

## MEMORANDUM

**To:** Ross Geller - Applied Planning **JN 161137**  
**From:** Bob Matson - Michael Baker International  
**Date:** February 20, 2018  
**Subject:** Proposed Torrance Technology Park Project Trip Generation Analysis

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The proposed 410,000 square foot industrial Torrance Technology Park project is located south of 195<sup>th</sup> Street and east of Van Ness Avenue in the City of Torrance. The project site is currently approved for 351,360 square feet of general office by the City of Torrance as analyzed and documented in the City of Torrance 2000 Mitigated Negative Declaration (MND) covering the project site.

The purpose of this trip generation analysis memorandum is to derive the forecast trip generation of both the proposed 410,000 square foot industrial park project proposed by the project applicant and the approved 351,360 square feet of general office approved by the City of Torrance for the project site, and determine whether the proposed project is forecast to generate more, less, or the same trip generation as the City-approved project for the project site.

Subsequently, based on the trip generation analysis, it can be determined whether the proposed 410,000 square foot industrial park project is anticipated to result greater, less, or the same (or combination of) traffic impacts associated with the 351,360 feet of general office assumed for the project site as the documented in the applicable City of Torrance 2000 MND.

To calculate the forecast trip generation of both the proposed 410,000 square foot industrial park project and the approved 351,360 square feet of general office approved the project site, the corresponding Institute of Transportation Engineers (ITE) *Trip Generation 10<sup>th</sup> Edition (2017)* rates shown in Table 1 are utilized.

**Table 1**  
**ITE Trip Generation Rates for Proposed & Approved Project Site Land Use**

Land Use	ITE Code	Units	Daily Trip Rates	AM Peak Hour Trip Rates			PM Peak Hour Trip Rates		
				In	Out	Total	In	Out	Total
Industrial Park	130	TSF	3.37	0.32	0.08	0.40	0.08	0.32	0.40
General Office	710	TSF	9.74	1.00	0.16	1.16	0.18	0.97	1.15

**Note:** Source - Institute of Transportation Engineers (ITE) *Trip Generation 10<sup>th</sup> Edition 2017*; TSF = thousands of square feet

Table 2 summarizes the forecast daily trips, AM peak hour trips, and PM peak hour trips of the proposed 410,000 square foot industrial park project and the 351,360 square feet of general office approved the project site utilizing the ITE *Trip Generation 10<sup>th</sup> Edition (2017)* rates shown in Table 1.

**Table 2**  
**Forecast Trip Generation of Proposed & Approved Project Site Land Use**

Land Use	Quantity	Units	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Proposed Industrial Park Project	410.00	TSF	1,382	131	33	164	33	131	164
Approved General Office Project	351.36	TSF	3,422	351	56	407	63	341	404

**Note:** TSF = thousands of square feet

As shown in Table 2, the proposed 410,000 square foot industrial park project is forecast to generate approximately 1,382 daily trips, which includes approximately 164 AM peak hour trips and approximately 164 PM peak hour trips.

As also shown in Table 2, the approved 351,360 square foot of general office for the project site is forecast to generate approximately 3,422 daily trips, which includes approximately 407 AM peak hour trips and approximately 404 PM peak hour trips.

Hence, the proposed 410,000 square foot industrial park project is forecast to generate less daily trips, less AM peak hour trips, and less PM peak hour trips than the 351,360 square feet of general office approved for the project site.

Table 3 shows the forecast reduction in trip generation resulting from the proposed 410,000 square foot industrial park project when compared to the 351,360 square feet of general office approved for the project site.

**Table 3**  
**Forecast Reduction in Trip Generation Resulting From**  
**Proposed Project When Compared to Approved Project Site Land Use**

Daily Trip Reduction	AM Peak Hour Trip Reduction			PM Peak Hour Trips Reduction		
	In	Out	Total	In	Out	Total
2,040	220	23	243	30	210	240

As shown in Table 3, when compared to the 351,360 square feet of general office approved for the project site, the proposed 410,000 square foot industrial park project is forecast to result in approximately 2,040 less daily trips, which includes approximately 243 less AM peak hour trips and approximately 240 less PM peak hour trips.

The ITE *Trip Generation Handbook* documents that on average, approximately 13 percent of the trips generated by the Industrial Park land use category are truck trips. Since the ITE Trip Generation Handbook does not break down trucks by axle type, this analysis utilizes truck axle breakdown data documented in the *Fontana Truck Trip Generation Study (2003)* for the ITE Industrial Park land use category shown in Table 4.

**Table 4**  
**Industrial Park Truck Trip Generation Axle Breakdown**

Truck Axle Breakdown	Industrial Park (ITE Code 130) Axle Percentage
2 Axle Truck	7.9 percent
3 Axle Truck	7.1 percent
4+ Axle Truck	85.0 percent
Total	100.0 percent

**Note:** Source – *Fontana Truck Trip Generation Study, 2003*

As shown in Table 4, according to the *Fontana Truck Trip Generation Study (2003)*, 7.9 percent of Industrial Park truck trips consist of 2 axle trucks, 7.1 percent of Industrial Park truck trips consist of 3 axle trucks, and 85 percent of Industrial Park truck trips consist of 4 or more axle trucks.

Table 5 shows the forecast trip generation of the proposed 410,000 square foot industrial park project assuming 13 percent of the trips are truck trips (87 percent of the trips are passenger car trips), with the truck trips broken down by axle type assuming the percentages shown in Table 4.

**Table 5**  
**Forecast Trip Generation of Proposed 410,000 SF Industrial Park Project**

Vehicle Type	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
		In	Out	Total	In	Out	Total
Passenger Car	1,202	114	29	143	29	114	143
2 Axle Truck	14	1	0	1	0	1	1
3 Axle Truck	13	1	0	1	0	1	1
4+ Axle Truck	153	15	4	19	4	15	19
<b>Total Trips</b>	<b>1,382</b>	<b>131</b>	<b>33</b>	<b>164</b>	<b>33</b>	<b>131</b>	<b>164</b>

To account for the difference in trucks when compared to passenger cars in terms of size and movement, the Passenger Car Equivalent (PCE) trip factors shown in Table 6 are utilized to convert truck trips to passenger car trips.

**Table 6**  
**Passenger Car Equivalent (PCE) Factors**

Vehicle Type	Passenger Car Equivalent (PCE) Trip Factor
Passenger Car	1.0
2 Axle Truck	1.5
3 Axle Truck	2.0
4+ Axle Truck	3.0

**Note:** Source – *Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County, 2016*

Table 7 shows the forecast PCE trip generation of the proposed 410,000 square foot industrial park project utilizing the PCE trip conversion factors shown in Table 6.

**Table 7**  
**Forecast PCE Trip Generation of Proposed 410,000 SF Industrial Park Project**

Vehicle Type	Daily PCE Trips	AM Peak Hour PCE Trips			PM Peak Hour PCE Trips		
		In	Out	Total	In	Out	Total
Passenger Vehicle	1,202	114	29	143	29	114	143
2 Axle Truck	21	2	0	2	0	2	2
3 Axle Truck	26	2	0	2	0	2	2
4+ Axle Truck	459	45	12	57	12	45	57
<b>Total PCE Trips</b>	<b>1,708</b>	<b>163</b>	<b>41</b>	<b>204</b>	<b>41</b>	<b>163</b>	<b>204</b>

Note: PCE = Passenger Car Equivalent

As shown in Table 7, when accounting for PCE truck trip conversion, the proposed industrial park project is forecast to generate approximately 1,708 daily PCE trips, which includes approximately 204 AM peak hour PCE trips and approximately 204 PM peak hour PCE trips.

Table 8 summarizes the forecast daily PCE trips, AM peak hour PCE trips, and PM peak hour PCE trips of the proposed 410,000 square foot industrial park project and the 351,360 square feet of general office approved for the project site.

**Table 8**  
**Forecast PCE Trip Generation of Proposed & Approved Project Site Land Use**

Land Use	Quantity	Units	Daily PCE Trips	AM Peak Hour PCE Trips			PM Peak Hour PCE Trips		
				In	Out	Total	In	Out	Total
Proposed Industrial Park Project	410.00	TSF	1,708	163	41	204	41	163	204
Approved General Office Project	351.36	TSF	3,422	351	56	407	63	341	404

Note: Note: PCE = Passenger Car Equivalent, TSF = thousands of square feet

As shown in Table 8, when converted to PCE trip generation, the proposed 410,000 square foot industrial park project is forecast to generate less daily trips, less AM peak hour trips, and less PM peak hour trips than the 351,360 square feet of general office approved for the project site.

Assuming PCE trip conversion, Table 9 shows the forecast reduction in trip generation resulting from the proposed 410,000 square foot industrial park project when compared to the 351,360 square feet of general office approved for the project site.

**Table 9**  
**Forecast Reduction in Trip Generation Resulting From Proposed Project**  
**When Compared to Approved Project Site Land Use Assuming PCE Conversion**

Daily Trip Reduction	AM Peak Hour Trip Reduction			PM Peak Hour Trips Reduction		
	In	Out	Total	In	Out	Total
1,714	188	15	203	22	178	200

As shown in Table 9, when accounting for PCE trip conversion, the proposed 410,000 square foot industrial park project in comparison to the 351,360 square feet of general office approved for the project site is forecast to result in approximately 1,714 less daily trips, which includes approximately 203 less AM peak hour trips and approximately 200 less PM peak hour trips.

Since the proposed 410,000 square foot industrial park project is forecast to generate less daily trips and less peak hour trips than the 351,360 square feet of general office approved for the project site, the proposed 410,000 square foot general industrial park project would therefore be expected to generate the same or less traffic impacts than the approved 351,360 square foot general office for the project site analyzed and documented in the City of Torrance 2000 MND covering the project site.