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MEMORANDUM

Date: October 7, 2019

Project #: 23550

To: Fred Gast, Lyon Homes
Stacy Connery, Pacific Community Design

From: Julia Kuhn, PE & Chris Brehmer, PE

Project: Cedar Hills Center Development

Subject: Shared Parking Review

This memorandum presents the shared parking needs associated the Cedar Hills Center. When fully redeveloped, the approximately 113,361 square feet retail center located to the southeast of the SW Park Way/SW Marlow Avenue intersection would be replaced with 509 apartments, 56,388 square feet of commercial space, and 576 vehicular parking spaces.

This memorandum has been prepared to provide supplemental information to facilitate review by the City's Planning Commission. As discussed herein, the shared parking analyses demonstrates that the proposed supply will meet the needs of the redeveloped center when considering the weekday and the weekend conditions.

Per the City of Beaverton Development Code (BDC) Chapter 60.30.10.5, the minimum parking ratios that apply to the redevelopment include:

- Apartments – 1.0 spaces per dwelling unit; and,
- Retail (including shopping, commercial and restaurant uses) – 3.0 spaces per 1,000 square feet.

Per Chapter 60.30.10.9, when multiple uses occupy the site, the total requirement is the sum of the uses computed individually. However, Chapter 60.30.10.9.B states:

B. Spaces which only meet the requirements of one establishment may serve more than one establishment on the same parking lot, provided that sufficient evidence is presented which shows that the times of peak parking demand for the various establishments do not coincide, and that adequate parking will be available at all times when the various establishments are in operation.

As allowed under Chapter 60.30.11, Lyon Homes is proposing a number of multimodal enhancements to the site to reduce the minimum parking requirement. With these reductions, the 576 spaces proposed meets BDC requirements. This memorandum supplements the parking review by Planning Commission.

Beaverton Development Code Required Parking

When the site is fully developed the parking for the individual uses per BDC Chapter 60.30.10.9 would be:

- Apartments – 1.0 spaces per dwelling unit * 509 units = 509 spaces;
- Retail – 3.0 spaces per 1,000 square feet * 56,388 square feet = 169 spaces;
- Total Parking assuming Individual Uses are Served Independently = 678 spaces.

The Cedar Hills Center is located in close proximity both to the Sunset Transit Center as well as the US 26 pedestrian and bicycle pathway that continues along SW Park Way to the west. In addition, sidewalks and bike lanes connect users with access to the transit service along SW Park Way as well as the surrounding residential and commercial land uses. These multimodal facilities provide convenient and direct access for pedestrians, cyclists and transit for future residents, employees and visitors of the Cedar Hills Center. To further enhance the comfort and convenience of non-automobile travel associated with the site and consistent with BDC Chapter 60.30.11., Lyons Homes is proposing to complete the following as part of site redevelopment:

- Provision of a pedestrian plaza and transit shelter along SW Park Way adjacent to the transit stop (which will be relocated following coordination with TriMet). These amenities will meet the requirements outlined in BDC Chapter 60.30.11.A.2 and will enable a 10 percent reduction in the vehicular parking requirement. This reduces the 678 spaces by 68 spaces.
- Provision of 131 additional long-term bicycle parking spaces given the site's proximity to transit as well as to the bicycle pathway. Per BDC Chapter 60.30.11.E, this will enable a maximum reduction in vehicle parking by 5 percent, which would reduce the parking requirement by 34 spaces (i.e., $678 * 0.05$).
- With these reductions to the required parking, the adjusted vehicular parking requirement for the individual uses is 576 spaces (i.e., $678 - 68 - 34$).

With these reductions, the 576 spaces proposed meets the adjusted vehicular parking requirements.

Identification of Shared Use Parking

To further understand the potential for shared use parking, we obtained information about time-of-day parking demand profiles from the *Parking Generation Manual* (5th Edition, Institute of Transportation Engineers). This manual is described as providing a “*current state-of-the-practice understanding of the relationship between parking demand and the many characteristics associated with an individual development site.*” Information about peak parking demands can be useful in quantifying the supply that may be needed to forecast the needs of a new development and to reduce the potential for off-site parking impacts. Further, it provides time-of-day hourly variations in parking demand by land use type to help in the estimation of shared use parking.

For the Cedar Hills Center, we used information about hourly variation for the commercial and residential uses from the *Parking Generation Manual* as well as the BDC minimum parking ratio for the individual uses to analyze the total supply needed. As part of this determination, we applied the following for the shared parking calculations:

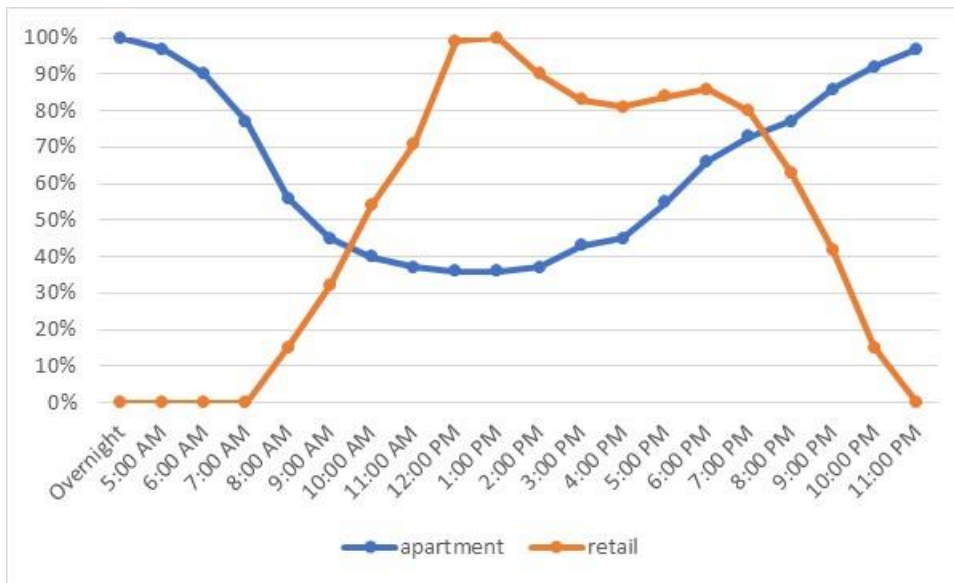
- The peak parking demand for the apartments is 1.0 spaces per dwelling unit per the BDC requirements.
- The peak parking demand for the retail uses is 3.0 spaces per 1,000 square feet per the BDC requirements.
- The hourly parking profile for the apartments is based on the *General Urban/Suburban* context within the *Parking Generation Manual* for multifamily housing (ITE Land Use 220, which includes apartments, townhouses and condominiums).
- The hourly parking profile for the retail uses is based on the Non-December context for “Shopping Center” uses within the *Parking Generation Manual* (ITE Land Use 820). At this point, the specific tenants for the retail uses are unknown so a generalized retail categorization is appropriate. The *Shopping Center* land use type is based on data collected at “neighborhood, community, town center and regional shopping centers” and accounts for both retail uses and other “non-merchandising facilities” such as offices, restaurants, post offices, health and recreational facilities, etc. Given the variety of uses accounted for, this land use type is a reasonable estimation for the future needs of the Cedar Hills Center. Further, the Non-December context was used because a large-scale shopping center that could attract holiday shoppers is not proposed.

Based on the above, the following sections summarize the shared parking needs for a weekday and Saturday. The *Parking Generation Manual* does not contain hourly profile data for either land use for a Sunday condition but one could ascertain that the Saturday condition represents the peak parking for the weekend based on other information contained in both the *Trip Generation* and *Parking Generation Manuals*.

Weekday Shared Parking Needs

Exhibit 1 illustrates the hourly parking profiles on a weekday for the apartments and the retail from the *Parking Generation Manual*. This exhibit shows the percentage of the “peak demand” that occurs by hour of the day to help understand how the needs of the individual uses differ throughout the day, and to glean when the shared needs of the uses overlap.

Exhibit 1. Percent of Peak Parking Demand by Time of Day – Weekday Condition



As shown, if only residential uses were proposed, the overnight time period would be used to reflect needed parking supply whereas if only retail were proposed the mid-day information would be used to reflect parking supply. When combining the two uses, the evening hours (i.e., 6 PM – 9 PM) may represent the time in which the highest demand of the two uses occurs simultaneously.

Exhibit 2 and Table 1 present the shared use parking calculations for full redevelopment based on the BDC parking ratio requirements and the weekday hourly profile. The table also compares the proposed supply, the supply required to serve the shared use parking needs on a weekday, and the parking supply that would be required if no shared parking was provided.

Exhibit 2. Redevelopment Shared Use Parking Needs – Weekday Condition

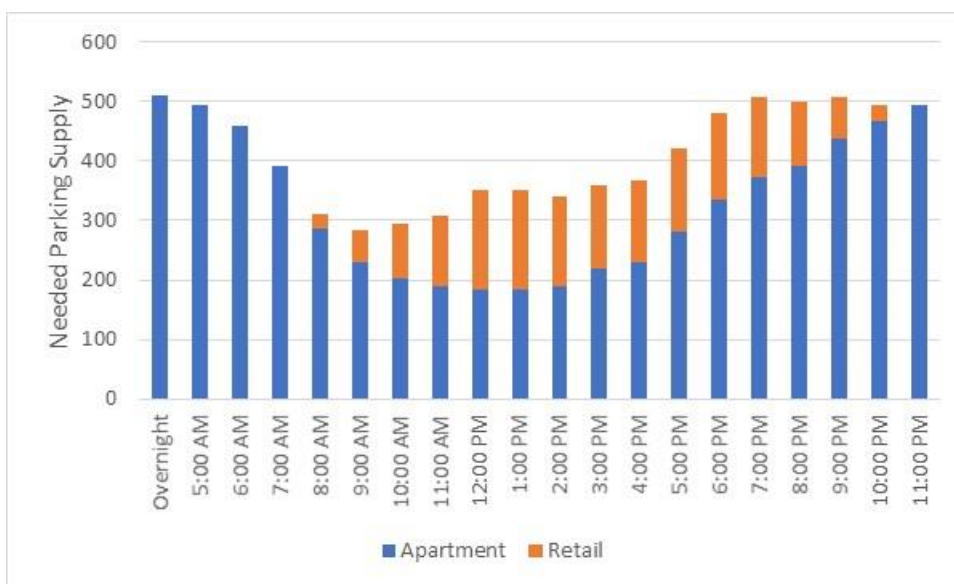


Table 1. Redevelopment Parking Needs – Weekday Condition

Land Use	ITE Code	Size	Individual Parking Requirements per City Development Code	Time Peak Parking Demand Occurs per ITE	Ratio of 9 PM Supply Needed to Parking Requirement	Resulting 9 PM Parking Rate	Parking Supply Needed at 9 PM
Apartments	220	509 units	1.00 spaces per unit	Overnight	86%	0.86 spaces per unit	438 spaces
Retail	820	56,388 sq. ft.	3.00 spaces per 1,000 sq. ft.	1 PM	42%	1.26 spaces per 1,000 sq. ft.	71 spaces
Shared Use Parking Supply Needed							509 spaces
Supply Provided							576 spaces
Excess Supply per ITE Shared Parking Analysis							67 spaces
City Code Requirement							678 spaces
Allowable Reductions in Required Parking							-102 spaces
Adjusted City Code Requirement							576 spaces
Deficit per City Code							None

As shown, the peak parking demand when accounting for both residential and retail uses occurs at 9 PM on a weeknight when 509 spaces are needed. The proposed parking supply provides 67 more spaces than would be needed per the shared analyses, thereby meeting the intent of the Shared Parking Determination.

Saturday Shared Parking Needs

Exhibit 3 illustrates the hourly parking profiles for the apartments and the retail from the *Parking Generation Manual* assuming a Saturday condition.

Exhibit 3. Percent of Peak Parking Demand by Time of Day on a Saturday

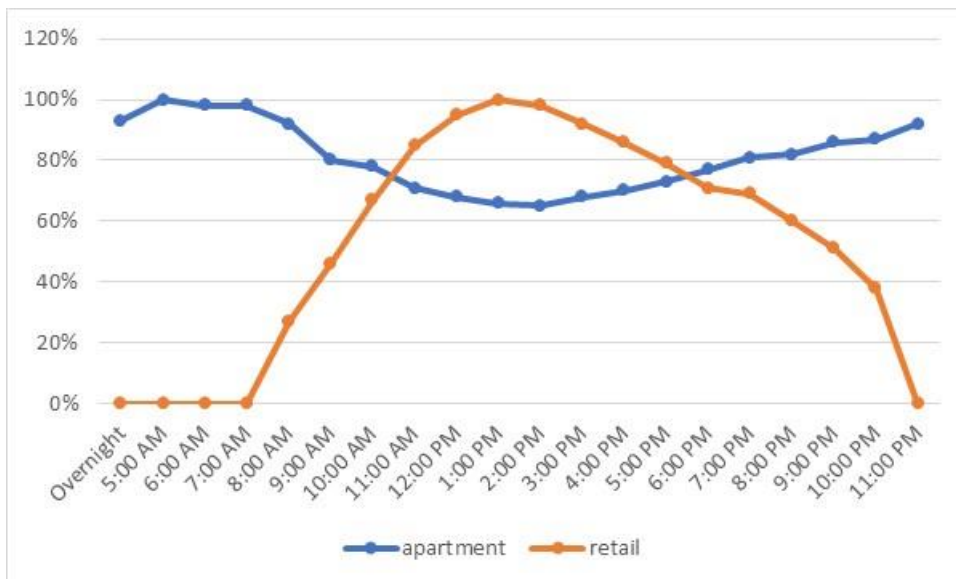


Exhibit 4 and Table 2 present the shared use parking calculations for full redevelopment for a Saturday condition. Table 2 also compares the proposed supply to the shared use determination versus that required by each individual use per the BDC requirements. As shown, the shared parking demand peaks at 7 PM on a Saturday but is fairly consistent throughout the day and into the evening.

Exhibit 4. Redevelopment Shared Use Parking Needs – Saturday Condition



Table 2. Redevelopment Parking Needs – Saturday Condition

Land Use	ITE Code	Size	Individual Parking Requirements per City Development Code	Time Peak Parking Demand Occurs per ITE	Ratio of 7 PM Supply Needed to Parking Requirement	Resulting 7 PM Parking Rate	Parking Supply Needed at 7 PM
Apartments	220	509 units	1.00 spaces per unit	5:00 AM	81%	0.81 spaces per unit	412 spaces
Retail	820	56,388 sq. ft.	3.00 spaces per 1,000 sq. ft.	1 PM	69%	2.07 spaces per 1,000 sq. ft.	117 spaces
Combined Saturday Parking Supply Needed							529 spaces
Supply Provided							576 spaces
Excess Supply per ITE Shared Parking Analysis							47 spaces
City Code Requirement							678 spaces
Allowable Reductions in Required Parking							-102 spaces
Adjusted City Code Requirement							576 spaces
Deficit per City Code							None

As shown, the Saturday analysis of shared parking revealed that 529 parking spaces are needed to accommodate the residential and retail uses. The proposed 576 vehicular parking space supply would provide 47 more spaces than needed per the shared analyses, thereby also meeting the intent of the Shared Parking Determination.

Retail Specific Parking Requirements

As noted in our September 30th Traffic Impact Study Supplemental memo, only residents will have access to the 337 below grade parking spaces within the garage. The retail users and the apartment residents will share the remaining 239 spaces within the surface parking area.

As discussed previously, the highest retail parking demand occurs during the mid-day on both the weekday and on the weekend. At this time, the retail demand is estimated to be 169 spaces. As shown in Exhibit 2, when the retail is at its peak on the weekday, the residential demand is estimated to be 183 spaces, leaving ample parking opportunities for retail parkers. Further, when both uses combine for the shared peak parking time at 9 PM, the retail demand is only 71 spaces whereas the residential parking is estimated to be 438 spaces. At this time, residential users are anticipated to park in the garage as well as the surface parking area but yet still leaving ample spaces for retail users.

As shown in Exhibit 4, when the retail is at its peak on the weekend, the residential demand is estimated to be 336 spaces, leaving ample parking opportunities for retail parkers. Further, when both uses combine for the shared peak parking time at 7 PM, the retail demand is 117 spaces whereas the residential parking is estimated to be 412 spaces. At this time, residential users are anticipated to park in the garage as well as the surface parking area but yet still leaving ample spaces for retail users.

Based on this analysis, we conclude the shared parking is appropriate for use at the redeveloped Cedar Hills Center.

Please let us know if you have any questions regarding our analyses.