URBAN CROSSROADS

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Ms. Tracy Zinn
T&B Planning, Inc.
3200 El Camino Real, Suite 100
Irvine, CA 92602

SUBJECT: KAISER COMMERCE CENTER WAREHOUSE TRIP GENERATION ASSESSMENT

Dear Ms. Tracy Zinn:

Urban Crossroads, Inc. is pleased to provide the following Trip Generation Assessment for Kaiser Commerce Center Warehouse development which is located south of San Bernardino Avenue, between Commerce Drive and Calabash Avenue in unincorporated County of San Bernardino. The purpose of this work effort is to assess the potential changes in trip generation associated with the uses currently being contemplated for the Project in comparison to those evaluated in the Kaiser Commerce Center Traffic Impact Analysis (August 2019).

BACKGROUND

The Kaiser Commerce Center Traffic Impact Analysis (referred to as 2019 Traffic Study) assumed the Project would consist of 165,324 square feet of warehousing use. However, the Project is currently proposing to develop 132,259 square feet of warehousing use (80% of the overall square footage) and 33,065 square feet of high-cube cold storage warehouse (20% of the overall square footage). The following trip generation assessment is to determine if any additional changes or revisions are necessary to the 2019 Traffic Study.

PROPOSED PROJECT FROM 2019 TRAFFIC STUDY

The 2019 Traffic Study evaluated 165,324 square feet of warehousing use. The trip generation from the 2019 Traffic Study was calculated based on the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017), the ITE Trip Generation Handbook (3rd Edition, 2017), and the South Coast Air Quality Management District (SCAQMD) Warehouse Truck Trip Study Data Results and Usage (2014). As shown in Table 2, the 2019 Traffic Study concluded that the Project would generate 288 trip-ends per day, with 28 trips generated during the AM peak hour and 31 trips generated during the PM peak hour (actual vehicles).

TABLE 1: ITE TRIP GENERATION RATES, 10TH EDITION

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Actual Vehicle Trip Generation Rates									
Warehousing[3,4]	TSF	150	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars (80.0%)			0.105	0.031	0.136	0.041	0.111	0.152	1.392
2-Axle Trucks (3.34%)			0.004	0.001	0.006	0.002	0.005	0.006	0.058
3-Axle Trucks (4.14%)			0.005	0.002	0.007	0.002	0.006	0.008	0.072
4+-Axle Trucks (12.52%)			0.016	0.005	0.021	0.006	0.017	0.024	0.218
High-Cube Cold Storage Warehouse[4]	TSF	157	0.085	0.025	0.110	0.032	0.088	0.120	2.120
Passenger Cars (AM-69.2%; PM-78.3%; Daily-67.8%)			0.059	0.018	0.076	0.025	0.069	0.094	1.437
2-Axle Trucks (AM-10.69%; PM-7.53%; Daily-11.17%)			0.009	0.003	0.012	0.002	0.007	0.009	0.237
3-Axle Trucks (AM-3.39%; PM-2.39%; Daily-3.54%)			0.003	0.001	0.004	0.001	0.002	0.003	0.075
4-Axle+ Trucks (AM-16.76%; PM-11.80%; Daily-17.52%)			0.014	0.004	0.018	0.004	0.010	0.014	0.371
Passenger Car Equivalent (PCE) Trip Generation Rates[5]									
Warehousing[3,4]	TSF	150	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars (80.0%)			0.105	0.031	0.136	0.041	0.111	0.152	1.392
2-Axle Trucks (3.34%) (PCE = 1.5)			0.007	0.002	0.009	0.003	0.007	0.010	0.087
3-Axle Trucks (4.14%) (PCE = 2.0)			0.011	0.003	0.014	0.004	0.011	0.016	0.144
4+-Axle Trucks (12.52%) (PCE = 3.0)			0.049	0.015	0.064	0.019	0.052	0.071	0.654
High-Cube Cold Storage Warehouse[4]	TSF	157	0.085	0.025	0.110	0.032	0.088	0.120	2.120
Passenger Cars (AM-69.2%; PM-78.3%; Daily-67.8%)			0.059	0.018	0.076	0.025	0.069	0.094	1.437
-Axle Trucks (AM-10.69%; PM-7.53%; Daily-11.17%) (PCE = 1.5)			0.014	0.004	0.018	0.004	0.010	0.014	0.355
3-Axle Trucks (AM-3.39%; PM-2.39%; Daily-3.54%) (PCE = 2.0)			0.006	0.002	0.007	0.002	0.004	0.006	0.150
xle+ Trucks (AM-16.76%; PM-11.80%; Daily-17.52%) (PCE = 3.0)			0.043	0.013	0.055	0.011	0.031	0.042	1.114

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] TSF = thousand square feet

[3] Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Handbook, Third Edition (September 2017).

[4] Truck Mix Source: South Coast Air Quality Management District (SCAQMD) Warehouse Truck Trip Study Data Results and Usage (2014).
Normalized % - Without Cold Storage: 16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.6% 4-Axle trucks
Normalized % - With Cold Storage: 34.7% 2-Axle trucks, 11.0% 3-Axle trucks, 54.3% 4-Axle trucks

TABLE 2: PROJECT TRIP GENERATION SUMMARY FROM 2019 TRAFFIC STUDY

Land Use	Quantity	Units[1]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Actual Vehicles									
Kaiser Commerce Center (2019 TIA)	165.324	TSF							
Passenger Cars:			17	5	22	7	18	25	230
Truck Trips:									
2-axle:			1	0	1	0	1	1	10
3-axle:			1	0	1	0	1	1	12
4+-axle:			3	1	4	1	3	4	36
- Truck Trips			*5*	*1*	*6*	*1*	*5*	*6*	*58*
Total Trips (Actual Vehicles)[2]			***22***	***6***	***28***	***8***	***23***	***31***	***288***
Passenger Car Equivalent (PCE)									
Kaiser Commerce Center (2019 TIA)	165.324	TSF							
Passenger Cars:			17	5	22	7	18	25	230
Truck Trips:									
2-axle (PCE = 1.5)			1	0	1	0	1	1	14
3-axle (PCE = 2.0)			2	1	3	1	2	3	24
4+-axle (PCE = 3.0)			8	2	10	3	9	12	108
- Truck Trips (PCE)			*11*	*3*	*14*	*4*	*12*	*16*	*146*
Total Trips (PCE)[2]			***28***	***8***	***36***	***11***	***30***	***41***	***376***

[1] TSF = thousand square feet

[2] Total Trips = Passenger Cars + Truck Trips

CURRENTLY PROPOSED PROJECT

The Project is proposing to assume 132,259 square feet of warehousing use (80% of the overall square footage) and 33,065 square feet of high-cube cold storage warehouse (20% of the overall square footage).

The following ITE land use codes and vehicle mixes have been utilized for calculating trip generation for the proposed Project:

- ITE land use code 150 (Warehousing) has been used to derive site specific trip generation estimates for up to 132,259 square feet (80% of the overall square footage), consistent with the trip generation rate currently utilized in the 2019 Traffic Study for the Project. The ITE Trip Generation Handbook (3rd Edition, 2017) identifies a 20% mix of heavy trucks, however, does not provide a breakdown of the 20% further by axle type. As such, the South Coast Air Quality Management District (SCAQMD) Warehouse Truck Trip Study Data Results and Usage (2014) for warehouse trucks has been utilized for the truck mix (without cold storage): 16.7% 2-axle trucks, 20.7% 3-axle trucks, and 62.6% 4+-axle trucks.

- ITE land use code 157 (High-Cube Cold Storage Warehouse) has been used to derive site specific trip generation estimates for up to 33,065 square feet (20% of the overall square footage). High-cube cold storage warehouses include warehouses characterized by the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. High-cube cold storage warehouses are facilities typified by temperature-controlled environments for frozen food or other perishable products. The High-Cube Cold Storage Warehouse vehicle mix (passenger cars versus trucks) has been obtained from the ITE's High Cube Warehouse Vehicle Trip Generation Analysis (dated October 2016). This study provides the following vehicle mix: AM Peak Hour: 69.2% passenger cars and 30.8% trucks; PM Peak Hour: 78.3% passenger cars and 21.7% trucks; Weekday Daily: 67.8% passenger cars and 32.2% trucks. The truck percentages were further broken down by axle type per the following SCAQMD recommended truck mix (with cold storage): 2-Axle = 34.7%; 3-Axle = 11.0%; 4+-Axle = 54.3%.

Table 1 identifies the trip generation rates applied to the currently proposed Project. The resulting trip generation for the proposed Project is shown on Table 3. As shown in Table 3, the proposed Project is calculated to generate 302 trip-ends per day with 26 AM peak hour trips and 28 PM peak hour trips (actual vehicles).

TABLE 3: CURRENTLY PROPOSED PROJECT TRIP GENERATION SUMMARY

Land Use	Quantity	Units[1]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Actual Vehicles									
High-Cube Cold Storage Warehouse	33.065	TSF							
Passenger Cars:			2	1	3	1	2	3	48
Truck Trips:									
2-axle:			0	0	0	0	0	0	8
3-axle:			0	0	0	0	0	0	2
4+-axle:			0	0	0	0	0	0	12
- Truck Trips			0	0	0	0	0	0	22
COLD STORAGE TOTAL TRIPS (Actual Vehicles)[2]			**2**	**1**	**3**	**1**	**2**	**3**	**70**
Warehousing	132.259	TSF							
Passenger Cars:			14	4	18	5	15	20	184
Truck Trips:									
2-axle:			1	0	1	0	1	1	8
3-axle:			1	0	1	0	1	1	10
4+-axle:			2	1	3	1	2	3	30
- Net Truck Trips			4	1	5	1	4	5	48
WAREHOUSING TOTAL TRIPS (Actual Vehicles)[2]			**18**	**5**	**23**	**6**	**19**	**25**	**232**
Total Proposed Project (Actual Vehicles)			**20**	**6**	**26**	**7**	**21**	**28**	**302**

TABLE 3 (CONTINUED): CURRENTLY PROPOSED PROJECT TRIP GENERATION SUMMARY

Passenger Car Equivalent (PCE)									
High-Cube Cold Storage Warehouse	33.065	TSF							
Passenger Cars:			2	1	3	1	2	3	48
Truck Trips:									
2-axle:			0	0	0	0	0	0	12
3-axle:			0	0	0	0	0	0	6
4+-axle:			1	0	1	0	1	1	38
- Net Truck Trips			1	0	1	0	1	1	56
COLD STORAGE TOTAL NET TRIPS (PCE) [2]			**3**	**1**	**4**	**1**	**3**	**4**	**104**
Warehousing	132.259	TSF							
Passenger Cars:			14	4	18	5	15	20	184
Truck Trips:									
2-axle:			1	0	1	0	1	1	12
3-axle:			1	0	1	1	2	3	20
4+-axle:			7	2	9	3	7	10	86
- Net Truck Trips			9	2	11	4	10	14	118
WAREHOUSING TOTAL NET TRIPS (PCE) [2]			**23**	**6**	**29**	**9**	**25**	**34**	**302**
Total Proposed Project (PCE)			**26**	**7**	**33**	**10**	**28**	**38**	**406**

[1] TSF = thousand square feet

[2] TOTAL TRIPS = Passenger Cars + Truck Trips.

PROJECT TRIP GENERATION COMPARISON

Comparisons for the Project trip generation have been provided in both actual vehicles and passenger car equivalent (PCE) since the operations analysis in the 2019 Traffic Study is PCE-based. As shown in Table 4, the development of the proposed Project is anticipated to generate 30 more PCE-based trip-ends per day with 3 fewer PCE AM and 3 fewer PCE PM peak hour trips as compared to the Project evaluated in the 2019 Traffic Study.

TABLE 4: TRIP GENERATION COMPARISON

	AM Peak Hour			PM Peak Hour			
Project	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Daily**
2019 Traffic Study (Actual Vehicles)	22	6	28	8	23	31	288
Currently Proposed (Actual Vehicles)	20	6	26	7	21	28	302
VARIANCE (Actual Vehicles)	**-2**	**0**	**-2**	**-1**	**-2**	**-3**	**14**
2019 Traffic Study (PCE)	28	8	36	11	30	41	376
Currently Proposed (PCE)	26	7	33	10	28	38	406
VARIANCE (PCE)	**-2**	**-1**	**-3**	**-1**	**-2**	**-3**	**30**

CONCLUSION

The San Bernardino County Transportation Impact Study Guidelines (dated July 9, 2019) identifies a traffic impact analysis should be required if one or more of the following criteria are met:

- If a project generates 100 or more trips without consideration of pass-by trips during any peak hour
- If a project is located within 300 feet of
    - The intersection of two streets designated as Collector or higher in the County's General Plan or the Department's Master Plan **or**
    - An impacted intersection as determined by the Traffic Division
- If this project creates safety or operational concerns

Although the proposed Project results in an increase to the daily traffic from the Project evaluated in the 2019 Traffic Study, the increase would not affect the findings in the 2019 Traffic Study as all operations analyses were conducted for the morning and evening peak hours (no analysis of daily traffic). Since the proposed Project would result in a net reduction to the AM and PM peak hour trips in comparison to the Project evaluated in the 2019 Traffic Study, the impacts are anticipated to be the same or less than those previously identified at the study area intersections. Therefore, no additional traffic-related impacts are anticipated as a result of the development that is currently being contemplated in addition to those previously disclosed in the 2019 Traffic Study.

If you have any questions, please contact me directly at (949) 336-5982.

Respectfully submitted,

URBAN CROSSROADS, INC.

Charlene So

Charlene So, PE
Associate Principal