Exhibit G-3

Memorandum from Gorove/Slade

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TECHNICAL MEMORANDUM

To:	David Roberts	PN Hoffman
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From:	Maris Fry, P.E. Daniel VanPelt, P.E., PTOE	
Date:	March 11, 2019	
Subject:	**1000 4th Street SW (ZC Case No. 02-38j)** **Post-Hearing Transportation Memorandum**	

Introduction

This memorandum provides additional parking and Transportation Demand Management (TDM) information in response to questions and comments raised during the Zoning Commission Hearing on January 31, 2019 for the proposed development of 1000 4th Street SW (ZC Case No. 02-38j) (the "Project"). Specifically, this memorandum includes the following information:

- **Parking Justification.** This section outlines applicable parking data from nearby sites and local studies that justify the Project's proposed parking supply. This section concludes that the Project "right-sizes" its parking supply.
- **Impacts of TDM Programs.** This section outlines the impacts of TDM programs and the availability of Capital Bikeshare throughout the DC area. This section concludes with a summary of the Project's proposed TDM plan and how it aligns with TDM findings in the region.

This memorandum concludes:

- Residential parking ratios within the overall Waterfront Station PUD are slightly higher than that of the proposed Project (the final parcel of the Waterfront Station PUD). Given that parking supply in a multifamily residential building can influence rates of vehicle ownership among residents, the Project's residential parking ratio accomplishes the goal of meeting the needs of the Project without encouraging additional vehicular traffic.
- Although the amount of parking a residential development provides can influence vehicle ownership among its residents, not all residents use their vehicles on a daily basis. Based on detailed parking data collected in Arlington County (the most comparable data available), a significant amount of multifamily residential parking remains occupied over the course of a full day. Averaging data collected at 36 residential study sites, only 46% of vehicles parked in the residential garages departed the garage over the course of an average weekday. This data suggests that although residents own vehicles, more than half do not use their vehicles on a daily basis.
- Although it is difficult to isolate the quantitative impacts of specific TDM strategies, local studies support the idea that TDM strategies and increased awareness of and proximity to alternate transportation modes decrease the

proportion of single-occupancy vehicle (SOV) trips. Detailed data collected in Arlington County (again, the most comparable data available) show a correlation between residential TDM programs and decreased reliance on SOV trips. Additionally, a member survey performed by Capital Bikeshare shows that the bikeshare program has encouraged residents to rely less on personal vehicles or ridesharing services and more on biking. Members also indicated that they would use Capital Bikeshare more frequently if there were more stations in their neighborhood.

- Based on the studied impacts of TDM programs, enhanced TDM strategies can be an effective way to mitigate vehicular impacts of a mixed-use development such as the Project and are generally more appropriate in an urban setting than other mitigation measures that simply improve conditions for vehicular modes of travel. The TDM plan proposed as part of the Project incorporates TDM strategies that have been shown to be successful elsewhere. These strategies include Transit Screens, bicycle amenities, unbundled residential parking, and the installation of a Capital Bikeshare station. The full TDM plan is detailed in this memorandum.

Parking Justification

As discussed in the CTR, the Project proposes to supply 198 residential parking spaces for 456 residential units, resulting in a parking ratio of 0.43 spaces per unit. This amount of parking will be sufficient to serve the needs of the Project, without inducing vehicular trips. The following section provides a summary of comparable parking data, specific parking needs of the Project, and data collected as part of the *Arlington County Residential Building Study*, performed by Nelson Nygaard in May of 2018, to give additional context to the proposed parking supply. Based on the information outlined in these resources, this memorandum concludes that the Project includes an appropriate amount of parking.

Comparable Data

Within the overall Waterfront Station PUD, parking supply and parking ratio data was collected for residential components of each development parcel (whether already built or only approved). This data, included below in Table 1, shows that the average residential parking ratio within the overall Waterfront Station PUD is 0.53 spaces per unit. The proposed parking ratio for the Project, the final parcel of the Waterfront Station PUD, is 0.43 spaces per unit. Although this amount of parking is lower than what has been provided or proposed within the Waterfront Station PUD previously, this amount of parking is consistent with parking demand trends throughout the District and is expected to be adequate to serve the site without encouraging vehicle ownership. Excess parking can induce vehicle ownership; thus, the Applicant has intentionally lowered the parking supply to a point that still meets market and Project demands.

Table 1: Waterfront Station Comparable Parking Data

Project Name	Total Residential Units	Parking Supply	
		Total Residential Parking Spaces	Parking Ratio (Spaces/Unit)
The Eliot	365	223	0.61
325 M Street SW	296	146	0.49
375 M Street SW	308	154	0.50
The Lex	264	140	0.53
		Average	**0.53**

*Although The Leo is part of the overall Waterfront Station PUD, residential parking supply data was not available at the time of this study.

Vehicle Parking vs. Vehicle Trips

Although the amount of parking that a multifamily residential development provides may have an impact on car ownership of its residents, residents who occupy parking spaces do not necessarily use their vehicle on a daily basis. There is limited data available from the District of Columbia regarding daily residential parking turnover; however, extensive data is available from Arlington County as part of the *Arlington County Residential Building Study.* Given the geographic proximity of the District and Arlington, and given similarities in terms of transit availability, urban densities, and resident demographics, Arlington's study is instructive to development in the District. Data was collected at numerous residential buildings throughout the entirety of Arlington County including resident intercept studies, entrance/exit counts, and parking counts. Although overall parking requirements differ between Arlington County and DC, the collected data helps determine how much residential parking turnover occurs on a daily basis.

For the majority of the study sites, the maximum parking occupancy stays below 90% and the minimum parking occupancy stays above 20% at any given time. On average, the maximum parking occupancy for these sites is 80% and the minimum parking occupancy is 36%. With this in mind, it can be concluded that many residents do not use their vehicles on a regular basis and that in many cases parking is oversupplied. On average, only 46% of vehicles parked in the residential garages leave the site on any given day. The range of parking turnover for all sites is between 26% to 76%, meaning that at most 76% of parked vehicles exit (and presumably re-enter) a residential building on any given day.

In the context of the Project this means that although 198 parking spaces are supplied for residential uses, not all parked vehicles are expected to exit and enter the site on a daily basis. If the average turnover of 46% is applied, this means a total of 91 vehicles in and out of the garage over the course of the entire day, with the potential for some additional trips for residents who make multiple vehicles trips in one day. The analysis within the CTR assumes 83 outbound residential trips during the AM peak hour and 79 inbound residential trips during the PM peak hour. That is, the CTR assumes nearly as many trips during the peak hours as the Arlington study would suggest occur over an entire day. As such, the analysis included in the CTR is conservative as it assumes that a majority of estimated daily residential trips occur during the same AM and PM peak hours, respectively. It is more likely that these trips will be distributed over a longer time frame, but the CTR employed conservative assumptions to analyze vehicular impacts during the peak hours.

Impacts of TDM Programs

Although it is difficult to isolate the quantitative impacts of specific TDM strategies, there are local studies that support the position that TDM strategies and increased awareness and proximity to alternate transportation modes decreases the proportion of SOV trips. The studies outlined below include the *Arlington County Residential Building Study* prepared by Nelson Nygaard Consulting Associates in May of 2018 and the *2016 Capital Bikeshare Member Survey Report* prepared by LDA Consulting in February of 2017.

Arlington County Residential Building Study

In addition to the parking characteristics discussed in the previous section, the *Arlington County Residential Building Study* outlined impacts of TDM programs at residential buildings throughout Arlington County. The study evaluated the impacts of the following TDM measures at 36 residential buildings across Arlington County:

- Travel information
    - Transit schedule, service, and stop location information

- Biking and walking information

- Shuttle to Metro
- Transit support
  - SmarTrip cards for sale on site
  - SmarTrip cards as an initial "gift"/incentive to try transit
  - Other transit discounts and/or conveniences
- Bicycle Amenities
  - Secure, weather protected bicycle parking and/or
  - Visitor bike parking
- Unbundled parking (parking cost is contracted separately from the primary lease agreement).

The study notes that identifying the specific effects of TDM measures is not feasible with the available data and simple size; however, a comparison of mode share for properties offering and not offering TDM measures was completed as shown on Table 2.

Table 2: Building Average Drive Alone Mode Share by TDM Measure Offered (*Arlington County Residential Building Study*)

TDM Measure	Average Drive Alone (SOV) Share		% of Residents who Always Drive Alone	
	Offered	*Not Offered*	*Offered*	*Not Offered*
Travel Information	49%	47%	38%	47%
Transit Support	50%	46%	41%	37%
Bicycle Amenities	49%	NA**	39%	NA**
Shuttle to Metro*	61%	64%	49%	54%
Unbundled Parking	48%	54%	38%	45%

* Only considers responses outside the Metro catchment
** Measure offered in all buildings

This table confirms that for residential buildings where a specific TDM service is available, the average SOV share is less than that of a residential building without that TDM service. The only exception to this is the transit support measures, in which the study notes that the data is insufficient to determine the underlying cause of an increase in SOV trips with the transit support TDM measure. Generally speaking, the implementation of TDM programs is shown to decrease the reliance on SOV trips, particularly through the inclusion of travel information and unbundled parking.

In addition to the findings stated above, the study concludes with an outline of findings and associated actions items and outcomes. Although many of the overall action items are specific to the needs of Arlington County, the following finding/action is equally applicable in the District:

- "**Finding:** While many residents are aware of TDM in principle and that there are measures/amenities available in their buildings many residents are not well informed on the topic. A majority, 84%, say they are aware of at least one service (sometimes erroneously) and 57% say they have tried at least one offered measure. Property managers are also not always well informed with respect to their obligations and offerings.

> **Action and Outcome:** There are opportunities to improve outreach materials and generate a better informed TDM constituency. A more informed community will be able to take greater advantage of the TDM offerings and amenities."

This finding highlights the importance of not only implementing a TDM program, but also providing the right tools for the property owner to encourage awareness of the TDM program and for residents to take advantage of the TDM program.

2016 Capital Bikeshare Member Survey

One of the primary purposes of the *Capital Bikeshare Member Survey* is to determine travel changes made in response to Capital Bikeshare availability. In relation to this objective, the following conclusions were drawn from the survey data:

- "**Bikeshare allows members to get around without the cost and hassle of car ownership and driving** – More than four in ten (44%) Capital Bikeshare members didn't have access to a car or other personal vehicle. And 20% of respondents said they reduced their driving miles since joining Capital Bikeshare. These respondents each reduced an average of 1,565 annual driving miles, equating to about 9.9 million fewer driving miles by the 31,700 bikeshare members (in November 2016)."
- "**Bikeshare members shift some trips to bicycle from other travel modes** – Eighty-two percent of respondents increased their use of bicycling since joining Capital Bikeshare and 49% said they ride a bike much more often. By comparison, respondents reduced use of all other transportation modes; 54% drove a personal motor vehicle less often, 65% used a taxi less often, and 60% reduced their use of Uber/Lyft ride-hailing services. Nearly six in ten (58%) rode Metrorail less often, 55% rode a bus less often, and 35% decreased their use of walking, suggesting some shifts from each of these modes to biking."
- "**Nine in ten CB members would increase their bikeshare use if bikeshare service was expanded and/or other service enhancements were made** – Fifty-five percent of respondents said they would ride more often if more docks/bikes were added to existing stations, indicating unmet demand for rides even within the current service area. Almost four in ten (39%) respondents would use bikeshare more if new stations were installed in residential neighborhoods, perhaps indicating a desire for greater access to bikeshare for short trips within a home neighborhood. Respondents also expressed significant interest in several non-expansion service enhancements. Nearly four in ten (38%) said they would use bikeshare more often if they could lock a bike near the stations when the station dock was full."

Based on these findings, access to Capital Bikeshare helps reduce SOV trips, and that increased availability to and density of bikeshare stations will only further these benefits.

Applicability of Applicant's TDM Plan

Although it is difficult to extrapolate the exact impact of TDM strategies, it is clear from the above studies that the implementation of TDM practices and access to Capital Bikeshare decreases the reliance on SOV trips and increases the use of non-auto modes of travel. As such, enhanced TDM strategies are an effective way to mitigate vehicular impacts of a project and are generally more appropriate in an urban setting than mitigations that simply improve conditions for vehicular modes of travel. This is the mitigation strategy that DDOT requested in their Staff Report dated January 22, 2019, and that the Applicant agreed to. The full revised TDM plan is detailed below with the updates per DDOT's staff report outlined in **bold**:

The following TDM components apply to the development a whole:

- The Applicant will identify a TDM Leader (for planning, construction, and operations). The TDM Leader will work with residents and tenants of the building to distribute and market various transportation alternatives and options. This includes providing TDM materials to new residents and tenants in a welcome package.
- The Applicant will provide TDM Leader contact information to DDOT and report TDM efforts and amenities to goDCgo staff once per year.
- **TDM Leaders will receive TDM training from goDCgo to learn about the TDM conditions for this project and nearby available options**
- The Applicant will post all TDM commitments online, publicize availability, and allow the public to see what commitments have been promised.
- The Applicant will provide website links to CommuterConnections.com and goDCgo.com on property websites.
- The Applicant will meet or exceed the Zoning Regulations' requirements for bicycle parking. This includes secure interior bicycle parking and short-term exterior bicycle parking around the perimeter of the site.
- **Long-term bicycle storage rooms will accommodate non-traditional sized bikes including cargo, tandem, and kids' bikes.**
- **The Applicant will install a bicycle repair station within each of the long-term bicycle storage rooms.**
- **The Applicant will install a minimum of two (2) showers and six (6) lockers for use by the building's non-residential uses.**
- **Fund and install a 19-dock Capital Bikeshare (CaBi) station and fund one-year of maintenance and operations costs.**

The following TDM components apply to the residential use:

- The Applicant will unbundle all parking from the cost of the lease or purchase of residential units. Parking costs will be set at the average market rate within a ¼ mile, at a minimum.
- The Applicant will install a Transportation Information Center Display (electronic screen) within the residential lobby, containing information related to local transportation alternatives.
- **The Applicant will distribute welcome packets to all new residents that should, at a minimum, include the Metrorail pocket guide, Capital Bikeshare coupon or rack brochure, Guaranteed Ride Home (GRH) brochure, and the most recent DC Bike Map.**
- **The Applicant will provide 10 shopping carts for resident use to run errands and for grocery shopping.**

The following TDM components apply to the art/cultural use:

- **The Applicant will post "getting here" information on the arts/culture tenant website for attendees/visitors that includes information about how to travel to the site via Metro, biking, and walking. A printable map should also be available and goDCgo can assist with this effort.**

This TDM plan includes several of the effective strategies outlined in the *Arlington County Residential Building Study*, including travel information, bicycle amenities, and unbundling parking. Additionally, the TDM plan includes several strategies that

help with TDM outreach, which was identified as an area for improvement in the study. The proposed TDM plan includes strategies that both improve the knowledge and accountability of the property owner, and also educates residents on what TDM is available to them.

This TDM plan also includes the installation of a 19-dock Capital Bikeshare station, which expands the existing bikeshare network within the SW neighborhood and helps give relief to the overburdened station at the intersection of 4th Street, SW and M Street, SW. Not only does this additional Capital Bikeshare station give greater transportation flexibility to the project itself, but it also provides improved Capital Bikeshare access to the surrounding neighborhood. As such, this TDM strategy has the opportunity to decrease reliability on SOV trips at the project and throughout the neighborhood.