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## MEMORANDUM

**Date:** March 25, 2020  
**To:** Brian Hansen  
**From:** Bryan T. Nemeth, P.E., PTOE  
Kelsey. E. Retherford, P.E.  
**Subject:** Village Club Parking Study  
City of Bloomington  
Project No.: T44.119241

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

By: Kelsey Retherford  
Kelsey E. Retherford, P.E.  
License No. 57829

Date: 3-25-2020

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## Introduction

A parking study was completed for the proposed expansion of the Village Club apartment at 1900 E 86th St, Bloomington, MN. See **Figure 1** for the project location. The existing site consists of one large building with a total of 306 units. Two new buildings are proposed that are each four stories high for a total of 172 units. This would bring the total number of units at the site up to 478. Of the 172 new units, 23 would be 1 bedroom, 63 would be 2 bedrooms, 67 would be 3 bedroom units, and 19 would be 4 bedroom units. Aeon is seeking a deviation in parking stalls required by City Code based on the type of housing, the parking demand typically generated by this type of housing, and the proximity to Metro Transit bus routes. This parking study was conducted to determine parking demand for the proposed apartment building.

**Figure 1. Location Map**



## Parking Demand – Proposed Apartment

The parking demand for the proposed apartment was reviewed against the required amount based on City Code, the ITE Parking Generation Manual and information from similar apartments. It should be recognized that the site plan is still in the process of being updated. The analysis completed in this report is based on the site plan provided by City of Bloomington on behalf of Aeon on February 20, 2020. Since then, the number of proposed units with the new construction has increased which is accurately reflected in this report. Any additional changes will require modification.

### City Code

Based on the apartment building size the City Code requires 1,060 parking stalls. The building, however, qualifies for a 20% reduction according to the Bloomington Opportunity Housing Ordinance. This reduction lowers the amount of required parking to 848 parking stalls. Aeon is proposing to provide 737 parking stalls, however there are 5 existing stalls included in the 737 total that are currently located in City right of way that are subject to removal with the proposed project. Therefore, a total of 732 are proposed by Aeon, which is a deviation of 116 parking stalls from the City Code requirement.

### ITE Parking Generation

The ITE Parking Generation Manual (5<sup>th</sup> Edition) provides a rate for peak period parking demand depending on land use. The rates are determined based on the analysis of various sites nationwide. The ITE Land Use 221 for “Multifamily Housing (Mid-Rise)” was used to estimate the peak parking demand for the proposed apartment. Based on this land use, for apartments in a suburban location, the average peak period parking demand is 1.31 vehicles per unit with a standard deviation of 0.22. The average size

of the sites analyzed for the mid-rise apartments land use is 261 dwelling units. Based on the average rate the parking demand for Village Club is 627 vehicles. Since the size of the proposed apartment building is larger than the average site, a range of estimated peak parking demand was calculated. Taking into account the standard deviation, the parking demand is estimated to be at most 732 vehicles. Therefore, the estimated peak parking demand is between 627 and 732 parked vehicles.

### Similar Apartments Parking Demand

To understand the potential parking needs a review of current parking use was also completed for similar apartment buildings in the area. Parking data was collected for nine existing apartment buildings with a previous study for the City of Bloomington in July 2019. The buildings for the previous study were chosen that have similar proximity to Metro Transit bus routes and surrounding land uses. The apartments were re-analyzed to ensure they were similar to the Village Club apartments. Eight of the nine apartments previously analyzed were included in the current study. Additionally, data at four other sites including the existing Village Club apartment was collected with the current study. The complete list of the apartments analyzed is included in **Table 1**.

**Table 1. Locations of Similar Apartment Buildings**

Apartment Building	Address
Oxboro Place	325 W Old Shakopee Rd, Bloomington, MN 55420
Woodland Apartments	1819 W Old Shakopee Rd, Bloomington, MN 55431
Southwood Apartments	10120 Lyndale Cir S, Bloomington, MN 55420
Catalpa Village	10100 Lyndale Ave S, Bloomington, MN 55420
Wentworth Apartments	8940 Wentworth Ave S #3, Bloomington, MN 55420
Southview Estates	8916 Lyndale Ave S, Bloomington, MN 55420
The Gables Apartments	9741 Grand Ave S, Bloomington, MN 55420
Nicollet South Apartments	8848 Nicollet Ave, Bloomington, MN 55420
Palacio Del Sol	9101 Old Cedar Ave S, Bloomington, MN 55425
Cedar Glen Apartments	9100 Old Cedar Ave S, Bloomington, MN 55425
Metropolitan Towers	2324 E Old Shakopee Rd, Bloomington, MN 55425
Village Club	1930 E 86th St, Bloomington, MN 55425

The peak parking time was determined to be overnight, so data was collected between 3:30 AM and 5:30 AM. Data from the previous study was collected during the week of July 8<sup>th</sup>, 2019. Data at Palacio Del Sol, Cedar Glen Apartments, Metropolitan Towers and Village Club were collected during the week of March 2<sup>nd</sup>, 2020. Two days of data were collected at each apartment buildings to ensure consistency in the data. The total number of units and parking spaces in each parking garage (if applicable) were provided by the City or the building property managers. The number of units occupied, parking demand observed of the days counted, total number of parking stalls provided at each apartment building, and the number of unused parking stalls during the peak parking demand at each apartment are listed in **Table 2**. The number of units occupied was determined through the apartment listings online.

**Table 2. Parking Demand and Number of Units for Similar Apartments**

<b>Apartment Building</b>	<b>Number of Units Occupied</b>	<b>Total Parking Stalls Used during Peak Parking Demand</b>	<b>Total Number of Parking Stalls Provided on Site</b>	<b>Unused Parking Stalls during Peak Parking Demand</b>
Oxboro Place	42	49	62	13
Woodland Apartments	61	80	130	50
Southwood Apartments	66	122	139	17
South Wind Apartments	33	45	58	13
Wentworth Apartments	14	18	40	22
Southview Estates	47	87*	84	1
The Gables Apartments	102	144	180	36
Nicollet South Apartments	33	37	69	32
Palacio Del Sol	74	122	144	22
Cedar Glen Apartments	60	75	116	41
Metropolitan Towers	108	176	202	26
Village Club	284	324	340	16

\* Includes four vehicles that were observed parking on roadway adjacent to the apartment building

All garage parking stalls were assumed to be utilized except at Village Club. Aeon stated that only 48 of the garage spaces were currently utilized. All parking stalls were counted (there was no separation of resident versus visitor parking stalls). Aeon stated that they will not be charging tenants for parking. Of the apartments analyzed, the Metropolitan Towers was the only location that charged for surface lot parking spaces. Oxboro Place, Southwood Apartments, Palacio Del Sol, Metropolitan Towers and Village Club were found to charge for garage parking.

The last column of **Table 2** indicates that most apartment buildings analyzed have 13-50 unused parking stalls during the peak period parking demand. The one exception was Southview Estates which was observed to have one unused parking stall during the peak period parking demand.

Additionally, in areas where parking was fully utilized adjacent roadways and nearby parking lots were observed to estimate the potential additional demand. At Southview Estates the one unused parking stall was a space reserved for handicapped and four vehicles were observed to park on the roadway adjacent to the building. The four vehicles were included in the total parking stalls used count. At Village Club the parking surrounds the existing building so to understand where within the existing parking lot residents like to park, the area was divided into six smaller areas as shown in **Figure 2**.

**Figure 2. Parking at Village Club**



Area A borders several apartment buildings, Areas B and C border the Best Western hotel and an office building, and Areas D, E and F border roadways with no on street parking allowed at any time. **Table 3** below shows the number of vehicles observed parking in the surface lot stalls in each area compared to the total number of parking stalls. The 48 garage stalls currently occupied are distributed through the existing site. In Area A only one parking stall was open during the first count and two parking stalls were open during the second count. Area B showed 10-20 parking stalls open over the two days observed and Areas C-F showed 100% utilization of parking at least one of the days observed.

**Table 3. Surface Lot Parking Demand Breakdown at Village Club**

Village Club	Total Parking Stalls	Day 1	Day 2
		Number of Vehicles Parked	Number of Vehicles Parked
Area A	45	44	43
Area B	106	86	96
Area C	42	41	42
Area D	53	53	49
Area E	22	22	22
Area F	21	19	21
Total	289	265	273

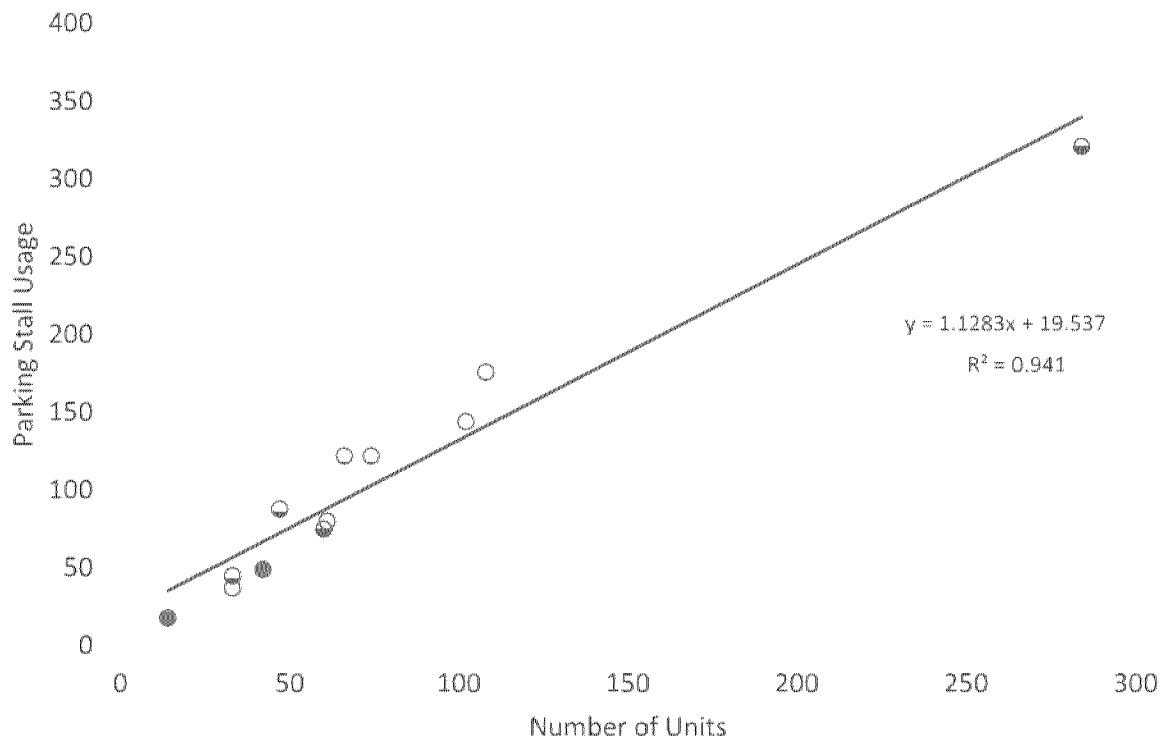
Since parking in Areas A and C were heavily utilized and are adjacent to other parking lots, parking usage was observed in the adjacent lots as well. **Figure 3** highlights the areas in yellow where cars were observed to be parked. To the north of Area C there were clusters of three to six vehicles both days. To the east of Area A, 13 cars were observed to be parked along the property line both days, which filled the entire alley area available between the buildings. It is unclear if the parking observed adjacent to the properties were Village Club residents, hotel guests, or other apartment building residents so these vehicles were not added to the “Total Parking Stalls Used during Peak Parking Demand” in **Table 2**.

**Figure 3. Possible Overflow Parking at Village Club**



The apartment building data collected was graphed to analyze the trend between the number of units in an apartment building and the total number of parking stalls used. To be conservative the one unused parking stall at the Southview Estates was included in the total number of parking stalls used since it was a space reserved for handicapped. This is shown in **Figure 4**.

**Figure 4. Number of Units vs Parking Stall Usage During Peak Period**



**Figure 4** shows correlation between the number of units in an apartment building and the number of parking stalls used during the peak period. The trendline (equation shown on **Figure 4**) allows us to estimate the parking stall usage for the proposed 478 units at the Village Club apartment building. In the equation, the “y” variable represents the parking stall usage and the “x” variable represents the number of units. The  $R^2$  value is a statistical measure of how close the data points are to the trendline. An  $R^2$  value close to 1 shows data with significant correlation between variables where an  $R^2$  value closer to 0 indicates no correlation between variables. The  $R^2$  value of about 0.9 indicates that there is a good statistical correlation with the data. Using the equation, it was determined that the estimated peak parking stall usage at Village Club would be 559 parked vehicles.

## Analysis of Circumstances that Affect Parking

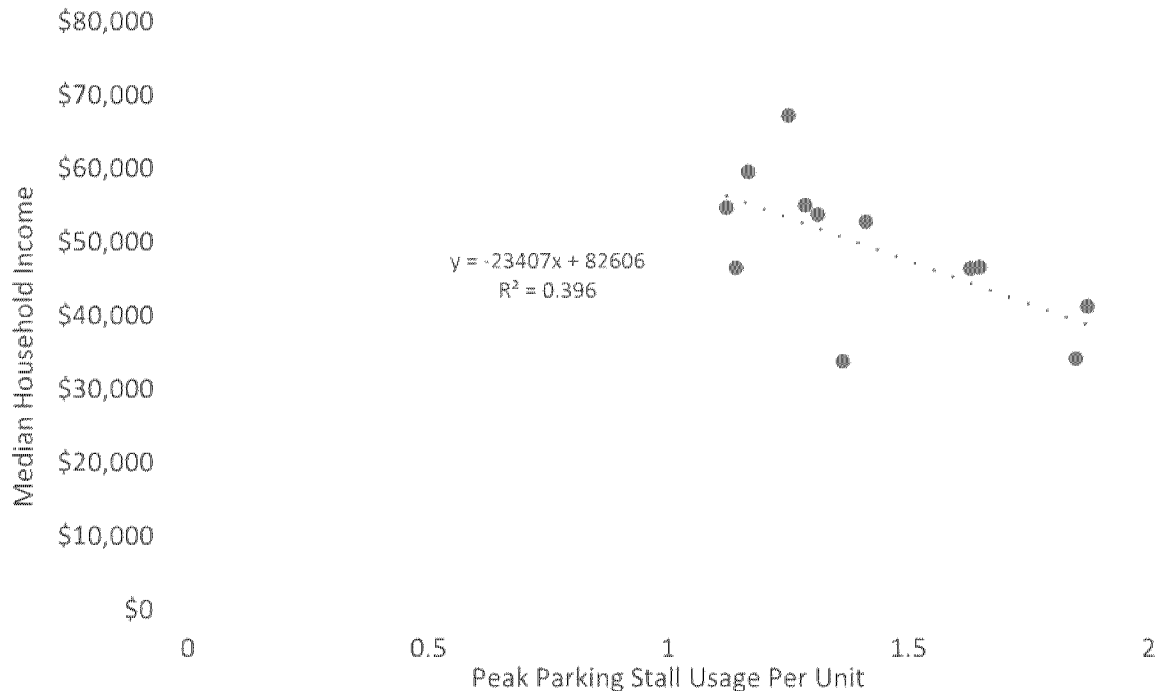
The number of Metro Transit buses per day that service provided at the bus stops near each apartment were analyzed. The results did not show significant correlation between the number of buses, the number of units in the corresponding apartment building, and the peak parking demand. This analysis evaluated ordinary bus service. Bus Rapid Transit (BRT) and Light Rail Transit services were not analyzed as these services are not provided at many of the similar sites analyzed and therefore a conclusion of the impact they have on parking could not be determined.

The peak parking demand is assumed to occur on weekday evenings (M-Th) in the late overnight hours prior to the start of most people’s workdays (2:30 AM to 5:30 AM). It is estimated that this peak would be consistent throughout the year. Parking demand is estimated to be lower during the other hours of the day, and likely lower in the summer during the daytime hours.



Median household income was also analyzed at the similar apartment buildings analyzed to determine if income has an impact on parking usage. A 0.1 to 0.2 mile buffer around each apartment building was used to pull data. The median household income was graphed against the peak parking stall usage per unit to determine if there is a correlation. This is shown in **Figure 5**.

**Figure 5. Peak Parking Stalls Used per Unit vs. Median Household Income**



With an  $R^2$  value about 0.4, **Figure 5** does not show significant correlation between the median household income and the peak parking stall usage per unit. While there does not appear to be a significant correlation, **Figure 5** does indicate that parking demand count may increase with decreasing income, but since there is not a significant correlation, additional data points are needed to understand if this is consistently true. This could be due to the suburban nature of these sites, or could be due to more bedrooms per apartment unit and therefore more people living in each unit that can drive.

During the winter months it is typical for the parking supply available to be reduced by approximately 1% to 5% for snow storage. 1%-5% of 732 parking stalls (value estimated using the ITE Parking Generation Manual) is 8-37 parking stalls. Therefore, up to 37 parking stalls could be needed to accommodate snow storage. This potential loss of parking stalls should be considered in the total parking supply or snow removal maintenance activities should be in place to allow for all available spots to remain open during winter months.

## Proposed Parking Lot Configuration Review

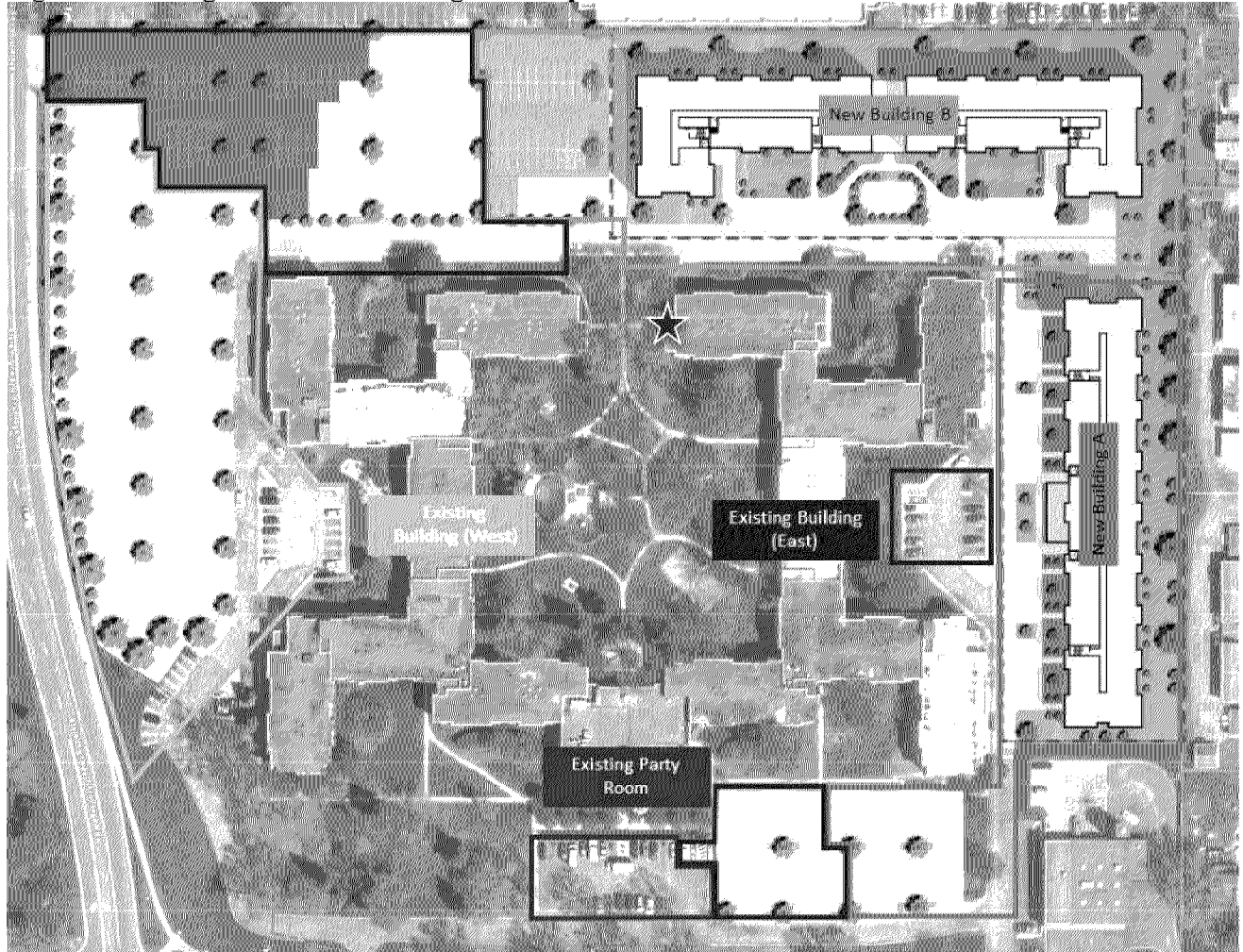
City Code requires parking be available for residents within 400 ft of the buildings main entrance. The proposed site plan was analyzed to determine if each building had adequate parking within 400 ft. Each building was analyzed separately as the buildings vary in size and therefore associated required parking stalls. Due to the size of the existing building, it was split in half analyzing the eastern and western portions of the building separately.



The average walking speed is 5.2 ft/s. This is based on studies completed by the Minnesota Local Road Research Board (LRRB). 3.5 ft/s is the 15th percentile walking speed, meaning 85% of walkers walk at a faster rate. 3.5 ft/s is used to determine the signal timing of the pedestrian “Don’t Walk” phase so that the majority of walkers are able to cross in the time allotted. Using the average walking speed of 5.2 ft/s it would take 77 seconds to walk 400 ft. The City Code requirement of providing available parking for residents within 400 ft is a valid metric. Anything further could lead to residents parking on adjacent properties instead of using the parking provided for them.

As the code states, the 400 ft is to be measured from the buildings main entrance. The main entrance was used as a reference point for the two new buildings however, since the existing building is larger and more spread out, the 400 ft was measured from the building access that was nearest to the parking lot area in question. For example, the parking in the northwest corner boxed in blue assumed to be for residents in the eastern portion of the existing building was measured from the building entrance denoted with a star on **Figure 6** below. **Figure 6** shows show the parking stalls assumed to be associated with each building and shades the spots that are more than 400 ft away from the buildings access point.

**Figure 6. Parking Distribution Throughout Proposed Site**



**Table 4** summarizes the total required parking at each building accounting for the 29.5% deviation as proposed by Aeon, the parking stalls determined to be within 400 ft of the building, and how many

parking spots are located more than 400 ft away. **Table 4** indicates that the New Building B and Existing Building (East) have 45 and 78 spots respectively that are further than 400 ft away.

**Table 4. Parking Distribution Analysis**

Building	Proposed Parking	Parking Spots within 400 ft	Parking Spots further than 400 ft away
New Building A	129	129	0
New Building B	168	123	45
Existing Building East	211	133	78
Existing Building West	210	210	0
Existing Building Party Room	19	19	0
<b>Total</b>	<b>737</b>	<b>614</b>	<b>123</b>

In order to mitigate this issue, it is recommended that Aeon shift the location of New Building B from the northeast corner to the northwest corner of the property. This would allow parking for residents in the eastern portion of the existing building to park where the current New Building B is shown which is within 400 ft of a building access point. Also, with the New Building B built in the northwest corner of the property there will be parking stalls directly south of the building which will also be within 400 ft of the buildings main access, meeting City Code. If these modifications are not made residents may choose to park in the adjacent properties parking lots which could cause parking shortages for the residents of these other properties.

While reviewing the proposed parking configuration another item of concern was the placement of the compact parking stalls. All of the compact parking was shown along the northern edge of the site. It is recommended that this parking be moved closer to the existing/proposed buildings as this will ensure an increased number of parking stalls within 400 ft of the building access points. Additionally, the further parking spots are typically filled last. Having the compact parking spaces furthest from the buildings will likely result in larger vehicles using more than one space each, further putting a strain on the total parking spaces available for use.

Additionally, in order to accommodate emergency vehicles throughout the site it is recommended that “No Parking” signs be installed in tight areas such as the northeast corner of the existing building.

## Conclusions

The ITE Parking Generation Manual estimates the parking demand at the Village Club to be between 627 and 732 parked vehicles. The analysis of similar apartment buildings estimated 559 parking stalls at the proposed apartment during the peak period parking demand.

Based on the analysis provided, the 732 proposed parking stalls will be adequate with the proposed expansion at Village Club. Additional parking stalls are recommended to accommodate snow storage if snow removal maintenance is unable to keep all parking stalls available during the winter months.

With 732 parking stalls, this apartment building would have 116 less parking stalls than the amount required by City Code (including the 20% reduction based on the Bloomington Opportunity Housing Ordinance), however, based on the analysis provided this amount should be adequate.

Based on the review of the proposed parking lot configuration it was determined that the current layout does not provide parking for all residents within 400 ft of the building as required by City Code. The location of New Building B should be relocated the northwest corner of the site in order to meet the City Code requirement.

All compact vehicle parking spaces should be relocated closest to the building to increase the number of spaces closest to the buildings and to ensure that larger vehicles do not use them.

## Recommendations

Relocate New Building B to the northwest corner of the site in order to meet the City Code requirement. Parking stalls shall be assigned to ensure stalls are located within 400 ft each residents' respective building and compact parking stalls should be moved closer to the apartment buildings. Install "No Parking" signs where necessary in tight areas to ensure emergency vehicles can navigate the site. Additional parking stalls are recommended if parking stalls will be used to accommodate snow storage.