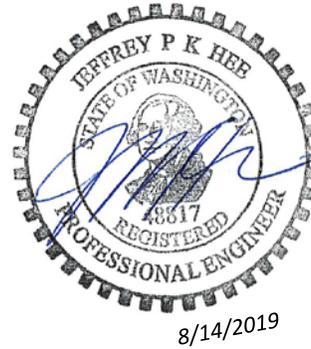




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August 14, 2019

To: Andy Chow, City of Redmond
 From: Jeff Hee, Transportation Solutions, Inc.
 Subject: MV Transportation Facility Expansion
 Phase 1 Traffic Study

This Phase 1 Traffic Study summarizes the trip generation and travel distribution forecasts for development of MV Transportation Facility Expansion at Lot 3 of the Union Hill Corporate Campus. The proposal is consistent with the overall campus’ Development Agreement and includes expansion of the existing and adjacent MV Transportation site.

Project Description

MV Transportation provides private buses and shuttle services for Microsoft Corporation.

Lot 3 of the corporate campus is on parcel no. 072506-9141 at the southwest corner of NE 76th Street and 188th Ave NE. Figure 1 includes a vicinity map highlighting the site and surrounding properties.

MV Transportation currently operates on Lot 5 of the corporate campus, at 18690 NE 73rd Street, on land parcel 072506-9143. The transportation provider is proposing to expand their operations to Lot 3.

Table 1 compares the proposal (Lot 3) to the existing MV Transportation site (Lot 5). Figure 2 includes a conceptual site plan.

Table 1: MV Transportation Lot 5 (Existing) and Lot 3 (Proposed) Site Summary

	Existing Lot 5	Proposed Lot 3	Total
Employee, bus and shuttle parking	228	up to 325	up to 533
Office/Service Building (sq. ft.)	15,003	none	15,003
Lot Area (acres)	4.660	4.130	8.790

With development of Lot 3, a private roadway would be extended between NE 76th and 73rd Streets. No changes are proposed to existing facility.

The proposed facility expansion includes one access off the private roadway across from the north driveway of Lot 5. The driveway is about 380 feet south of NE 76th Street and just over 250 feet north of NE 73rd Street. The driveway is about 45 feet south of the existing south driveway of the Union Hill Self Storage site.

The major circulation route to the site will be from NE 73rd Street to the south of the site.

Trip Generation

On Wednesday, June 21 and Thursday, June 22, 2017 vehicle volumes were collected at the existing MV Transportation site. The average daily volumes are summarized below in Table 2 and are used as the basis to forecast trips generated by the proposed expansion.

Table 2: Average 2-Day Existing MV Transportation Trips

Time-Period	AM Trips			PM Trips		
	In	Out	Total	In	Out	Total
12:00	1	1	2	17	14	31
1:00	0	2	2	13	14	26
2:00	1	0	1	27	13	40
3:00	3	0	3	43	36	79
4:00	14	2	16	14	56	70
5:00	32	13	45	4	16	20
6:00	38	42	80	20	12	32
7:00	14	24	37	46	42	87
8:00	23	10	32	14	29	43
9:00	50	27	77	2	5	7
10:00	31	42	72	2	2	4
11:00	15	22	36	1	4	5
Total	218	182	400	200	241	441

Trip rates were derived for MV Transportation based on trips per the number of parking spaces for the weekday daily, AM peak hour (7-9 AM) and PM peak hour (4-6 PM) period. The trip rates based on the number of trips generated by the existing facility are:

- 841 daily trips ÷ 228 parking spaces = 3.69 trips per space
- 37 AM peak hour trips ÷ 228 parking spaces = 0.16 trips per space
- 70 PM peak hour trips ÷ 228 parking spaces = 0.31 trips per space

The rates were then applied to the proposed number of bus and shuttle parking spaces for the proposed expansion (325 spaces) to forecast trip generation. Table 3 summarizes the trip generation forecast.

Table 3: Proposed Expansion (Lot 3) Trip Generation Forecast

Time-Period	Parking Spaces	Trip Rate ¹	Trips-In	Trips-Out	Trips-Total
Daily Trips	325	3.69	600	600	1,199
AM Peak Hour Trips	325	0.16	19	33	52
PM Peak Hour Trips	325	0.31	20	81	101

1. Trips per number of parking spaces

Trip Distribution and Assignment

Figure 3 illustrates the PM peak hour trip distribution and assignment forecasts for the proposed expansion. Table 4 summarizes the proposed study area based on the Traffic Study Requirements.

Table 4: Study Intersection – New PM Peak Hour Trip Impact

Intersection	Lot 3 PM Trips
1. NE Union Hill Road and Avondale Road NE	40
2. NE Union Hill Road and 178th Pl NE	40
3. NE Union Hill Road and 185th Ave NE	40
4. NE Union Hill Road and 188th Ave NE	56
5. NE 76th Street and 188th Ave NE	68
6. Site Access and Private Road	101
7. NE 73rd Street and Private Road	98
8. NE 73rd Street and 188th Ave NE	98
9. NE 65th Street and 188th Ave NE	30



Concurrency

Table 5 shows the breakdown for the mobility unit estimate for the proposed expansion. The mobility units are included in the Transportation Concurrency Application.

Table 5: New Mobility Unit Forecast – Transportation Concurrency

	Component	MV Transportation Lot 3
	Vehicle Trip Generation Rate ¹	0.56 / space
X	Percent New Trips ²	100%
X	Person Trip Conversion ³	1.24
X	Trip Length ⁴	2.6 miles
=	Person Mile Rate per Unit	0.99
X	Units of Development ⁵	325 spaces
=	Person Miles (Mobility Units)	322

1. PM trips / bus and shuttle spaces, see Table 3
2. Assumes no pass-by trips
3. From City of Redmond Multimodal Plan-Based Concurrency System (October 2009)
4. Average trip length in the City of Redmond from the BKR Model
5. Number of proposed parking spaces

Pipeline Development

Pipeline developments in the vicinity of the proposal are listed below and are from the City of Redmond Property Viewer:

- UPS Employee Parking Expansion – 252 new parking spaces and 25,000 sq. ft. mezzanine addition
- King County Van Distribution Center
- Nut Tree Holdings – remodel
- Drivers Club and Metro Auto Park
- Woodside
- Union Hill Self-Storage – 97,800 sq. ft. self-storage warehouse (recently completed)

We would appreciate the trip assignment and mitigation information for each of the above, except for Union Hill Self-Storage, which was a past TSI evaluation.

Sight Distance

Vehicle sight distance triangles will be included in the Phase 2 traffic analysis to show that the proposed and existing driveways on the private roadway meet AASHTO Green Book standards.

Pedestrian sight triangles are included in the Civil Plan.

Access Spacing

The three driveways on the private road including both MV Transportation driveways and the south driveway of the self-storage site, are within 150 feet from each other. The MV Transportation driveways are aligned. The south driveway of the self-storage property is a secondary access to the site. Sightlines on the private roadway will be sufficient such that drivers can see each other. With negligible public traffic and adequate sightlines, we believe that the access spacing does not adversely impact vehicle traffic on the private road.



Conclusions

The proposal expands the footprint of MV Transportation from Lot 5 to Lot 3 of the Union Hill Corporate Campus. Development of the site will extend a private roadway between NE 76th and 73rd Streets.

The proposal includes parking and storage for up to 325 employees and private buses and shuttles. No new structures are proposed at the expanded facility.

The proposal is forecast to generate:

- 1,199 daily trips, split 600 in and 600 out
- 52 AM peak hour trips, split 19 in and 33 out
- 101 PM peak hour trips, split 20 in and 81 out
- 322 mobility units

A Phase 2 Traffic Study Impact Analysis is anticipated to address intersection level of service at up to 9 intersections and driveways, see Table 4.

The Phase 2 study and civil plans will also provide sight distance triangles.

A deviation for access spacing is not anticipated with the site accesses off a private road. The proposed access is within 25 feet from the existing south and secondary access of the self-storage site and across the existing access to the MV Transportation site. The proposed access design will not encumber sightlines on the private roadway; and also, and the public traffic on the private roadway is anticipated to be negligible. The proposed driveway does not adversely impact the accessibility of the other parcels on the private road.

If you have any questions, please contact me at your earliest convenience.



Figure 1: Vicinity Map

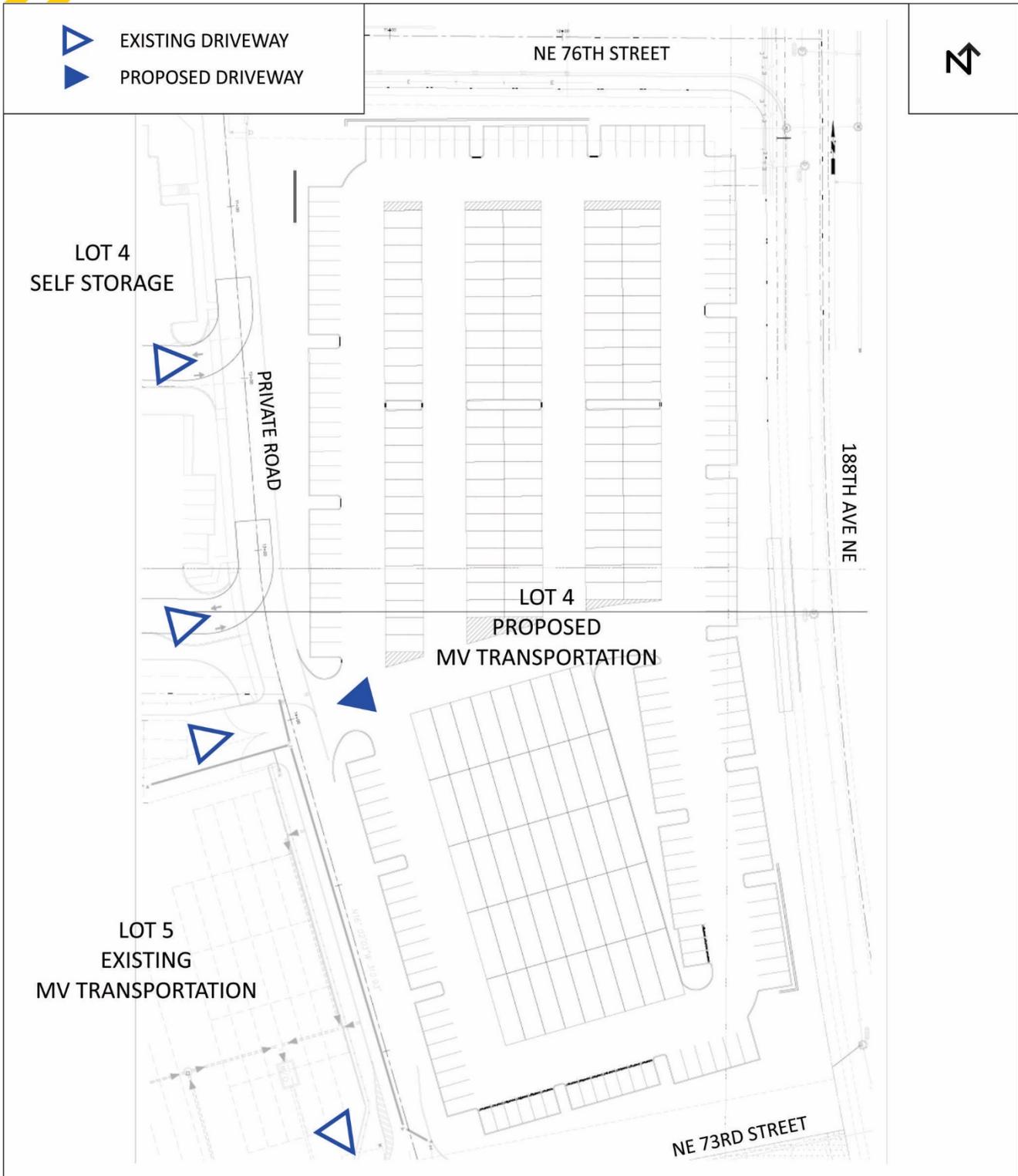


Figure 2: Conceptual Site Plan

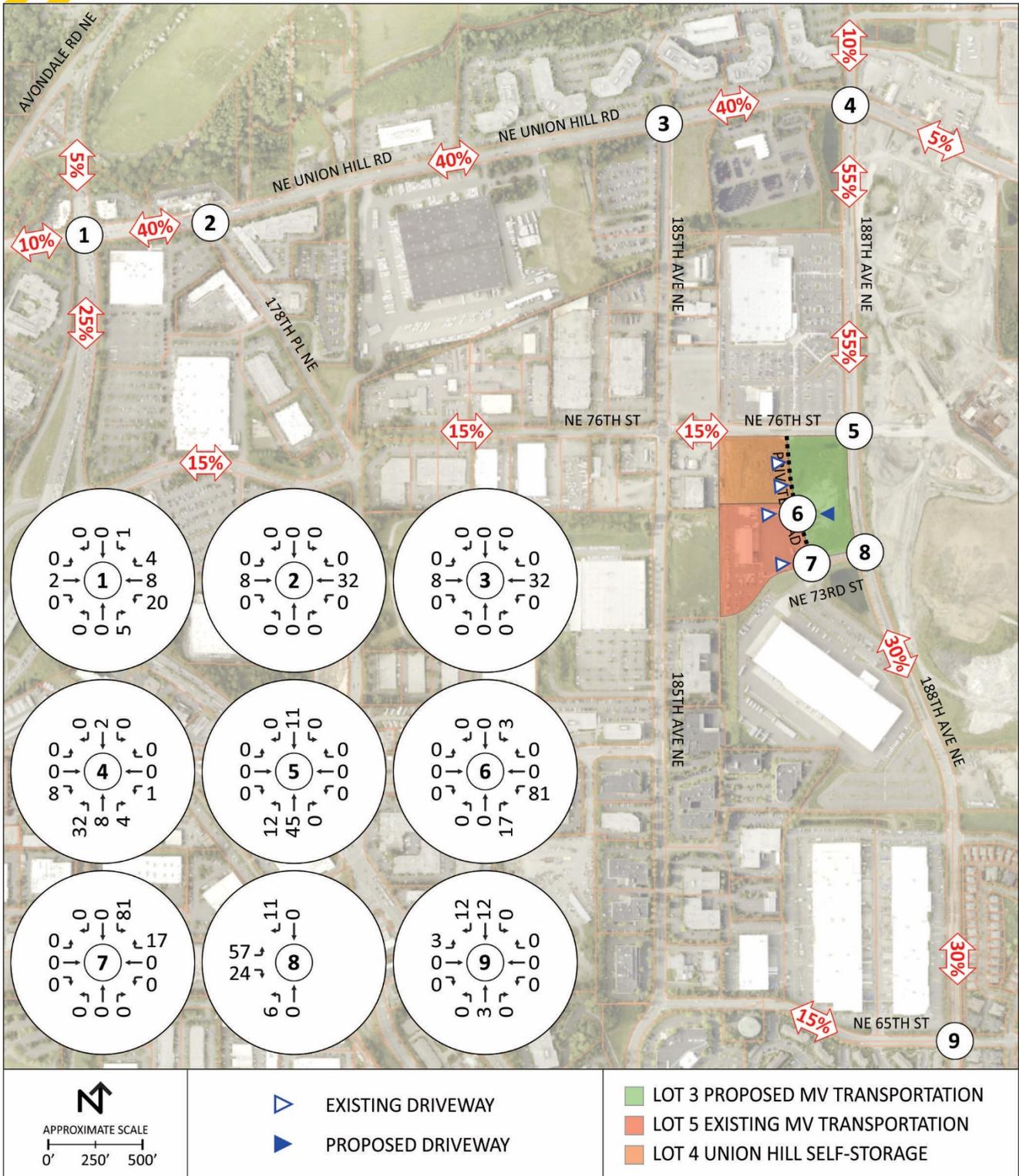


Figure 3: Lot 3 PM Peak Hour Trip Distribution and Assignment