

April 18, 2022

Mr. Don Young  
City of Redlands  
35 Cajon Street  
Redlands, CA 92373

**SUBJECT: LBA REDLANDS WAREHOUSE TRAFFIC ANALYSIS SCOPING AGREEMENT**

Dear Mr. Don Young:

The firm of Urban Crossroads, Inc. is pleased to provide this letter documenting the recommended scoping / assumptions for the proposed LBA Redlands Warehouse redevelopment (**Project**), which is located at 350 Iowa Street in the City of Redlands. The project location with respect to the surrounding area is illustrated on Exhibit 1.

**EXHIBIT 1: LOCATION MAP**

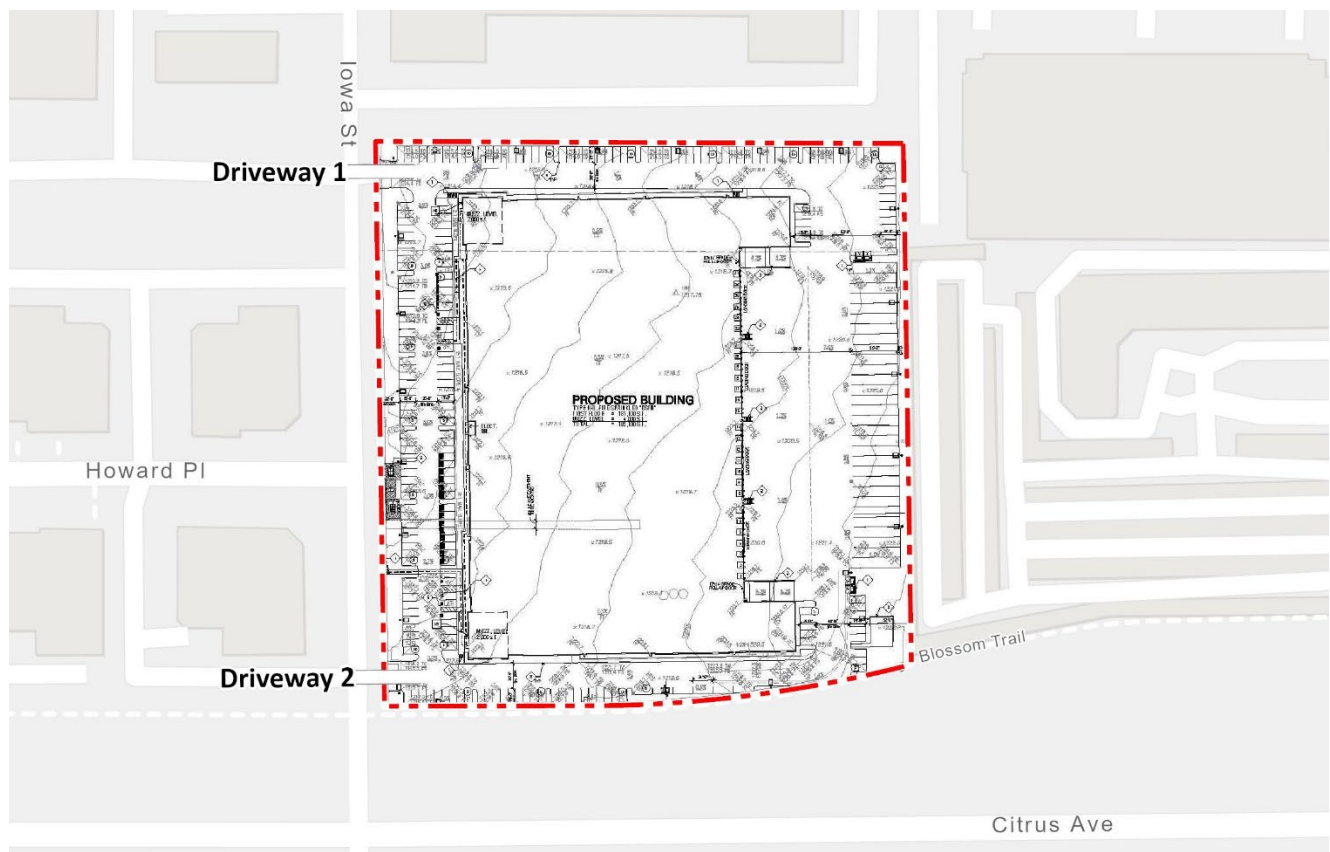


Our goal is to obtain comments from City of Redlands staff to ensure that the traffic study fully addresses the potential deficiencies of the proposed Project. The remainder of this letter describes the proposed analysis methodology, project trip generation, trip distribution, and project traffic assignment/project trips on the surrounding roadway network, which has been used, along with inputs from City staff to establish the proposed project study area. It should be noted that this scoping agreement has been prepared in accordance with the County of San Bernardino Congestion Management Program (CMP) traffic study guidelines (Appendix B) and the City's Traffic Performance Criteria.

### PROPOSED PROJECT

The Project consists of the development of a 185,100 square foot warehouse building. For the purposes of this analysis, the trip generation will be calculated assuming 20% general light industrial use (37,020 square feet) and 80% general warehousing use (148,080 square feet). The Project is anticipated to be built out and occupied by the year 2024. The preliminary site plan is illustrated on Exhibit 2. The Project will have access to Iowa Street via two driveways.

**EXHIBIT 2: PRELIMINARY SITE PLAN**



## **VMT ANALYSIS**

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which requires all lead agencies to adopt VMT as a replacement for automobile delay-based level of service (LOS) as the new measure for identifying transportation impacts for land use projects. This statewide mandate took effect July 1, 2020. To aid in this transition, the Governor's Office of Planning and Research (OPR) released a [Technical Advisory on Evaluating Transportation Impacts in CEQA](#) (December of 2018). The VMT analysis prepared for this Project will be in accordance with the City's VMT guidelines (adopted June 2020). The VMT analysis will be prepared as a separate document from the LOS-based traffic study. A VMT letter report (separate from the LOS-based traffic study) will be provided to summarize the VMT results.

## **LOS ANALYSIS**

A level of service (LOS) analysis is required because of Measure U, a voter approved initiative regulating traffic impact due to development projects. An analysis must be done to compare LOS for Existing and Existing plus Project to determine if traffic improvements are necessary as a result of the Project.

## **TRIP GENERATION ASSUMPTIONS**

Trip generation estimates for the proposed Project have been developed using data from the Institute of Transportation Engineers (ITE) [Trip Generation Manual](#) (11<sup>th</sup> Edition, 2021). The trip generation rates used to estimate Project traffic are summarized in Table 1.

The following ITE land use codes and vehicle mixes will be utilized for the Project:

- ITE land use code 110 (General Light Industrial) has been used to derive site specific trip generation estimates for up to 37,020 square feet of the proposed Project. A light industrial facility is a free-standing facility devoted to a single use that has an emphasis on activities other than manufacturing. Typically, there is minimum office space. The vehicle mix has been obtained from the ITE's [Trip Generation Manual](#). The truck percentages were further broken down by axle type per the following SCAQMD recommended truck mix: 2-Axle = 16.7%; 3-Axle = 20.7%; 4+-Axle = 62.6%.
- ITE land use code 150 (Warehousing) has been used to derive site specific trip generation estimates for up to 148,080 square feet of the proposed Project. A warehouse is primarily devoted to the storage of materials but may also include office and maintenance areas. The vehicle mix has been obtained from the ITE's [Trip Generation Manual](#). The truck percentages were further broken down by axle type per the following SCAQMD recommended truck mix: 2-Axle = 16.7%; 3-Axle = 20.7%; 4+-Axle = 62.6%.

**TABLE 1: TRIP GENERATION RATES**

Land Use <sup>1</sup>	Units <sup>2</sup>	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
<b>Actual Vehicle Trip Generation Rates</b>									
General Light Industrial <sup>3</sup>	TSF	110	0.651	0.089	0.740	0.091	0.559	0.650	4.870
Passenger Cars			0.642	0.088	0.730	0.090	0.550	0.640	4.620
2-Axle Trucks			0.001	0.001	0.002	0.001	0.001	0.002	0.042
3-Axle Trucks			0.001	0.001	0.002	0.001	0.001	0.002	0.052
4+-Axle Trucks			0.004	0.002	0.006	0.003	0.003	0.006	0.157
Warehousing <sup>3</sup>	TSF	150	0.131	0.039	0.170	0.050	0.130	0.180	1.710
Passenger Cars			0.116	0.034	0.150	0.042	0.108	0.150	1.110
2-Axle Trucks			0.002	0.001	0.003	0.003	0.002	0.005	0.100
3-Axle Trucks			0.002	0.002	0.004	0.003	0.003	0.006	0.124
4+-Axle Trucks			0.007	0.006	0.013	0.010	0.009	0.019	0.376
<b>Passenger Car Equivalent (PCE) Trip Generation Rates<sup>4</sup></b>									
General Light Industrial <sup>3</sup>	TSF	110	0.651	0.089	0.740	0.091	0.559	0.650	4.870
Passenger Cars			0.642	0.088	0.730	0.090	0.550	0.640	4.620
2-Axle Trucks (PCE = 1.5)			0.002	0.001	0.003	0.002	0.001	0.003	0.063
3-Axle Trucks (PCE = 2.0)			0.002	0.002	0.004	0.002	0.002	0.004	0.104
4+-Axle Trucks (PCE = 3.0)			0.012	0.007	0.019	0.009	0.010	0.019	0.470
Warehousing <sup>3</sup>	TSF	150	0.131	0.039	0.170	0.050	0.130	0.180	1.710
Passenger Cars			0.116	0.034	0.150	0.042	0.108	0.150	1.110
2-Axle Trucks (PCE = 1.5)			0.003	0.002	0.005	0.005	0.003	0.008	0.150
3-Axle Trucks (PCE = 2.0)			0.004	0.004	0.008	0.006	0.006	0.012	0.248
4+-Axle Trucks (PCE = 3.0)			0.021	0.017	0.038	0.030	0.026	0.056	1.127

<sup>1</sup> Trip Generation & Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

<sup>2</sup> TSF = thousand square feet

<sup>3</sup> Truck Mix: South Coast Air Quality Management District’s (SCAQMD) recommended truck mix, by axle type.  
 Normalized % - Without Cold Storage: 16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.6% 4-Axle trucks.

<sup>4</sup> PCE factors: 2-axle = 1.5; 3-axle = 2.0; 4+-axle = 3.0.

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 B of the San Bernardino County Congestion Management Program (CMP) (2016 Update). As shown on Table 2, the Project is anticipated to generate a net total of approximately 436 two-way trips per day with 51 AM peak hour trips and 47 PM peak hour trips. The Project trip generation summarized in Table 3 are reflected in PCE and will be utilized for the operations analysis.

**TABLE 2: PROJECT TRIP GENERATION SUMMARY (ACTUAL VEHICLES)**

Land Use	Quantity Units <sup>1</sup>	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
<b>Actual Vehicles:</b>								
General Light Industrial	37.020 TSF							
Passenger Cars:		24	3	27	3	20	23	172
2-axle Trucks:		0	0	0	0	0	0	2
3-axle Trucks:		0	0	0	0	0	0	2
4+-axle Trucks:		0	0	0	0	0	0	6
Total Truck Trips (Actual Vehicles):		0	0	0	0	0	0	10
<b>Total Trips (Actual Vehicles)<sup>2</sup></b>		<b>24</b>	<b>3</b>	<b>27</b>	<b>3</b>	<b>20</b>	<b>23</b>	<b>182</b>
Warehousing	148.080 TSF							
Passenger Cars:		17	5	22	6	16	22	164
2-axle Trucks:		0	0	0	0	0	0	16
3-axle Trucks:		0	0	0	0	0	0	18
4+-axle Trucks:		1	1	2	1	1	2	56
Total Truck Trips (Actual Vehicles):		1	1	2	1	1	2	90
<b>Total Trips (Actual Vehicles)<sup>2</sup></b>		<b>18</b>	<b>6</b>	<b>24</b>	<b>7</b>	<b>17</b>	<b>24</b>	<b>254</b>
Passenger Cars:		41	8	49	9	36	45	336
Trucks:		1	1	2	1	1	2	100
<b>Project Total Trips (Actual Vehicles)<sup>2</sup></b>		<b>42</b>	<b>9</b>	<b>51</b>	<b>10</b>	<b>37</b>	<b>47</b>	<b>436</b>

<sup>1</sup> TSF = thousand square feet

<sup>2</sup> Total Trips = Passenger Cars + Truck Trips.

**TABLE 3: PROJECT TRIP GENERATION SUMMARY (PCE)**

Land Use	Quantity Units <sup>1</sup>	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
<b>Passenger Car Equivalent (PCE):</b>								
General Light Industrial	37.020 TSF							
Passenger Cars:		24	3	27	3	20	24	172
2-axle Trucks:		0	0	0	0	0	0	2
3-axle Trucks:		0	0	0	0	0	0	4
4+-axle Trucks:		0	0	1	0	0	1	18
Total Truck Trips (PCE):		0	0	0	0	0	0	24
<b>Total Trips (PCE)<sup>2</sup></b>		<b>24</b>	<b>3</b>	<b>27</b>	<b>3</b>	<b>20</b>	<b>24</b>	<b>196</b>
Warehousing	148.080 TSF							
Passenger Cars:		17	5	22	6	16	22	164
2-axle Trucks:		0	0	0	1	0	1	22
3-axle Trucks:		1	1	2	1	1	2	38
4+-axle Trucks:		3	2	5	4	4	8	168
Total Truck Trips (PCE):		4	3	7	6	5	11	228
<b>Total Trips (PCE)<sup>2</sup></b>		<b>21</b>	<b>8</b>	<b>29</b>	<b>12</b>	<b>21</b>	<b>33</b>	<b>392</b>
Passenger Cars:		41	8	49	9	36	46	336
Trucks:		4	3	7	6	5	11	252
<b>Project Total Trips (PCE)<sup>2</sup></b>		<b>45</b>	<b>11</b>	<b>56</b>	<b>15</b>	<b>41</b>	<b>57</b>	<b>588</b>

<sup>1</sup> TSF = thousand square feet

<sup>2</sup> Total Trips = Passenger Cars + Truck Trips.

The site is currently occupied with an existing use. As such, driveway counts were conducted on January 24, 2022 and January 26, 2022 to understand the existing activity on the site. However, the activity was relatively nominal with approximately 26 two-way trips per day. As such, no credit has been taken for the existing use.

### **TRIP DISTRIBUTION ASSUMPTIONS**

Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. The Project trip distribution was developed based on anticipated travel patterns to and from the Project site and developed based on an understanding of existing travel patterns in the area, the geographical location of the site, and the site's proximity to the regional arterial and state highway system. Exhibit 3 illustrates the Project's truck trip distribution patterns while the passenger car trip distribution patterns are reflected on Exhibit 4.

### EXHIBIT 3: PROJECT (TRUCK) TRIP DISTRIBUTION





**EXHIBIT 4: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION**



**PROPOSED STUDY AREA INTERSECTIONS**

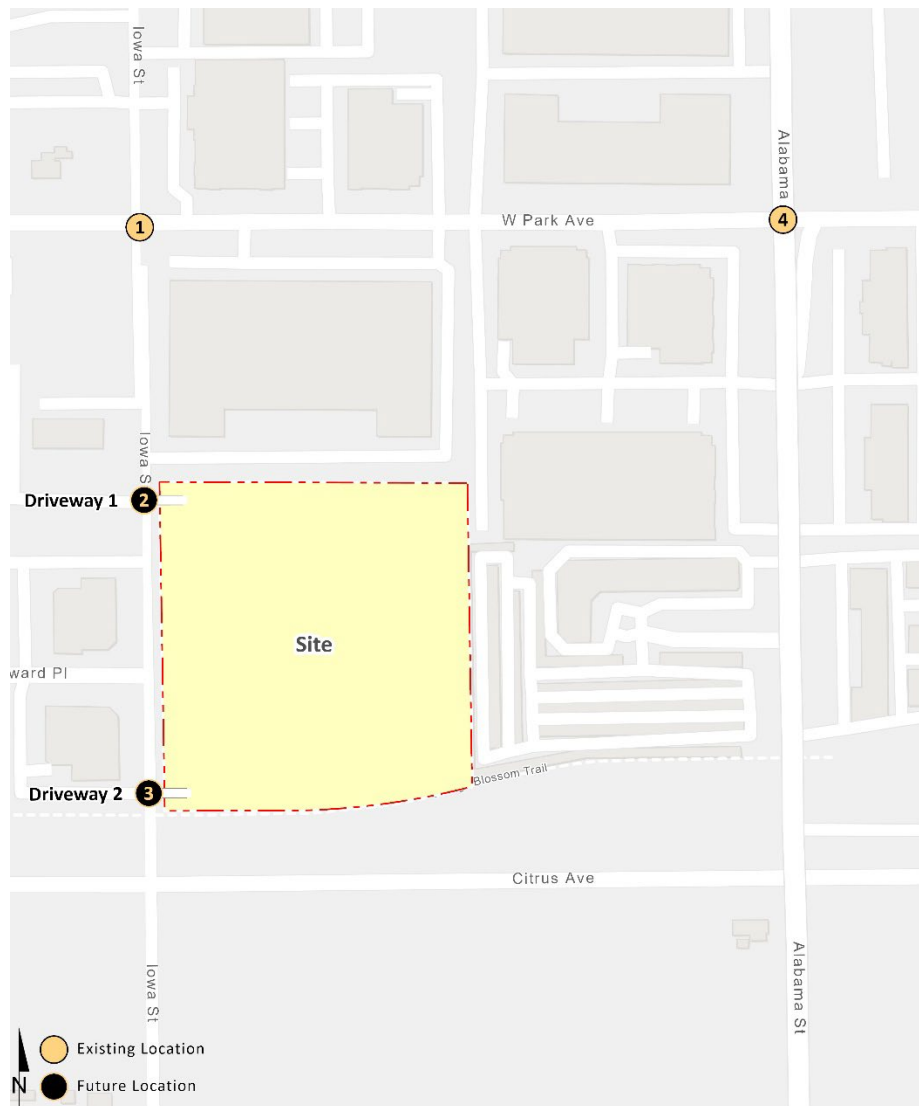
The Project is anticipated to contribute fewer than 50 peak hour trips, but the following intersections have been identified as study analysis locations (see Table 4 and Exhibit 5). Although the Project is anticipated to contribute less than 50 peak hour trips, the intersection of Alabama Street at Park Avenue has been added in order to demonstrate the Project’s effect on this location is not significant and therefore would have a further minimal impact at other locations north on Alabama Street (such as at Redlands Boulevard and the I-10 Ramps).



**TABLE 4: STUDY AREA INTERSECTIONS**

ID	Intersection	Jurisdiction	CMP?
1	Iowa St. & Park Av.	Redlands	No
2	Iowa St. & Driveway 1	Redlands	No
3	Iowa St. & Driveway 2	Redlands	No
4	Redlands St. & Park Av.	Redlands	No

**EXHIBIT 5: STUDY AREA**



## **TRAFFIC COUNTS**

As local schools are back to in-person instruction, Urban Crossroads recommends that we conduct new traffic counts and not make any further adjustments.

## **ANALYSIS SCENARIOS**

Intersection analyses will be provided for AM and PM peak hours for the following analysis scenarios:

- Existing (2022) Conditions
- Existing plus Project Conditions

## **METHODOLOGY**

Intersection operations analysis will utilize the Highway Capacity Manual (6<sup>th</sup> Edition) to evaluate signalized and unsignalized intersections. The California Manual on Uniform Traffic Control Devices (CA MUTCD) will be utilized to evaluate peak hour traffic signal warrants at the unsignalized study area intersections.

## **LEVEL OF SERVICE CRITERIA**

The City of Redlands has established specific performance criteria for intersection operations. These performance criteria include standards related to determining the project deficiencies on the roadway system. The City of Redlands has established LOS C as the minimum level of service for its intersections. Therefore, any intersection operating at LOS D or worse will be considered deficient for the purposes of this analysis. Additionally, General Plan Policy 5.20c from the Redlands General Plan states that: Where the current level of service at a location within the City of Redlands is below the Level of Service (LOS) C standard, no development project shall be approved that cannot be mitigated so that it does not reduce the existing level of service at that location (i.e. intersections in Redlands that are deficient to start out with are acceptable as long as they do not further degrade LOS) except as provided in Section 5.20b.

General Plan Policy 5.20b of Measure U states that within the area identified in GP Figure 5-1, including the “donut hole”, maintain LOS C or better, however, accept a reduced LOS on a case-by-case basis upon approval by a four-fifths (4/5ths) vote of the total authorized membership of the City Council.

## DEFICIENCY THRESHOLDS

The following thresholds will be utilized to determine whether the addition of Project traffic at a study intersection results in a project-related deficiency:

- A project deficiency occurs at a study intersection if the addition of project-generated trips reduces the peak hour level of service of the study intersection to change from acceptable operation (e.g., LOS A, B or C) to deficient operation (e.g., LOS D, E or F) and, if applicable, also causes an unsignalized intersection to satisfy a Caltrans traffic signal warrant; or
- A project deficiency occurs at a study intersection if the addition of project-generated trips worsens the pre-project level of service grade at a deficiently operating (e.g., LOS D, E or F) intersection and, if applicable, also causes an unsignalized intersection to satisfy a Caltrans traffic signal warrant.

Per 5.20c of Measure U, where the current LOS at a location within the City of Redlands is below the LOS C standard, no development project shall be approved that cannot be mitigated so that it does not reduce the existing LOS at that location except as provided in Section 5.20b.

## SPECIAL ISSUES

The following special issues will also be addressed as part of the traffic analysis:

- Conduct a queuing analysis at Project access points to determine adequate turn pocket storage to accommodate 95<sup>th</sup> percentile queues.
- Truck turn templates will be provided for the Project driveways on Nevada Street to determine whether truck turns can be accommodated.
- Conduct traffic signal warrant analysis for all existing and future unsignalized study area intersections. Unsignalized intersections with restricted access will not be evaluated for signal warrants as they are not suitable locations for signalization.
- LOS-based Traffic Study and VMT Analysis will be provided under separate cover.

Please provide your approval or comments finalizing the study area and analysis assumptions. If you have any questions or comments, I can be reached at (949) 861-0177.

Regards,

URBAN CROSSROADS, INC.



Charlene So, PE  
Principal