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F. A. Hesketh
& Associates, Inc.

February 8, 2022

Mr. Bart Pacekonis - Chairman
Planning & Zoning Commission
Town of South Windsor
1540 Sullivan Avenue
South Windsor, CT 06074

Re: Proposed Warehouse Development
UW Vintage Lane II, LLC
25 Talbot Lane
South Windsor, Connecticut
Our File: 22010

Dear Mr. Pacekonis:

On behalf of our client, UW Vintage Lane II, LLC, our office has prepared this letter to outline the potential truck trip generation and truck queuing/marshalling requirements related to a proposed 359,640 s.f. warehouse and distribution center proposed for property located at 25 Talbot Lane in the Town of South Windsor, CT. This letter presents our findings.

The proposal is to construct a 359,640 s.f. warehouse/distribution center with a total of 54 loading docks. The revised site plan depicts a total of 318 vehicle spaces, 59 trailer spaces and 30 trailer queueing/marshalling spaces. Access to the site is proposed at two locations. Vehicular access is provided by a driveway to the Governor's Highway, located east of Talbot Lane, and a truck access driveway is proposed to Talbot Lane.

In order to determine the potential truck trip generation for the proposed site, the Institute of Transportation Engineers (ITE) *Trip Generation* Report was consulted. *Trip Generation* presents trip generation estimates for many land uses based on counts conducted at existing facilities throughout the country. Included within the ITE database are several Industrial Land Uses including: Land Use Code (LUC) 110 - General Light Industrial; LUC 140 – Manufacturing; LUC 150 - Warehouse; LUC 154 – High Cube Transload and Short Term Storage Warehouse; LUC 155 – High Cube Fullfillment Center Warehouse; LUC 156 – High Cube Parcel Hub Warehouse; and LUC 157 – High Cube Cold Storage Warehouse. The truck trip generation for each land use is based on the square footage of the building.

The truck trip generation was run for each land use. Using the ITE Trip Generation report the proposed 359,640 s.f. building has a maximum daily truck generation of 209,

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made up of 104 entering and 105 exiting movements. A peak hour truck generation of 32 trucks, assumed to be made up of 19 entering and 13 exiting trucks is projected. The Trip generation results are summarized in Table 1. The peak hour volume is consistent with that provided in the Langan traffic report dated January 2022. Since a directional distribution is not provided in the ITE report, we have a slightly different entering and exiting volume than presented by Langan. Langan assumed a 50/50 split, we have assumed a 60/40 split.

A review of the revised site plan indicates that the loading dock portion of the site is located inside a gated area. There are two driveways to the dock loading area accessible from Talbot Lane, each controlled by an automatic security gate. A truck queueing lot providing a total of 30 spaces is proposed, outside the gate to allow trucks to wait during this process. Drivers arriving at the site will notify the office by phone or radio that they are in route or that they have arrived, and if necessary, they can park in the 30 space queueing/marshalling lot while their paperwork is being processed, or until the appropriate loading dock space is available. Signage directing trucks to the queuing/marshalling area are indicated on the site plan.

Our office has conducted a queueing analysis for the proposed development. As indicated above, the facility has a total of 54 loading docks. A daily entering truck volume of 104 trucks is projected, with a peak hour entering truck volume of 19 trucks. With 54 docks and an average loading/unloading time of 2 hours per truck, the facility has the ability to load or unload a total of 270 trucks on a daily (10 hour workday) basis. A total of 104 trucks are anticipated. Therefore, the facility has the capacity to accommodate 260% of the anticipated daily truck volume. A longer work day would result in the facility being able to accommodate more trucks.

Looking at the peak hour of operations, we have run a M/M/s Queueing analysis for the site. An M/M/s model applies when there is a single queue with multiple servers (docks). The analysis assumes a standard Poisson distribution of arriving vehicles and an exponential distribution of service times. We have used the following assumptions. An arrival rate of 19 trucks/hour, a service rate of two hours per truck, or 0.5 trucks/hour/dock, and a total of 54 docks. Based on these assumptions, an expected queue of 0 trucks is calculated with an anticipated wait time in the queue of less than 1 minute per truck. It is anticipated that there will be a total of 38 trucks in the system. The minimum number of loading docks required to service 100% of the arriving trucks is 42 docks. This analysis indicates that there is more than a sufficient number of loading docks to accommodate the peak hour and daily truck volume projected for the facility.

It is also important to look at the potential queueing at the gate access. Although the facility has a sufficient number of docks, the choke point could be the initial gate access. As indicated above, each truck needs to complete paperwork prior to entering the dock area. The paperwork review typically takes five minutes on average per truck. The paperwork can typically be accomplished while the truck is on route if the driver notifies

the office while in route, thereby reducing the dwell time on site. But if the driver waits until they are at the site to begin processing, at 5 minutes per driver, one person in the office can process a total of 12 drivers an hour. With a total of 19 peak hour trucks anticipated, two employees will be needed for processing. With 2 employees processing arriving trucks, the anticipated queue would be 2.7 trucks with 4.3 trucks expected in the system (2 being serviced and two in the queue) and an expected wait time of 8.4 minutes and a total time in the system of 13.4 minutes. The probability that the queue would exceed 16 trucks is less than 1%.

The site driveway provides in excess of 300 feet of storage area from the gate to Talbot Lane, capable of accommodating a total of 4 trucks. For those trucks that have their paperwork in order and have been assigned a dock, where no waiting is required, there is sufficient area on the driveway to accommodate them. The staging/queueing area provides 30 spaces for trucks located off the entrance drive and outside the gated area The 30 available queueing spaces far exceeds the maximum number of spaces (16) required in the queueing analysis.

The queueing analysis clearly indicates that with a total of 19 entering trucks during the peak hour of activity, with 54 loading docks and a queueing lot with a total of 30 spaces, there is more than enough queueing/marshalling space to accommodate the peak hour volume of trucks without vehicles backing out onto Talbot Lane.

Based on the results of our analysis, it is our professional opinion that there will be no negative impact to the public roadways as a result of truck queuing or marshalling at the proposed facility. We appreciate the opportunity to provide this information to you. A representative from our firm will be available to present testimony before local commissions if needed. If you require any additional information, please do not hesitate to contact our office.

Very truly yours,

F. A. Hesketh & Associates, Inc.

Scott F. Hesketh, P.E.
Manager of Transportation Engineering

cc: Mr. Bradford Wainman, UW Vintage Lane II, LLC

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Table 1
Truck Trip Generation Summary
25 Talbott Lane
South Windsor, CT

Land Use	Size	A.M. Peak Hour			P.M. Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Warehouse							
Peak Hour Adjacent Street	359,640 s.f.	4	3	7	6	5	11
Pear Hour of Generator	359,640 s.f.	8	14	22	11	11	22
Manufacturing							
Peak Hour Adjacent Street	359,640 s.f.	6	5	11	4	7	11
Pear Hour of Generator	359,640 s.f.	3	4	7	8	10	18
High Cube Transload							
Pear Hour of Generator	359,640 s.f.	2	2	4	4	3	7
High Cube Parcel Hub*							
Peak Hour Adjacent Street	359,640 s.f.	19	13	32	13	9	22
High Cube Cold Storage*							
Peak Hour Adjacent Street	359,640 s.f.	4	7	11	7	4	11
High Cube Fulfillment Center							
Peak Hour Adjacent Street	359,640 s.f.	3	4	7	3	4	7

* - When Not provided, distribution estimated to be 60% entering and 40% exiting

M/M/s Queueing Calculations

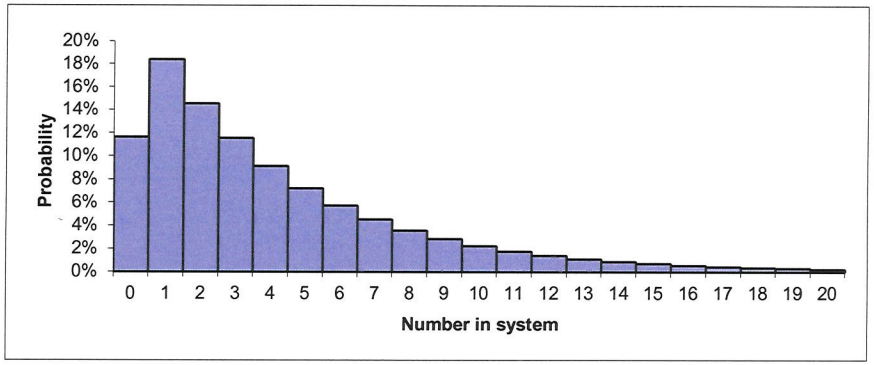
Basic Parameters		
Arrival Rate	19	per hour
Service Rate	12	per hour
Number of Servers	2	
Time Unit	hour	

Basic Performance Measures	
Utilization	79%
P(0), probability that the system is empty	12%
Lq, expected number in queue	2.6585
L, expected number in system	4.2419
Wq, expected time in queue	0.1399 hours
W, expected total time in system	0.2233 hours
Probability that customer waits	70%

Advanced Parameters		
Threshold time	2.5	hours
Desired service level	99%	

Advanced Performance Measures	
Current service level	100%
Number of servers required to achieve desired service level	2

State Probabilities		
Number in system	Probability	
0	12%	
1	18%	
2	15%	
3	12%	
4	9%	
5	7%	
6	6%	
7	5%	
8	4%	
9	3%	
10	2%	
11	2%	
12	1%	
13	1%	
14	1%	
15	1%	
16	1%	
17	0%	
18	0%	
19	0%	
20	0%	
Total	99%	



Note: this worksheet uses some special functions that are defined in this workbook.

M/M/s Queueing Calculations

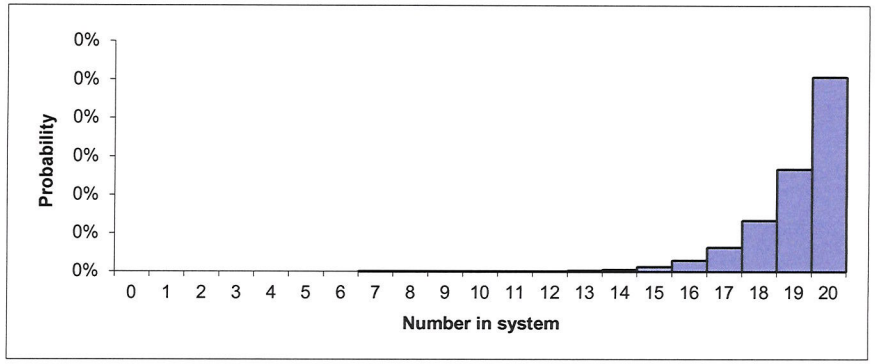
Basic Parameters		
Arrival Rate	19	per hour
Service Rate	0.5	per hour
Number of Servers	54	
Time Unit	hour	

Basic Performance Measures		
Utilization	70%	
P(0), probability that the system is empty	0%	
Lq, expected number in queue	0.0221	
L, expected number in system	38.0221	
Wq, expected time in queue	0.0012	hours
W, expected total time in system	2.0012	hours
Probability that customer waits	1%	

Advanced Parameters		
Threshold time	2.5	hours
Desired service level	99%	

Advanced Performance Measures	
Current service level	100%
Number of servers required to achieve desired service level	42

State Probabilities	
Number in system	Probability
0	0%
1	0%
2	0%
3	0%
4	0%
5	0%
6	0%
7	0%
8	0%
9	0%
10	0%
11	0%
12	0%
13	0%
14	0%
15	0%
16	0%
17	0%
18	0%
19	0%
20	0%
Total	0%



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