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MEMORANDUM

EXHIBIT # 14.1

Date:	March 23, 2018	**TG:**	1.18082.00
To:	Brian Highberger – Upright Construction, Inc.		
From:	Kyle Stahley, PE		
cc:	Gordon Stephenson – Real Property Associates, Inc.		
Subject:	Bell in LFP - Trip Generation and Parking Study		

This memorandum summarizes the anticipated vehicle trip generation and parking characteristics for the proposed Bell in LFP residential development in Lake Forest Park, Washington. A project description, transit service summary, estimate of vehicle trip generation, and estimate of vehicle ownership and parking demand are provided.

Project Description

The proposed residential development is located just north of the NE 200th Street / 31st Avenue NE intersection in Lake Forest Park. A single-family dwelling unit currently exists on site and would be removed. As part of the City's Conservation Cluster Housing program, the proposed project would construct 3 duplexes (6 dwelling units) and 1 small, age-in-place style home, each dwelling unit is approximately 950 square feet in size and includes two bedrooms. This program is intended to promote a diversity of housing options in the City by allowing additional dwelling units in exchange for providing a permanent conservation easement and outdoor common area on the site.

The project would provide a total of 12 parking spaces for residents and guests. Eight parking spaces would be provided on site and accessed via NE 200th Street. An additional 4 parking spaces would be provided along the project frontage on NE 200th Street. A preliminary site plan illustrating the layout of the dwelling units and parking, as well as the vehicle access to the site, is shown in Figure 1.

Transit

The project site is approximately a 5- to 10-minute walk to the nearest transit stops, located at the NE 205th Street / 30th Avenue NE intersection. Route 347 operated by King County Metro serves these transit stops with southbound service providing access to the Northgate Transit Center via local streets through Shoreline and North Seattle. Northbound service terminates at the Mountlake Terrace Transit Center which has connections to local service as well as express bus service for regional destinations including Everett, Lynnwood and Seattle.

Anticipated to start service in 2024, the Lynnwood Link Extension of the Sound Transit Light Rail will serve the Mountlake Terrace Transit Center providing frequent and reliable transit service between the Angle Lake station in SeaTac and the Lynnwood Transit Center. Additional existing transit service within a 10-minute walk of the project site includes King County Metro Routes 308, 331 and 342. Route 331 provides all-day local service between Shoreline and Kenmore in North King County, whereas Routes 308 and 342 provide peak-direction routes to Downtown Seattle and Renton, respectively.

EXHIBIT # 14.2

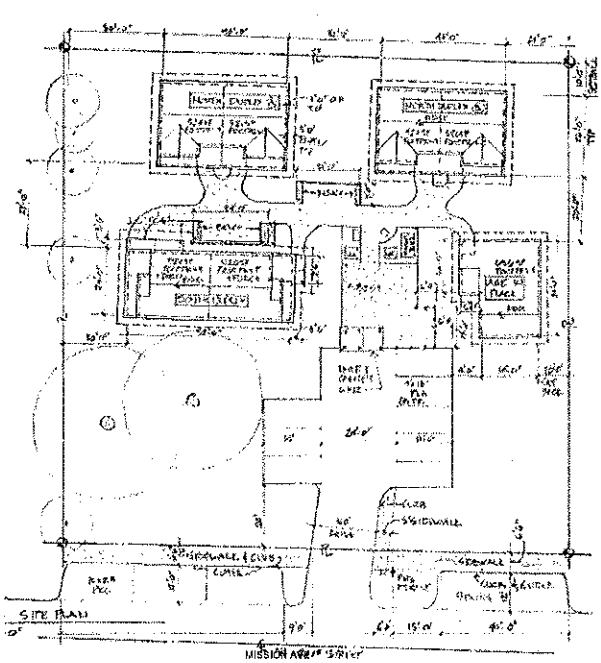

Figure 1: Preliminary Site Plan

Trip Generation

Project trip generation was based on average trip rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual* (10th Edition, 2017). As no trip rates exist in the *Trip Generation Manual* for duplex homes, rates associated with the Single-Family Detached Housing land use (#210) were used to estimate the number of vehicle trips. Due to the smaller size of the proposed dwelling units as compared to a typical single-family home, trip generation was based on the estimated number of residents, not the number of units. It was assumed that there would be approximately 2.37 residents per unit[1] which would include a total of 17 residents in the 7 units. As these units are smaller than the average residential unit[2] in the project's Census Tract, it is likely the trip generation estimates would provide a conservative estimate for the number of trips generated by the proposed project.

As described previously, the proposed dwelling units have fewer bedrooms than the average residential unit in the project's Census Tract and would likely be occupied as starter homes by single people and young couples or as downsized homes for empty-nest couples. Based on this, it is likely that the dwelling units would have fewer residents than average for the project's Census

[1] The average household size for owner-occupied units in the project's Census Tract (204.02) is 2.37 residents per unit based on the *Selected Housing Characteristics* (Report DP 04) from the US Census Bureau's American Community Survey. This includes all housing types in the Census Tract including single-family homes, townhomes and condos.

[2] The average residential unit in the project's Census Tract (204.02) has 2.81 bedrooms per unit based on the *Selected Housing Characteristics* (Report DP 04) from the US Census Bureau's American Community Survey. This includes all housing types within the Census Tract whether they are rented or owned by the tenant.

EXHIBIT # 14.3

Tract which would result in a lower trip generation. For comparison purposes, trip generation was also calculated using an assumption of 1.7 residents per home (12 total residents), which reflects a mix of one-person and two-person occupancy in the dwelling units.

A summary of the trip generation estimates for the weekday daily, AM and PM peak hour time periods is shown in Table 1. This includes estimates for the development based on the number of residents for the average dwelling unit size as well as the number of residents for the expected buyer demographic. Detailed trip generation calculations are included in Attachment 1.

Table 1. Weekday Trip Generation Estimates

Duplex / Age-In-Place Occupancy	Size[1]	Daily[2] *(In / Out)*	AM Peak Hour[2] *(In / Out)*	PM Peak Hour[2] *(In / Out)*
Average Occupancy	17 Residents	50 *(25 / 25)*	4 *(1 / 3)*	5 *(3 / 2)*
Expected Demographic	12 Residents	30 *(15 / 15)*	3 *(1 / 2)*	3 *(2 / 1)*

1. The project proposes to develop 7 dwelling units. The average occupancy reflects 2.37 residents per dwelling unit, 17 total residents, based on the average household occupancy for owned units in the project's Census Tract based on the Selected Housing Characteristics (Report DP 04) from the US Census Bureau's American Community Survey. The expected demographic reflects 1.7 residents per dwelling unit, 12 total residents, based on the anticipated mix of single people, young couples, and empty-nest couples due to the size of the dwelling unit.
2. Daily and weekday AM and PM peak hour trips based on the average trip rate per resident for the Single-Family Detached Housing land use (#210) in the ITE *Trip Generation Manual* (10th Edition, 2017).

As shown in Table 1, depending on the number of residents, it is estimated the proposed dwelling units would generate between 30 and 50 daily vehicle trips with 3 to 4 of these trips occurring during the weekday AM peak hour and 3 to 5 of these trips occurring during the weekday PM peak hour.

If the 7 proposed dwelling units are not constructed under the Conservation Cluster Housing program, we understand the site could be redeveloped to include larger, single-family detached homes which would likely include 4 bedrooms and have more than twice the square feet as the currently proposed development. An estimate for the trip generation of an equivalent number of single-family detached homes was developed to compare to the vehicle trips estimated for the currently proposed project. Trip rates for average single-family detached housing units in the *Trip Generation Manual* were used and trip generation estimates are shown in Table 2 with detailed trip generation calculations included in Attachment 1.

Table 2. Weekday Trip Generation Estimates – Equivalent Single-Family Homes

Land Use	Size[1]	Daily[1] *(In / Out)*	AM Peak Hour[2] *(In / Out)*	PM Peak Hour[2] *(In / Out)*
Single-Family Detached Housing	5 DUs	50 *(25 / 25)*	4 *(1 / 3)*	5 *(3 / 2)*
Single-Family Detached Housing	3 DUs	30 *(15 / 15)*	2 *(1 / 1)*	3 *(2 / 1)*

Note: DUs = dwelling units

1. Daily and weekday AM and PM peak hour trips based on the average trip rate per dwelling unit for the Single-Family Detached Housing land use (#210) in the ITE *Trip Generation Manual* (10th Edition, 2017).

As shown in Table 2, it is estimated that 3 to 5 single-family detached dwelling units would generate about the same number of daily and peak hour vehicle trips as the currently proposed 7 dwelling units.

Parking

As described previously, the proposed development would provide 12 parking spaces, with 8 provided on-site and 4 additional along the project frontage on NE 200th Street. The Conservation Cluster Housing program requires 1 parking space to be provided per unit, or 7 spaces total.

EXHIBIT # 14.4

The peak parking demand for the project was estimated based on average household size and vehicle ownership information provided in the local census data. Based on the American Community Survey from the US Census's *Selected Housing Characteristics* (Report DP 04) report, there were a total of 6,426 bedrooms in 2,290 dwelling units in the project's Census Tract (204.02), an average of 2.81 bedrooms per dwelling unit.

Additionally, using information from the *Selected Housing Characteristics* report for the project's Census Tract, approximately 3,828 vehicles were available for the occupied dwelling units, an average of 1.76 vehicles per dwelling unit. Overall, vehicle ownership in the Census Tract is 0.62 vehicles per bedroom[3].

The peak parking demand generation is shown below in Table 3. A more detailed calculation can be found in Attachment 2.

Table 3. Weekday Peak Parking Demand Estimates

			Weekday
Land Use	**Size**	**Rate[1]**	**Demand**
7 Two-Bedroom Dwelling Units	14 bedrooms	0.63 per bedroom	9 vehicles

1. Based on 2012-2016 American Community Survey 5-year estimate of average vehicle ownership per bedroom for Census Tract 204.02.

As shown in Table 3, the estimated vehicle ownership for residents of the 7 dwelling units would be approximately 9 vehicles. The proposed development would provide 12 total parking spaces; therefore, it is estimated that the parking supply would meet the anticipated peak parking demand for residents. Extra parking spaces not used by residents could be used by residential visitors to the development.

[3] Given the average of 2.81 bedrooms per dwelling unit and 1.76 vehicles availability per dwelling unit, the average number of vehicles available per bedroom would be 0.63 (1.76 bedrooms per dwelling unit divided by 2.81 vehicles per dwelling unit) in the project's Census Tract.

EXHIBIT # 14.5

Attachment 1: Project Trip Generation Calculations

EXHIBIT # 14.6

Project Trip Generation Calculations

Weekday Trip Generation Estimates														
Currently Proposed Bell in LFP Project			Weekday Daily		Weekday AM Peak Hour					Weekday PM Peak Hour				
Land Use	**Size[1]**		**Rate[2]**	**Total**	**Rate**	**% Inbound**	**Inbound**	**Outbound**	**Total**	**Rate**	**% Inbound**	**Inbound**	**Outbound**	**Total**
Single Family Home (LU #210)	17	Residents	2.65	45	0.21	31%	1	3	4	0.28	66%	3	2	5
Single Family Home (LU #210)	12	Residents	2.65	32	0.21	31%	1	2	3	0.28	66%	2	1	3

1. A size of 17 residents reflects the occupancy based on the average household size (2.37 residents per dwelling unit) in the project's Census Tract. A size of 12 residents reflects the possible occupancy for the project based on the target demographic and reflecting the smaller size of the units compared to the average household size in the project's Census Tract.
2. Trip rates and inbound distributions based on the Institute of Transportation Engineers *Trip Generation Manual* (10th Edition, 2017)

Weekday Trip Generation Estimates														
Alternate Development Project			Weekday Daily		Weekday AM Peak Hour					Weekday PM Peak Hour				
Land Use	**Size**		**Rate[1]**	**Total**	**Rate**	**% Inbound**	**Inbound**	**Outbound**	**Total**	**Rate**	**% Inbound**	**Inbound**	**Outbound**	**Total**
Single Family Home (LU #210)	5	DU	9.44	50	0.74	25%	1	3	4	0.99	63%	3	2	5
Single Family Home (LU #210)	3	DU	9.44	30	0.74	25%	1	1	2	0.99	63%	2	1	3

Note: DU = dwelling unit
1. Trip rates and inbound distributions based on the Institute of Transportation Engineers *Trip Generation Manual* (10th Edition, 2017)

EXHIBIT # 14.7

Attachment 2: Parking Demand Calculation

EXHIBIT # 14.8

Parking Demand Calculation

Average Localized Dwelling Unit Size

Bedrooms	Unit Count
0	95
1	102
2	618
3	905
4	477
5+	93
Total Units	2,290
Total Bedrooms	6,426
Ave. Bedrooms / Unit	2.81

Average Localized Vehicles per Dwelling Unit

Vehicles Available	Occupied Unit Count
0	176
1	531
2	1,107
3+	361
Total Occupied Units	2,175
Total Vehicles Available	3,828
Ave. Vehicles / Unit	1.76

Average Localized Vehicles per Bedroom

Ave. Vehicles / Unit	2.81
Ave. Bedrooms / Unit	1.76
Ave. Vehicles / Bedroom	0.63

Proposed Bell in LFP Development Localized Parking Demand

Vehicles / Bedroom	0.63
Total Proposed Bedrooms	14
Anticipated Vehicle Ownership	9

Note: Unit and bedroom count and the number of vehicles available based on the Report DP 05 for the *2012-2016 American Community Survey 5-Year Estimate* for the project's census tract (# 204.02).