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Traffic Impact Study

Napa Valley Museum Use Permit and Variance
P24-00072-UP & P24-00241-VAR
Planning Commission Hearing – October 2, 2024

May 28, 2024

Ms. Laura Rafaty
Napa Valley Museum
P.O. Box 3567
Yountville, CA 94599

Response to Comments on the Trip Generation Study for the Napa Valley Museum Project

Dear Ms. Rafaty;

Subsequent to the issuance of the *Trip Generation Study for the Napa Valley Museum Project*, February 23, 2024, W-Trans is in receipt of comments from the County's Planning Department and from TJKM, who provided a peer review, relayed via email on April 26, 2024. Following are these comments and our responses.

1. The ITE Trip Generation rates used for the Museum Land Use (580LU) is based on a single site survey for a museum which was 45,000 square feet. The ITE Manual states that due to the variation in types of museums and the fact that only one site was surveyed, caution should be exercised when using this information. Since the Napa Valley Museum is only 15% the size of the surveyed land use, using a trip generation rate may be underestimating the trip generation based on square footage. The calculated PM Peak Hour trips is only one trip, which seems unreasonably low. Please provide additional information to justify the museum trip generation rate. Here are some suggestions to determine the museum trip generation rate:
   a. Collect trip generation data from an existing similar facility in a similar size
   b. Conduct online research to find other traffic studies that may have collected trip generation data of a similar facility.

An online search was conducted to find a traffic study on a similar land use. The *Museum House Draft EIR*, Placeworks, 2016, assessed the effects of replacing an existing museum with housing in the City of Newport Beach, California. As part of this study, traffic count data was collected at the existing museum and site-specific trip generation rates were developed. The site had a daily trip generation rate of 4.5 trips per thousand square feet, an a.m. peak hour rate of 0.17 trips per thousand square feet, and a p.m. peak hour rate of 0.21 trips per thousand square feet.

Using these alternative trip rates, the proposed project would be expected to generate 28 daily trips with one trip during each of the a.m. and p.m. peak hours. The result of applying these trip rates to the proposed Napa Valley Museum project are shown below in Table 1.

Table 1 – Trip Generation Summary Using Newport Beach Museum House DEIR Rates

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Museum	6.272 ksf	4.5	28	0.17	1	1	0	0.21	1	0	1

Note: ksf = 1,000 square feet

Application of the alternative Museum House trip generation rates to the proposed project results in similar peak hour trip generation estimates as ITE rates, though the projected daily trips are higher. For reference, application of ITE trip rates for the proposed museum as originally assessed in the February 2024 letter is shown in Table 2.

Table 2 – Trip Generation Summary Using ITE Rates

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Museum	6.272 ksf	1.8	11	0.28	2	2	0	0.18	1	0	1

Note: ksf = 1,000 square feet

In addition to the alternative trip generation rates obtained from the Newport Beach study, a set of site-specific trip generation rates were developed using the existing Napa Valley Museum's ticket sales from January 4th, 2023 to March 3rd, 2024. This date range includes several large events such as the "Warrior Dogs" exhibition opening, "Wizards of Elixirs" competition, and "Endless Summer" party as well as any smaller events the museum hosted during this period. This approach of including events in the development of museum-specific trip generation rates was chosen to present a more conservative analysis. The existing museum sells an average of 36 tickets per day. Of the 9,464 sold tickets in the data set, about two percent were youth tickets for minors, and about one percent were sold to nearby veteran's home residents who likely did not drive to the museum. To present a conservative analysis, the likely non-driving minors and veteran's home residents were not excluded from the trip generation calculation, and it was assumed that every ticket holder arrived alone and made one trip to and one trip from the museum. This approach results in an average of approximately 72 visitor trips per day. The existing museum has one full-time employee and four part-time employees during normal operations. The full-time employee is assumed to generate three daily trips, one during each peak hour and an average of one midday trip. The part-time employees are assumed to produce two daily trips since they typically work fewer hours. Each part-time employee is assumed to generate 0.5 trips during the a.m. and p.m. peak hours because the employee would either come to work or leave work during an off-peak time. Adding these employee-related trips to the daily visitor rate results in 83 daily trips on average. Dividing this daily trip estimate by the existing museum's size of 9,464 square feet results in a daily trip generation rate of 8.8 trips per 1,000 square feet.

Time of day stamps were not available from the ticket transaction data, but based on information provided by Museum staff, the existing Napa Valley Museum has an estimated dwell time for visitors of about 45 minutes. It was assumed that visitor demand is mostly evenly spread across the day, with upticks in activity when the museum opens and closes (nearest peak traffic hours). The proposed museum would be open between the hours of 10:00 a.m. to 10:00 p.m., though it would only be open to the general public from 10:00 a.m. to 5:00 p.m. Trips occurring between 5:00 p.m. and 10:00 p.m. would typically occur only on days with activities for invited guests. While the museum may have fewer visitors when it is closed to the general public, it was assumed in this analysis that the museum would generate the same number of trips when it is closed to the public as when it is open. Applying these assumptions in addition to the museum-specific daily trip generation rate, estimated dwell time, and employee arrival and departure assumptions results in an estimated daily trip generation of 55 trips, including eight trips during the a.m. peak hour and seven trips during the p.m. peak hour. The results of this customized trip generation approach based on existing Napa Valley Museum data are shown in Table 3.

Table 3 – Trip Generation Summary using Existing Napa Valley Museum Data

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Museum	6.272 ksf	8.8	55	1.3	8	6	2	1.2	7	1	6

Note: ksf = 1,000 square feet

The custom trip generation estimates developed using existing Napa Valley Museum data along with very conservative assumptions result in a daily trip generation rate that is over twice as high as the ITE daily rate. The custom peak hour trip generation rates are four to six times higher than the published ITE a.m. and p.m. peak hour trip generation rates. Even upon applying these higher custom rates, however, the museum would be expected to result in a net decrease in the project site's trip generation due to the removal of trips generated by the existing market. The proposed project would be expected to generate an average decrease of 184 trips per day, including two fewer a.m. peak hour trips and 22 fewer trips during the p.m. peak hour. These results are summarized in Table 4.

Table 4 – Trip Generation Summary using Custom Napa Valley Museum Rates

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Strip Retail Plaza (<40ksf)	-6.272 ksf	54.45	-341	2.36	-15	-9	-6	6.59	-41	-21	-20
Pass-by		*-30%*	*102*	*30%*	*5*	*3*	*2*	*-40%*	*12*	*6*	*6*
Total Primary Trips			***-239***		***-10***	***-6***	***-4***		***-29***	***-15***	***-14***
Proposed											
Museum (custom rates)	6.272 ksf	8.8	55	1.3	8	6	2	1.2	7	1	6
Net New Trips			**-184**		**-2**	**0**	**-2**		**-22**	**-14**	**-8**

Note: ksf = 1,000 square feet

2. The submitted Trip Gen calcs don't look to include specifics as to marketing. However, it is staffs understanding that the museum will conduct events depending on the season and interchanging displays. This will likely alter the trip gen calcs.

The museum would routinely host exhibitions and small events after the museum is closed to the public; such exhibitions and events are inherently included in the museum's typical operations as already accounted for in trip generation rates. In addition, the proposed museum would have up to six events per year of at most 200 attendees, all of which would have a duration of about two hours. Using the vehicle occupancy of 2.8 persons per vehicle assumed by the County for wineries, and assuming each vehicle would generate one arrival and one departure trip from these events, there would be an estimated total of 143 visitor trips associated with each of these annual events. The existing museum has at most six volunteers working during these events. These volunteers are conservatively assumed to generate three trips (one inbound, one outbound, and one ancillary) due to the possibility of additional trips such as deliveries and pick-ups being made before or after the event. This results in a total of 161 trips being generated for these large events. The volunteers are expected to arrive before and leave after the peak

hours of the events to help set up and clean up the event. Half of all visitors are assumed to arrive in the first hour of the event with the second half arriving in the second hour of the event. Half of the visitors are expected to depart during the second hour and the other half are expected to depart when the event concludes after the end of the second hour. The results of these calculations are shown below in Table 5.

Table 5 – Proposed Large Event Trip Generation Summary

Land Use	Units	Daily		1st Hour			2nd Hour			3rd Hour		
		Rate	Trips	Trips	In	Out	Trips	In	Out	Trips	In	Out
200-Person Event (6 per year)												
Volunteers	6	3.00	18	0.00	0	0	0.00	0	0	0.00	0	0
Visitors	200	0.70	143	36	36	0	72	36	36	36	0	36
Total			**161**	**36**	**36**	**0**	**72**	**36**	**36**	**72**	**36**	**36**

We hope this information is adequate to address the comments from the County and TJKM. Please let us know if you need anything further.

Sincerely,

William Andrews

William Andrews, EIT
Assistant Engineer

Dalene Whitlock

Dalene J. Whitlock, PE (Civil, Traffic), PTOE
Senior Principal

DJW/wia/NAX188.L2

February 21, 2024

Ms. Laura Rafaty
Napa Valley Museum
P.O. Box 3567
Yountville, CA 94599

DRAFT Trip Generation Study for the Napa Valley Museum Project

Dear Ms. Rafaty;

W-Trans has completed an evaluation of the anticipated change in trip generation associated with the Napa Valley Museum to be located at 607 South St. Helena Highway in the County of Napa. The purpose of this letter is to provide this information for County staff's use.

Project Description

The project as proposed would convert 6,272 square feet of space most recently used for Gary's Wine & Marketplace to a not-for-profit museum. The store would maintain 1,439 square feet of space and existing uses would be retained for the remaining 3,022 square feet of space within the building (kitchen, bathrooms, storage). The areas of the existing and proposed uses are shown in Table 1

Table 1 – Areas of Existing and Proposed Land Uses

Use	Existing	Proposed
Store	7,711	1,439
Museum	-	6,272
Office	389	389
Bathroom	464	464
Commercial Kitchen	1,028	1,028
Storage	1,141	1,141
Total	**10,733**	**10,733**

Note: all areas in square feet

Trip Generation

The anticipated change in trip generation between the most recent site uses and the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 11th Edition, 2021. Rates for Strip Retail Plaza (<40ksf) (LU #822) were applied to Gary's Wine & Marketplace, which occupied the site most recently and would remain in a smaller portion of the building, and Museum rates (LU #580) were applied to the proposed use. It is noted that Liquor Store may be a more similar land use than Retail Plaza but the Retail Plaza rates are lower than those for a liquor store, so this provides a conservative assessment. There is not a daily trip rate for the museum available and no similar land uses were identified. The industry standard approach of assuming that the daily trip rate is ten times the p.m. peak hour trip rate was therefore used.

The Retail Plaza land use has pass-by rate information that further reduces the trip generation against which the project would be compared, again, ensuring a conservative assessment. A pass-by-rate for only the p.m. peak

period is available, so pass-by rates for the a.m. peak period and daily were assumed based on engineering judgment.

Based on the application of these rates, the proposed project is expected to generate an average decrease of 228 trips per day, including eight fewer a.m. peak hour trips and a reduction of 28 trips during the p.m. peak hour. These results are summarized in Table 2.

Table 2 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Strip Retail Plaza (<40ksf)	-6.272 ksf	54.45	-341	2.36	-15	-9	-6	6.59	-41	-21	-20
Pass-by		*-30%*	*102*	*30%*	*5*	*3*	*2*	*-40%*	*12*	*6*	*6*
Total Primary Trips			***-239***		***-10***	***-6***	***-4***		***-29***	***-15***	***-14***
Proposed											
Museum	6.272 ksf	1.8	11	0.28	2	2	0	0.18	1	0	1
Net New Trips			**-228**		**-8**	**-4**	**-4**		**-28**	**-15**	**-13**

Note: ksf = 1,000 square feet

Conclusions

- Based on application of standard trip generation rates, the proposed change in land use would be expected to result in a decrease in the number of trips generated at the project site, with 228 fewer trips on a daily basis, eight fewer trips during the morning peak hour and 28 fewer trips during the evening peak hour.

We hope this information is helpful to County staff in evaluating potential impacts associated with the Museum project. Thank you for giving us the opportunity to provide these services.

Sincerely,

William Andrews, EIT
Assistant Engineer

Dalene J. Whitlock, PE (Civil, Traffic), PTOE
Senior Principal

DJW/djw/NAX188.L1

Copy to: Ms. Beth Painter, Balanced Planning, Inc. (via email to beth@bpnapa.com)