



# memorandum

**DATE:** November 10, 2019  
**TO:** Kimley Horn  
**FROM:** Sandipan Bhattacharjee  
**SUBJECT:** Bridge Upland – Trip Generation for Retail Development

This memo analyzes the number of trips that would be generated for the proposed Foothill Boulevard warehouse project if the same building were developed for retail uses. The proposed project is located on the northeast corner of Central Avenue and Foothill Boulevard in the City of Upland in San Bernardino County. The project includes 276,825 square feet of gross leasable area.

Trip generation for a retail use is based on trip generation rates from the Institute of Transportation Engineers' (ITE) Trip Generation (10<sup>th</sup> Edition) and are based on Land Use 820 - "Shopping Center". Retail uses will typically draw some of its trips from the adjacent street traffic, so that some of the project trips are not actually "new" trips to the adjacent circulation system. These trips are referred to as "pass-by" trips. Pass-by trips are trips that are on the roadway immediately adjacent to the retail center which make intermediate stops on the way from an origin to a primary trip destination without route diversion. Pass-by trips for Land Use 820 - "Shopping Center" were calculated using rates from ITE *Trip Generation Handbook* (3<sup>rd</sup> Edition). Since the ITE Trip Generation Handbook does not have data on daily pass by trips, daily pass by trips are calculated based on the ITE Trip Generation Handbook 2<sup>nd</sup> Edition which shows the daily pass by rate to be 10 percent less than the p.m. peak hour rate. No pass by reductions have been taken for the a.m. peak hour. Table A shows the trip generation for the retail alternative. As shown in Table A below, a retail building the same size as the proposed project is anticipated to generate 260 trips in the a.m. peak hour, 696 trips in the p.m. peak hour, and 7,941 daily trips.

**Table A - Project Trip Generation**

Land Use	Units	A.M. Peak Hour			P.M. Peak Hour			Daily
		In	Out	Total	In	Out	Total	
<b>Retail</b>								
Trip Generation Rates <sup>1</sup>		0.58	0.36	0.94	1.83	1.98	3.81	37.75
Trip Generation	276,825 TSF	161	99	260	506	549	1,055	10,450
Pass-By Trips <sup>2</sup>	0/34%/24%	0	0	0	(180)	(179)	(359)	(2,508)
Net Trip Generation		161	99	260	326	370	696	7,942

<sup>1</sup> Trip generation rates based on Land Use 820 - "Shopping Center" from ITE *Trip Generation* (10<sup>th</sup> Edition).

<sup>2</sup> Pass-By rates based on Land Use 820 - "Shopping Center" from ITE *Trip Generation Handbook* (3<sup>rd</sup> Edition). Pass-By rates for the p.m. peak hour, and daily traffic. Daily pass-by rates have been assumed to be 10% less than the p.m. peak hour pass-by rate.

The Traffic Impact Analysis (TIA) for the proposed project forecasts 198 a.m. peak hour trips, 198 p.m. peak hour trips, and 2,483 daily trips. Table B compares the trips from the proposed warehouse use with the retail use. As shown in Table B, a retail use for the same size building would generate 62 trips more than the proposed warehouse project in the a.m. peak hour, 498 trips more than the project in the p.m. peak hour, and 5,459 more daily trips than the project.

**Table B – Trip Generation Comparison**

Land Use	A.M. Peak Hour	P.M. Peak Hour	Daily
Retail	260	696	7,942
Warehouse	198	198	2,483
<b>Difference in Trip Generation (Retail – Warehouse)</b>	<b>62</b>	<b>498</b>	<b>5,459</b>

The proposed project is anticipated to generate 50 daily truck trips. While the ITE Trip Generation Manual does not have any data related to truck trips from retail uses, the California Emissions Estimator Model (CalEEMod) states that approximately 3.9 percent of trips from retail uses are from trucks. Therefore, a retail building the same size as the proposed project is anticipated to generate approximately 310 daily truck trips. Therefore, the retail building would generate 260 more truck trips per day than the proposed project.