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DRAFT MEMORANDUM

DATE: December 17, 2020

TO: Brian Hansen, City of Bloomington

FROM: Jordan Schwarze, PE, Alliant Engineering

SUBJECT: **8131 34th Avenue Parking Study**

Introduction

Alliant Engineering, Inc. has completed a parking study in response to a development proposal for an active senior apartment building to be located at 8131 34th Avenue in Bloomington, MN (see **Figure 1: Project Location**). The proposed development will be located adjacent to an existing office building at 8101 34th Avenue. A portion of the surface parking allocated to the existing office building is expected to be removed by the proposed development. However, underground parking will be included at the proposed apartment building, a portion of which is expected to be shared with office building tenants to offset some of the lost parking. The proposed parking supply represents a significant reduction from the City Code requirement. Therefore, a special parking study is required to review the parking demand and proposed supply for this development project.

Study Purpose

This parking study will evaluate the viability of the proposed parking supply against the combined parking demand of the existing office building and proposed apartment building. To achieve this, the following goals have been established:

- Determine the Bloomington Zoning Code off-street parking requirement
- Estimate parking demand for the existing office building and proposed apartment building using applicable peak parking rates available in the *Institute of Transportation Engineers Parking Generation Manual, 5th Edition*
- Compare the estimated parking demand over the course of a typical weekday against the proposed parking supply to determine a surplus or deficit
- Document any impacts to surrounding properties and roadways if estimated future parking demand exceeds the proposed supply.
    - Identify any potential parking demand mitigation or alternative parking supply options that could be considered in the event of parking shortfalls.

8131 34th Avenue Parking Study

Figure 1
Project Location

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Proposed Condition

The proposed development consists of a 145-unit active senior apartment building. Under the current development proposal, the total parking demand of the existing office building and proposed apartment building site would be accommodated through a combination of surface and garage parking totaling 278 stalls. 76 surface parking stalls would be provided primarily on the 8101 34th Avenue office property, while 202 garage parking stalls would be provided beneath the proposed apartment building on the 8131 34th Avenue property. **Table 1** summarizes proposed site characteristics, while the proposed site plan is illustrated in **Figure 2**.

Table 1. Proposed Site Characteristics

Land Use	Units	Size	Parking Supply[1] (Stalls)
Existing Office Building[2]	Square Feet	48,110	278
Proposed Active Senior Apartment Building	Dwellings	145	

(1) 76 surface parking stalls to be provided in combination with 202 garage parking stalls.
(2) The existing office building site currently offers 182 surface parking stalls, 106 of which will be displaced by the proposed apartment building. Square footage of the existing office building provided by City of Bloomington staff.

The current parking plan for the proposed condition at the combined 8101/8131 34th Avenue site includes dedicating all 76 surface parking stalls to tenants of the existing office building and dedicating 129 garage parking stalls to residents of the proposed apartment building. The remaining 73 garage parking stalls would be reserved for office tenants during business hours but available to rent by apartment residents during the overnight hours and on weekends.

Bloomington Zoning Code Parking Requirement

The Bloomington Zoning Code (Section 21.301.06 Parking and Loading) regulates the minimum off-street parking supply for various land uses. Relevant land uses in this case include Office, Senior Citizen Housing, and Party Room. Parking requirements based on the zoning code were obtained from City of Bloomington staff. Code required parking for the proposed condition is provided in **Table 2**. Based on the Bloomington Zoning Code, the combined office building and apartment building site would be required to have approximately 408 off-street parking stalls. Based on this requirement, the proposed parking supply of 278 stalls represents a 130-stall deficiency. Therefore, a parking demand data driven approach is necessary to estimate the adequacy of the proposed parking supply.

Table 2. Bloomington Zoning Code Parking Requirements

Land Use	Units	Size	Code Requirement	Required Parking Stalls by Code
Office	Square Feet	48,110	1 stall per 285 square feet	168.8
Senior Citizen Housing	Dwellings	145	1.5 stalls per dwelling unit	217.5
Party Room	Square Feet	2,100	1 stall per 100 square feet	21.0
			Total Parking Requirement	**408**
			Proposed Parking Stalls	278
			Parking Surplus/*Deficit*	***-130***
			Percent Deviation from City Code	31.9%

8131 34th Avenue Parking Study

Figure 2
Proposed Site Plan

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Parking Demand Analysis

Parking demand for the combined office building and apartment building site was estimated based on applicable parking rates available in the *Institute of Transportation Engineers Parking Generation Manual, 5th Edition* (*ITE PGM)*. The *ITE PGM* is an industry standard resource for estimating parking demand. Often, this resource is supplemented with field observations of parking demand for existing land uses. However, given the impacts of the ongoing COVID-19 pandemic, the existing office building parking demand could not be adequately observed due to the current overrepresentation of remote employees.

It should be noted that two METRO Blue Line light-rail stations are located within one-quarter mile of the proposed development. The American Boulevard Station is located one block north of the proposed development, while the Bloomington Central Station is located one block to the west. The METRO Blue Line offers a convenient light-rail connection to the Mall of America, Minneapolis-Saint Paul International Airport, and downtown Minneapolis. Consequently, the proximity of the METRO Blue Line is expected to produce a parking reduction at the proposed development site. This consideration was factored when choosing applicable parking generation rates from the *ITE PGM*.

Table 3 documents the *ITE PGM* estimated hypothetical maximum weekday peak parking demand for the combined office building and apartment building site. The *ITE PGM* based hypothetical weekday peak parking demand estimate of 217 vehicles (117 office and 100 apartment) is below the proposed parking supply of 278 stalls. It should be noted that an internal capture/multi-use reduction was not included in the hypothetical maximum weekday peak parking demand estimate due to limited potential for motorists to utilize both land uses onsite.

Table 3. Hypothetical Maximum Weekday Peak Parking Generation

Land Use (ITE Code)	Units	Size	Weekday Peak Parking Demand (Vehicles)
[(1)]Office (710)	Square Feet	48,110	117
[(2)]Mid-Rise Apartment (221)	Dwellings	145	100
		Total Parking Demand	**217**
		Proposed Parking Stalls	278
		Parking Surplus/*Deficit*	**61**
		Percent Parking Surplus/*Deficit*	28.1%

(1) Office estimates based on ITE dense multi-use urban rate

(2) Apartment estimates based on Multifamily Housing Mid-Rise (221) ITE dense multi-use urban rate within 1/2-mile of rail transit due to the limited availability of Senior Adult Housing (252) peak parking data

While the hypothetical maximum weekday peak parking demand for the existing office building and proposed apartment building site is summed in **Table 3**, the peak parking demand for each land use by time of day would not be expected to coincide. Consequently, this parking demand estimate is conservative. Therefore, hourly parking distribution data for applicable land uses were referenced in the *ITE PGM* to create a more accurate hourly parking demand model. The combined site estimated weekday hourly parking demand model is shown in **Table 4**. The combined site weekday hourly parking demand versus supply is then illustrated graphically in **Figure 3**.

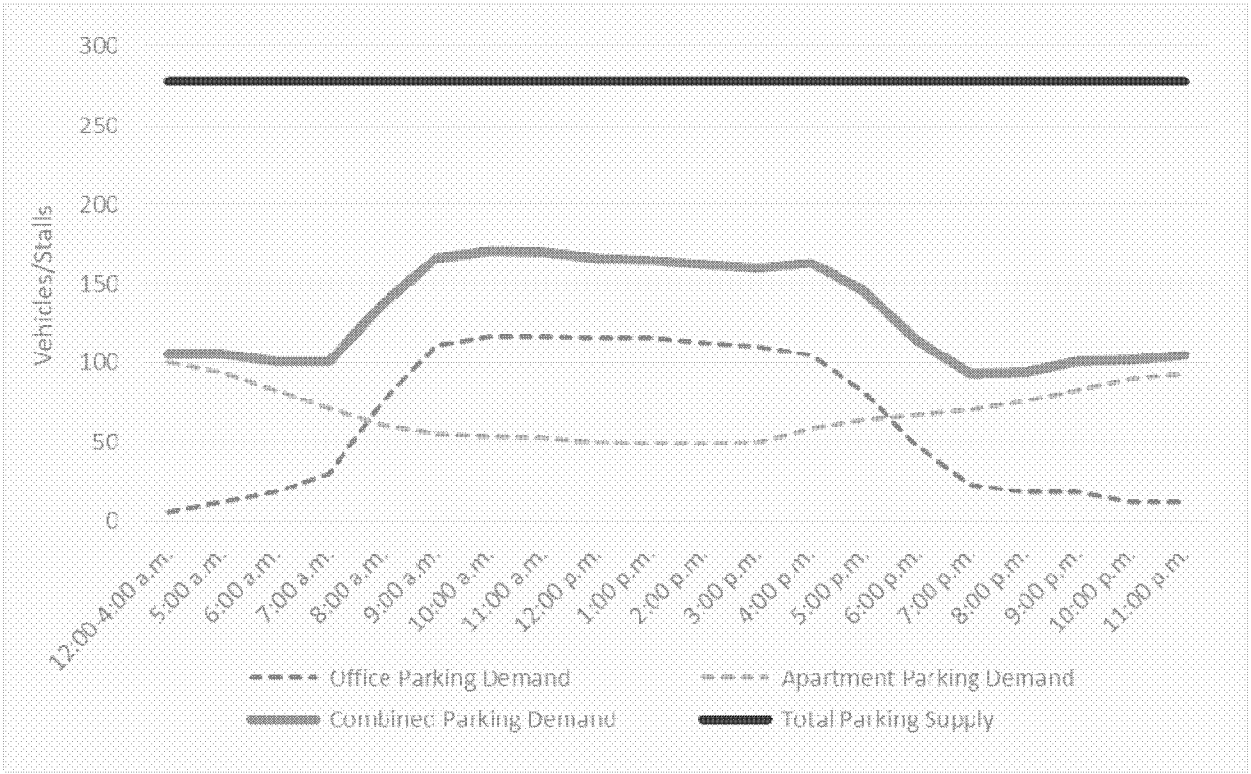
Table 4. ITE Estimated Weekday Hourly Parking Demand

Hour Beginning	Percent of Peak Parking Demand[1]		Estimated Parking Demand by Land Use		Total Parking Demand	Proposed Parking Stalls	Parking Surplus	Percent Parking Surplus
	Office	Apartment	Office	Apartment				
12:00-4:00 a.m.	*5%*	**100%**	6	**100**	**106**	278	172	162.3%
5:00 a.m.	*10%*	94%	12	94	**106**		172	162.3%
6:00 a.m.	*15%*	83%	18	83	**101**		177	175.2%
7:00 a.m.	26%	71%	30	71	**101**		177	175.2%
8:00 a.m.	65%	61%	76	61	**137**		141	102.9%
9:00 a.m.	95%	55%	111	55	**166**		112	67.5%
10:00 a.m.	**100%**	54%	**117**	54	**171**		107	62.6%
11:00 a.m.	**100%**	53%	**117**	53	**170**		108	63.5%
12:00 p.m.	99%	50%	116	50	**166**		112	67.5%
1:00 p.m.	99%	49%	116	49	**165**		113	68.5%
2:00 p.m.	97%	49%	113	49	**162**		116	71.6%
3:00 p.m.	94%	50%	110	50	**160**		118	73.8%
4:00 p.m.	90%	58%	105	58	**163**		115	70.6%
5:00 p.m.	*70%*	64%	82	64	**146**		132	90.4%
6:00 p.m.	*40%*	67%	47	67	**114**		164	143.9%
7:00 p.m.	*20%*	70%	23	70	**93**		185	198.9%
8:00 p.m.	*15%*	76%	18	76	**94**		184	195.7%
9:00 p.m.	*15%*	83%	18	83	**101**		177	175.2%
10:00 p.m.	*10%*	90%	12	90	**102**		176	172.5%
11:00 p.m.	*10%*	93%	12	93	**105**		173	164.8%

Interpolated data

(1) Source = ITE Parking Generation Manual, 5th Edition

Figure 3. ITE Estimated Hourly Parking Demand vs. Total Supply



Based on the weekday hourly parking demand model, it is evident that the periods of peak parking demand for each proposed land use do not overlap:

- Office peak parking hours: 10:00 a.m. – 12:00 p.m. (Noon)
- Apartment peak parking hours: 12:00 a.m. (Midnight) – 4:00 a.m.
- Combined office/apartment peak parking hour: 10:00 a.m. – 11:00 a.m.

The maximum weekday peak parking demand for the combined office building and apartment building site is estimated to be 171 vehicles, occurring from 10:00 a.m. to 11:00 a.m. At this demand, a 107-stall (62.6 percent) parking surplus is anticipated. The overall conclusion drawn from the *ITE PGM* estimated hourly parking demand model is that the proposed parking supply of 278 stalls is expected to be adequate to accommodate all parking demand onsite. Consequently, overflow parking impacts to surrounding properties or roadways are not anticipated.

Furthermore, the noted current parking plan would be expected to accommodate parking demand adequately, assuming the hours for shared parking stalls are defined appropriately. As illustrated in **Figure 4**, the proposed allotment of 149 parking stalls to office tenants during business hours is able to accommodate office parking demand. Meanwhile, the proposed allotment of 202 parking stalls to apartment residents during overnight hours is able to accommodate apartment parking demand. It should also be noted that the proposed allotment of 129 dedicated stalls to apartment residents alone would be expected to accommodate apartment parking demand during all time periods.

Figure 4. ITE Estimated Hourly Parking Demand vs. Planned Supply by Land Use

Given the potential for confusion surrounding the allocation of shared parking stalls by time of day, proper communication and management related to shared parking would be necessary. However, based on peak parking demand estimates, several alternatives to the current parking plan could be considered that would minimize the potential for confusion over shared parking. One such alternative would dedicate one parking stall within the garage for each apartment unit of the proposed development, a total of 145 garage stalls. The remaining 133 parking stalls, a combination of 76 surface parking stalls and 57 garage parking stalls could then be assigned general parking status. The 133 general parking stalls would be expected to accommodate the office peak parking demand (117 vehicles) and provide visitor parking for both onsite land uses.

Additional Site Considerations

Additional site considerations include the following:

Parking Garage Security

With both office tenants and apartment residents expected to utilize garage parking, the application of garage security measures should be carefully considered. For example, garage entries with access keycards may serve apartment residents well but not office tenants. With the proposed parking garage expected to provide 202 stalls over two levels, it may be possible to provide secure resident access to one level while allowing unimpeded access the other level. Another option could involve limiting garage access to residents with keycards during evening and overnight hours.

Weekend Parking

Due to limited weekend parking demand related to the office land use, the weekend time period was not evaluated in this parking study. It should be noted that no parking issues are anticipated on weekends.

Trip Generation

To understand the potential impact to the surrounding roadway network, trip generation estimates for the combined office building and apartment building site were developed for the weekday a.m. and p.m. peak hours as well as on a daily basis using applicable rates in the *Institute of Transportation Engineers Trip Generation Manual, 10th Edition (ITE TGM)*. The *ITE TGM* provides peak hour and daily trip generation rates based on studies of various land uses. Results of the *ITE TGM* estimates provided in **Table 5** indicate the combined office building and apartment building site would be expected to generate approximately 85 a.m. and p.m. peak hour trips as well as 1,080 daily trips.

Table 5. ITE Estimated Trip Generation

Land Use	Units	Size	AM Peak Hour Trips[1]			PM Peak Hour Trips[1]			Daily Trips
			Trips In	Trips Out	Total Trips	Trips In	Trips Out	Total Trips	
[2]Office (710)	Square Feet	48,110	48	8	56	8	40	48	522
[3]Senior Adult Housing (252)	Dwellings	145	10	19	29	20	17	37	558
Total Trips			**58**	**27**	**85**	**28**	**57**	**85**	**1,080**

(1) AM and PM peak hours of the adjacent roadway network

(2) Office peak hour estimates based on ITE dense multi-use urban rate, daily estimate based on ITE general suburban rate due to the limited availability of dense multi-use urban data

(3) Apartment estimates based on Senior Adult Housing (252) ITE general suburban rate due to the limited availability of dense multi-use urban

It should be noted that the year 2017 average daily traffic volume along the adjacent segment of 34th Avenue was 5,200 vehicles. Given this moderate daily traffic volume, the six-lane 34th Avenue has sufficient remaining capacity to accommodate the increased traffic volumes generated by the proposed development.

Conclusions

The following conclusions are offered for consideration:

- The proposed development consists of a 145-unit active senior apartment building. Under the current development proposal, the total parking demand of an existing adjacent office building and the proposed apartment building would be accommodated through a combination of surface and garage parking totaling 278 stalls. 76 surface parking stalls would be provided primarily on the office property, while 202 garage parking stalls would be provided beneath the proposed apartment building.
  - The current parking plan for the proposed condition at the combined office building and apartment building site includes dedicating all 76 surface parking stalls to tenants of the existing office building and dedicating 129 garage parking stalls to residents of the proposed apartment building. The remaining 73 garage parking stalls would be reserved for office tenants during business hours but available to rent by apartment residents during the overnight hours and on weekends.
- The Bloomington Zoning Code parking requirement for the proposed combined site is 408 off-street parking stalls. Based on this requirement, the proposed parking supply of 278 stalls represents a 130-stall deficiency. Therefore, a parking demand data driven approach is necessary to estimate the adequacy of the proposed parking supply.
- Parking demand for the combined site was estimated based on applicable parking rates in the *Institute of Transportation Engineers Parking Generation Manual* (*ITE PGM*). The *ITE PGM* hypothetical weekday peak parking demand estimate is 217 vehicles (117 office and 100 apartment), which is below the proposed parking supply of 278 stalls.
  - While the hypothetical maximum weekday peak parking demand for the combined site is summed, it should be noted that the peak parking demand for each land use by time of day would not be expected to coincide. Consequently, this parking demand estimate is conservative. Therefore, *ITE PGM* hourly parking distribution data for applicable land uses were referenced to create a more accurate hourly parking demand model.
- From the hourly parking demand model, the maximum weekday peak parking demand for the combined site is estimated to be 171 vehicles, occurring from 10:00 a.m. to 11:00 a.m. At this demand, a 107-stall (62.6 percent) parking surplus is anticipated. The overall conclusion drawn from the *ITE PGM* estimated hourly parking demand model is that the proposed parking supply of 278 stalls is expected to be adequate to accommodate all parking demand onsite. Consequently, overflow parking impacts to surrounding properties or roadways are not anticipated.
  - The noted current parking plan would be expected to accommodate parking demand adequately, assuming the hours for shared parking stalls are defined appropriately. It should be noted that the proposed allotment of 129 dedicated stalls to apartment residents alone would be expected to accommodate apartment parking demand during all time periods.

- Given the potential for confusion surrounding the allocation of shared parking stalls by time of day, proper communication and management related to shared parking would be necessary. However, based on peak parking demand estimates, several alternatives to the current parking plan could be considered that would minimize the potential for confusion over shared parking. One such alternative would dedicate one parking stall within the garage for each apartment unit of the proposed development, a total of 145 garage stalls. The remaining 133 parking stalls, a combination of 76 surface parking stalls and 57 garage parking stalls could then be assigned general parking status. The 133 general parking stalls would be expected to accommodate the office peak parking demand (117 vehicles) and provide visitor parking for both onsite land uses.
- Additional site considerations include the following:
  - With both office tenants and apartment residents expected to utilize garage parking, the application of garage security measures should be carefully considered.
  - Due to limited weekend parking demand related to the office land use, the weekend time period was not evaluated in this parking study. It should be noted that no parking issues are anticipated on weekends.
  - Trip generation estimates for the combined site were developed for the weekday a.m. and p.m. peak hours as well as on a daily basis using applicable rates in the *Institute of Transportation Engineers Trip Generation Manual, 10th Edition* (*ITE TGM*). Results of the *ITE TGM* estimates indicate the combined site would be expected to generate approximately 85 a.m. and p.m. peak hour trips as well as 1,080 daily trips.
    - It should be noted that the year 2017 average daily traffic volume along the adjacent segment of 34th Avenue was 5,200 vehicles. Given this moderate daily traffic volume, the six-lane 34th Avenue has sufficient remaining capacity to accommodate the increased traffic volumes generated by the proposed development.