

ATTACHMENT C

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September 28, 2015

Ms. Nicole Criste
Terra Nova Planning & Research
42635 Melanie Place, #101
Palm Desert, CA 92211

SUBJECT: PROJECT JUPITER TRIP GENERATION EVALUATION

Dear Ms. Nicole Criste:

The firm of Urban Crossroads, Inc. is pleased to submit the following Trip Generation Evaluation for the proposed Project Jupiter development (referred to as "Project") located on the southwest corner of Navajo Road and Lafayette Street in the Town of Apple Valley. The site is located within the North Apple Valley Industrial Specific Plan (referred to as "SP"). The traffic study that was prepared for the SP assumed the development of industrial park on the subject property (North Apple Valley Specific Plan CMP Traffic Impact Analysis (Revised), prepared by Urban Crossroads, Inc., April 3, 2007). However, the Project proposes to develop a 1,360,875 square foot high-cube warehouse/distribution center (see Exhibit 1). As such, the purpose of this trip generation evaluation is to compare the trip generation for proposed Project to that previously assumed and analyzed in the North Apple Valley Specific Plan CMP Traffic Impact Analysis (Revised) (referred to as "2007 Traffic Study") to determine if any additional traffic analysis would be required.

PROJECT DESCRIPTION

The proposed Project includes the development of a 1,360,875 square feet of high-cube warehouse/distribution center use on a vacant parcel within TAZ 1 (Block 21) of the SP.

PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development. The trip generation rates used for this assessment are based upon information collected by the Institute of Transportation Engineers (ITE) as provided in their Trip Generation manual (9th Edition, 2012). The ITE Trip Generation manual is a nationally recognized source for estimating site specific trip generation.

PROPOSED PROJECT: HIGH-CUBE DISTRIBUTION CENTER/WAREHOUSE

For purposes of this assessment, the following ITE land use code and vehicle mixes have been utilized:

- ITE land use code 152 (High-Cube Warehouse) has been used to derive site specific trip generation estimates for Building 3. Total vehicle mix percentages were also obtained from the ITE Trip Generation manual in conjunction with the South Coast Air Quality Management District's (SCAQMD) recommended truck mix, by axle type. The SCAQMD is currently recommending the use of the ITE Trip Generation manual in conjunction with their truck mix by axle-type to better quantify trip rates associated with local warehouse and distribution projects, as truck emission represent more than 90 percent of air quality impacts from these projects. This recommended procedure has been utilized for the purposes of this analysis in effort to be consistent with other technical studies being prepared for the Project. The percentage of trucks has been determined from the table shown on page 267 of the ITE *Trip Generation* manual. As shown on page 267, the truck trip generation rate for weekday daily traffic is 0.64 or 38.1% of the total traffic. Similarly, the truck trip generation rate for the weekday AM peak hour is 0.03 (27.3% of the total traffic) and 0.04 (or 33.3% of the total traffic) for the weekday PM peak hour. Trip generation for heavy trucks was further broken down by truck type (or axle type). The total truck percentage is comprised of 3 different truck types: 2-axle, 3-axle, and 4+-axle trucks. For the purposes of this analysis, the percentage of trucks, by axle type, were obtained from the SCAQMD interim recommended truck mix. The SCAQMD has recently performed surveys of existing facilities and compiled the data to provide interim guidance on the mix of heavy trucks for these types of high-cube warehousing/distribution facilities. Based on this interim guidance from the SCAQMD, the following truck fleet mix was utilized for the purposes of estimating the truck trip generation for the site: 22.0% of the total trucks as 2-axle trucks, 17.7% of the total trucks as 3-axle trucks, and 60.3% of the total trucks as 4+-axle trucks.

High-cube warehouse/distribution centers are a unique land use type within the larger, more generalized industrial land use category. ITE's most recent edition of the *Trip Generation* manual (ITE 9th Edition), published in 2012, defines "high-cube warehouses" as "...used for storage of materials, goods and merchandise prior to their distribution to retail outlets, distribution centers or other warehouses. These facilities are typically characterized by ceiling heights of at least 24 feet with small employment counts due to a high level of mechanization." The average square footage for the sites surveyed for high-cube warehouse/distribution center (Land Use 152) use is above 500,000 square feet. The number of sites observed in the compilation of this data ranges from 57-70 sites of which more than 20 sites exceed 1,000,000 square feet in gross floor area. Although the 2007 Traffic Study evaluated the proposed Project using the Industrial Park (ITE Land Use Code 130) trip generation rates, the recently added High-Cube Warehouse/Distribution Center (ITE Land Use Code 152) land use is a more appropriate use for the building size of the proposed Project.

Lastly, passenger car equivalent (PCE) factors were applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). PCEs allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, to be used for the purposes of capacity and level of service analyses. The PCE factors are consistent with the recommended PCE factors in Appendix C of the *San Bernardino County Congestion Management Program (CMP)*, 2005 Update.

As shown on Table 1, the proposed Project is anticipated to generate a net total of 211 net PCE AM peak hour trips and 244 net PCE PM peak hour trips (see Table 4-4).

CURRENTLY APPROVED LAND USE FROM SP: INDUSTRIAL PARK

Table 2 summarizes the resulting trip generation estimates based on the previously approved land use (Industrial Park). The traffic study previously evaluated Industrial Park use on the same vacant parcel proposed to be occupied by the Project. The ITE *Trip Generation* manual defines Industrial Park uses as “containing a number of industrial or related facilities. They are characterized by a mix of manufacturing, service, and warehouse facilities with a wide variation in the proportion of each type of use from one location to another. Many industrial parks contain highly diversified facilities – some with large number of small businesses and others with one or two dominant industries.” The average square footage for the sites surveyed for industrial park (Land Use 130) use is between 369,000 to 435,000 square feet. The number of sites observed in the compilation of this data ranges from 43-52 sites of which only 3 sites exceed 1,000,000 square feet in gross floor area.

The currently approved land use (Industrial Park) is anticipated to generate a net total of approximately 225 PCE AM peak hour trips and 249 PCE PM peak hour trips.

TRIP GENERATION COMPARISON

As shown in Table 3, the development of the proposed Project is anticipated to generate 15 fewer PCE AM peak hour trip and 5 fewer PCE PM peak hour trips as compared to the land use and intensity previously evaluated and approved in the 2007 Traffic Study. As such, traffic impacts are anticipated to be the same or less than those previously identified in the 2007 Traffic Study with the proposed high-cube warehouse/distribution center.

If you have any questions, please contact me directly at (949) 336-5978.

Respectfully submitted,

URBAN CROSSROADS, INC.



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Principal



Charlene So, PE
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Table 1

Proposed Project Trip Generation Summary

Land Use	Units ²	ITE LU Code	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Trip Generation Rates:¹								
High-Cube Warehouse/Distribution Center ^{3,4}	TSF	152	0.076	0.034	0.110	0.037	0.083	0.120
		Passenger Cars	0.055	0.025	0.080	0.025	0.055	0.080
		2-Axle Trucks (PCE = 1.5)	0.007	0.003	0.010	0.004	0.009	0.013
		3-Axle Trucks (PCE = 2.0)	0.007	0.003	0.011	0.004	0.010	0.014
		4-Axle+ Trucks (PCE = 3.0)	0.037	0.017	0.054	0.022	0.050	0.072
Land Use	Quantity	Units ²	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Trip Generation Summary:								
High-Cube Warehouse/Distribution Center	1,360.875	TSF						
Passenger Cars:			75	34	109	34	75	109
Truck Trips:								
2-axle:			9	4	13	6	12	18
3-axle:			10	4	14	6	13	19
4+-axle:			51	23	74	30	68	98
- Net Truck Trips (PCE) ^{1,3}			70	32	102	42	94	136
TOTAL NET TRIPS (PCE)⁵			145	65	211	76	169	244

¹ Trip Generation Source: Institute of Transportation Engineers (ITE), *Trip Generation Manual*, Ninth Edition (2012).

² TSF = thousand square feet

³ Vehicle Mix Source: Total truck percentage source from ITE *Trip Generation* manual. Truck mix (by axle type) source from SCAQMD.

AM peak hour = 72.7% passenger cars, 6.01% 2-Axle trucks, 4.83% 3-Axle trucks, 16.46% 4-Axle trucks

PM peak hour = 66.7% passenger cars, 7.33% 2-Axle trucks, 5.89% 3-Axle trucks, 20.08% 4-Axle trucks

ADT = 61.9% passenger cars, 8.38% 2-Axle trucks, 6.74% 3-Axle trucks, 22.98% 4-Axle trucks

⁴ PCE rates are per SANBAG.

⁵ TOTAL NET TRIPS (PCE) = Passenger Cars + Net Truck Trips (PCE).

Table 2

Currently Approved Land Use Trip Generation Summary

Land Use	Units ²	ITE LU Code	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Trip Generation Rates:¹								
Industrial Park ^{3,4}	TSF	130						
		Passenger Cars	0.038	0.018	0.056	0.014	0.034	0.048
		Trucks	0.055	0.055	0.110	0.051	0.084	0.135
Land Use	Quantity	Units ²	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Trip Generation Summary:								
Industrial Park	1,360.875	TSF						
Passenger Cars:			52	24	76	18	47	65
Truck Trips: ^{1,3}			75	75	149	69	115	184
TOTAL NET TRIPS (PCE)⁵			127	99	225	87	162	249

¹ Trip Generation Source: City of Fontana [Truck Trip Generation Study](#) for LU 130, August 2003. Consistent with [North Apple Valley SP TIA](#).

² TSF = thousand square feet

³ Vehicle Mix Source: City of Fontana Truck Trip Generation Study for LU 130, August 2003.

⁴ PCE rates are per SANBAG.

⁵ TOTAL NET TRIPS (PCE) = Passenger Cars + Net Truck Trips (PCE).

Table 3

Trip Generation Comparison

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Currently Proposed ¹	145	65	211	76	169	244
Approved Project Land Use ²	127	99	225	87	162	249
Variance³	18	-33	-15	-12	7	-5

¹ Currently proposed Project trip generation (see Table 1).

² Trip generation based on currently approved land use/quantity (see Table 2).

³ Variance = Proposed - Currently Approved.