MEMORANDUM

To: City of Moorpark, CA

From: John Karnowski, PE, PTOE, AICP (john.karnowski@NV5.com)

CC: Victoria Guobaitis, P.E., T.E., PTOE (Victoria.guobaitis@NV5.com)

Date: January 15, 2021

Re: VMT Study for DCX6 Delivery Station
6000 Condor Drive, Moorpark, CA 93021

This memo conveys the findings of our Vehicle Miles Traveled (VMT) study for the proposed DCX6 delivery station in Moorpark, CA. The trip generation and study methodology are presented below. The total site VMT is calculated, including delivery vehicles, which is the primary operation for the site.

Trip Generation

Delivery stations are the last mile connection between the company's fulfillment process and their customers. Packages are transported to delivery stations via line-haul trucks from neighboring fulfillment and sortation centers and are further sorted, picked, and loaded into delivery vehicles.

Delivery stations operate 24/7 to support delivery of packages to customer locations between 10:30 AM and 9:00 PM. At the proposed Moorpark, CA facility, the tenant expects 14 line-haul trucks delivering packages to the delivery station each day, primarily between the hours of 10:00 PM to 8:00 AM. There will be 137 on-site employees. For the purpose of this analysis, we conservatively estimate that none will carpool or take transit – resulting in 274 commuting vehicle trips per day.

The delivery operations primarily consist of 153 employees, resulting in 306 commuting vehicle trips per day; delivery drivers start to arrive around 9:20 AM. Beginning at 9:50 AM and ending at 11:10 AM, 153 delivery vans will load and depart from the delivery station at a rate of 50 vans every 20 minutes The vans return to the delivery station between 7:10 PM and 9:00 PM. The drivers park the delivery vans and leave using personal vehicles or public transport.

The delivery station will also use private carriers (aka Flex drivers) to deliver packages from this location. The tenant anticipates 40 traditional passenger vehicles entering the facility staggered between 4:30 PM and 6:00 PM. Flex vehicles will load and depart every 15 minutes. They will not return to the station that same day. Table 1 shows the anticipated traffic volume by vehicle type.

Table 1. Trip Generation

Traffic	Number of People or Vehicles	Daily Trips
Autos - Employees & Van Drivers	290	580
Delivery Vans	153	306
Autos – Flex	40	80
Line-Haul Trucks	14	28
Total	**497**	**994**

VMT Methodology and Calculations

As discussed above, there are four types of vehicle trips:

- Employee commute trips
- Delivery vans
- Personal delivery vehicles (Flex)
- Line-haul trucks

The methodology and assumptions for determining the VMT for each type is discussed below:

Employee Commuter Trips
It is assumed that employees will live within a reasonable commuting distance of the site and likely follow the same trends as those that are now employed within the same area. Caltrans reports a home-based-work VMT for the traffic analysis zone (3533) where this site is located of **13.96** per employee. With a total of 290 employees this would equate to a **VMT of 4,048**.

Delivery Van Trips
The tenant delivers packages to zones much like the U.S. Postal Service except that the routes the vans take vary by day and are optimized for the most efficient movement. It is possible to estimate the VMT for delivery vehicles by finding the distance from the site to the furthest point within the delivery zone and multiplying by the number of vehicles bound for those zones. The furthest point within the zone is assume to account for circuitous travel as packages are dropped off throughout a route. (Note, not every van will travel to the furthest point within a zone). The total number of delivery vans is shown in Table 1.

Most delivery trips are within 10 to 15 miles of the site, but some are as far away at 34 miles. Since all vans leave the site and then return, the VMT is doubled to account for the returning trip. It is noteworthy that the delivery stations are located within the company's larger delivery area to consolidate deliveries in smaller geographic areas. Many customers for the new delivery station in Moorpark are already being served by another delivery station. Therefore, there is a net difference when comparing the current VMT travel to the future volume. The current VMT for delivery operations is 6,818 miles per day while the future VMT is 7,274 miles per day. **The difference is the total VMT for the delivery vans of 456 miles per day.**

Flex Trips
As explained previously, Flex trips are made by private contractors who deliver packages. These individuals are contacted via an App and instructed when to arrive at the delivery station and told how many packages they will be delivering. They are routed from the site to their delivery zones in the same manner as the delivery vans. The only difference is that the Flex vehicles do not return to the delivery station. It is important to note that it is not possible to account for the trips to the delivery station since in all likelihood, the Flex drivers do not come from their homes but are most often already in the area conducting other business. Many Flex drivers work for ride sharing companies or are professional drivers.

The delivery zones are the same as the delivery vans so the methodology for determining VMT is the same except that because the Flex vehicles do not return to the delivery station, the VMT is not doubled. The current VMT for Flex delivery operations is 903 miles per day while the future Flex VMT is 964 miles per day. **The difference is the total Flex VMT for the delivery vans of 61 miles per day.**

Line-haul Truck Trips
Line-haul truck trips are not considered in VMT calculations.

Table 2. Vehicle Miles Traveled (VMT) for DCX6

Traffic	Daily Trips	Existing Delivery Station VMT	New Delivery Station VMT	Diff. between Existing and Future VMT	VMT per Employee per Day
Auto – Employees	580	0	4,048	4,048	13.96[2]
Delivery Vans	306	3,892	4,152	260	
Auto – Private carrier[1]	40	509	543	34	
Total	**926**	**4,401**	**8,743**	**4,342**	**13.16[3]**

[1]Private carrier vehicle VMT is for the outbound delivery only
[2]Travel based on 290 commuting employees (on-site employees + drivers)
[3]Travel based on 330 total personnel, including private carrier drivers

Conclusions

In the publication "Technical Advisory on Evaluating Transportation Impacts in CEQA" by the Governor's Office of Planning and Research (OPR), December 2018, the target for office develops is a 15% reduction of VMT from the existing. While this land use is not an office development (there is no OPR guidance on industrial land uses), it is generally assume that the same reduction goal would apply to industrial land uses. If the current VMT/employee in the area is 13.96, the site would need to reduce to 11.87 miles per day. This would require the site to reduce its projected VMT of 13.16 miles per day by 9.8% to meet OPR guidance. Travel demand management strategies that can help achieve this target reduction include:

- Carpool parking
- Bike racks/employee lockers
- Informational Kiosks /web resources
- Employee Transportation Coordinators
- Carpool program promotions
- Guaranteed Ride Home programs

DCX6 in Moorpark, CA - 2W2F

Time	Associates			Trucks			DSP Drivers			DSP Vans			Flex			Total		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
00:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
00:30	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
01:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
01:30	72	0	72	0	0	0	0	0	0	0	0	0	0	0	0	72	0	72
02:00	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
02:30	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
04:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
04:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
05:30	22	0	22	0	1	1	0	0	0	0	0	0	0	0	0	22	1	23
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
07:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
08:30	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
09:00	0	0	0	0	0	0	17	0	17	0	0	0	0	0	0	17	0	17
09:30	0	0	0	1	0	1	67	0	67	0	0	0	0	0	0	68	0	68
10:00	0	0	0	0	1	1	67	0	67	0	50	50	0	0	0	67	51	118
10:30	0	0	0	0	0	0	2	0	2	0	100	100	0	0	0	2	100	102
11:00	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	3	3
11:30	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	72	72	0	0	0	0	0	0	0	0	0	0	0	0	0	72	72
13:00	22	0	22	0	0	0	0	0	0	0	0	0	0	0	0	22	0	22
13:30	17	0	17	0	0	0	0	0	0	0	0	0	0	0	0	17	0	17
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	22	22
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	40	0	40	40	0	40
16:30	0	0	0	1	0	1	0	0	0	0	0	0	0	20	20	1	20	21
17:00	0	0	0	0	1	1	0	0	0	0	0	0	0	20	20	0	21	21
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	17	17	1	0	1	0	0	0	0	0	0	0	0	0	1	17	18
18:30	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
19:00	0	0	0	1	0	1	0	13	13	13	0	13	0	0	0	14	13	27
19:30	0	0	0	0	1	1	0	26	26	65	0	65	0	0	0	65	27	92
20:00	0	0	0	1	0	1	0	77	77	38	0	38	0	0	0	39	77	116
20:30	0	0	0	0	1	1	0	25	25	37	0	37	0	0	0	37	26	63
21:00	0	0	0	0	0	0	0	12	12	0	0	0	0	0	0	0	12	12
21:30	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
22:00	0	22	22	0	1	1	0	0	0	0	0	0	0	0	0	0	23	23
22:30	0	4	4	1	0	1	0	0	0	0	0	0	0	0	0	1	4	5
23:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
23:30	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
Total	**137**	**137**	**274**	**14**	**14**	**28**	**153**	**153**	**306**	**153**	**153**	**306**	**40**	**40**	**80**	**497**	**497**	**994**

1st Shift:	2:00 AM	12:30 PM	72	Assoc.	25%
2nd Shift:	6:00 AM	2:30 PM	22	Assoc.	8%
3rd Shift:	1:30 PM	10:00 PM	22	Assoc.	8%
PFSD Shift:	2:00 PM	6:00 PM	17	Assoc.	6%
RTS Shift:	12:00 PM	10:30 PM	4	Assoc.	1%
Drivers:	9:20 AM	9:10 PM	153	Drivers	53%