



November 16, 2017

Ms. Lynn Goldberg
City of Calistoga
1232 Washington Street
Calistoga, CA 94515

Traffic Study for the Calistoga Vista Project

Dear Ms. Goldberg;

As requested, W-Trans has prepared a traffic analysis relative to the proposed residential development to be located at 1506 Grant Street in the City of Calistoga. The purpose of this letter is to address the potential impacts associated with the subject development and identify any improvements needed to mitigate such impacts.

Study Area and Operational Analysis

Existing Conditions

In addition to the section of Grant Street fronting the project site, the study area included the following intersections that would be most likely to experience an impact due to the project. These intersections were evaluated in the *City of Calistoga Development Impact Fee Study*, September 2014, indicating their importance in the citywide transportation network.

1. Lake Street/Grant Street
2. Lincoln Avenue/Brannan Street
3. Lincoln Avenue/Fair Way

Future Conditions

The *City of Calistoga Development Impact Fee Study* (2014) presented a future scenario assuming a projected level of development and redevelopment of certain parcels in the following 20 years. Under this scenario, the intersection of Lake Street/Grant Street was projected to operate acceptably at LOS A with a delay of 7.8 seconds during the p.m. peak hour, while Lincoln Avenue/Fair Way was projected to operate deficiently. The signalization recommended for this intersection is included in the Transportation Development Impact Fee that is assessed on new development. With the improvements, the intersection is expected to operate acceptably at LOS B. All other intersections analyzed in the study are expected to operate acceptably under future volumes either under their current geometrics or with recommended improvements.

Project Description

The project as proposed would remove the existing two single family dwellings and the 24,320 square feet of light industrial space to construct 50 residential units. As proposed, four of the 50 units would be live-work units. Live-work units operate as both residences and businesses. It is understood that the light industrial buildings are currently 20 percent occupied with vehicle repair and tree service businesses.

The project as proposed would have two driveways on Grant Street. The western driveway would be located in approximately the same location as the existing driveway for the light industrial facility. The eastern driveway would be located east of the stop bar on the east leg of the intersection of Stevenson Street/Grant Street. The site plan is enclosed for reference.

Since these parcels were occupied when counts were obtained for the impact fee study, the trips associated with existing development of the site were included. However, the proposed change in use was not envisioned, so the

net increase in trips resulting from the proposed project was not captured in growth related to conditions projected by 2034.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 10th Edition, 2017 for “Multifamily Housing (Low Rise)” (ITE LU #220). Because the site is currently occupied by two single family dwellings and partially occupied light industrial buildings, the trip generation of these land uses was considered using “Single Family Detached Housing” (ITE LU #210) and “General Light Industrial” (ITE LU #110) rates.

ITE does not have a trip generation rate for live-work units. A use-specific rate developed by W-Trans was applied based on the assumption that each live-work unit would generate trips similar to an apartment for the residents together with trips for clients or co-workers.

The expected trip generation potential for the proposed project is indicated in Table 1 with deductions taken for trips made to and from the existing occupied land uses at the site, which will cease with the construction of the project. The proposed project is expected to generate an average of 377 trips per day, including 24 trips during the a.m. peak hour and 30 during the p.m. peak hour. After deducting trips for existing uses, 334 net new trips are expected to be generated on a daily basis, including 20 during the a.m. peak hour and 25 during the p.m. peak hour; these new trips represent the net anticipated increase in traffic.

Table 1 – Trip Generation Summary											
Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Single Family Dwelling	2 du	9.44	19	0.74	1	0	1	0.99	2	1	1
General Light Industrial	4.864 ksf*	4.96	24	0.70	3	3	0	0.63	3	0	3
<i>Sub-total Existing</i>			43	4	3	1	5	1	4		
Proposed											
Multifamily (Low Rise)	46 du	7.32	337	0.46	21	5	16	0.56	26	16	10
Live-Work Units	4 du	9.95	40	0.86	3	2	1	0.94	4	1	3
<i>Sub-total Proposed</i>			377	24	7	17	30	17	13		
Net New Trips			334	20	4	16	25	16	9		

Note: du = dwelling unit; ksf = 1,000 square feet; * = only 20% of the 24.32 ksf was occupied

Cumulative Plus Project Scenario

As discussed above, all of the intersections evaluated in the impact fee study are projected to operate acceptably at LOS D or better during the p.m. peak hour with the improvements that would be funded by the Transportation Development Impact Fee. The 25 additional p.m. trips that would be generated by the proposed project would have a nominal effect on the results from the impact fee study, and it is reasonable to assume that the conclusions and recommendations would be unchanged as a result of this small increase in future volumes.

While the analysis in the impact fee study did not cover the a.m. peak period, it is reasonable to conclude that the addition of 20 a.m. peak hour trips to the network would also have a minimal impact on operation.

It is therefore concluded that the project would have a less-than-significant impact on traffic operation.

Transportation Facilities

Roadway

Based on the proposed site plan, the project would construct curb, gutter, and sidewalk along the project frontage on Grant Street. Per the City's Municipal Code 12.04.130(C.1), the desired cross-section for Grant Street would include improvements only along the "old warehouse property." To be consistent with the Municipal Code it is recommended that the project's proposed curb, gutter, and sidewalk conform to the curbs east and west of the project site.

Pedestrian Facilities

Currently, the only sidewalks in the study area are a short segment west of Arch Way on the north side of Grant Street along with a continuous network of sidewalks, curb ramps, and a paved pathway on the south side. Fronting the existing light industrial warehouse and two residential homes, there are no sidewalks or paved pathways. According to the *Calistoga Active Transportation Plan* (October 2014), sidewalks are desired on the north side of Grant Street. The project as proposed would provide sidewalk along the entire length of the site's frontage, which implements the planned improvements.

Bicycle Facilities

According to the *Calistoga Active Transportation Plan*, Grant Street is proposed to be a Class III Bike Route. As proposed, the project would not interfere with this plan.

In Section 17.36.151, the *Calistoga Municipal Code* indicates that multifamily residential developments shall provide one bicycle parking space for every three dwelling units. The proposed 50-unit project would therefore require 17 bicycle parking spaces.

Access and Circulation

As proposed, the site would have two driveways connecting to Grant Street located at the east and west ends of the site. The western driveway would be shifted just east of the existing western driveway and the eastern driveway would be located just east of the existing limit line on the westbound Grant Street approach to its intersection with Stevenson Street. Both driveways would connect to drive aisles that would extend straight back from Grant Street and provide access to 68 proposed parking stalls, which would mostly be located along the perimeter of the site, though ten stalls would be located inside of the drive aisles. The two drive aisles would be connected by a dedicated emergency access lane that would be blocked by removable bollards during non-emergency situations and opened to provide emergency access, as needed.

On-site circulation would be expected to operate acceptably as proposed; however, the location of the eastern driveway has the potential to interfere with operation of the adjacent intersection. Because of the proximity, it does not appear that there would be sufficient room for a vehicle exiting the site to make a complete right-turn and stop behind the limit line on the westbound approach to Stevenson Street/Grant Street. This would force drivers to choose between beginning their movement at the intersection from the driveway location or crossing the limit line and coming to a complete stop within the intersection before beginning their movement. This could be avoided by relocating the stop sign and limit line to the east side of the proposed driveway, approximately 25 feet east of their current position. This would allow the driveway to operate as the fourth leg of the intersection, which would provide safer and more organized access to the site. A recommended improvements exhibit is enclosed for reference.

Sight Distance

At driveways a substantially clear line of sight should be maintained between the driver of a vehicle waiting to enter the street and the driver of an approaching vehicle. Adequate sight distance must be available for the waiting vehicle to see oncoming traffic and enter the roadway without requiring the through traffic to radically alter their speed. Sight distance should be measured from a 3.5-foot height at the location of the driver on the driveway to a 4.25-foot object height in the center of the approaching lane of the major road. Set-back for the driver on the driveway shall be a minimum of 15 feet, measured from the edge of the traveled way.

Sight distance along Grant Street from both driveways was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distances are based on stopping sight distance, with approach travel speeds used as the basis for determining the recommended sight distance. Additionally, the stopping sight distance needed for a following driver to stop if there is a vehicle waiting to turn into a driveway is evaluated based on stopping sight distance criterion and the approach speed on the major street.

Sight distance at the both proposed driveways was field measured. Although sight distance requirements are not technically applicable to driveways, the stopping sight distance criterion for private street intersections was applied for evaluation purposes. Based on a design speed of 25 mph, the minimum stopping sight distance needed is 150 feet. It should be noted that while the posted speed limit is 25 mph, vehicles were observed to be driving slower since drivers were approaching or departing from a full stop at the Grant Street/ Stevenson Street intersection.

The west driveway would be located near the location of the existing driveway, but would be shifted to the east slightly. Based on field observations, the sight distance at the 15 foot set-back from the travel way is inadequate due to the existing hedge that is on the western property boundary. Due to this hedge, the line of sight is only about 90 feet; however, even with the existing hedge, 150 feet of sight line can be obtained from a 10-foot set-back, though it should be noted that branches from the trees in the front yard of the residence to the west have the potential to further restrict sight lines if they are not trimmed. Considering that drivers are traveling slower than 25 mph, and that drivers can achieve adequate sight lines without entering the travelway, sight distance in both directions from the proposed west driveway is adequate for the conditions.

As recommended above, the east driveway would be located such that it is one leg of an all-way stop-controlled intersection. Since all vehicles approaching the driveway would be stopping, and a driver would have sight lines to the other three approaches to the intersection, sight lines are adequate.

In order to improve sight distance for the west driveway and maintain adequate sight distance at both driveways, the landscaping fronting the site should be low lying and any tree canopies should be maintained above seven feet.

Conclusions and Recommendations

- The proposed project is expected to generate an average of 377 daily trips, including 24 during the a.m. peak hour and 30 during the p.m. peak hour. After deducting trips for the existing land uses, the expected net increase in trips is expected to be an average of 334 net new daily trips with 20 during the a.m. peak hour and 25 during the p.m. peak hour.
- The intersections evaluated in the *City of Calistoga Development Impact Fee Study* are all expected to operate acceptably under projected development conditions, upon completion of the improvements identified in the study.
- The addition of the limited number of net new trips to the network can reasonably be expected to result in less-than-significant impacts on the study intersections.

- The project's potential impact to the network would be mitigated through the payment of the City's Transportation Development Impact Fee.
- It is recommended that sidewalk be constructed along the entire length of the site's frontage, as is proposed in the most recent site plan, in order to connect with the proposed facilities described in the *Calistoga Active Transportation Plan*.
- The project should provide 17 bicycle parking spaces.
- The limit line and stop sign on the westbound Grant Street approach to Stevenson Street/Grant Street should be moved approximately 25 feet east of their current position to the east side of the proposed project driveway.
- In order to maintain and improve sight distance at the proposed project driveways, it is recommended that low-lying vegetation be used for any landscaping along the project frontage. Any tree canopies should be trimmed and maintained above seven feet.

We hope this information is adequate to address the potential traffic impact associated with the proposed project. Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,



Cameron Nye, EIT
Assistant Traffic Engineer



Dalene J. Whitlock, PE, PTOE
Principal



DJW/cn/CAL041.L2

Enclosures: Site Plan
Recommended Improvements Exhibit

