

MEMORANDUM

DATE: February 27, 2019

TO: Lisa Rigg, P.E.
City of Redmond

FROM: Chris Bicket, P.E.
TENW

SUBJECT: Access Analysis to Support Driveway Deviation Request
LMC Marymoor – Redmond, WA
TENW Project No. 5607

This memorandum summarizes an evaluation of the potential impacts of parking maneuvers for the LMC Marymoor project associated with four (4) proposed perpendicular parking stalls on the north side of the new private site roadway known as NE 69th Street. Specifically, the City has expressed concern about parking maneuvers and how they could impact the safety of adjacent vehicular operations along NE 69th Street, which serves as one of the primary access points into the LMC site. This evaluation responds to the following City comment associated with an *Administrative Engineering Deviation Request for Driveway Spacing* on NE 69th Street between 176th Ave NE and the on-site garage access locations:

“There are some safety concerns for this 90 degree parking stalls...It is expected NE 69th St will be busy for cars...and cars in the parking stalls backing into this busy driveway will not be able to see traffic getting into the driveway from 176th Ave NE and from the garage entrances...Can you design parallel parking stalls further to the east...on NE 69th St or do parallel parking on both sides of NE 69th St.”

NE 69th Street

LMC Marymoor is a proposed 5-acre mixed-use residential/retail development. This development includes frontage improvements on NE 70th Street, and 176th Avenue NE. Additionally, NE 68th Street and NE 69th Street (Private) will be developed with this project. The area evaluated in this memorandum along NE 69th Street is illustrated in the **Figure 1** site plan below. NE 69th Street will provide primary access to the LMC Marymoor site and is designed to be a low speed, Type III woonerf style private roadway that dead-ends at the garage access points.

The four (4) perpendicular parking stalls located on NE 69th Street (see yellow highlight in **Figure 1** below) are intended to be signed “Future Tenant Parking” and used by potential residential tenants visiting the leasing office located in the north building. Potential residential tenants typically visit the leasing office during the midday on weekdays and on the weekends. Therefore, these 4 stalls are not expected to be high-turnover stalls (like a retail use might be), especially during the weekday AM and PM peak hours. Given the intended use of these four (4) stalls, the location on the surface of the site is critical to ensure potential lessees can easily navigate their way to the leasing office.

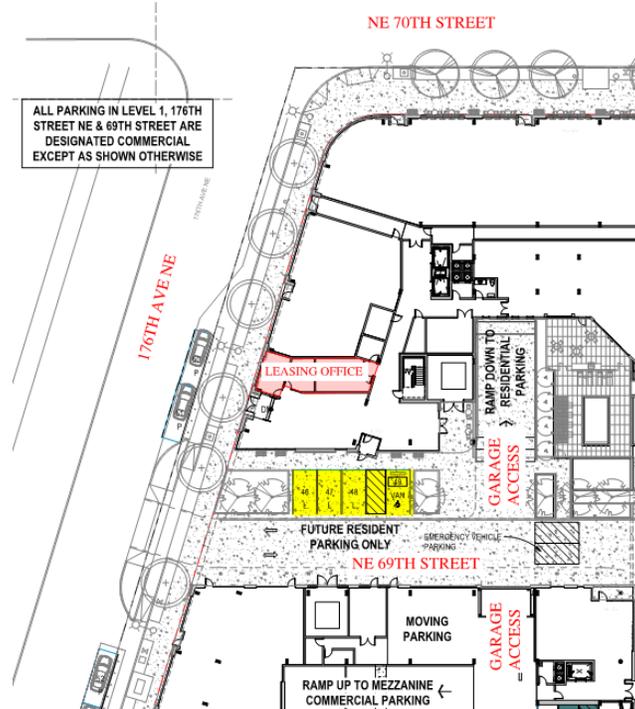


Figure 1 Site Plan

TENW evaluated anticipated conditions along NE 69th Street in the vicinity of the four (4) proposed perpendicular parking stalls with respect to the following:

- Safety and function of vehicles entering and exiting the site
- Safety of pedestrians
- Safety of vehicles making parking maneuvers

This access analysis supplements the applicant's formal *Administrative Engineering Deviation Request for Driveway Spacing* (KPF, July 26, 2018). It is anticipated that the information in this memo will enable the City to issue a final decision on the driveway spacing deviation request for NE 69th Street.

Safety and Operations

Sight Triangles

The sight triangles for 176th Ave NE, NE 69th Street and the two garage access points were evaluated and shown in **Figure 2** below. Vehicular and Pedestrian sight triangles have been verified to be clear of obstructions. Cars approaching NE 69th Street from 176th Ave NE would be able to see vehicles accessing the perpendicular parking stalls before beginning their turn onto NE 69th Street. Vehicles exiting the garages would be stop controlled. At the stop, vehicles would have a clear line of sight to cars accessing the perpendicular parking stalls.

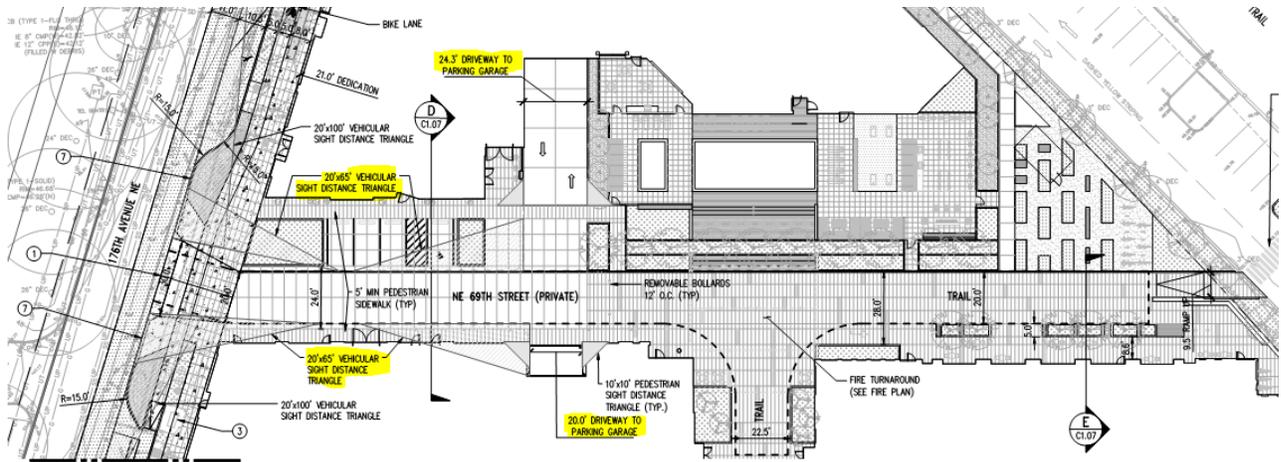


Figure 2 Sight Triangles

2022 Operations on NE 69th Street

As documented in the *LMC Marymoor Updated Transportation Impact Study* (TENW, February 21, 2019), during the AM and PM peak hours in 2022 with LMC Marymoor project, the southbound left-turn onto NE 69th Street from 176th Ave NE is expected to operate at LOS A with an anticipated 95th percentile vehicle queue of less than one vehicle. Additionally, vehicles exiting NE 69th Street (westbound) to 176th Ave NE are expected to operate at LOS C with an anticipated 95th percentile vehicle queue of two vehicles during the AM and PM peak hours in 2022.

As shown in **Figure 3** below, an outbound (westbound) queue of two vehicles on NE 69th Street would not block the perpendicular parking stalls, so inbound vehicles could freely access all four of the perpendicular parking stalls. Additionally, at least one vehicle can queue on site (eastbound) while a vehicle is entering the western most perpendicular parking stall as shown in **Figure 3** below.

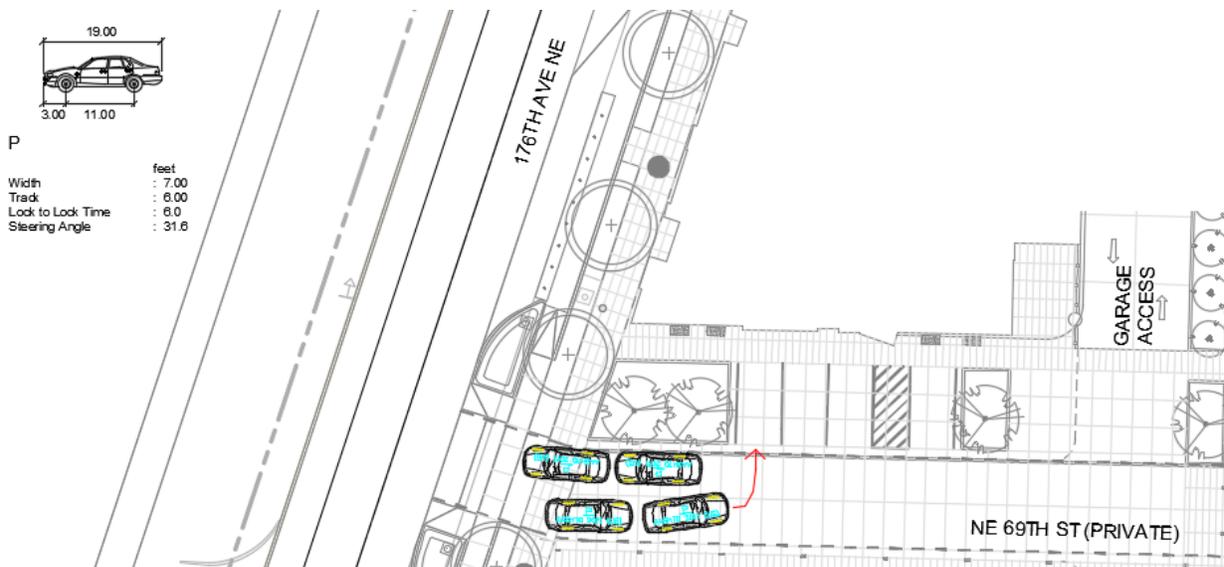


Figure 3 2022 AM and PM Peak Hour Vehicle Queues on NE 69th Street

2026 Operations on NE 69th Street

The Sound Transit (ST) SE Redmond Light Rail Station is anticipated to be operational in 2024, two years after the anticipated completion of the LMC Marymoor project. Per the request of the City, operations of NE 69th Street were evaluated for year 2026 conditions with the Sound Transit SE Redmond Station and with the LMC Marymoor project.

As documented in the *LMC Marymoor Updated Transportation Impact Study* (TENW, February 21, 2019), during the AM and PM peak hours in 2026, the southbound left-turn onto NE 69th Street from 176th Ave NE is expected to operate at LOS B or better with an anticipated 95th percentile vehicle queue of one vehicle. Additionally, vehicles exiting NE 69th Street (westbound) to 176th Ave NE are expected to operate at LOS D during the AM peak hour and LOS E during the PM peak hour with an anticipated 95th percentile vehicle queue of four vehicles during the AM peak hour and five vehicles during the PM peak hour in 2026.

An exiting (westbound) queue of 4 to 5 vehicles during the AM and PM peak hours would block the perpendicular parking stalls. However, it should be noted that a 95th percentile queue is a queue that is only exceeded 5 percent of the time. Based on the location of the proposed perpendicular stalls on NE 69th Street, at least one vehicle can queue on site (eastbound) while a vehicle is waiting to access and entering the western most perpendicular parking stall as shown in **Figure 3** above.

If the 4 perpendicular stalls are blocked by an outbound queue, a driver wanting to park in the perpendicular parking would most likely continue past the perpendicular stalls and enter the garage on the south side of NE 69th Street to park. Signage will be placed on NE 69th Street directing drivers to additional parking in this garage. Based on this analysis, the proposed 90-degree on-street parking stalls and associated maneuvers are not anticipated to be impacted by the on-site queuing on NE 69th Street.

2026 Operations on 176th Ave NE

With the Sound Transit SE Redmond Station, the intersection of NE 70th Street/176th Ave NE will be signalized. As documented in the *LMC Marymoor Updated Transportation Impact Study* (TENW, February 21, 2019), the 95th percentile queue for the northbound approach on 176th Ave NE at NE 70th Street /176th Ave NE is anticipated to extend beyond the LMC site access at NE 69th Street during both the AM and PM peak hours.

The anticipated queuing on the northbound approach at NE 70th Street/176th Ave NE in 2026 with Sound Transit shows that it may be difficult for drivers to access 176th Ave NE from NE 69th Street during the peak hours. Residents of the LMC Marymoor project will have alternate access to 176th Ave NE via NE 68th Street which will operate better than NE 69th Street. This level of queuing in an urban area is not unexpected. With the new grid system of streets being implemented in Marymoor, queues during the peak hours will inevitably back up between adjacent intersections during the peak hours. Drivers will either create gaps to avoid completely blocking intersections, or drivers leaving the LMC Marymoor project will need to wait for the queue to clear on a green light at NE 70th Street/176th Ave NE. Based on this analysis, the proposed 90-degree on-street parking stalls and associated maneuvers are not anticipated to impact the northbound queuing on 176th Ave NE.

Alternate Parking Options Considered

The project has considered other options for the parking stalls along NE 69th Street as summarized below:

- 176th Ave NE: On-street parking on the adjacent 176th Ave NE is limited north and south of NE 69th Street and would be intended to support the LMC site and adjacent businesses. Since this is public parking, these stalls cannot be signed for a specific use such as residential leasing and therefore are not a feasible alternative.
- NE 69th Street: The area east of the garage driveways on NE 69th Street is designed to be restricted to pedestrian/bicycle (non-motorized) and emergency vehicle/fire truck use via removeable bollards and is not available for vehicular maneuvers or parking.
- Parallel or Angled Parking: Parallel or Angled parking stalls along NE 69th Street were considered but would both require a turnaround for vehicles on this dead-end Private Road. These stall configurations would be anticipated to create more congestion on NE 69th Street compared to the proposed 90-degree parking stalls. NE 69th Street east of the garage driveways is intended to be a pedestrian plaza area that is built to accommodate emergency vehicle turnaround. Removable bollards are proposed directly east of the garages to provide a safe pedestrian environment and limit access to pedestrians/bicycles and emergency vehicles. Therefore, it is not recommended to be utilized as a turnaround for general vehicular traffic.
- Garage Parking: Locating stalls for the leasing office within the garage would negatively impact the overall operation and function of the apartment community. Potential residential tenants would have to access the parking garage on the south side of NE 69th Street and then cross NE 69th Street to access the leasing office, which would result in potential additional pedestrian/vehicular conflicts compared to the proposed location of the four (4) stalls on NE 69th Street.

Conclusion

Based on the justifications summarized below in response to the City's concerns regarding the safety of the proposed perpendicular parking stalls on NE 69th Street, we recommend the applicant's proposed garage access (driveway) locations on NE 69th Street and the City's approval of the driveway spacing deviation request.

- The provision of the four (4) perpendicular parking stalls on NE 69th Street is critical to the function of the site.
- Alternate surface parking locations and orientation were evaluated. However, the proposed perpendicular stalls were found to be ideal.
- Sight triangles will remain unobstructed to ensure adequate visibility for vehicles and pedestrians approaching the parking maneuvering area from both 176th Ave NE and the internal garage access.
- The four (4) perpendicular parking stalls are located as far east as site constraints allow to maximize the distance from 176th Ave NE for queue storage and sight triangles.
- The limited number of stalls provided (4) and intended use would result in a low number of anticipated parking maneuvers, especially during the weekday AM and PM peak hours. This would limit the frequency of potential conflicts between vehicles to/from the garage accesses on NE 69th Street and vehicles using the perpendicular parking stalls.

- Inbound vehicles from 176th Ave NE would have adequate storage on-site to queue while waiting for a parking maneuver in/out of the perpendicular parking; therefore, vehicular queuing onto 176th Ave NE is not expected to occur due to the operation of the perpendicular parking stalls.
- The outbound 95th percentile vehicle queue exiting the site onto 176th Ave NE is anticipated to be two vehicles or less during the weekday AM and PM peak hours in 2022 which would not impact the maneuvering area for the proposed parking stalls (see **Figure 3**).
- The low speed environment on NE 69th Street based on woonerf type design reduces the potential for high-speed vehicular conflicts.

If you have any questions regarding this information, please contact me at (425) 250-5002 or email at bicket@tenw.com