptions of other roadways based on the general north-south direction of the highway; therefore, because traffic flow calculations are directly tied to *regional* traffic models, descriptions of *traffic flow direction* in this chapter correspond with the "U.S. 101 North/U.S. 101 South" assumption.

Figure 12.1. Roadway System and Study Intersections.

(a) Regional Roadways. The following regional roadways serve the project site:

*U.S. 101* is a major north-south interregional route serving Redwood City. Access to the project site from U.S. 101 is accommodated via interchanges at Woodside Road (SR 84) and Marsh Road.

*I-280* is a major north-south regional route serving Redwood City. The route begins in San Francisco and extends south to San Jose, primarily as an eight-lane facility. Access to the project site from I-280 is provided via an interchange with Woodside Road.

*Woodside Road (SR 84)* is a four- to five-lane divided arterial roadway extending east-west through Redwood City to the City of Woodside. Woodside Road connects I-280 to U.S. 101. The road intersects with Bay Road and Broadway north of the project site. At the U.S. 101/Woodside Road junction, SR 84 joins U.S. 101, continues south and eventually east across the Dumbarton Bridge to I-880 and into Union City.

*El Camino Real (SR 82)* is a north-south, six-lane, intraregional arterial roadway and is one of the primary commercial corridors in the city.

(b) Local Roadways. The following local roadways serve the project site:

*Marsh Road* is a four- to five-lane minor arterial roadway extending east-west from Middlefield Road to east of U.S. 101. Marsh Road is south of the project site and provides direct access to U.S. 101. From the southern portion of the project site, access to Marsh Road is via Bay Road, which turns into Florence Street.

*Bay Road* is a four-lane, north-south roadway extending from north of Woodside Road South to 8th Avenue. As Bay Road approaches 15th Avenue, it turns into Florence Street and connects to Marsh Road.

*Broadway* is a two- to four-lane north-south roadway. Broadway begins at 5th Avenue and continues north of Woodside Road and ends south of Whipple Avenue.

*Charter Street* is a two-lane minor roadway extending east-west with all-way stop-controlled intersections at Bay Road and Broadway. Charter Street is located north of the project site; it begins at Middlefield Road and continues east of Broadway, where it dead-ends.

*Douglas Avenue* is a two-lane minor roadway extending east-west directly north of the project site. The street intersects with Bay Road and Broadway with all-way stop controls. Douglas Avenue begins at Middlefield Road and continues east of Broadway, where it dead-ends.

*Second Avenue* is an east-west minor two-lane roadway directly south of the project site. The street begins at the railroad tracks west of Middlefield Road and continues east past the project site, where it intersects Rolison Road, a frontage road along U.S. 101. Second Avenue intersects with both Bay Road and Broadway with an all-way stop control and two-way stop control, respectively.

*Fifth Avenue* is an east-west two-lane roadway south of the project site. Fifth Avenue extends from El Camino Real, where it is an arterial roadway through the project vicinity extending to Rolison Road. Both Bay Road and Broadway intersect with 5<sup>th</sup> Avenue.

*Florence Street/Bohannon Drive* is a two-lane roadway extending north-south. Bay Road turns into Florence Street at 15th Avenue. At the intersection with Marsh Road, Florence becomes Bohannon Drive, which extends south along the railroad tracks then turns east and joins with Scott Drive.

*Rolison Road/Scott Drive* is a two-lane minor roadway that begins at Marsh Road and extends north. Rolison Road is a two-lane frontage road that parallels U.S. 101. Rolison Road has residential land uses on one side of the roadway and a sound wall on the other side. Scott Drive is the continuation of Rolison Road south of Marsh Road. Farther south, Scott Drive turns into Bohannon Drive.

*Veterans Boulevard* is an east-west, six-lane, divided arterial roadway extending south from Whipple Avenue to Chestnut Street. Between Chestnut Street and Woodside Road, Veterans Boulevard becomes two lanes. The northern and southern termini of this street are a southbound off-ramp from and on-ramp to U.S. 101, respectively.

(c) Study Intersections. Intersections, rather than midblock roadway segments, are almost always the critical capacity-controlling locations for urban and suburban roadway networks. The following 14 "study" intersections have been identified in consultation with City staff for analysis in this SEIR:

*Signalized Intersections:*

1. Woodside Road/Veterans Boulevard
2. Woodside Road/Broadway
3. Woodside Road/Bay Road
4. Woodside Road/Middlefield Road
5. Marsh Road/Scott Road
6. Marsh Road/Florence Street/Bohannon Drive

*Unsignalized Intersections:*

7. Broadway/Charter Street
8. Broadway/Douglas Avenue
9. Broadway/2nd Avenue
10. Broadway/5th Avenue
11. Bay Road/Charter Street
12. Bay Road/Douglas Avenue
13. Bay Road/2nd Avenue
14. Bay Road/5th Avenue

### **12.1.2 Transit Service**

Figure 12.2 shows existing transit facilities near the project site.

Figure 12.2. Transit Facilities.

(a) Caltrain Service. The Peninsula Corridor Joint Powers Board operates commuter rail service (Caltrain) between San Jose and San Francisco. During the peak commute period, Caltrain also provides extended service south of San Jose to Morgan Hill and Gilroy. The closest Caltrain station to the project site is the Redwood City station located in downtown Redwood City near Jefferson Street. Caltrain operates from 4:30 AM until 1:30 AM on 15- to 60-minute headways during the weekday. In addition, the Baby Bullet service also operates during peak hours in the morning and the afternoon periods; however, the express train service does not currently serve the Redwood City Station.

(b) SamTrans Service. The San Mateo County Transit District (SamTrans) provides bus service in San Mateo County. Bus routes 270, 271, 295, and 297/397 provide bus service within Redwood City near the project site; however, none of these existing routes directly serves the project site. Route 51B, described in the 1996 EIR as running "on Broadway through the [Midpoint Technology Park] project site," no longer operates anywhere on the SamTrans system; Route 270, which does not pass by the Outpatient Center project site, generally traverses the same route as previous Route 51B in Redwood City.<sup>1</sup> Table 12.1 summarizes the service frequencies for the SamTrans routes that serve Redwood City.

### **12.1.3 Pedestrian and Bicycle Facilities**

(a) Sidewalks. Sidewalks are provided on both sides of Broadway in front of the project site. No sidewalks or crosswalks are provided around the intersections of Woodside Road/Veterans Boulevard and Woodside Road/Middlefield Road. Woodside Road and Broadway have sidewalks and signalized crosswalks on all four legs except the east leg. The other 11 study intersections have sidewalks on all four legs.

(b) Bicycle Facilities. Bicycle facilities comprise bike paths (Class I), bike lanes (Class II), and bike routes (Class III). Bike paths are paved trails that are separated from roadways. Bike lanes are lanes on roadways and are designated for bicycle use by striping, pavement legends, and signs. Bike routes are roadways designated for bicycle use by signs only.

Class II bike lanes are provided on Broadway starting at 5th Avenue and continuing through to Douglas Avenue. Field observations showed that existing bike lanes near the project site are in good condition.

### **12.1.4 On-Site Parking**

There are approximately 1,175 on-site parking spaces located within the 11.3-acre project site, including spaces in surface lots around the four existing buildings and in parking structures beneath the four buildings.<sup>2</sup> Access to the on-site parking areas is provided via two driveways

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<sup>1</sup>SamTrans information line (800-660-4287) and website ([www.SamTrans.com](http://www.SamTrans.com)); May 8, 2006. Also, *Final Environmental Impact Report for the Pacific Shores Center Project* (State Clearinghouse #93053065); prepared for the City of Redwood City by Recon Environmental Corporation; certified May 8, 1995. Current SamTrans staff could not locate information regarding when Route 51B was discontinued; however, because Route 51B existed *before* the @Home buildings on the current project site were constructed (i.e., when the site was vacant), no direct correlation can be drawn between the discontinuation of Route 51B and the vacation of the @Home buildings.

<sup>2</sup>The adequacy of this existing on-site parking supply for the proposed change in on-site land use from office to outpatient medical clinic is described in section 12.3.4 (Supplemental Project Impacts and Mitigations) herein, under *Supplemental Impact 12-10 (Project Impact on Parking)*.

Table 12.1  
**SAMTRANS BUS SERVICE**

Route	From	To	Hours of Operation		Headway During Commute Periods (in minutes)	
			Weekday	Weekend	AM	PM
83*	Bay/Christopher	Santa Cruz/Elder	7:15 am-8:05 am	None	N/A	N/A
270	Redwood City Caltrain Station	Florence Street/17 <sup>th</sup> Avenue	6:35 am-12:10 am	9:35 am-12:10 am	60	60
271	Woodside Plaza	Redwood City Caltrain Station	6:30 am-6:30 pm	None	30	30
295	San Mateo Caltrain Station	Florence Street/17 <sup>th</sup> Avenue	6:00 am-7:55 pm	None	30	60
297/397	Stanford Shopping Center	Mission/1 <sup>st</sup>	12:45 am-12:20 am (next day)	12:45 am-12:20 am (next day)	60	60

SOURCE: San Mateo Transportation Authority ([www.samtrans.org](http://www.samtrans.org))

Notes:

\*This bus operates only during school periods.

N/A = not applicable

located on Broadway. Some limited on-street parking is located on nearby side streets such as Douglas Avenue and 2nd Avenue.

### **12.1.5 Analysis Methodology**

**(a) Traffic Condition Scenarios.** Study intersection operation has been evaluated in this SEIR analysis during the morning (AM) and evening (PM) peak hours for the following scenarios.

- *Scenario 1: Existing Conditions*--Existing volumes obtained from recent (2005) traffic counts.
- *Scenario 2: Background Conditions*--Existing volumes plus traffic from approved but not yet constructed developments in the area. Due to the high vacancy rates at some of the existing major office complexes in the study area, estimated trips from these underused developments were added to the background traffic conditions. These added trips include the full occupancy of the existing vacant buildings. For existing buildings on the project site, the trip generation was based on the rates used in the certified EIR for the Midpoint Technology Park (1996 EIR). This scenario forms the basis against which project impacts are determined.

- *Scenario 3: Project Conditions*--Existing, plus background, plus the net new traffic generated by the proposed change from office/R&D to medical clinic, as compared to the volumes previously evaluated in the 1996 EIR.
- *Scenario 4: Cumulative No Project Conditions*--Existing plus background plus traffic associated with other pending and possible future developments in the area, without the project. Based on input from City staff, a one-percent annual growth was also applied to account for other regional growth on City streets under Cumulative Conditions.
- *Scenario 5: Cumulative Plus Project Conditions*--The existing plus background plus cumulative condition described under Scenario 4, plus the net new traffic generated by the project--i.e., the proposed change in project site use from office/R&D to medical clinic.

(b) Level of Service Calculations. Operations of the study intersections have been evaluated using the "Level of Service" (LOS) calculations and grading system. The term "Level of Service" refers to a commonly used grading system methodology for evaluating and describing roadway system operational conditions. The LOS grading system considers such traffic flow factors as speed, travel time, delay, and freedom to maneuver. Six levels of operation are used ranging from LOS A, representing the best operating conditions, to LOS F, representing the worst operating conditions. LOS E represents "at capacity" operations. When demand exceeds the design capacity of a roadway facility, stop-and go conditions typically result and operations are designated as LOS F. The City has established a minimum acceptable operating level of **LOS D** for signalized and unsignalized intersections.

*Signalized Intersections.* The signalized intersection LOS methodology evaluates intersection operation based on average control vehicular delay for all vehicles entering the intersection.<sup>1</sup> Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration. The average control delay for signalized intersections is correlated to a level of service designation, as shown in Table 12.2.

*Unsignalized Intersections.* The LOS rating for unsignalized intersections is based on the weighted average control delay expressed in seconds per vehicle (see Table 12.3).<sup>2</sup> At two-way or side street-controlled intersections, LOS is calculated for each controlled movement, not for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. For all-way stop-controlled locations, LOS is computed for the intersection as a whole considering all approaches.

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<sup>1</sup>Average control delay at signalized intersections is calculated using the method described in chapter 16 of the 2000 *Highway Capacity Manual*, using the TRAFFIX analysis software. Consistent with common practice, the average delay for signalized study intersections (with the exception of the Broadway/Woodside Road intersection) was calculated for this analysis using the TRAFFIX level of service analysis software package. The Broadway/Woodside Road intersection has five approach legs and four departure legs, and the TRAFFIX software package cannot analyze intersections with more than four approaches. Therefore, the Synchro software package was used to analyze the level of service at the Broadway/Woodside Road intersection. The Synchro software package correlates LOS designations to the average control delay and is consistent with the methodology presented in the 2000 *Highway Capacity Manual*.

<sup>2</sup>Operations of the unsignalized intersections were evaluated using the methodology contained in chapter 17 of the 2000 *Highway Capacity Manual*.

Table 12.2  
**SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS**

Level of Service	Description of Operations	Average Control Delay (seconds/vehicle)
A	Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.	≤ 10
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted.	> 10 to 20
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted.	> 20 to 35
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 to 55
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues from upstream.	> 55 to 80
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80

SOURCE: *Highway Capacity Manual*, Transportation Research Board, 2000.

Table 12.3  
**UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS**

Level of Service	Description of Operations	Average Control Delay (seconds/vehicle)
A	No delay for stop-controlled approaches.	0 to 10
B	Operations with minor delays.	> 10 to 15
C	Operations with moderate delays.	> 15 to 25
D	Operations with some delays.	> 25 to 35
E	Operations with high delays and long queues.	> 35 to 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

SOURCE: *Highway Capacity Manual*, Transportation Research Board, 2000.

*State Highway Facilities:* State highway facilities serving the project vicinity--U.S. 101, I-280, Woodside Road (SR 84) and El Camion Real (SR 82)--are subject to Caltrans LOS criteria. Caltrans' *Guide for the Preparation of Traffic Impact Studies* states, "Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State highway facilities; however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State Highway is operating at less than the appropriate target LOS, the existing LOS should be maintained." For previous EIRs prepared by the City of Redwood City, the City's LOS D policy has been applied to intersections along Woodside Road (SR 84), consistent with Caltrans guidelines. As further explained in section 12.3.2 (Significance Criteria) herein, for intersections along this State Highway route where the existing LOS already exceeds LOS D, the City defines a small increment of delay (five seconds) as the significant impact criteria, which is also generally consistent with Caltrans guidelines.

### **12.1.6 Existing Traffic Conditions**

(a) Existing Traffic Volumes and Lane Configurations. Peak operational conditions at roadway intersections usually occur during the morning and evening between 7:00 and 9:00 AM and 4:00 and 6:00 PM, respectively. Intersection operations were evaluated for the highest one-hour traffic volume during each of these periods.

Existing peak-hour traffic counts were conducted in June 2005. Copies of the traffic counts are included in appendix A of the Fehr & Peers transportation impact analysis available for review at the Redwood City Planning Department.

Figure 12.3 illustrates existing intersection lane configurations and traffic control devices, and Figure 12.4 shows existing traffic volumes at each of the study intersections during the AM and PM peak hours, based on the June 2005 counts.

(b) Existing Intersection Levels of Service. The existing lane configurations and the peak-hour turning movement volumes were used to calculate the levels of service for each of the 14 study intersections during each peak hour. Table 12.4 summarizes the results of the existing LOS analysis. Level of service calculation worksheets are included in appendix B of the Fehr & Peers transportation impact analysis available for review at the Redwood City Planning Department.

The results of this analysis show that the study intersections generally vary in existing operational condition from LOS A to LOS D. Most of the study intersections currently operate within acceptable standards (LOS D or better). An exception is the Woodside Road/Broadway intersection, which currently operates at an unacceptable LOS E during the PM peak hour.

(c) Field Observations. Field observations of the key study intersections in the project vicinity were conducted to verify the calculated operations. In general, observation confirmed that most of the study intersections are operating at or near the calculated levels of service.

Figure 12.3. Existing Intersection Lane Configurations.

Figure 12.4. Existing Peak-Hour Intersection Volumes.

Table 12.4  
**EXISTING INTERSECTION LEVELS OF SERVICE**

<u>Intersections</u>	<u>Traffic Control Device</u>	<u>Peak Hour</u>	<u>Average Intersection Delay<sup>1</sup></u>	<u>LOS<sup>2</sup></u>
1. Woodside Road/Veterans Boulevard	Signal	AM	23.2	C
		PM	42.5	D
2. Woodside Road/Broadway <sup>3</sup>	Signal	AM	50.3	D
		PM	<b>78.9</b>	<b>E</b>
3. Woodside Road/Bay Road	Signal	AM	21.7	C
		PM	27.0	C
4. Woodside Road/Middlefield Road*	Signal	AM	38.6	D
		PM	46.2	D
5. Marsh Road/Scott Road	Signal	AM	22.2	C
		PM	21.5	C
6. Marsh Road/Florence Street/Bohannon Drive	Signal	AM	18.7	C
		PM	21.6	C
7. Broadway/Charter Street	All-way Stop Control	AM	11.4	B
		PM	14.7	B
8. Broadway/Douglas Avenue	All-way Stop Control	AM	9.6	A
		PM	10.6	B
9. Broadway/2nd Avenue	Two-way Stop Control	AM	7.2	B
		PM	8.9	B
10. Broadway/5th Avenue	Two-way Stop Control	AM	4.1	A
		PM	4.6	A
11. Bay Road/Charter Street	All-way Stop Control	AM	11.2	B
		PM	12.9	B
12. Bay Road/Douglas Avenue	All-way Stop Control	AM	9.9	A
		PM	10.5	B
13. Bay Road/2nd Avenue	All-way Stop Control	AM	10.1	B
		PM	10.4	B
14. Bay Road/5th Avenue	All-way Stop Control	AM	13.8	B
		PM	15.6	C

SOURCE: Fehr & Peers

*Notes:*

<sup>1</sup> Average control delay per vehicle for signalized intersections using the methodology described in the 2000 *Highway Capacity Manual*. LOS calculations conducted using the TRAFFIX analysis software package.

<sup>2</sup> LOS = Level of Service

<sup>3</sup> This intersection has five approaches and was analyzed using the Synchro software package.

\* Denotes County Congestion Management Program (CMP) monitored intersection.

AM = AM Peak Hour; PM = PM Peak Hour

**Bold font** indicates unacceptable conditions.

At the Woodside Road/Veterans Boulevard intersection, the morning and evening peak hours have long queues in the eastbound and westbound directions. The eastbound queue occasionally blocks the adjacent Broadway/Woodside Road intersection. In addition, the Woodside Road/Veterans Boulevard intersection has no accommodation for pedestrian traffic.

The Broadway/Woodside Road intersection has heavy traffic in both the AM and PM peak hours. The east and west traffic volumes on Woodside are approximately equal with similar queuing on the intersection approaches. The queue westbound on Woodside sometimes spills back into the adjacent Woodside Road/Veterans Boulevard intersection and blocks traffic.

At the Florence Street/Marsh Road intersection, waiting vehicle queues in the southbound direction occasionally do not clear the intersection in a single signal cycle during the AM peak hour. In the PM peak hour, eastbound left-turning vehicle queues occasionally do not clear the intersection in a single signal cycle length.

The unsignalized intersections along both Bay Road and Broadway have moderate to low traffic volumes during both the morning and evening peak hours, and operate acceptably.

(d) Roadway Segments. In addition to intersection turning movement volumes, data were collected on eight "study" roadway segments located south of the project site. Twenty-four hour machine counts were taken at these locations to determine the existing daily and peak-hour volumes. Speed data were also collected at each location. The 85th percentile speed is commonly used to establish speed limits for roadways.<sup>1</sup> Table 12.5 presents the average daily, AM peak-hour, and PM peak-hour traffic count and 85<sup>th</sup> percentile speed data results.

Of these eight "study" locations, four roadway segments currently carried fewer than 3,000 vehicles per day (vpd). Roadways carrying fewer than 3,000 vpd are considered "local streets" by the City of Redwood City. The four roadway segments that currently fall into this "local street" category, based on existing traffic volumes, are:

- Rolison Road south of 2nd Avenue--2,280 vpd
- Hoover Street south of 2nd Avenue--1,920 vpd
- Page Street south of 2nd Avenue--1,735 vpd
- Second Avenue between Bay Road and Broadway--2,920 vpd

Traffic calming devices (speed humps) were installed on Hoover Street and Page Street as a result of a traffic calming study conducted as a 1997 condition of approval for the original Midpoint Technology Park. Due to these traffic calming devices, the 85th percentile speeds on these two roadways are lower than on the six other study roadway segments.

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<sup>1</sup>The 85th percentile speeds are also a factor in traffic signal warrants; they are used to determine whether an intersection should be treated as an urban or rural location. If 85th percentile speeds are over 40 miles per hour (mph), a location within a small urban area should be treated as a rural location. In the case of this analysis, 85th percentile speeds on all facilities surveyed were below the 40 mph threshold. Therefore, the traffic signal warrants at all locations were considered urban.

Table 12.5

**EXISTING TRAFFIC VOLUMES AND SPEEDS ON ROADWAY SEGMENTS**

<u>Location</u>	<u>Average Daily Traffic (ADT)</u>	<u>AM Peak Hour</u>	<u>PM Peak Hour</u>	<u>85th Percentile Speed (miles per hour)</u>
NB - Broadway north of 2nd Avenue	3,595	335	260	33
SB - Broadway north of 2nd Avenue	3,955	135	425	36
<i>Total Two-Way Traffic</i>	<i>7,550</i>	<i>470</i>	<i>685</i>	
NB - Broadway south of 2nd Avenue	2,090	200	145	34
SB - Broadway south of 2nd Avenue	2,370	85	245	37
<i>Total Two-Way Traffic</i>	<i>4,460</i>	<i>285</i>	<i>390</i>	
NB - Rolison Road south of 2nd Avenue	1,040	105	70	36
SB - Rolison Road south of 2nd Avenue	1,240	70	135	35
<i>Total Two-Way Traffic</i>	<i>2,280</i>	<i>175</i>	<i>205</i>	
NB - Hoover Street south of 2nd Avenue	995	90	70	23
SB - Hoover Street south of 2nd Avenue	925	40	110	31
<i>Total Two-Way Traffic</i>	<i>1,920</i>	<i>130</i>	<i>180</i>	
NB - Page Street south of 2nd Avenue	880	80	70	26
SB - Page Street south of 2nd Avenue	845	55	90	26
<i>Total Two-Way Traffic</i>	<i>1,725</i>	<i>135</i>	<i>160</i>	
NB - Bay Road south of 2 <sup>nd</sup> Avenue	5,165	430	395	32
SB - Bay Road south of 2 <sup>nd</sup> Avenue	5,055	305	440	31
<i>Total Two-Way Traffic</i>	<i>10,220</i>	<i>735</i>	<i>835</i>	
WB - 2nd Avenue – Bay & Broadway	1,565	95	125	29
EB - 2nd Avenue – Bay & Broadway	1,355	80	65	29
<i>Total Two-Way Traffic</i>	<i>2,920</i>	<i>175</i>	<i>190</i>	
WB - 5th Avenue – Bay & Broadway	2,495	175	205	32
EB - 5th Avenue - Bay & Broadway	2,290	120	215	32
<i>Total Two-Way Traffic</i>	<i>4,785</i>	<i>295</i>	<i>420</i>	

SOURCE: Fehr & Peers

Note: NB = northbound, SB = southbound, WB = westbound, EB = eastbound

### **12.1.7 Background Traffic Conditions**

Background Conditions serve as the baseline scenario against which project impacts are identified.

(a) Background Traffic Estimates. Traffic volumes under Background Conditions were estimated by adding existing volumes, traffic estimates from approved but not yet constructed projects, and traffic estimates from underused developments in the study area, including the project site. In collaboration with the City Traffic Engineer and other Redwood City staff, trip generation amounts and trip assignments for the following approved but not yet constructed developments in the area were included in the background traffic estimates:

- 1501 Seaport Boulevard (West Point Marina),
- Chesapeake (Abbott Labs),
- Kaiser Hospital Master Plan,
- 2107 Broadway (Downtown Cinema),
- 1540 El Camino Real (Villa Montgomery Apartments),
- 890 Broadway (High Tech School), and
- 2300 Middlefield Road Costco Expansion.

In addition, trip generation amounts and trip assignments from the following underused sites (unoccupied existing space) in the study area were included in the background traffic estimates:

- Pacific Shores (approximately 970,000 square feet unoccupied space),
- 500 Arguello (approximately 38,300 square feet unoccupied space),
- off-site components of Midpoint Technology Park (approximately 289,000 square feet unoccupied space), and
- the four on-site Excite@Home Buildings (approximately 360,000 square feet unoccupied space).

The approved project trip inventories and trip distribution assumptions are described in Appendix C of the Fehr & Peers transportation impact analysis available for review at the Redwood City Planning Department. Figure 12.5 presents traffic volumes at the study intersections during the AM and PM peak hours under Background Conditions.

(b) Background Intersection Level of Service. Background Condition levels of service were calculated for the study intersections for the AM and PM peak hours. Table 12.6 presents the LOS calculation results under Background Conditions. The LOS calculation worksheets are contained in Appendix B of the Fehr & Peers transportation impact analysis available for review at the Redwood City Planning Department.

Figure 12.5. Background Peak-Hour Intersection Volumes.

Table 12.6  
**INTERSECTION LEVELS OF SERVICE UNDER BACKGROUND CONDITIONS**

Intersection	Traffic Control Device	Peak Hour	Average Intersection Delay <sup>1</sup>	LOS <sup>2</sup>
1. Woodside Road/Veterans Boulevard	Signal	AM	26.6	C
		PM	52.3	D
2. Woodside Road/Broadway <sup>3</sup>	Signal	AM	<b>85.3</b>	<b>F</b>
		PM	<b>112.8</b>	<b>F</b>
3. Woodside Road/Bay Road	Signal	AM	21.1	C
		PM	27.5	C
4. Woodside Road/Middlefield Road*	Signal	AM	43.7	D
		PM	54.3	D
5. Marsh Road/Scott Road	Signal	AM	23.8	C
		PM	23.0	C
6. Marsh Road/Florence Street/Bohannon Drive	Signal	AM	27.5	C
		PM	31.8	C
7. Broadway/Charter Street	All-way Stop Control	AM	20.2	C
		PM	26.1	D
8. Broadway/Douglas Avenue	All-way Stop Control	AM	12.7	B
		PM	14.0	B
9. Broadway/2nd Avenue	Two-way Stop Control	AM	22.0	C
		PM	26.6	D
10. Broadway/5th Avenue	Two-way Stop Control	AM	10.9	B
		PM	11.5	B
11. Bay Road/Charter Street	All-way Stop Control	AM	13.0	B
		PM	15.1	C
12. Bay Road/Douglas Avenue	All-way Stop Control	AM	10.9	B
		PM	11.9	B
13. Bay Road/2nd Avenue	All-way Stop Control	AM	10.7	B
		PM	11.3	B
14. Bay Road/5th Avenue	All-way Stop Control	AM	16.1	C
		PM	19.4	C

SOURCE: Fehr & Peers

Notes:

<sup>1</sup> Average control delay per vehicle for signalized intersections using the methodology described in the 2000 *Highway Capacity Manual*. LOS calculations conducted using the TRAFFIX analysis software package.

<sup>2</sup> LOS = Level of Service

<sup>3</sup> This intersection has five approaches and was analyzed using the Synchro software package.

\* Denotes County Congestion Management Plan (CMP) monitored intersection.

AM = AM Peak Hour; PM = PM Peak Hour

**Bold font** indicates unacceptable conditions.

The addition of Background Conditions traffic increases the delays at the study intersections. Most will continue to operate at acceptable levels; however, the Woodside Road/Broadway intersection is projected to operate at unacceptable LOS F during both the AM and PM peak hours.

(c) Background Traffic on Roadway Segments. Table 12.7 presents background traffic volumes for the eight study roadway segments. Based on the background traffic growth assumptions, daily traffic on the study roadway segments will increase from 4 to 67 percent.

These "background" increases are due to the combined effects of applying a background growth factor, anticipated increase in occupancy at the Midpoint Technology Park, and full occupancy of vacant on-site office space. Since traffic calming devices have been installed on both Hoover Street and Page Street, no additional background traffic was assigned to these facilities.

Under Background Conditions, the following three roadway segments will carry fewer than 3,000 vehicles per day (vpd), thereby maintaining their "local street" designation:

- Rolison Road south of 2nd Avenue--2,550 vpd,
- Hoover Street south of 2nd Avenue--1,920 vpd, and
- Page Street south of 2nd Avenue--1,735 vpd.

With the re-occupancy of the existing vacant space in the Midpoint Technology Park, including the project site, it is estimated that the roadway segment on 2nd Avenue between Bay Road and Broadway will carry a traffic volume of 4,865 daily trips--i.e., a volume that exceeds the route's "local street" identification.

## **12.2 PERTINENT PLANS AND POLICIES**

The City of Redwood City has jurisdiction over all City streets and City-operated traffic signals. The City/County Association of Governments of San Mateo County (C/CAG) is the state-authorized Congestion Management Agency for San Mateo County, and with the Metropolitan Transportation Commission (MTC) oversees and coordinates funding for intra-regional transportation improvement programs. The State of California Department of Transportation (Caltrans) has jurisdiction over Redwood City-serving freeways (U.S. 101 and I-280), freeway ramps, and designated state routes (SR 82/El Camino Real and SR 84/Woodside Road).

### **12.2.1 Redwood City Strategic General Plan**

The Redwood City Strategic General Plan Circulation Element (adopted in 1990, revised in 1993) contains the following relevant objectives and policies:

- *Allow for the safe and convenient movement and access of motor vehicles in Redwood City, but not at the expense of the environment or the overall quality of life in Redwood City or to the detriment of alternative transportation modes. (Motor Vehicle Transportation Objective 1, page 7-7)*

Table 12.7  
 TRAFFIC VOLUMES ON ROADWAY SEGMENTS UNDER BACKGROUND CONDITIONS

Location	Existing Conditions			Background Conditions			% Change
	AM	PM	ADT	AM	PM	ADT	
NB - Broadway north of 2nd Avenue	335	260	3,595	555	295	5,130	
SB - Broadway north of 2nd Avenue	135	425	3,955	200	595	5,615	
<i>Total Two-Way Traffic</i>	<i>470</i>	<i>685</i>	<i>7,550</i>	<i>755</i>	<i>890</i>	<i>10,745</i>	<i>42%</i>
NB - Broadway south of 2nd Avenue	200	145	2,090	300	170	2,865	
SB - Broadway south of 2nd Avenue	85	245	2,370	130	335	3,325	
<i>Total Two-Way Traffic</i>	<i>285</i>	<i>390</i>	<i>4,460</i>	<i>430</i>	<i>505</i>	<i>6,190</i>	<i>39%</i>
NB - Rolison Road south of 2nd Avenue	105	70	1,040	130	90	1,290	
SB - Rolison Road south of 2nd Avenue	70	135	1,240	70	140	1,260	
<i>Total Two-Way Traffic</i>	<i>175</i>	<i>205</i>	<i>2,280</i>	<i>200</i>	<i>230</i>	<i>2,550</i>	<i>12%</i>
NB - Hoover Street south of 2nd Avenue	90	70	995	90	70	995	
SB - Hoover Street south of 2nd Avenue	40	110	925	40	110	925	
<i>Total Two-Way Traffic</i>	<i>130</i>	<i>180</i>	<i>1,920</i>	<i>130</i>	<i>180</i>	<i>1,920</i>	<i>0%<sup>1</sup></i>
NB - Page Street south of 2nd Avenue	80	70	880	80	70	880	
SB - Page Street south of 2nd Avenue	55	90	845	55	90	845	
<i>Total Two-Way Traffic</i>	<i>135</i>	<i>160</i>	<i>1,725</i>	<i>135</i>	<i>160</i>	<i>1,725</i>	<i>0%<sup>1</sup></i>
NB - Bay Road south of 2nd Avenue	430	395	5,165	445	395	5,265	
SB - Bay Road south of 2nd Avenue	305	440	5,055	320	465	5,340	
<i>Total Two-Way Traffic</i>	<i>735</i>	<i>835</i>	<i>10,220</i>	<i>765</i>	<i>860</i>	<i>10,605</i>	<i>4%</i>
WB - 2nd Avenue – Bay & Broadway	95	125	1,565	120	210	2,350	
EB - 2nd Avenue - Bay & Broadway	80	65	1,355	140	130	2,515	
<i>Total Two-Way Traffic</i>	<i>175</i>	<i>190</i>	<i>2,920</i>	<i>260</i>	<i>340</i>	<i>4,865</i>	<i>67%</i>
WB - 5th Avenue - Bay & Broadway	175	205	2,495	185	250	2,870	
EB - 5th Avenue - Bay & Broadway	120	215	2,290	250	235	3,315	
<i>Total Two-Way Traffic</i>	<i>295</i>	<i>420</i>	<i>4,785</i>	<i>435</i>	<i>485</i>	<i>6,185</i>	<i>29%</i>

SOURCE: Fehr & Peers

Notes:

<sup>1</sup> Background traffic was not assigned to these facilities due to the existing traffic calming devices that limit travel speeds.

ADT = average daily traffic

NB = northbound, SB = southbound, WB = westbound, EB = eastbound

- *Create conditions to allow for better utilization of the existing public transportation system that will increase public transportation use and the subsequent improvement of the public transportation infrastructure and expansion of service.* (Public Transportation Objective 1, page 7-13)
- *Establish site planning and architectural standards for new building projects that would incorporate transit access and orientation. Such standards would apply to both public and private building projects located along existing bus routes to enhance pedestrian access and convenient public transit access.* (Public Transportation Policy PT-4, page 7-14)
- *Make walking and bicycling a realistic and more widespread transportation alternative in Redwood City by establishing a series of policies to create an urban environment that will make walking and bicycling safe, efficient, and convenient.* (Non-Motorized Transportation Objective, page 7-26)
- *All new traffic signal installations and existing traffic signal modifications shall include installation of bicycle-sensitive signal detector loops.* (Non-Motorized Transportation Policy NM-11, page 7-27)

### **12.2.2 Redwood City Traffic Impact Mitigation Fee Program**

The *Redwood City Traffic Impact Mitigation Fee Study (TIF)* has been prepared and adopted by the City to establish a source of funding for future transportation system capital improvements in Redwood City. The Redwood City fee program has been formulated to fund over 13 identified transportation improvement projects located throughout the City. Specific improvement funding targets identified in the study that involve the local roadway system serving the project vicinity are described below.

#### *Identified Intersection Improvement Needs:*

- Bay Road/Fifth Street identified for installation of a traffic signal.

#### *Identified Travel Corridor and Areawide Improvements:*

- Woodside Road (SR 84) identified for widening to six lanes from El Camino Real to U.S. 101 to improve traffic flow to LOS D. A Caltrans-prepared Project Study Report (PSR) and Environmental Document (ED) were prepared for this project. At this point, the City has decided not to pursue widening this section of Woodside Road.
- Woodside Road identified for widening to six lanes from El Camino Real to Valota Road to improve traffic flow to LOS D. No further project development work has been performed for this section of Woodside Road.
- Neighborhood traffic management programs (NTMP) identified as generally needed, including installation of traffic calming/improvement projects in local neighborhoods to alleviate cut-through traffic and speeding.

*Identified Alternative Modes/Transit Potential Projects:*

- A City-based shuttle system identified as a potential project.
- A full-time city transportation demand management (TDM) coordinator identified as a potential way to encourage alternative transportation modes. The coordinator would have the responsibility to develop TDM traffic reduction plans, assist employers in establishing and operating employee trip reduction plans, and coordinate with regional agencies and traffic relief organizations.
- Miscellaneous transit, pedestrian, and bicycle projects identified as potential improvements, such as bus shelters, benches, pedestrian amenities, Americans with Disability Act (ADA) curb ramps, closing sidewalk and bike lane gaps, park and ride lots, and transit center improvements.

**12.2.3 C/CAG Guidelines**

C/CAG has adopted guidelines for its Congestion Management Program (CMP) in order to reduce the regional traffic impacts of substantive new developments. The guidelines apply to all projects in San Mateo County that generate 100 or more net new peak-period trips on the CMP network and are subject to CEQA review. Projects that meet this criterion are required to:

(1) Determine if a combination of acceptable mitigation options/measures is possible that have the capacity to fully reduce the demand for net new trips that a project is anticipated to generate on the CMP roadway network (including the first 100 trips). Such options/measures could include:

- implementation of adequate roadway and/or transit improvements so that the added peak-hour trips will have no measurable impact on the CMP roadway network;
- contribution of a one-time only payment of \$20,000 per peak-hour trip (including the first 100 trips) to a special fund for the implementation of appropriate transportation demand management (TDM) system measures at the development;
- implementation of a TDM program that has the capacity to fully reduce the demand for new peak-period trips (C/CAG has provided a list of TDM measures and their associated "trip credit" to assist in the development of a TDM program); and/or
- negotiation with C/CAG staff for other acceptable ways to mitigate trips for specific developments on a case-by-case basis.

Also, the portion of traffic impact mitigation fees collected by the City through its Traffic Impact Fee Mitigation Program that are used to mitigate project impacts on the CMP roadway network will count as a credit toward the project's per-trip mitigation requirements under the CMP.

(2) If a combination of options/measures selected from the list above can fully reduce the number of project trips on the CMP roadway network, this information must be included as part of the environmental documents that are circulated and adopted by the local jurisdiction.

(3) If the combination of options/measures listed above cannot fully reduce the number of trips on the CMP roadway network, C/CAG staff should be contacted for review and approval as

early in the process as possible so that the agreed upon mitigation plan can be included in the environmental documents placed in circulation.

(4) If an agreement is not reached with C/CAG staff on the mitigation plan, an immediate review by the C/CAG Board will be scheduled so that the local jurisdiction project approval process will not be delayed.

## **12.3 SUPPLEMENTAL IMPACT AND MITIGATION FINDINGS**

### **12.3.1 Supplemental Analysis Scope**

This supplemental analysis focuses on the transportation and parking implications of the proposed project changes (i.e., the differences between the project evaluated in the 1996 EIR and 1998 SEIR and the currently proposed project), including the following:

- the proposed change in land use from office/R&D to medical clinic, and associated changes in anticipated traffic;
- possible circulation effects of the proposed project modifications, including new landscaping and entry signage, and on-site circulation changes;
- emergency access requirements for the proposed medical clinic land use;
- project circulation feature and transit provision compliance with City policies and standards that support alternative transportation modes; and
- the adequacy of the project's proposed parking program.

### **12.3.2 Significance Criteria**

Applying significance criterion used in the 1996 EIR and 1998 SEIR, the project would be considered to have a significant supplemental traffic impact if it would:

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

In addition, based on the current CEQA Guidelines, the project would be considered to have a significant supplemental traffic impact if it would meet any of the following criteria (which differ slightly from the criteria cited in the 1996 EIR and 1998 SEIR):

- (b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways;<sup>1</sup>
- (c) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses;<sup>2</sup>

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<sup>1</sup>CEQA Guidelines, Appendix G, item XV(b).

<sup>2</sup>CEQA Guidelines, Appendix G, item XV(d).

- (d) Result in inadequate emergency access;<sup>1</sup> or
- (e) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).<sup>2</sup>

In applying these criteria, the following City and C/CAG standards have been used to identify intersection impacts, roadway impacts, and transit, bicycle, and pedestrian impacts.<sup>3</sup>

(1) Intersection Impacts. According to Redwood City standards, a significant traffic impact at a study intersection would occur if the project would cause:

- operations at a signalized intersection to deteriorate from an acceptable level (LOS D or better) to an unacceptable level (LOS E or F);
- the average delay at a signalized intersection operating at an unacceptable level (LOS E or F) to increase by five (5) or more seconds;
- operations at an unsignalized intersection to deteriorate from an acceptable level (LOS D or better) to an unacceptable level (LOS E or F) and either: (1) a traffic volume increase at the intersection sufficient to satisfy the peak-hour warrant for traffic signal installation, or (2) the delay to increase by five (5) or more seconds; or
- the delay at an unsignalized intersection operating at an unacceptable level (LOS E or F) to increase by five (5) or more seconds and a traffic volume increase at the intersection sufficient to satisfy the peak-hour warrant for traffic signal installation.

(2) Roadway Impacts. For the purpose of this analysis, a significant traffic impact on local roadway segment would occur if:

- the roadway segment currently carries fewer than 3,000 vehicles per day; and
- there is a project-related increase in traffic volume of more than five (5) percent of the daily or peak-hour traffic. For low-volume roadways, the absolute threshold is five (5) peak-hour trips or 50 daily trips.

On C/CAG-designated Congestion Management Program (CMP) roads (e.g., SR 82 [El Camino Real], SR 84 [Woodside Road]), the project impact would be considered significant if the project would generate more than 100 net new peak-hour trips. Projects generating this number of trips are required to comply with the *C/CAG Guidelines for the Implementation of the Land Use Component of the 1999 Congestion Management Program*.

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<sup>1</sup>CEQA Guidelines, Appendix G, item XV(e).

<sup>2</sup>CEQA Guidelines, Appendix G, item XV(g).

<sup>3</sup>These standards are consistent with recent transportation and circulation analyses prepared for other transportation impact studies in Redwood City. The standards for signalized intersections are similar to the criteria used in the 1996 EIR and 1998 SEIR, while the other standards elaborate on or modify the criteria used in those earlier documents.

Since the U.S. 101 freeway, a C/CAG-designated CMP road, currently does not comply with the C/CAG adopted LOS standard of E, the project would be considered to have a significant impact if it would add traffic equal to one (1) percent or more of the segment capacity or cause the freeway segment volume-to-capacity ratio to increase by one (1) percent.

(3) Transit, Bicycle and Pedestrian Impacts. Following common transportation planning practice, the proposed project would be considered to result in a significant transit, bicycle, and/or pedestrian impact if it would:

- Conflict with any existing, planned, or possible future transit, bicycle, and/or pedestrian facilities and services;
- Cause transit, bicycle, or pedestrian facilities to be frequently blocked by cars or other potential safety obstructions/hazards;
- Cause vehicles to cross pedestrian or bicycle facilities on a regular basis at driveway entrances lacking adequate sight distance or warning system; or
- Encourage pedestrians to cross roads in undesignated areas.

### **12.3.3 Project Traffic Generation and Distribution**

(a) Trip Generation. The amount of traffic generated by the proposed project changes has been estimated by applying the daily trip rate, peak-hour percentages, and inbound/outbound splits published in the Institute of Transportation Engineers (ITE) *Trip Generation, 7th Edition for "Medical-Dental Office Buildings"* (ITE Land Use Code 720); the ITE rate is based on trips per employee. The net new trips generated by the proposed change of use were determined by comparing the estimated trip generation from the 1996 EIR for an office/R&D use to the new ITE trip generation estimates for a medical/dental office building use. The detailed net trip generation estimates are presented in Table 12.8.

As shown in Table 12.8, it is estimated that the proposed Outpatient Center project would generate 3,688 added (net new) daily trips and 393 added (net new) PM peak-hour trips (194 inbound and 199 outbound). Table 12.8 also indicates that the proposed project would result in a slight reduction in trips during the AM peak hour.

Use of ITE employment-based trip generation rate for the proposed project land use change represents a conservative, "worst case" traffic assessment approach for the following reasons:

The anticipated scheduling of project employee arrivals and departures influences the AM and PM peak-hour traffic estimates. For example, the applicant indicates that surgery center staff would arrive outside the AM peak period and depart before the PM peak period, since surgery preparation would begin as early as 7:00 AM and most procedures would end before 3:00 PM. Another employee group would arrive between 7:00 and 8:00 AM. Some staff would have a standard 8:00 AM to 5:00 PM schedule, and some clinics would see patients beginning at 8:00 or 8:30 AM. However, the largest portion of employees would arrive between 8:00 and 8:30 AM. These employees would typically begin to see patients between 9:00 and 9:30 AM. Some of the faculty (doctors) would arrive between 9:00 and 9:30 AM, after making rounds at the Stanford Medical Center in Palo Alto and just before seeing patients at the Redwood City Outpatient Center. Finally, some employees of the sleep center would work overnight, arriving in the evening and leaving early in the morning.

Table 12.8  
**TRIP GENERATION FOR MEDICAL/DENTAL OFFICES**

<u>Land Use</u>	<u>Project Size</u>	<u>AM Peak Hour</u>			<u>PM Peak Hour</u>			<u>Daily Trips</u>
		<u>In</u>	<u>Out</u>	<u>Total</u>	<u>In</u>	<u>Out</u>	<u>Total</u>	
<b>Medical/Dental Offices</b> <sup>1</sup>	670	0.42	0.11	0.53	0.36	0.70	1.06	8.91
Rates per Employee	Employees							
Trips		281	74	355	241	469	710	5,970
<b>Midpoint Technology Park 1996 EIR</b> <sup>2</sup>	360 KSF							
Rates per 1,000 square feet (KSF)		0.83	0.17	1.00	0.13	0.75	0.89	6.34
Trips		299	61	360	47	270	317	2,282
<b>Net New Trips</b>		<b>-18</b>	<b>13</b>	<b>-5</b>	<b>194</b>	<b>199</b>	<b>393</b>	<b>3,688</b>

SOURCE: Fehr & Peers

Notes:

<sup>1</sup> Institute of Transportation Engineers, *Trip Generation, 7th Edition*; Medical-Dental Office Building--Land Use Code 720.

<sup>2</sup> Institute of Transportation Engineers, *Trip Generation, 5th Edition*; Research Center--Land Use Code 760.

An estimated breakdown of daytime employee arrivals would be as follows:

- Before 7:00 AM: 5 percent,
- 7:00 AM to 8:00 AM: 30 to 40 percent,
- 8:00 AM to 9:00 AM: 50 to 55 percent, and
- After 9:00 AM: 5 percent.

Similarly, afternoon employee and patient departures would be spread out over the period from 3:00 PM to 6:00 PM or later. For the most part, patient appointments would end around 5:00 PM, and some staff could be expected to stay after 6:00 PM to finish tasks after their appointments.

It is important to note that the estimated 670 employee total for the project represents the total number of employees on the payroll; on any given work day, the actual number of employees to and from the site would be less than 670 due to vacations and sick days. The number of employees on-site would also fluctuate because doctors would not see patients five days a week (see section 3.4.9 herein).

Finally, it also should be noted that initially, part of some of the project buildings would be used for administrative purposes rather than as clinic facilities. Potential project trip generation was therefore evaluated for both medical outpatient uses and office uses, and it was determined that the trip generation for medical outpatient uses would be higher than the trip generation for administrative office uses for the PM peak hour and on a daily basis. During the AM peak hour, the trip generation would be approximately the same for both the outpatient and office uses. Based on this trip generation comparison, the traffic analysis in this SEIR focuses on the scenario under which all four buildings would be used for medical outpatient clinics to ensure that worst-case traffic effects are fully analyzed.

(b) Trip Distribution. The proposed project Stanford Outpatient Center clinics would be relocated from existing facilities at the Stanford University Medical Center in Palo Alto. To determine the directions of approach and departure of patients using the proposed relocated Outpatient Center, Stanford Hospital & Clinics outpatient zip code data for 2003 and 2004 was applied to identify the general travel patterns of future Outpatient Center patients.

Figure 12.6 presents projected project trip distribution characteristics based on the zip code survey. Based on the zip code analysis, just over 60 percent of the patients would come from the south (Santa Clara and Santa Cruz counties); approximately 22 percent would come from the north (San Mateo, San Francisco, and Marin counties); and the remaining trips would originate in areas east of the Bay Area.

Also, based on the existing clinic trip origination and destination zip code data, approximately 70 percent of the Outpatient Center patients would come from areas south of Woodside Road. The traffic analysis assumes the following distribution of these trips:

- 40 percent would use U.S. 101 south of the site;
- 5 percent would come from the East Bay using the Dumbarton Bridge;
- 10 percent would use Middlefield Road; and
- 15 percent would use El Camino Real south of the site.

Project trips from northbound U.S. 101 would use both the Woodside Road and Marsh Road interchanges. Trips using the Marsh Road interchange were assigned to both Bay Road and Rolison Road.

(c) Trip Assignment. The net new trips generated by the proposed project were assigned to the roadway system based on the directions of approach and departure (trip distribution) discussed above. Figure 12.7 illustrates the project trip assignments for both peak hours at the 14 study intersections. Project trips were added to Background Condition traffic volumes to estimate volumes under Project Conditions. Figure 12.8 shows the resultant traffic volumes at the study intersections under Project Conditions.

Figure 12.6. Project Trip Distribution.

Figure 12.7. Project Trip Assignments.

Figure 12.8. Project Peak-Hour Intersection Volumes.

### **12.3.4 Supplemental Project Impacts and Mitigations**

**Supplemental Impact 12-1: Project Impact on Broadway/Second Avenue Intersection.** During the PM peak hour, project traffic would reduce the level of service (LOS) and increase individual vehicle delay by more than five (5) seconds at the Broadway/Second Avenue intersection. This change would represent a **significant impact** (see criteria for "Intersection Impacts" in subsection 12.3.2, "Significance Criteria," above). This impact is similar to Impact 3-3 identified in the 1996 EIR.

*Explanation:*

Estimated traffic volumes under Project Conditions were added to the background roadway network to calculate levels of service for all study intersections. The results of this analysis, summarized in Table 12.9, indicate that two intersections are expected to operate at unacceptable LOS F under the Project Conditions scenario:

- Woodside Road/Broadway--would operate at LOS F during both the AM and PM peak hours with or without the project; and
- Broadway/Second Avenue (unsignalized, stop sign control)--would operate at LOS F during the PM peak hour with the project.

The Woodside Road/Broadway intersection would operate at LOS F during the AM and PM peak hours with or without the project. The project would result in a slight reduction in the AM peak-hour delay (compared to the previous office/R&D use on the project site) and an increase of fewer than five seconds in the PM peak-hour delay. Therefore, project traffic would produce a less-than-significant impact at this intersection (see criteria for "Signalized Intersections" in subsection 12.3.2, "Significance Criteria," above).

The Broadway/Second Avenue intersection would experience a change in PM peak-hour LOS from LOS D without the project to LOS F with the project. The project-related traffic increment would also meet the peak-hour delay warrant for signalization,<sup>1</sup> and vehicles would

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<sup>1</sup>The peak-hour signal warrant analysis is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. Signal warrant calculation sheets are included in Appendix D of the Fehr & Peers traffic report on file at the City of Redwood City Planning Department. The analysis estimates future development-generated traffic compared with a subset of the standard traffic signal warrants recommended in the Federal Highway Administration Manual on Uniform Traffic Control Devices and on Caltrans Guidelines. While this analysis is considered adequate for CEQA purposes (i.e., evaluates potential impacts against SEIR significance criteria), it should not serve as the only basis for deciding whether and when to install a signal at Broadway/Second Avenue. To reach such a decision, the full set of warrants should be investigated by an experienced engineer, based on field-measured (rather than forecast) traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The City of Redwood City should undertake regular monitoring of actual traffic conditions and accident data at Broadway/Second Avenue, and regularly re-evaluate the full set of warrants in order to set priorities and plan for intersection signalization. Stanford Hospital & Clinics should fund the collection and analysis of the data, which would be undertaken by a traffic consultant hired by the City.

Table 12.9

**INTERSECTION LEVELS OF SERVICE UNDER PROJECT CONDITIONS**

Intersection	Traffic Control Device	Peak Hour	Background		Project		Change in Delay	Significant Impact?
			Average Intersection Delay <sup>1</sup>	LOS <sup>2</sup>	Average Intersection Delay <sup>1</sup>	LOS <sup>2</sup>		
1. Woodside Road/Veterans Boulevard	Signal	AM	26.6	C	26.6	C	0.0	No
		PM	52.3	D	52.1	D	-0.2	No
2. Woodside Road/Broadway <sup>3</sup>	Signal	AM	85.3	F	81.8	F	-3.5	No
		PM	112.8	F	117.7	F	4.9	No
3. Woodside Road/Bay Road	Signal	AM	21.1	C	21.2	C	0.1	No
		PM	27.5	C	27.5	C	0.0	No
4. Woodside Road/Middlefield Road*	Signal	AM	43.7	D	43.2	D	-0.5	No
		PM	54.3	D	54.5	D	0.2	No
5. Marsh Road/Scott Road	Signal	AM	23.8	C	24.0	C	0.2	No
		PM	23.0	C	24.2	C	1.2	No
6. Marsh Road/Florence Street/Bohannon Drive	Signal	AM	27.5	C	27.6	C	0.1	No
		PM	31.8	C	32.7	C	0.9	No
7. Broadway/Charter Street	All-way Stop Control	AM	20.2	C	17.9	C	-2.3	No
		PM	26.1	D	32.4	D	6.3	No
8. Broadway/Douglas Avenue	All-way Stop Control	AM	12.7	B	12.0	B	-0.7	No
		PM	14.0	B	15.7	C	1.7	No
9. Broadway/2nd Avenue	Two-way Stop Control	AM	22.0	C	26.8	D	4.7	No
		PM	26.6	D	85.2	<b>F</b>	<b>58.6</b>	<b>Yes</b>
10. Broadway/5th Avenue	Two-way Stop Control	AM	10.9	B	11.2	B	0.3	No
		PM	11.5	B	12.1	B	0.6	No
11. Bay Road/Charter Street	All-way Stop Control	AM	13.0	B	13.0	B	0.0	No
		PM	15.1	C	15.1	C	0.0	No
12. Bay Road/Douglas Avenue	All-way Stop Control	AM	10.9	B	10.9	B	0.0	No
		PM	11.9	B	11.9	B	0.0	No
13. Bay Road/2nd Avenue	All-way Stop Control	AM	10.7	B	10.8	B	0.1	No
		PM	11.3	B	12.3	B	1.0	No
14. Bay Road/5th Avenue	All-way Stop Control	AM	16.1	C	17.1	C	1.0	No
		PM	19.4	C	27.9	D	8.5	No

SOURCE: Fehr & Peers

Notes:

<sup>1</sup> Average control delay per vehicle for signalized intersections using the methodology described in the 2000 *Highway Capacity Manual*. LOS calculations conducted using the TRAFFIX analysis software package.

<sup>2</sup> LOS = Level of Service

<sup>3</sup> This intersection has five approaches and was analyzed using the Synchro software package.\*Denotes a County Congestion Management Program (CMP) monitored intersection.\*\*Unsignalized Intersection

AM = AM Peak Hour; PM = PM Peak Hour

experience an increase in delay of more than five (5) seconds. These project effects meet the significance criteria for unsignalized intersections (see criteria for "Intersection Impacts" in subsection 12.3.2, "Significance Criteria," above). A similar impact was identified in the 1996 EIR as Impact 3-3. The mitigation included in the 1996 EIR for this impact included traffic diverters at the Broadway/Second Avenue intersection; this mitigation has not been implemented. (Other road segments analyzed in the 1996 EIR were not reanalyzed in this SEIR because they now have speed humps that were installed in accordance with the traffic calming plan recommended as a mitigation measure in the 1996 EIR.)

**Supplemental Mitigation 12-1.** The applicant shall install all-way stop sign control at the Broadway/Second Avenue intersection, which would achieve LOS D operations at this location under Project Conditions. Implementation of this measure would reduce the impact to a ***less-than-significant level***.

**Supplemental Impact 12-2: Project Impact on Rolison Road Roadway Segment.** Project traffic would increase PM peak-hour and daily traffic on Rolison Road south of Second Avenue by more than five percent. Since this segment of Rolison Road currently carries fewer than 3,000 vehicles per day and is therefore operating as a "local street," the increase in traffic due to the project represents a ***significant impact*** (see criteria for "Roadway Impacts" in subsection 12.3.2, "Significance Criteria," above). This impact is similar to Impact 3-3 identified in the 1996 EIR.

*Explanation:*

Table 12.10 lists Background Condition traffic volumes and the percent increase in traffic due to the project trips for the eight study roadway segments. Based on the "Roadway Impacts" criteria, the project would have a potentially significant impact on the Rolison Road segment, which would carry less than 3,000 vehicles per day (vpd)--i.e., operates as a "local street"--and would experience a greater-than-five-percent increase in PM peak-hour and daily traffic.

This same impact was identified as Impact 3-3 of the 1996 EIR. (Other road segments analyzed in the 1996 EIR were not reanalyzed in this SEIR because they now have speed humps that were installed in accordance with the traffic calming plan recommended as a mitigation measure in the 1996 EIR.) The mitigation included in the 1996 EIR for this impact included investigating traffic calming on Rolison Road. Another specific 1996 EIR recommendation involved closing the connection to Rolison at Marsh Road; however, this recommendation was not supported by City staff and was not included in the 1996 Mitigation and Monitoring Program. Traffic diverters were also identified as mitigation for this impact, but have not been installed, at the intersection of Broadway/Second Avenue and Page Street/Second Avenue. (A traffic calming study was conducted in the Friendly Acres residential neighborhood, and speed humps were subsequently installed on Hoover Street and Page Street.)

Table 12.10

**TRAFFIC VOLUMES ON ROADWAY SEGMENTS UNDER PROJECT CONDITIONS**

Location	Background Conditions			Project Trips			Percent Increase		
	AM	PM	ADT	AM	PM	ADT	AM	PM	ADT
NB - Broadway north of 2nd Avenue	555	295	5,130	51	106	891			
SB - Broadway north of 2nd Avenue	200	595	5,615	19	154	1,295			
<i>Total Two-Way Traffic</i>	<b>755</b>	<b>890</b>	<b>10,745</b>	<b>70</b>	<b>260</b>	<b>2,186</b>	9%	29%	20%
NB - Broadway south of 2nd Avenue	300	170	2,865	35	43	362			
SB - Broadway south of 2nd Avenue	130	335	3,325	70	73	614			
<i>Total Two-Way Traffic</i>	<b>430</b>	<b>505</b>	<b>6,190</b>	<b>105</b>	<b>116</b>	<b>976</b>	24%	23%	16%
NB - Rolison Road south of 2nd Avenue	130	90	1,290	4	20	168			
SB - Rolison Road south of 2nd Avenue	70	140	1,260	2	25	210			
<i>Total Two-Way Traffic</i>	<b>200</b>	<b>230</b>	<b>2,550</b>	<b>6</b>	<b>45</b>	<b>378</b>	3%	20%	15%
NB - Hoover Street south of 2nd Avenue	90	70	995	0	0	0			
SB - Hoover Street south of 2nd Avenue	40	110	925	0	0	0			
<i>Total Two-Way Traffic</i>	130	180	1,920	0	0	0	0%	0%	0%
NB - Page Street south of 2nd Avenue	80	70	880	0	0	0			
SB - Page Street south of 2nd Avenue	55	90	845	0	0	0			
<i>Total Two-Way Traffic</i>	135	160	1,725	0	0	0	0%	0%	0%
NB - Bay Road south of 2nd Avenue	445	395	5,265	0	23	193			
SB - Bay Road south of 2nd Avenue	320	465	5,340	2	24	202			
<i>Total Two-Way Traffic</i>	<b>765</b>	<b>860</b>	<b>10,605</b>	<b>2</b>	<b>47</b>	<b>395</b>	0%	5%	4%
WB - 2nd Avenue - Bay & Broadway	120	210	2,350	5	54	454			
EB - 2nd Avenue - Bay & Broadway	140	130	2,515	11	43	362			
<i>Total Two Way Traffic</i>	<b>260</b>	<b>340</b>	<b>4,865</b>	<b>16</b>	<b>97</b>	<b>816</b>	6%	29%	17%
WB - 5th Avenue - Bay & Broadway	185	250	2,870	10	73	614			
EB - 5th Avenue - Bay & Broadway	250	235	3,315	35	43	362			
<i>Total Two-Way Traffic</i>	<b>435</b>	<b>485</b>	<b>6,185</b>	<b>45</b>	<b>116</b>	<b>976</b>	10%	24%	16%

SOURCE: Fehr & Peers

Notes:

ADT = average daily traffic

NB = northbound, SB = southbound, WB = westbound, EB = eastbound

**Bold font** indicates potentially significant project impact.

**Supplemental Mitigation 12-2.** The applicant shall implement traffic calming devices to help maintain vehicle speeds at posted limits along Rolison Road south of Second Avenue. The installation of these devices shall be made in accordance with City standards and shall be coordinated with City emergency services (Fire Department). However, implementation of the traffic calming devices, while improving public safety, would not reduce the impact to a less-than-significant level; therefore, the project impact on Rolison Road south of Second Avenue would represent a **significant unavoidable impact**.

**Project Impact on Bay Road Roadway Segment.** The Fehr & Peers traffic analysis also found that the project would add some traffic to the Bay Road segment that passes by Taft Elementary School. The project-related traffic increase on this roadway segment during the PM peak hour would be five percent, and the daily increase would be four percent. This project-related increase in traffic volume alone, however, does not translate into an immediate safety concern; the roadway design is also an important safety factor. The existing Bay Road crosswalk in front of the school contains an in-pavement lighting system. This lighting system has push buttons that activate flashing lights to warn motorists when a pedestrian enters the crosswalk. With this system already in place to address pedestrian safety at the Bay Road crosswalk serving the school, the project traffic addition would have a **less-than-significant** safety impact.

**Supplemental Mitigation.** No significant impact has been identified; no mitigation is required.

**Supplemental Impact 12-3: Project Impact on Congestion Management Program Facilities.** The project would increase PM peak-hour traffic volumes on Woodside Road and El Camino Real (County Congestion Management Program facilities) by more than 100 trips, representing a **potentially significant impact** on these roads (see criteria for "Roadway Impacts" in subsection 12.3.2, "Significance Criteria," above). This is a new impact not identified in the 1996 EIR or 1998 SEIR.

*Explanation:*

The proposed project would increase the number of PM peak-hour trips on Woodside Road and El Camino Real, which are County Congestion Management Program facilities, by more than 100 trips; therefore the project would be required to provide a Transportation Demand Management (TDM) plan under the San Mateo County Congestion Management Program guidelines.

Based on the anticipated project trip generation compared to the previous office/R&D uses on-site, no net new trips are anticipated on the U.S. 101 freeway during the morning peak hour. Based on the anticipated project trip generation and distribution, the project would add 80 southbound and 77 northbound net new project trips on U.S. 101 south of Marsh Road during the evening peak hour. This assumes that 40 percent of the net new trips would travel to and from the south on U.S. 101. On U.S. 101 north of Woodside Road, the project would

add 20 northbound and 19 southbound net new trips during the evening peak hour. This assumes that 10 percent of the net new trips would travel to and from the north on U.S. 101.

For the purposes of the freeway analysis, the following assumptions were made for each direction of flow on U.S. 101:

- the three (3) mixed-flow lanes in the immediate study area have a capacity of 2,300 vehicles per hour (vph),
- a High Occupancy Vehicle (HOV, carpool) lane extends south from Whipple Avenue through Santa Clara County with a capacity of 1,800 vph,
- fifteen (15) percent of the traffic flow uses the HOV lanes extending south of the project site (south of Woodside Road), and
- auxiliary lanes are not considered to add freeway capacity.

Based on the above assumptions, the directional capacities (northbound or southbound) of the affected U.S. 101 freeway segments were assumed to be 8,700 vph south of Whipple Avenue and 6,900 vph north of Whipple Avenue. South of Whipple Avenue, the project would need to add more than 87 net new trips in a single direction during the morning or evening peak hour to exceed one percent of the freeway capacity. North of Whipple Avenue, the project would need to add more than 69 net new trips in a single direction to exceed one percent of the freeway capacity. Since the anticipated net new project trips would not exceed more than one percent of the freeway capacity, there would be no new significant project impact on the freeway based on the significance criteria cited in subsection 13.3.2, "Significance Criteria," above.

**Supplemental Mitigation 12-3.** Prior to Planned Development (PD) Permit Amendment approval, the applicant shall provide a Transportation Demand Management (TDM) plan for project impacts on Woodside Road and El Camino Real that complies with the *C/CAG Guidelines for the Implementation of the Land Use Component of the 1999 Congestion Management Program* (see details below). Implementation of this measure would reduce the impact to a ***less-than-significant level***.

The 1996 EIR (Certified Mitigation 3-4a, b, and c) recommended TDM actions for the then-proposed Midpoint Technology Park as mitigation for impacts related to General Plan policies for reducing auto use and encouraging use of alternative transportation modes. The applicant for the current Stanford Outpatient Center project has proposed additional TDM actions. Specifically, the project applicant proposes to incorporate the following TDM measures into the project to reduce single-occupancy vehicle trips and parking demand. The measures are divided into two categories: (1) those required in the 1996 EIR prepared for the Midpoint Technology Park, and (2) new actions that are proposed by the current applicant to provide for the proposed medical clinic. ***A TDM measure worksheet that estimates the C/CAG trip credits for the applicant's current TDM proposal is included at the end of this SEIR chapter.***

*1996 EIR Mitigation Measures--Required Actions:*

- Appoint an on-site TSM (transportation system management) coordinator.
- Encourage telecommuting (provision of high-speed, broadband connections at employees' homes).
- Explore compressed work weeks (four ten-hour days or other staggered work-hour arrangements).
- Provide peak period shuttle service to the Redwood City Caltrain Station. (The current applicant would work with both the Peninsula Corridor Joint Powers Board [JPB] and the City of Redwood City to provide shuttle service between the proposed Outpatient Center and the Downtown Station.)
- Coordinate with SamTrans to improve the schedule and frequency of service on the existing bus route (51B). (Note: There is no longer a SamTrans route designated as 51B.)
- Provide improved bus stops and bus turnouts within the project site, including street and curb modifications where needed and the construction of shelters and benches that conform to SamTrans standards at all bus stops.
- Develop bicycle routes on the streets within and near the project site (e.g., at project site intersections), and coordinate these routes with the City's citywide bicycle route system.
- Provide bicycle storage facilities on the project site.
- Provide employee shower facilities within the project site.

*TDM Actions Proposed by Current Applicant:*

- Subsidize transit tickets for all feasible transit modes.
- Offer Commuter Checks (federal pre-tax program for the purchase of transit passes).
- Offer Go-Passes (Caltrain reduced-rate pass program).
- Implement a carpool program.
- Offer preferential parking near building entrances.
- Provide carpool incentives similar to the existing programs at Stanford's Palo Alto facilities.
- Provide a guaranteed ride home program for employees who use alternative modes of transportation other than drive alone.
- Provide a commute assistance center for employees.

- Allow flextime scheduling--staggered work hours that allow employee arrivals outside the normal commuter morning and evening peaks.
- Provide video conferencing facilities.
- Provide on-site amenities:
  - Cafeteria
  - Exercise facilities
  - Banking (ATM).
- Conduct Employee TDM Survey. (Stanford currently conducts an annual TDM survey of all employees and would include employees at the Redwood City facilities.)

The Stanford Medical School in cooperation with Stanford University provides an extensive TDM program for its employees at the Palo Alto campus. Many of these programs would be extended to employees located at the Redwood City Outpatient Center. For example, the university is currently the largest participant in the Caltrain Go Pass program. Based on the current Go Pass program, approximately half of the employees (300) at the new Outpatient Center would receive Caltrain Go Passes. In addition, faculty members have high-speed connections that allow them to telecommute from home, and the majority of the faculty members work compressed clinic schedules of three to four days per week. The existing Stanford TDM program also includes carpool incentives and a guaranteed ride home program that would be extended to the Redwood City site.

The carpool program would include the use of external ride-matching services such as RIDES, which would provide additional opportunities for Stanford staff to carpool with other local employees.

***C/CAG staff would need to review the TDM plan to confirm the level of trip credits for which the project would qualify.***

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**Supplemental Project Impacts on Site Access and Internal Circulation.** The proposed site access and internal circulation system changes and refinements would not substantially increase traffic hazards or result in inadequate emergency access. The project would therefore have a ***less-than-significant impact*** on site access and internal circulation conditions. (The 1996 EIR and 1998 SEIR did not evaluate this impact.)

*Explanation:*

Since the project proposes reuse of recently constructed (1998) buildings, the site access locations and internal circulation system would require a minimum of modifications. The two existing driveways on Broadway would continue to be used for vehicular access to the site. Internal vehicular circulation would continue to be provided via parking aisles in parking rows with 90-degree parking spaces. Access to the underground parking area would continue to be provided from the parking aisles. A patient drop-off area would be created in the northwest portion of the project site. Pedestrian facilities at the site would provide adequate circulation between the buildings and to/from Broadway and the surrounding commercial and residential areas. The existing site access and proposed internal circulation system refinement would be adequate to meet the demands of the Outpatient Center.

The project does not propose any new features that would interfere with emergency access. Since the proposed medical clinic use does not include emergency services, emergency access needs would be similar to those associated with the previous office/R&D uses.

**Supplemental Mitigation.** No significant impact has been identified; no mitigation is required.

**Supplemental Impact 12-4: Project Consistency with General Plan Provisions for Alternative Transportation Modes.** Since the project site does not currently have bus service, the project has the potential to conflict with Redwood City Strategic General Plan Circulation Element objectives and policies encouraging the use of alternative transportation modes. This potential inconsistency represents a **potentially significant impact** (see criterion [f] in subsection 12.3.2, "Significance Criteria," above). This impact is similar to Impact 3-4 identified in the 1996 EIR.

Currently, there is no bus service provided immediately in front of the project site on Broadway; Route 51B, described in the 1996 EIR as running "on Broadway through the [Midpoint Technology Park] project site," no longer operates anywhere on the SamTrans system; Route 270, which does not pass by the Outpatient Center project site, generally traverses the same route as previous Route 51B in Redwood City.<sup>1</sup> As described in subsection 12.1.2 (Transit Service) above, some SamTrans bus routes operate nearby on Bay Street. The 1996 EIR (Mitigation 3-4b) recommended coordination with SamTrans to improve bus service to the project site. The current project applicant would be required to comply with this 1996 EIR mitigation measure as part of the new Transportation Demand Management (TDM) plan described under *Supplemental Mitigation 12-3* in this chapter.

One possibility would be to reroute the existing Route 270 onto Broadway in front of the project site. Currently, Route 270 serves the Caltrain station and operates on Bay Street, Charter Street, and Broadway near the project site, but does not travel directly by the site. The route primarily serves commercial areas such as Kaiser Hospital, Seaport Village, Harbor Village, and Marsh Road (in Menlo Park).

**Supplemental Mitigation 12-4.** Prior to Planned Development (PD) Permit Amendment approval, the applicant shall provide a Transportation Demand Management (TDM) plan as described in *Supplemental Mitigation 12-3* above, to City and C/CAG satisfaction. The TDM plan shall include measures to encourage use of transit services, coordinated with SamTrans. Implementation of this measure would reduce this impact to a **less-than-significant level**.

<sup>1</sup>SamTrans information line (800-660-4287) and website ([www.SamTrans.com](http://www.SamTrans.com)); May 8, 2006. Also, Final Environmental Impact Report for the Pacific Shores Center Project (State Clearinghouse #93053065); prepared for the City of Redwood City by Recon Environmental Corporation; certified May 8, 1995. Current SamTrans staff could not locate information regarding when Route 51B was discontinued; however, because Route 51B existed *before* the @Home buildings on the current project site were constructed (i.e., when the site was vacant), no direct correlation can be drawn between the discontinuation of Route 51B and the vacation of the @Home buildings.

### **12.3.5 Cumulative (2025) Traffic Conditions**

(a) Cumulative Without Project Conditions. Cumulative Without Project Conditions are defined as projected year 2025 conditions without the proposed project. A methodology similar to the one used for the Background Conditions was applied to estimate future cumulative conditions, as described below.

*Cumulative Without Project Traffic Projections.* Traffic volumes under Cumulative Without Project Conditions were developed following a three-step process:

1. A growth factor of one percent per year, recommended by City staff and used in other traffic studies in Redwood City, was applied to existing traffic volumes (2005), to account for regional traffic growth expected in the area.
2. Traffic associated with approved, pending, and potential future projects in the area was also assigned to the roadway network--i.e., was added to the traffic volumes derived in Step 1.
3. Traffic associated with underused developments near the project site and the vacant buildings on the project site were also assigned to the roadway network--i.e., was added to the traffic volumes derived in Step 2 to obtain turning movement volumes under Cumulative Without Project Conditions. Figure 12.9 shows the resulting Cumulative Without Project traffic volumes for the AM and PM peak hours.

*Cumulative Without Project Roadway Improvement.* Based on previous traffic studies in Redwood City, the following roadway improvement was assumed to be implemented by the year 2025:

- *Veterans Boulevard, Chestnut Street to Woodside Road.* Southbound Veterans Boulevard is expected to be widened to two lanes as part of the Redwood City Traffic Impact Fee Mitigation Study. City staff has indicated that this project is approximately 10 to 15 years away from implementation. This improvement is expected to increase queuing capacity at the Veterans Boulevard/Woodside Road intersection; however, the intersection lane configurations at the southbound approach would remain the same due to the constraint of receiving lanes on the U.S. 101 southbound ramp. Therefore, no change to the lane configurations at the intersection was assumed.

*Cumulative Without Project Intersection Levels of Service.* Levels of service (LOS) were calculated for the study intersections using the Cumulative Without Project traffic volumes during the AM and PM peak hours. Table 12.11 presents the LOS calculation results under Cumulative Without Project Conditions. The LOS calculation worksheets are contained in Appendix B of the Fehr & Peers report on file at the City of Redwood City Planning Department. The results of this analysis show that five intersections are expected to operate at an unacceptable level (LOS E or worse) under Cumulative Without Project Conditions:

- Woodside Road/Veterans Boulevard (PM peak hour),
- Woodside Road/Broadway (AM and PM peak hours),
- Woodside Road/Middlefield Road (AM and PM peak hours),
- Broadway/Charter Street (unsignalized--meets signal warrants) (PM peak hour), and
- Broadway/Second Avenue (unsignalized--meets signal warrants) (PM peak hour).

Figure 12.9. Cumulative (2025) Without Project Peak-Hour Intersection Volumes.

Table 12.11  
 LEVELS OF SERVICE AT STUDY INTERSECTIONS UNDER CUMULATIVE WITHOUT  
 PROJECT CONDITIONS

<u>Intersections</u>	<u>Traffic Control Device</u>	<u>Peak Hour</u>	<u>Average Intersection Delay<sup>1</sup></u>	<u>LOS<sup>2</sup></u>
1. Woodside Road/Veterans Boulevard	Signal	AM	33.1	C
		PM	<b>91.4</b>	<b>F</b>
2. Woodside Road/Broadway <sup>3</sup>	Signal	AM	<b>146.7</b>	<b>F</b>
		PM	<b>208.7</b>	<b>F</b>
3. Woodside Road/Bay Road	Signal	AM	24.2	C
		PM	38.1	D
4. Woodside Road/Middlefield Road*	Signal	AM	<b>139.3</b>	<b>F</b>
		PM	<b>188.3</b>	<b>F</b>
5. Marsh Road/Scott Road	Signal	AM	42.5	D
		PM	27.7	C
6. Marsh Road/Florence Street/Bohannon Drive	Signal	AM	40.3	D
		PM	42.1	D
7. Broadway/Charter Street	All-way Stop Control	AM	31.3	D
		PM	<b>48.4</b>	<b>E<sup>4</sup></b>
8. Broadway/Douglas Avenue	All-way Stop Control	AM	14.9	B
		PM	17.4	C
9. Broadway/2nd Avenue	Two-way Stop Control	AM	33.5	D
		PM	<b>48.3</b>	<b>E</b>
10. Broadway/5th Avenue	Two-way Stop Control	AM	11.5	B
		PM	12.4	B
11. Bay Road/Charter Street	All-way Stop Control	AM	16.3	C
		PM	20.9	C
12. Bay Road/Douglas Avenue	All-way Stop Control	AM	12.4	B
		PM	14.1	B
13. Bay Road/2nd Avenue	All-way Stop Control	AM	12.3	B
		PM	13.2	B
14. Bay Road/5th Avenue	All-way Stop Control	AM	23.7	C
		PM	34.6	D

SOURCE: Fehr & Peers

Notes:

<sup>1</sup> Average control delay per vehicle for signalized intersections using the methodology described in the 2000 *Highway Capacity Manual*. LOS calculations conducted using the TRAFFIX analysis software package.

<sup>2</sup> LOS = Level of Service

<sup>3</sup> This intersection has five approaches and was analyzed using the Synchro software package.

<sup>4</sup> This intersection meets the peak-hour volume traffic signal warrant and therefore meets the unsignalized impact criteria.

\*Denotes County Congestion Management Program (CMP) monitored intersection.

AM = AM Peak Hour; PM = PM Peak Hour

**Bold font** indicates unacceptable conditions.

Of the two unsignalized intersections that would operate at unacceptable LOS, the intersection of Broadway/Charter Street also meets the traffic signal warrant for peak-hour volumes.

*Roadway Segments.* Table 12.12 presents estimated cumulative traffic volumes for the eight analyzed roadway segments. Based on the cumulative traffic growth assumptions, the roadway segments would experience increases in daily traffic from 8 to 30 percent. Since traffic calming devices (i.e., speed humps) have been installed on both Hoover Street and Page Street, no additional cumulative traffic was assigned to these facilities.

Under cumulative conditions, three roadway segments would carry fewer than 3,000 vehicles per day (vpd) and therefore fall into the "local street" category:

- Rolison Road south of Second Avenue--2,755 vpd,
- Hoover Street south of Second Avenue--1,920 vpd, and
- Page Street south of Second Avenue--1,725 vpd.

(b) Cumulative With Project Conditions. Cumulative With Project Conditions are defined as Cumulative Without Project Conditions plus the net new traffic generated by the proposed project, as compared to the volumes previously evaluated in the 1996 certified EIR for the Midpoint Technology Park. Figure 12.10 shows the resulting Cumulative With Project traffic volumes for the AM and PM peak hours.

*Cumulative With Project Intersection Levels of Service.* Levels of service were calculated for the study intersections using the Cumulative With Project traffic volumes during the AM and PM peak hours. Table 12.13 presents the LOS calculation results under Cumulative With Project Conditions. The LOS calculation worksheets are contained in Appendix B of the Fehr & Peers traffic report on file at the City of Redwood City Planning Department. The results of this analysis show that the following six intersections are expected to operate at an unacceptable level (LOS E or worse) under this With Project scenario:

- Woodside Road/Veterans Boulevard,
- Woodside Road/Broadway (PM peak hour),
- Woodside Road/Middlefield Road,
- Broadway/Charter Street (unsignalized--meets signal warrant) (PM peak hour),
- Broadway/Second Avenue (unsignalized--does not meet signal warrant, but both AM and PM peak-hour delay would increase by more than five [5] seconds), and
- Bay Road/Fifth Avenue (unsignalized--meets signal warrant) (PM peak hour).

Cumulative With Project Conditions would have potential significant impacts at the Woodside Road/Broadway, Broadway/Charter Street, Broadway/Second Avenue, and Bay Road/Fifth Avenue intersections. Cumulative With Project impacts at the Woodside Road/Veterans Boulevard and Woodside Road/Middlefield Road intersections would not be considered significant, since these intersections already operate unacceptably and the proposed project would not cause a five-second increase in delay at these intersections.

Table 12.12  
 TRAFFIC VOLUMES ON ROADWAY SEGMENTS UNDER CUMULATIVE WITHOUT PROJECT  
 CONDITIONS

<u>Location</u>	<u>Background Conditions</u>			<u>Cumulative Without Project Conditions</u>			<u>Percent Change</u>
	<u>AM</u>	<u>PM</u>	<u>ADT</u>	<u>AM</u>	<u>PM</u>	<u>ADT</u>	
NB - Broadway north of 2nd Avenue	555	295	5,130	642	352	6,006	
SB - Broadway north of 2nd Avenue	200	595	5,615	236	889	7,945	
<i>Total Two-Way Traffic</i>	<i>755</i>	<i>890</i>	<i>10,745</i>	<i>878</i>	<i>1,241</i>	<i>13,951</i>	<i>30%</i>
NB - Broadway south of 2nd Avenue	300	170	2,865	355	205	3,392	
SB - Broadway south of 2nd Avenue	130	335	3,325	153	396	3,943	
<i>Total Two-Way Traffic</i>	<i>430</i>	<i>505</i>	<i>6,190</i>	<i>508</i>	<i>601</i>	<i>7,335</i>	<i>19%</i>
NB - Rolison Road south of 2nd Avenue	130	90	1,290	152	106	1,533	
SB - Rolison Road south of 2nd Avenue	70	140	1,260	38	164	1,222	
<i>Total Two-Way Traffic</i>	<i>200</i>	<i>230</i>	<i>2,550</i>	<i>190</i>	<i>270</i>	<i>2,755</i>	<i>8%</i>
NB - Hoover Street south of 2nd Avenue	90	70	995	90	70	995	
SB - Hoover Street south of 2nd Avenue	40	110	925	40	110	925	
<i>Total Two-Way Traffic</i>	<i>130</i>	<i>180</i>	<i>1,920</i>	<i>130</i>	<i>180</i>	<i>1,920</i>	<i>0%</i>
NB - Page Street south of 2nd Avenue	80	70	880	80	70	880	
SB - Page Street south of 2nd Avenue	55	90	845	55	90	845	
<i>Total Two-Way Traffic</i>	<i>135</i>	<i>160</i>	<i>1,725</i>	<i>135</i>	<i>160</i>	<i>1,725</i>	<i>0%</i>
NB - Bay Road south of 2nd Avenue	445	395	5,265	583	337	5,760	
SB - Bay Road south of 2nd Avenue	320	465	5,340	339	554	6,059	
<i>Total Two-Way Traffic</i>	<i>765</i>	<i>860</i>	<i>10,605</i>	<i>922</i>	<i>891</i>	<i>11,819</i>	<i>11%</i>
WB - 2nd Avenue - Bay & Broadway	120	210	2,350	153	238	2,781	
EB - 2 <sup>nd</sup> Avenue - Bay & Broadway	140	130	2,515	206	155	3,373	
<i>Total Two-Way Traffic</i>	<i>260</i>	<i>340</i>	<i>4,865</i>	<i>359</i>	<i>393</i>	<i>6,154</i>	<i>27%</i>
WB - 5 <sup>th</sup> Avenue - Bay & Broadway	185	250	2,870	225	299	3,440	
EB - 5th Avenue - Bay & Broadway	250	235	3,315	298	282	3,965	
<i>Total Two-Way Traffic</i>	<i>435</i>	<i>485</i>	<i>6,185</i>	<i>523</i>	<i>581</i>	<i>7,405</i>	<i>20%</i>

SOURCE: Fehr & Peers

Notes:

ADT = average daily traffic

NB = northbound, SB = southbound, WB = westbound, EB = eastbound

Figure 12.10. Cumulative (2025) With Project Peak-Hour Intersection Volumes.

Table 12.13  
 LEVELS OF SERVICE AT STUDY INTERSECTIONS UNDER CUMULATIVE WITH PROJECT  
 CONDITIONS

Intersections	Traffic Control Device	Peak Hour	Cumulative Without Project		Cumulative With Project		Change in Delay	Significant Impact?
			Average Intersection Delay <sup>1</sup>	LOS <sup>2</sup>	Average Intersection Delay <sup>1</sup>	LOS <sup>2</sup>		
1. Woodside Road/ Veterans Boulevard	Signal	AM	33.1	C	33.1	C	0.0	No
		PM	91.4	F	91.3	F	-0.1	No
2. Woodside Road/Broadway	Signal	AM	<b>146.7</b>	<b>F</b>	<b>141.8</b>	<b>F</b>	-4.9	No
		PM	<b>208.7</b>	<b>F</b>	<b>216.5</b>	<b>F</b>	<b>8.2</b>	<b>Yes</b>
3. Woodside Road/Bay Road	Signal	AM	24.2	C	24.2	C	0.0	No
		PM	38.1	D	38.1	D	0.0	No
4. Woodside Road/ Middlefield Road*	Signal	AM	84.2	F	82.0	F	-2.2	No
		PM	107.0	F	108.1	F	1.1	No
5. Marsh Road/Scott Road	Signal	AM	42.5	D	43.5	D	1.0	No
		PM	27.7	C	30.4	D	2.7	No
6. Marsh Road/ Florence Street/Bohannon Drive	Signal	AM	40.3	D	40.9	D	0.6	No
		PM	42.1	D	45.2	D	3.1	No
7. Broadway/Charter Street	All-way Stop Control	AM	31.3	D	26.0	D	-5.3	No
		PM	<b>48.4</b>	<b>E</b>	<b>62.0</b>	<b>F</b>	<b>13.6</b>	<b>Yes</b>
8. Broadway/ Douglas Avenue	All-way Stop Control	AM	14.9	B	13.8	B	-1.1	No
		PM	17.4	C	20.3	C	2.9	No
9. Broadway/2nd Avenue	Two-way Stop Control	AM	<b>33.5</b>	<b>D</b>	<b>45.7</b>	<b>E</b>	<b>12.2</b>	<b>Yes</b>
		PM	<b>48.3</b>	<b>E</b>	<b>&gt;100</b>	<b>F</b>	<b>&gt;45.8</b>	<b>Yes</b>
10. Broadway/5th Avenue	Two-way Stop control	AM	11.5	B	11.9	B	0.4	No
		PM	12.4	B	13.3	B	0.9	No
11. Bay Road/Charter Street	All-way Stop Control	AM	16.3	C	16.3	C	0.0	No
		PM	20.9	C	20.9	C	0.0	No
12. Bay Road/Douglas Avenue	All-way Stop Control	AM	12.4	B	12.4	B	0.0	No
		PM	14.1	B	14.1	B	0.0	No
13. Bay Road/2nd Avenue	All-way Stop Control	AM	12.3	B	12.5	B	0.2	No
		PM	13.2	B	14.7	B	1.5	No
14. Bay Road/5th Avenue	All-way Stop Control	AM	23.7	C	26.0	C	2.3	No
		PM	<b>34.6</b>	<b>D</b>	<b>55.2</b>	<b>F</b>	<b>20.6</b>	<b>Yes</b>

SOURCE: Fehr & Peers

Notes:

<sup>1</sup> Average control delay per vehicle for signalized intersections using the methodology described in the 2000 *Highway Capacity Manual*. LOS Calculations conducted using the TRAFFIX analysis software package.

<sup>2</sup> LOS = Level of Service

<sup>3</sup> This intersection has five approaches and was analyzed using the Synchro software package.

\* Denotes Congestion Management Program (CMP) monitored intersection.

\*\*Unsignalized Intersection

AM = AM Peak Hour; PM = PM Peak Hour

**Bold font** indicates potentially significant cumulative impact.

### **12.3.6 Supplemental Cumulative Impacts and Mitigations**

**Supplemental Impact 12-5: Cumulative With Project Impacts at Woodside Road/Broadway Intersection.** Traffic under Cumulative With Project Conditions would cause an unacceptable increase in delay at the Woodside Road/Broadway intersection during the PM peak hour. This delay increase would represent a **significant cumulative impact** (see "Intersection Impacts" criteria in subsection 12.3.2, "Significance Criteria," above). This impact is similar to Impact 3-2 identified in the 1996 EIR.

*Explanation:*

As shown in Table 12.13, traffic added by the project trips under Cumulative With Project Conditions would increase delay at the Woodside Road/Broadway intersection during the PM peak hour. During the AM peak hour, the intersection delay would decrease slightly due to the difference in the travel patterns between previous office/R&D uses and proposed medical uses. The intersection is expected to operate at an unacceptable LOS F during both the AM and PM peak hours under both the Background and Project Conditions. The addition of project trips is expected to increase delay by 8.2 seconds during the PM peak period, which would exceed the five-second threshold of significance established for this analysis.

The 1996 EIR identified a significant impact at this intersection under Project Conditions. The Certified Mitigation identified in the 1996 EIR Mitigation and Monitoring Program was the addition of a northbound right-turn overlap phase for traffic using Broadway. This right-turn overlap would run concurrently with the westbound left-turn phase (from Woodside Road to Broadway) and with the southbound U.S. 101 off-ramp phase. As a result of the combined benefit from these two overlaps, the intersection would operate at an acceptable level of service.

In addition, the 1996 EIR identified a significant impact at this intersection under Cumulative With Project Conditions. The Certified Mitigation identified for the cumulative impact in the 1996 EIR Mitigation and Monitoring Program was the right-turn overlaps plus the addition of a second westbound left-turn lane from Woodside Road to Broadway. The second left-turn lane improvement was not recommended by City staff and was excluded from the mitigation plan. Instead, a condition was added that would require the applicant to contribute a fair share amount to an areawide traffic assessment district and agree not to oppose the creation of the district.

The current implementation status of the mitigation measures recommended in the 1996 EIR is as follows:

- A northbound right-turn overlap phase has been added to the intersection that runs concurrently with the westbound left-turn movement from Woodside Road. However, the second overlap has not been implemented because Caltrans did not support the proposed mitigation for reasons related to signal phasing and operation.
- The project made a monetary contribution to an areawide fee program as a condition of use.

- A traffic mitigation fee program was implemented by the City and has been in place for approximately five years.

The recent Abbott Laboratories EIR identified an impact at this intersection and recommended the same right-turn overlap operation and the addition of an emergency vehicle pre-emption as mitigation. The impact at this intersection was still deemed significant and unavoidable, however, due to the uncertainty that Caltrans would implement the improvements. Therefore, Abbott Laboratories was also required to implement an aggressive TDM program to help reduce the impact at both the Woodside Road/Broadway and Woodside Road/Veterans Boulevard intersections.

**Supplemental Mitigation 12-5(a).** The project applicant shall pay an additional traffic impact fee for the approximately 393 net new PM peak-hour trips generated by the Stanford Outpatient Center project. The traffic impact fee program is planned to include citywide traffic improvement needs, including improvements that would reduce congestion in the Woodside Road corridor and in the area surrounding the project site on Bay Road.

**Supplemental Mitigation 12-5(b).** The project applicant shall implement a transportation demand management (TDM) program to reduce the number of drive-alone auto trips generated by the project (see *Supplemental Mitigation 12-3*).

The combination of these two measures has the potential to reduce the project's contribution to the cumulative impact at the Woodside Road/Broadway intersection to a *less-than-significant level*. However, until Caltrans commits to implementing the planned improvements at the Woodside Road/Broadway intersection, the project's contribution to the cumulative impact at this intersection would represent a **significant unavoidable impact**.

**Supplemental Impact 12-6: Cumulative With Project Impacts at Broadway/Charter Street Intersection.** Traffic under Cumulative With Project Conditions would cause an unacceptable increase in delay at the Broadway/Charter Street intersection during the PM peak hour. In addition, under Cumulative With Project Conditions, traffic volumes at the intersection are expected to satisfy the peak-hour signal warrant. Cumulative With Project Conditions would therefore cause a **potentially significant cumulative impact** (see "Intersection Impacts" criteria in subsection 12.3.2, "Significance Criteria," above). This impact is a new impact not identified in the 1996 EIR or 1998 SEIR.

*Explanation:*

The results of the intersection analysis indicate that the Broadway/Charter Street intersection is expected to operate at an unacceptable LOS E during the PM peak hour under Cumulative Without Project Conditions. Under Cumulative With Project Conditions, LOS would

deteriorate to F, and the intersection volumes are expected to satisfy the peak-hour signal warrant. Therefore, these conditions would result in a significant cumulative impact at the Broadway/Charter Street intersection as defined by the significance criteria for impacts on unsignalized intersections.

**Supplemental Mitigation 12-6.** A traffic consultant selected by and under the direction of the City, and funded by Stanford Hospital & Clinics, shall periodically monitor the intersection in a similar manner as other unsignalized intersections in Redwood City to determine if and when signalization, or other mitigation as determined by the City, would be warranted in the future. The project applicant shall also contribute its fair share, as determined by the City, to the design and installation of the mitigation measure at the time its installation is determined by the City to be necessary.

The intersection is expected to operate at LOS B during the PM peak hour under Cumulative With Project Conditions with installation of a traffic signal (as one example of a feasible mitigation measure). Implementation of this mitigation measure would therefore reduce the project's contribution to the cumulative impact at the Broadway/Charter Street intersection to a ***less-than-significant level***.

**Supplemental Impact 12-7: Cumulative With Project Impacts at Broadway/Second Avenue Intersection.** Traffic under Cumulative With Project Conditions would cause an unacceptable increase in delay at the Broadway/Second Avenue intersection during both the AM and PM peak hours. In addition, under the Cumulative With Project Conditions, the total delay on the minor street (Second Avenue) would satisfy the peak-hour delay signal warrant. Cumulative With Project Conditions would therefore cause a ***potentially significant cumulative impact*** (see "Intersection Impacts" criteria in subsection 12.3.2, "Significance Criteria," above). This impact is a new impact not identified in the 1996 EIR or 1998 SEIR.

*Explanation:*

The results of the intersection analysis (see Table 12.13) indicate that the Broadway/Second Avenue intersection is expected to operate at an acceptable LOS D in the AM peak hour and an unacceptable LOS E during the PM peak hour under Cumulative Without Project Conditions. The introduction of the proposed project to the cumulative scenario is expected to degrade operations at this intersection from LOS D to LOS E during the AM peak and from LOS E to LOS F during the PM peak hour. Under Cumulative With Project Conditions, the intersection would also experience an increase in delay of more than five (5) seconds during both peak hours and would meet the peak-hour delay signal warrant during the PM peak hour. The proposed project is therefore expected to contribute to a ***significant cumulative impact*** at the Broadway/Second Avenue intersection.

**Supplemental Mitigation 12-7.** The applicant shall implement *Supplemental Mitigation 12-1* (install all-way stop sign control). Implementation of this measure would reduce the project's contribution to this cumulative impact to a ***less-than-significant level***.

Alternatively, implementation of either of the following two mitigation measures would similarly reduce the project's contribution to this cumulative impact to a ***less-than-significant level*** and would also result in improving intersection operation to an acceptable level of service (LOS D or better under Cumulative Conditions).

A traffic consultant selected by and under the direction of the City, and funded by Stanford Hospital & Clinics, shall periodically monitor the intersection in a similar manner as other unsignalized intersections in Redwood City to determine if and when signalization, or other mitigation as determined by the City, would be warranted in the future. The project applicant shall also contribute its fair share, as determined by the City, to the design and installation of the mitigation measure at the time its installation is determined by the City to be necessary;

**or**

The City could have the applicant contribute its fair share, as determined by the City, to the design and installation of a roundabout at this intersection, assuming the roundabout is physically feasible.

Installation of a traffic signal would be the most common approach to achieving future cumulative LOS D conditions-- the intersection would operate at LOS C or better. However, due to the intersection's location next to a residential area, it may be desirable to consider a roundabout which could also provide additional benefit in terms of traffic calming and off-peak operations. The physical feasibility of implementing a roundabout would have to be studied further, and the ultimate design would have to be acceptable to the Redwood City Fire Department due to the proximity of a fire station to the intersection.

**Supplemental Impact 12-8: Cumulative With Project Impacts at Bay Road/Fifth Avenue Intersection.** Traffic under Cumulative With Project Conditions would cause an unacceptable increase in delay at the Bay Road/Fifth Avenue intersection during the PM peak hour. In addition, under Cumulative With Project Conditions, traffic volumes at the intersection are expected to satisfy the peak-hour signal warrant. Cumulative With Project Conditions would therefore cause a ***potentially significant cumulative impact*** (see "Intersection Impacts" criteria in subsection 12.3.2, "Significance Criteria," above). This impact is a new impact not identified in the 1996 EIR or 1998 SEIR.

*Explanation:*

The results of the intersection analysis indicate that the Bay Road/Fifth Avenue intersection is expected to operate at an acceptable LOS D during the PM peak hour under Cumulative Without Project Conditions. The proposed project is expected to degrade intersection operations from LOS D to F during the PM peak period. In addition, under Cumulative With Project Conditions, the intersection volumes are expected to satisfy the peak-hour signal warrant. The proposed project is therefore expected to contribute to a significant cumulative impact at the Bay Road/Fifth Avenue intersection.

This intersection was analyzed in the City of Redwood City's Traffic Impact Mitigation Fee Study, was identified in that study for signalization, and is therefore included in the fee program.

**Supplemental Mitigation 12-8.** The project applicant shall pay additional traffic impact fees for the estimated 393 net new PM peak-hour trips generated by the Stanford Outpatient Center project. Implementation of this mitigation measure would reduce the project's contribution to the cumulative impact at the Bay Road/Fifth Avenue intersection to a ***less-than-significant level***.

The project is estimated to add 393 net new trips during the PM peak hour. The traffic impact fee program includes citywide traffic improvements, including improvements that would reduce congestion in the Woodside Road corridor and in the area surrounding the project site on Bay Road. Specifically, the signalization of the Bay Road/Fifth Avenue intersection is included in the City's traffic impact fee program. With these improvements, the intersection would operate at an acceptable level of service.

**Supplemental Impact 12-9: Cumulative Impact on Rolison Road Roadway Segment.** Cumulative With Project traffic would increase PM peak-hour and daily traffic on Rolison Road south of Second Avenue by more than five percent. Since Rolison Road carries fewer than 3,000 vehicles per day, the increase in traffic due to the project would represent a ***significant cumulative impact*** (see criteria for "Roadway Impacts" in subsection 12.3.2, "Significance Criteria," above). This impact is similar to Impact 3-3 identified in the 1996 EIR.

Table 12.14 indicates cumulative traffic volumes, the trips forecast to be added by the proposed project, and the percent increase in traffic due to the project trips for the eight study roadway segments. Similar to Project Conditions, Cumulative With Project Conditions would create an impact on the Rolison Road segment south of Second Avenue, which would carry fewer than 3,000 vehicles per day (vpd) and experience a greater-than-five-percent increase in PM peak-hour and daily traffic.

This impact was identified in Impact 3-3 of the 1996 EIR. The mitigation included in the EIR was to investigate traffic calming on local streets, including Page Street, Hoover Street, Rolison Road, and portions of Broadway (south of Second Avenue). One specific EIR recommendation was to close the connection to Rolison at Marsh Road. This

Table 12.14  
 TRAFFIC VOLUMES ON ROADWAY SEGMENTS UNDER CUMULATIVE WITH PROJECT  
 CONDITIONS

Location	Cumulative Without Project			Cumulative With Project			Percent Change		
	AM	PM	ADT	AM	PM	ADT	AM	PM	ADT
NB - Broadway north of 2nd Avenue	642	352	6,006	51	106	891			
SB - Broadway north of 2nd Avenue	236	889	7,945	19	154	1,295			
<i>Total Two-Way Traffic</i>	<b>878</b>	<b>1,241</b>	<b>13,951</b>	<b>70</b>	<b>260</b>	<b>2,186</b>	8%	21%	16%
NB - Broadway south of 2nd Avenue	355	205	3,392	35	43	362			
SB - Broadway south of 2nd Avenue	153	396	3,943	70	73	614			
<i>Total Two-Way Traffic</i>	<b>508</b>	<b>601</b>	<b>7,335</b>	<b>105</b>	<b>116</b>	<b>976</b>	21%	19%	13%
NB - Rolison Road south of 2nd Avenue	152	106	1,533	4	20	168			
SB - Rolison Road south of 2nd Avenue	38	164	1,222	2	25	210			
<i>Total Two-Way Traffic</i>	<b>190</b>	<b>270</b>	<b>2,755</b>	<b>6</b>	<b>45</b>	<b>378</b>	3%	17%	14%
NB - Hoover Street south of 2nd Avenue	90	70	995	0	0	0			
SB - Hoover Street south of 2nd Avenue	40	110	925	0	0	0			
<i>Total Two-Way Traffic</i>	<b>130</b>	<b>180</b>	<b>1,920</b>	<b>0</b>	<b>0</b>	<b>0</b>	0%	0%	0%
NB - Page Street south of 2nd Avenue	80	70	880	0	0	0			
SB - Page Street south of 2nd Avenue	55	90	845	0	0	0			
<i>Total Two-Way Traffic</i>	<b>135</b>	<b>160</b>	<b>1,725</b>	<b>0</b>	<b>0</b>	<b>0</b>	0%	0%	0%
NB - Bay Road south of 2nd Avenue	583	337	5,760	-	23	193			
SB - Bay Road south of 2nd Avenue	339	554	6,059	2	24	202			
<i>Total Two-Way Traffic</i>	<b>922</b>	<b>891</b>	<b>11,819</b>	<b>2</b>	<b>47</b>	<b>395</b>	0%	5%	3%
WB - 2nd Avenue - Bay & Broadway	153	238	2,781	5	54	454			
EB - 2nd Avenue - Bay & Broadway	206	155	3,373	11	43	362			
<i>Total Two-Way Traffic</i>	<b>359</b>	<b>393</b>	<b>6,154</b>	<b>16</b>	<b>97</b>	<b>816</b>	4%	25%	13%
WB - 5th Avenue - Bay & Broadway	225	299	3,440	10	73	614			
EB - 5th Avenue - Bay & Broadway	298	282	3,965	35	43	362			
<i>Total Two-Way Traffic</i>	<b>523</b>	<b>581</b>	<b>7,405</b>	<b>45</b>	<b>116</b>	<b>976</b>	9%	20%	13%

SOURCE: Fehr & Peers

Notes:

ADT = average daily traffic

NB = northbound, SB = southbound, WB = westbound, EB = eastbound

**Bold font** indicates potentially significant cumulative impact.

recommendation was not supported by City staff and was removed from the Mitigation and Monitoring Program. Traffic diverters were also identified as mitigation, but have not been installed, at the intersections of Broadway/Second Avenue and Page Street/Second Avenue. A traffic calming study was conducted in the Friendly Acres residential neighborhood, and speed humps were installed on Hoover Street and Page Street.

**Supplemental Mitigation 12-9.** The applicant shall implement *Supplemental Mitigation 12-2* (traffic calming). However, implementation of this With Project Condition mitigation would not reduce this Cumulative With Project impact to a less-than-significant level. No feasible additional mitigation has been identified; therefore, this Cumulative With Project impact on Rolison Road south of Second Avenue would represent a ***significant unavoidable impact***.

**Supplemental Impact 12-10: Project Impact on Parking.** The project may not have an adequate number of parking spaces, since the anticipated parking supply (no less than 1,116 spaces) would not meet standard parking demand ratios specified by the Institute of Transportation Engineers (ITE) and the City of Redwood City for a typical medical/dental clinic use. This potential for inadequate parking supply represents a ***potentially significant impact*** (see criterion [e] in subsection 12.3.2, "Significance Criteria," above). This impact is a new impact not identified in the 1996 EIR or 1998 SEIR.

A parking analysis was prepared by Fehr & Peers for the proposed Outpatient Center. The parking demand assumptions used in this analysis were based on available data from the existing Stanford outpatient clinics located at the Stanford Medical Center in Palo Alto for those individual clinics that would be relocated to the Redwood City site. The Fehr & Peers parking analysis was independently reviewed for adequacy by George W. Nickelson, P.E., the SEIR transportation consultant. The Fehr & Peers parking analysis and Nickelson peer review documents are on file at the City of Redwood City Planning Department.

Based on these analyses, Fehr & Peers determined and George W. Nickelson, P.E., concurred that the anticipated parking supply (no less than 1,116 spaces) would be sufficient to meet the anticipated peak parking demand of the proposed Outpatient Center project. However, it was also agreed that the parking demand ratio developed and applied in the Fehr & Peers parking analysis (3.1 spaces per 1,000 square feet of gross floor area) is lower than the average peak parking ratio of 4.43 spaces per 1,000 square feet suggested by the Institute of Transportation Engineers for more typical medical/dental clinic uses. The Fehr & Peers parking demand ratio is also lower than the ratio of 5.0 spaces per 1,000 square feet specified in the City Code of Redwood City for a typical medical/dental clinic use.

In that light, the applicant has proposed implementing a *parking monitoring program* to ensure that parking demand does not exceed the parking supply provided on-site. A copy of the *parking monitoring program* proposal is included in Appendix F of the Fehr & Peers report on file at the City of Redwood City Planning Department. To implement the *parking monitoring program*, a baseline on-site and off-site parking survey would be performed prior to occupancy of the buildings by the Outpatient Center to document current parking patterns, including parking on nearby streets. The baseline data would then be compared to on-site

and off-site data periodically collected once the Outpatient Center is open. It is proposed by the applicant that the on-site and off-site (on-street) parking counts would be conducted twice a year to determine parking occupancy patterns, for a period of two years following full occupancy of the site. Stanford Hospital & Clinics would fund the parking monitoring program, which would be undertaken by a traffic consultant selected by and under the direction of the City.

**Supplemental Mitigation 12-10.** A *parking monitoring program* shall be undertaken by a traffic consultant selected by and under the direction of the City and funded by Stanford Hospital & Clinics. The *parking monitoring program* shall include completion of an initial baseline on-site and off-site (nearby on-street) parking analysis prior to Outpatient Center occupancy, followed by periodic on-site and off-site recounts (twice per year) for a period of two years following full Outpatient Center occupancy, as determined by the City. The residential streets to be included in the off-site parking counts are:

- Second Avenue--Rolison Road to Bay Street,
- Rolison Road--Second Avenue to Fourth Street,
- Hoover Street--Second Avenue to Fourth Street,
- Broadway--Second Avenue to Fourth Street, and
- Page Street--Second Avenue to Fourth Street.

Simultaneously with the parking counts, field observations shall be conducted at adjacent commercial sites, residential areas, and Andrew Spinas Park to determine if Outpatient Center employees or patients are parking in these areas. If parking demand in these adjacent areas increases by 15 percent or more over the base line surveys, consultations between City staff and the project applicant, based on the field observation data, shall be conducted to decide whether the increased parking demand is due to Stanford Outpatient Center activities or to other development in the area.

If the on-site parking demand exceeds specified occupancy levels, or if a 15 percent increase or more in spillover parking into adjacent areas is determined to result from Outpatient Center activities, the applicant shall provide additional on-site parking (e.g., through valet parking and/or installation of additional parking facilities such as reduced-height parking decks [rather than a four-story parking structure, as anticipated in the 1996 EIR] at one to three possible on-site locations, as illustrated on Figures 12.11 and 12.12 herein), subject to review and approval by the Redwood City Traffic Engineer and Redwood City Planning Commission.

Implementation of this measure would reduce the impact to a ***less-than-significant level***.

Three locations for providing on-site reduced-level parking decks have been preliminarily identified in the event that additional parking is needed. The three possible on-site locations are illustrated on Figures 12.11 and 12.12. Chapter 4 (Aesthetics) of this SEIR evaluates the

Figure 12.11. Possible Future Parking Structures (Plan View).

Figure 12.12. Possible Future Parking Structures (Cross-Section).

potential visual impacts of these possible future parking decks, whose location and design would be subject to Redwood City Planning Commission review and approval.



## **APPENDIX: TDM MEASURES PROPOSED FOR THE STANFORD OUTPATIENT CENTER PROJECT**

The following table is part of a transportation impact analysis prepared for the applicant by Fehr & Peers, transportation consultants, and an independent "peer review" of the Fehr & Peers findings by the SEIR transportation consultant, George W. Nickelson, P.E. Complete copies of the Fehr & Peers transportation impact analysis report and George W. Nickelson, P.E., review are on file at the Redwood City Planning Department, 1017 Middlefield Road.

