ATTACHMENT A

HEXAGON TRANSPORTATION CONSULTANTS, INC.

MEMORANDUM

TO: Mr. Tom Lodge, Rhodes Dahl LLC

FROM: Brian Jackson

DATE: June 24, 2008

SUBJECT: ***Trip Generation Analysis for the Proposed 343 Second Street Office Development in Downtown Los Altos, California***

Hexagon Transportation Consultants, Inc. has completed a trip generation analysis for the proposed 343 Second Street office development project in downtown Los Altos, California. The project site is located in the southeast quadrant of Second Street and Whitney Street. The project as proposed would consist of replacing 61,900 square feet (s.f.) of existing office/commercial uses with an approximately 44,200 s.f. office building. The adjacent gas station would remain. All parking for the project would be provided via surface lots located on Second Street and Whitney Street.

The magnitude of traffic added to the roadway system by a particular development is estimated by multiplying the applicable trip generation rates to the size of the development. The standard trip generation rates are published in the Institute of Transportation Engineers (ITE) manual entitled *Trip Generation, seventh edition,* 2003. The ITE trip generation rates for a single tenant office building were applied to the proposed office project. The project receives credit for the trips generated by the existing office/commercial uses that would be replaced. Since the site currently is approximately 50 percent occupied, the ITE rates were used to estimate the site's existing potential trip generation. The project is allowed to receive credit for all of the existing uses, including the vacant space, since the existing uses can be reoccupied at any time if the office project is not constructed.

Based on the ITE trip rates, the proposed office would generate 730 gross daily vehicle trips, with 96 gross trips occurring during the AM peak hour and 105 gross trips occurring during the PM peak hour. When compared to the trip generation of the existing uses on the site at full occupancy, the project would result in 457 fewer daily vehicle trips, with 8 more AM peak hour trips and 25 fewer PM peak hour trips. Table 1 shows the estimated trip generation for the proposed and existing uses.

Since the proposed 343 Second Street office development project would generate fewer trips overall than the existing uses on the site, it is our professional opinion and the opinion of James Walgren of the City of Los Altos that the proposed project does not warrant preparation of a Traffic Impact Analysis (TIA).

40 South Market Street, Suite 600 • San Jose, California 95113
phone 408.971.6100 • fax 408.971.6102 • www.hextrans.com

Table 1
Trip Generation Estimates

Land Use	ITE Category	Size (SF)	Daily Rate[1]	Daily Trips	AM Peak Hour Rate[1]	AM % In	AM % Out	AM Total	AM In	AM Out	PM Peak Hour Rate[1]	PM % In	PM % Out	PM Total	PM In	PM Out
Proposed Use																
Single Tenant Office	715	44,200	16.52	730	2.18	89%	11%	96	85	11	2.37	15%	85%	105	16	89
Existing Uses																
General Office Occupied	710	22,400	11.01	247	1.55	88%	12%	35	31	4	1.49	17%	83%	34	6	28
Shopping Center Occupied	820	9,800	42.94	421	1.03	61%	39%	10	6	4	3.75	48%	52%	37	18	19
General Office Vacant	710	23,700	11.01	261	1.55	88%	12%	37	32	5	1.49	17%	83%	36	6	30
Shopping Center Vacant	820	6,000	42.94	258	1.03	61%	39%	6	4	2	3.75	48%	52%	23	11	12
Existing Use Totals:		61,900		1,187				88	73	15				130	41	89
Net Project Trips:				**-457**				**8**	**12**	**-4**				**-25**	**-25**	**0**

Notes:
[1] Source: ITE Trip Generation, 7th Edition, 2003. Fitted curve equations used for proposed office use; average rates used for existing office and shopping center uses.

HEXAGON TRANSPORTATION CONSULTANTS, INC.

MEMORANDUM

TO: Mr. Tom Lodge, Rhodes Dahl LLC

FROM: Brian Jackson

DATE: September 29, 2008

SUBJECT: ***Unsignalized Intersection Analysis for the Proposed Packard Foundation Office Development located at 343 Second Street in Downtown Los Altos, California***

Hexagon Transportation Consultants, Inc. has completed an unsignalized intersection level of service (LOS) analysis and operations analysis for the proposed conversion of the Second Street and Whitney Street intersection from two-way stop-controlled to 4-way stop-controlled. The intersection is located in downtown Los Altos, California. Currently, only Whitney Street is stop-controlled. The planned conversion would occur in conjunction with the 44,200 square-foot Packard Foundation office building development project, located in the southeast quadrant of Second Street and Whitney Street.

Intersection Level of Service Analysis

Levels of service for the Second Street and Whitney Street intersection were calculated using TRAFFIX software, which is based on the 2000 *Highway Capacity Manual (HCM)* methodology. The correlation between average delay and level of service for unsignalized intersections is shown below in Table 1.

Table 1
Unsignalized Intersection Level of Service Definitions Based on Delay

Level of Service	Description of Operations	Average Delay Per Vehicle (Sec.)
A	Little or no traffic delay	10.0 or less
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays	Greater than 50.0

Source: Transportation Research Board, *2000 Highway Capacity Manual* (Washington, D.C., 2000) p17-2.

The results of the unsignalized intersection level of service analysis show that the Second Street and Whitney Street intersection currently operates and would continue to operate at LOS B or better during the AM and

40 South Market Street, Suite 600 • San Jose, California 95113
phone 408.971.6100 • fax 408.971.6102 • www.hextrans.com

PM peak hours. While the intersection would operate at LOS B during both the AM and PM peak hours under project conditions with no changes to the intersection, adding stop signs to the Second Street legs would actually improve the level of service at the intersection to LOS A during both peak hours of traffic. Table 2 shows the results of the unsignalized intersection level of service analysis. The detailed level of service calculation sheets are included in Appendix A.

Table 2
Unsignalized Intersection Levels of Service

						Project Conditions			
		Existing		Background		2-Way Stop		4-Way Stop	
Intersection	Peak Hour	Avg. Delay/a/	LOS	Avg. Delay/a/	LOS	Avg. Delay/a/	LOS	Avg. Delay/a/	LOS
Second St & Whitney St	AM	9.7	A	9.7	A	10.1	B	7.6	A
	PM	10.5	B	10.7	B	10.9	B	8.1	A

Notes:
/a/ The average delay shown corresponds to the worst-movement delay at the intersection.

Signal Warrant

In addition to the level of service analysis, the unsignalized intersection also was evaluated using the *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD) Peak Hour Volume Warrant in order to determine if there would be justification for installing a traffic signal based on peak hour traffic volumes. The volume warrant makes no evaluation of intersection level of service, but simply provides an indication whether vehicular peak hour traffic volumes are, or would be, sufficient to justify installation of a traffic signal. Intersections that meet the peak hour warrant are subject to further analysis (i.e., additional warrants) before determining that a traffic signal is necessary and appropriate. The analysis revealed that the peak hour volume warrant would not be satisfied at the unsignalized intersection based on estimated AM and PM traffic volumes under project conditions. The signal warrant worksheet is included in Appendix B.

Vehicle Queuing Analysis

An operations analysis also was conducted based on vehicle queuing at the unsignalized intersection for all four stop-controlled approaches. Vehicle queues were estimated using a Poisson probability distribution, which estimates the probability of "n" vehicles for a vehicle movement using the following formula:

$$P(x=n) = \frac{\lambda^n e^{-(\lambda)}}{n!}$$

Where:

P (x=n) = probability of "n" vehicles in queue per lane
n = number of vehicles in the queue per lane
λ = Average number of vehicles in the queue per lane (vehicles per hour per lane/signal cycles per hour)

The basis of the analysis is as follows: (1) the Poisson probability distribution is used to estimate the 95th percentile maximum number of queued vehicles for a particular approach; (2) the estimated maximum number of vehicles in the queue is translated into a queue length, assuming 25 feet per vehicle; and (3) the estimated maximum queue length is compared to the existing or planned available vehicle storage. The queue estimates and a tabulated summary of the findings for the AM and PM peak hours are provided in Table 3.

Table 3
Queuing Analysis for 4-Way Stop-Controlled Second St and Whitney St

Approach[1]	Northbound	Southbound	Eastbound	Westbound
AM Peak Hour				
Cycle/Delay[2] (sec)	7.3	7.6	7.5	7.3
Volume[3] (vphpl)	56	84	54	39
Avg. Queue (veh/ln.)	0.1	0.2	0.1	0.1
Avg. Queue[4] (ft./ln)	3	4	3	2
95th %. Queue (veh/ln.)	1	1	1	1
95th %. Queue (ft./ln)	25	25	25	25
PM Peak Hour				
Cycle/Delay[2] (sec)	7.4	8.1	7.6	7.9
Volume[3] (vphpl)	29	144	54	113
Avg. Queue (veh/ln.)	0.1	0.3	0.1	0.2
Avg. Queue[4] (ft./ln)	1	8	3	6
95th %. Queue (veh/ln.)	1	1	1	1
95th %. Queue (ft./ln)	25	25	25	25

[1] Lane configuration for each approach consists of a shared left/thru/right.
[2] Vehicle queue calculations based on cycle length for signalized intersections and vehicle delay for unsignalized intersections.
[3] Traffic volumes shown are peak hour volumes under project conditions.
[4] Assumes 25 feet per vehicle queued.

The analysis indicated that the estimated maximum vehicle queues for all four approaches during the AM and PM peak hours of traffic would be only 1 vehicle in length. The lack of vehicle queuing is directly related to the low peak hour traffic volumes that currently occur and would continue to occur at this intersection. Therefore, it can be concluded that adding stop signs to the Second Street legs of the intersection would not result in any queuing problems and would have little effect on vehicle flow along Second Street through the intersection. Converting the intersection to a four-way stop-controlled intersection also would create a safer environment for pedestrians crossing the street between the new Packard Foundation office building and the surface parking areas on Second Street located directly across from the office building.

Conclusions

The results of the unsignalized intersection analysis show that the Second Street and Whitney Street intersection would operate at LOS A during both the AM and PM peak hours under project conditions with the 4-way stop conversion. The results also show that the peak hour volume warrant would not be satisfied, and that adding stop signs to the Second Street legs of the intersection would not result in any queuing problems.