

Traffic and Parking Study Indoor Miniature Golf Facility

Arlington Heights, Illinois



Prepared For:

Arlington Lanes



May 19, 2021

1. Introduction

This report summarizes the methodologies, results, and findings of a traffic and parking study conducted by Kenig, Lindgren, O’Hara, Aboona, Inc. (KLOA, Inc.) for a proposed indoor miniature golf facility to be located in Arlington Heights, Illinois. The site, which contains a former Chuck E. Cheese, is located on the south side of Dundee Road just east of Kennicott Avenue. As proposed, the existing 8,023 square-foot building will be repurposed to contain an 18-hole miniature golf course, food service area, a party room, and a game area. The facility is proposed to provide a total of 69 parking spaces with access provided via an existing access drive on located on Dundee Road.

The purpose of this study was to examine background traffic conditions, assess the impact that the proposed facility will have on traffic conditions in the area, determine if any roadway or access improvements are necessary to accommodate traffic generated by the proposed facility, and examine if the parking to be provided by the facility will meet its peak demand. **Figure 1** shows the location of the site in relation to the area roadway system. **Figure 2** shows an aerial view of the site.

The sections of this report present the following:

- Existing roadway conditions
- A description of the proposed
- Directional distribution of the facility traffic
- Vehicle trip generation for the facility
- Future traffic conditions including access to the facility
- Traffic analyses for the weekday evening and Saturday midday peak hours
- Recommendations with respect to adequacy of the site access and adjacent roadway system
- Determine the adequacy of the parking to be provided by the facility

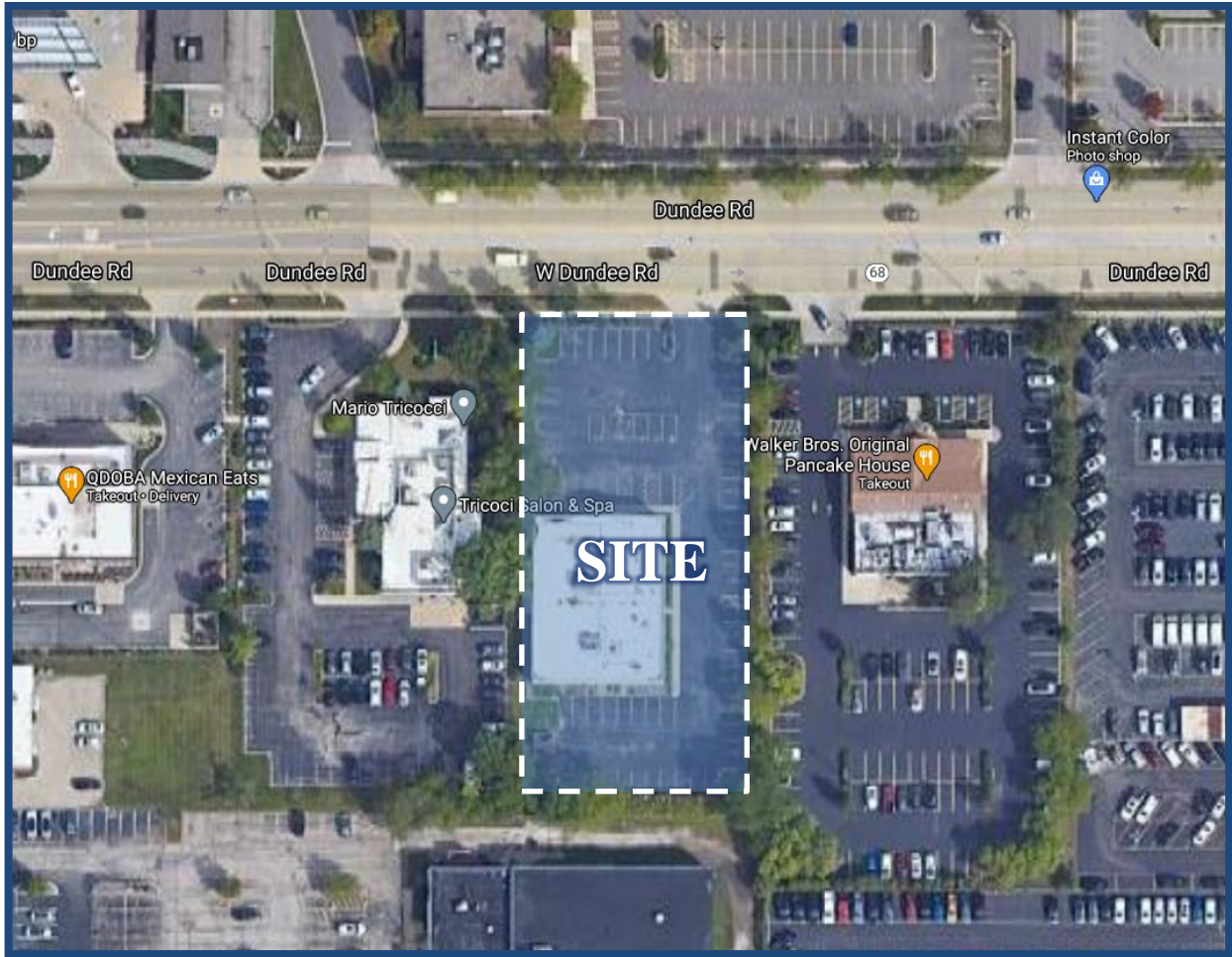
Traffic capacity analyses were conducted for the weekday evening and Saturday midday peak hours for the following conditions:

1. Year 2021 Base Conditions – Analyzes the capacity of the existing roadway system using peak hour traffic volumes increased to represent pre-pandemic Year 2021 base traffic conditions.
2. Year 2026 Total Projected Conditions – Analyzes the capacity of the future roadway system assuming the projected traffic volumes that include the base traffic volumes, ambient area growth not attributable to any particular development, and the traffic estimated to be generated by the proposed facility.



Site Location

Figure 1



Aerial View of Site

Figure 2

2. Existing Conditions

Existing transportation conditions in the vicinity of the site were documented based on field visits conducted by KLOA, Inc. in order to obtain a database for projecting future conditions. The following provides a description of the geographical location of the site, physical characteristics of the area roadway system including lane usage and traffic control devices, and existing peak hour traffic volumes.

Site Location

The site, which contains a former 8,023 square-foot Chuck E. Cheese, is bounded by Dundee Road on the north, the Walker Brothers Original Pancake House (Pancake House) on the east, Arlington Lanes on the south, and Mario Tricocci Salon and Day Spa on the west. Land uses in the vicinity of the site consist primarily of commercial and office uses. Ridge Plaza, a shopping center anchored by a Kohl's department store, is located directly north of the site on the north side of Dundee Road. Access to Arlington Lanes, which is located south of the site, is provided via two access drives on Kennicott Avenue.

Existing Roadway System Characteristics

The characteristics of the existing roadways near the proposed site are described below and illustrated in **Figure 3**.

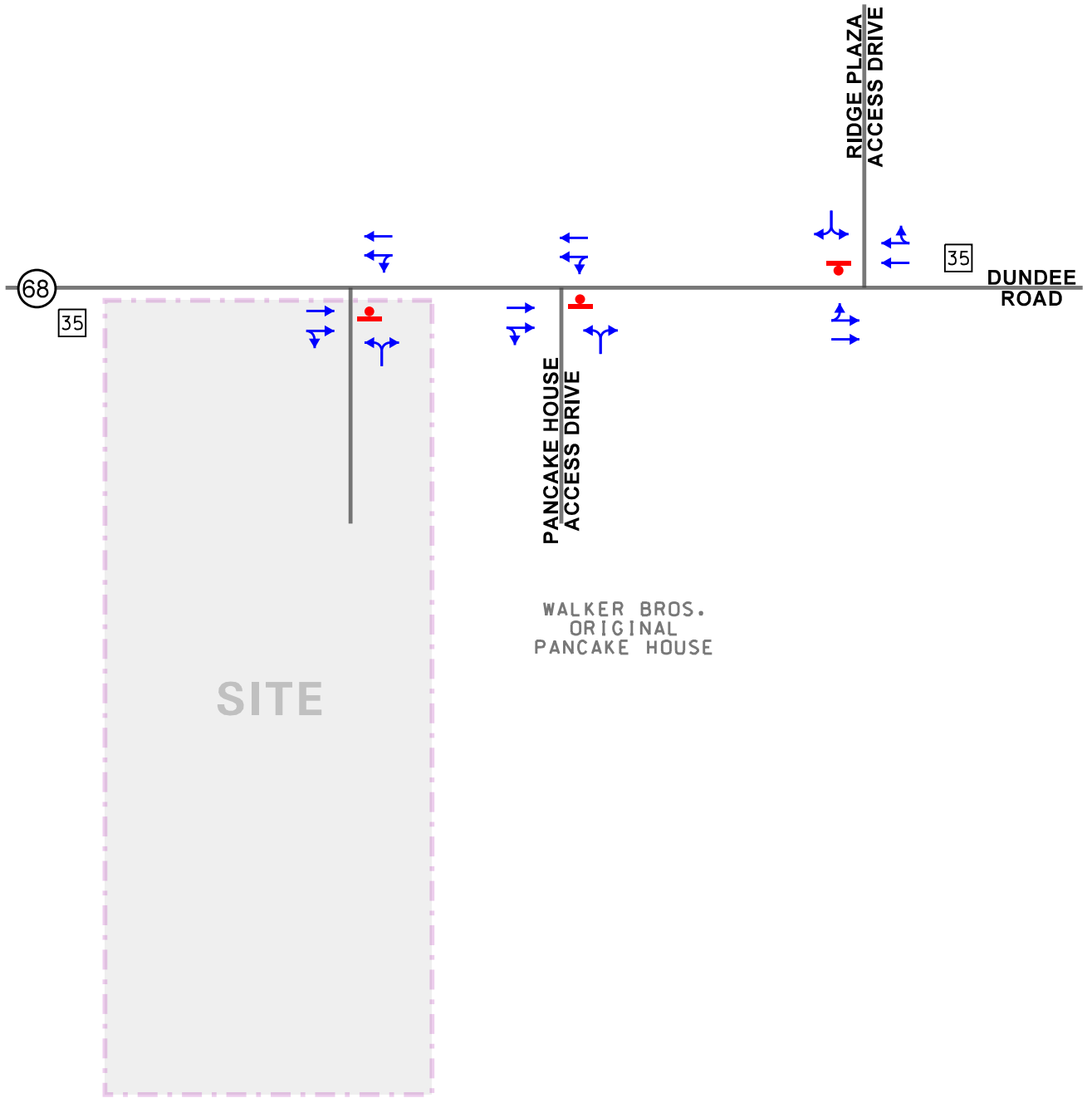
Dundee Road (IL 68) is an east-west, principal arterial roadway that has two through lanes in each direction divided by a striped median. At its unsignalized intersections with the site's existing access drive and the Pancake House access drive, Dundee Road has two through lanes on the westbound approach and a through lane and a shared through/right-turn lane on the eastbound approach. At its intersection with the Ridge Plaza access drive, Dundee Road has a through lane and a shared through/right-turn lane on the westbound approach and two through lanes on the eastbound approach. Left-turn movements to all three access drives are generally completed via the striped median. Dundee Road is under the jurisdiction of the Illinois Department of Transportation (IDOT), carries an annual average daily traffic (AADT) volume of 25,700 vehicles (IDOT 2019), and has a posted speed limit of 35 mph.

The site access drive, the Pancake House access drive, and the Ridge Plaza access drive all have one inbound lane and one outbound lane.



NOT TO SCALE




RIDGE PLAZA



SITE

WALKER BROS.
ORIGINAL
PANCAKE HOUSE

LEGEND

-  - TRAVEL LANE
-  - STOP SIGN
-  - SPEED LIMIT

Year 2021 Base Conditions

In order to determine current traffic conditions within the study area, KLOA, Inc. conducted peak period traffic counts at the following intersections:

- Dundee Road with the Ridge Plaza access drive
- Dundee Road with the Pancake House access drive

The traffic counts were conducted on Saturday, March 13, 2021 during the midday (noon to 2:00 P.M.) peak period and Tuesday, March 16, 2021 during the evening (4:00 P.M. to 6:00 P.M.) peak period. The results of the traffic counts show that the peak hours of traffic generally occurred between 4:00 P.M. and 5:00 P.M. during the weekday evening peak period and 1:00 P.M. and 2:00 P.M. during the Saturday midday peak period.

It should be noted that due to the Covid 19 pandemic, traffic volumes in the area generally do not reflect normal or typical conditions. As such, the 2021 traffic counts were compared to traffic counts previously conducted by IDOT in 2019 along Dundee Road. Based on the comparison of the traffic volumes, the Dundee Road traffic volumes were increased by eight percent during the weekday evening and Saturday midday peak hours. **Figure 4** illustrates the Year 2021 base peak hour vehicle traffic volumes. Copies of the traffic counts are located in the Appendix.

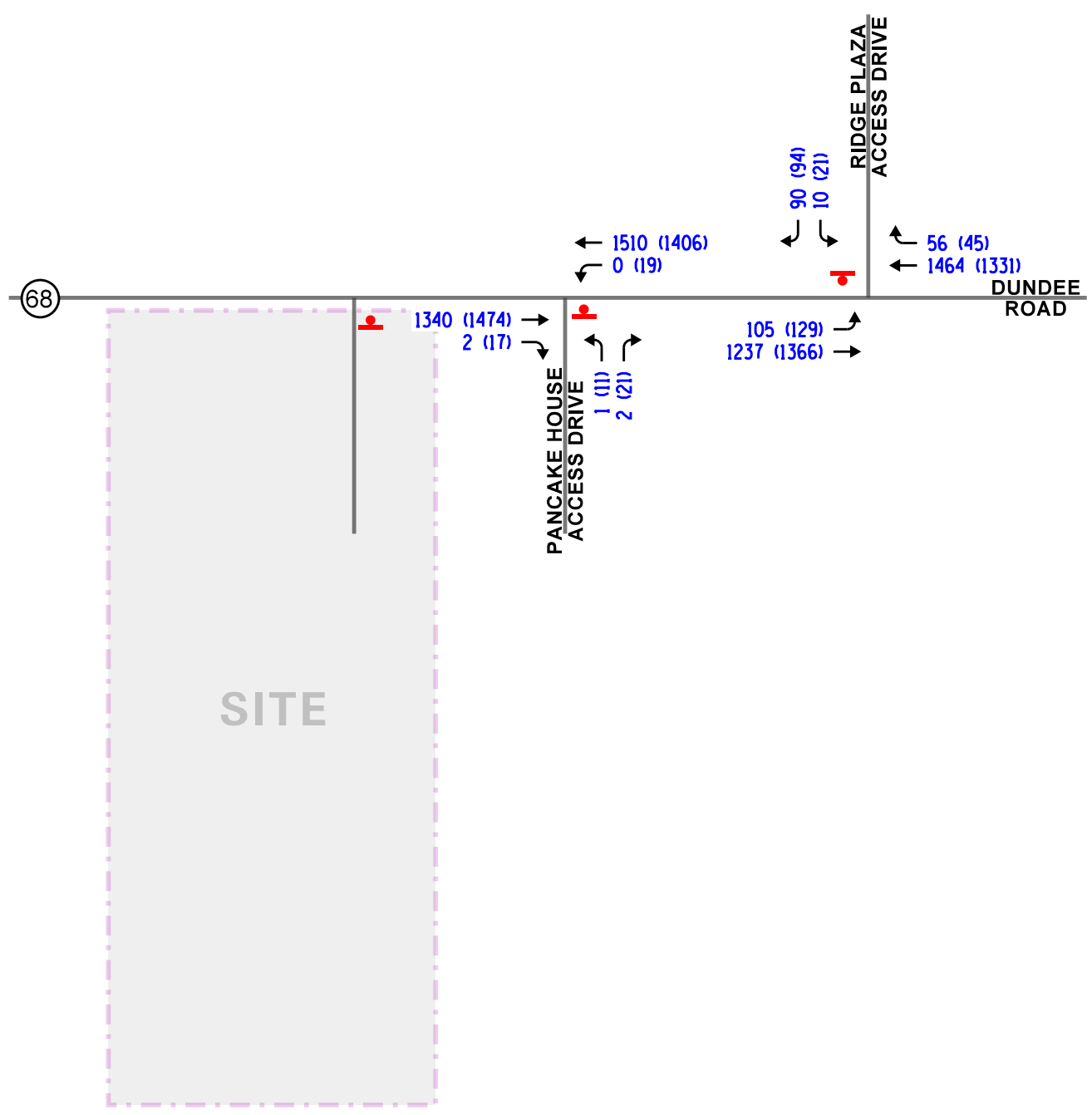
Crash Analysis

KLOA, Inc. obtained crash data¹ from IDOT for the most recent available five years (2015 to 2019) for the intersections of Dundee Road with the Ridge Plaza access drive and Dundee Road with the Pancake House access drive. Given the proximity of the two intersections, the crash data for both intersections are summarized in **Table 1**. Additionally, no fatalities were reported at either of the two intersections between 2015 and 2019.

¹ IDOT DISCLAIMER: The motor vehicle crash data referenced herein was provided by the Illinois Department of Transportation. Any conclusions drawn from analysis of the aforementioned data are the sole responsibility of the data recipient(s). Additionally, for coding years 2015 to present, the Bureau of Data Collection uses the exact latitude/longitude supplied by the investigating law enforcement agency to locate crashes. Therefore, location data may vary in previous years since data prior to 2015 was physically located by bureau personnel.



NOT TO SCALE



LEGEND

- 00 - PM PEAK HOUR (4:00-5:00 PM)
- (00) - SATURDAY MIDDAY PEAK HOUR (1:00-2:00 PM)

Table 1
 DUNDEE ROAD WITH THE RIDGE PLAZA ACCESS DRIVE AND PANCAKE HOUSE
 ACCESS DRIVE – CRASH SUMMARY

Year	Type of Crash Frequency							Total
	Angle	Head On	Object	Rear End	Sideswipe	Turning	Other	
2015	1	0	0	1	0	1	0	3
2016	0	0	0	1	0	1	1	3
2017	0	0	0	0	2	1	0	3
2018	1	0	1	3	1	0	0	6
2019	<u>0</u>	<u>0</u>	<u>0</u>	<u>3</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>4</u>
Total	2	0	1	8	3	4	1	19
Average	<1.0	0	<1.0	1.6	<1.0	<1.0	<1.0	3.9

3. Traffic Characteristics of the Proposed Facility

In order to properly evaluate future traffic conditions in the surrounding area, it was necessary to determine the traffic characteristics of the proposed facility, including the directional distribution and volumes of traffic that it will generate.

Proposed Site and Facility Plan

As proposed, the existing 8,023 square-foot building will be repurposed to contain an 18-hole miniature golf course, food service area, a party room, and a game area. The facility will operate from 11:00 A.M. to 9:00 P.M. on Sundays, 12:00 P.M. to 9:00 P.M. Mondays through Thursdays, 12:00 P.M. to 10:00 P.M. on Fridays, and 11:00 A.M. to 10:00 P.M. on Saturdays. In addition, the facility will have a maximum of three employees working at any one time.

The facility is proposed to provide a total of 69 parking spaces with access provided via the site's existing access drive located on the south side of Dundee Road at the east end of the site. The access drive provides one inbound lane and one outbound lane. Left-turn movements to the access drive are generally made from the striped median on Dundee Road. In addition, future cross access may be provided between the site and Arlington Lanes. Further, other than the potential cross access to Arlington Lanes, no other modifications are proposed to the site's existing internal circulation system. The preliminary site plan is included in the Appendix.

Directional Distribution

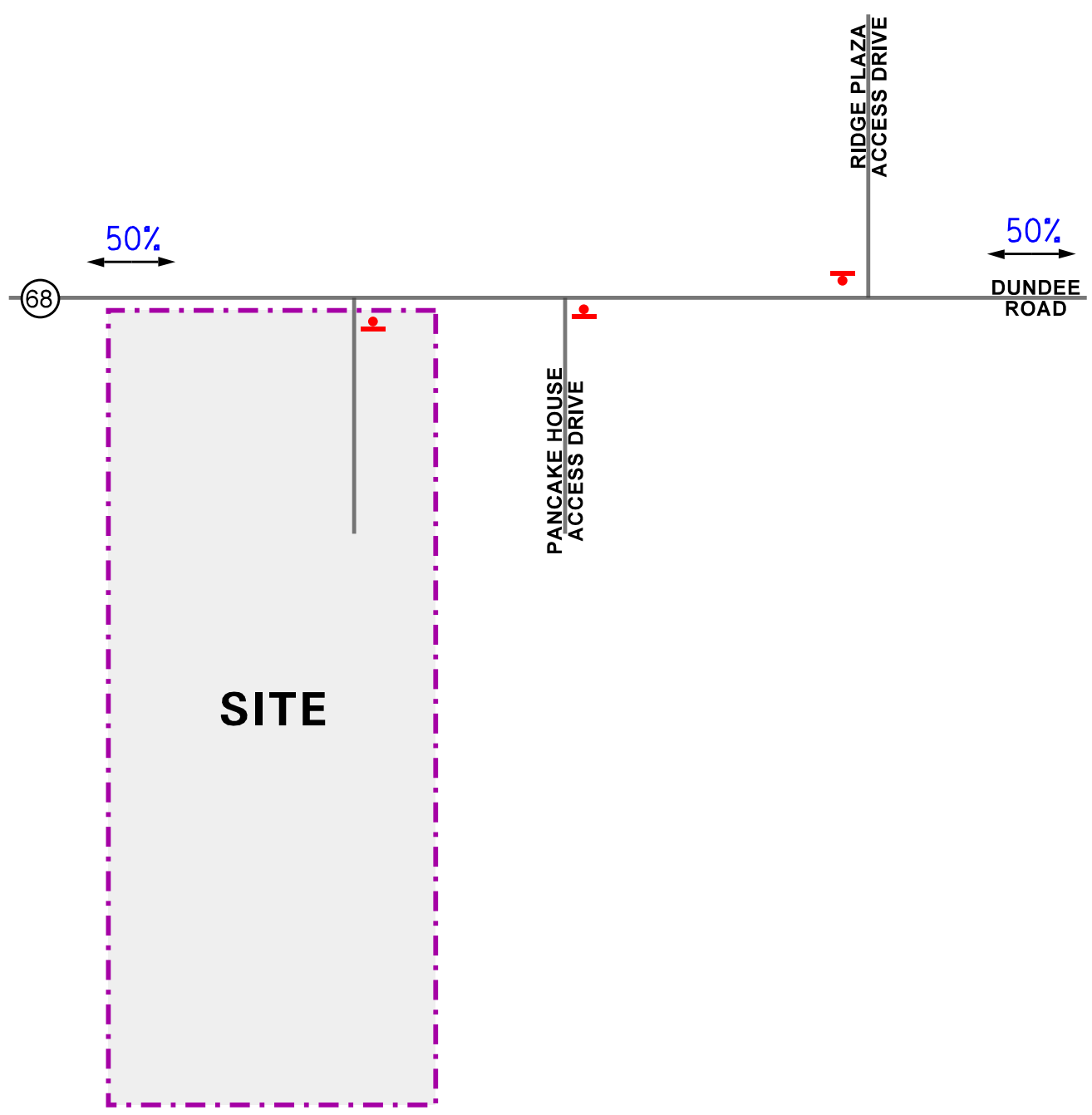
The directions from which patrons and employees of the proposed facility will approach and depart the facility were estimated based on existing travel patterns, as determined from the traffic counts. **Figure 5** illustrates the directional distribution of the facility-generated traffic.

Peak Hour Traffic Volumes

The number of peak hour trips estimated to be generated by the proposed facility was based on its projected operation. According to the operator, the facility will have a peak occupancy of approximately 35 to 45 patrons during the weekday evening peak hour and 70 to 80 patrons during the Saturday midday peak hour. It was assumed that the facility will have an average auto occupancy of 2.5 people per vehicle and that 50 percent of the traffic will consist of parents dropping off or picking up children. **Table 2** shows the traffic estimated to be generated by the proposed facility. It is important to note that the site formerly contained a Chuck E. Cheese, which was a similar type of entertainment use as the proposed indoor miniature golf facility. As such, the Chuck E. Cheese likely generated a similar volume of traffic as the proposed indoor miniature golf facility.



NOT TO SCALE



LEGEND

00% - PERCENT DISTRIBUTION

Table 2

ESTIMATED TRIP GENERATION FOR THE PROPOSED FACILITY

	Weekday Evening Peak Hour			Saturday Midday Peak Hour		
	In	Out	Total	In	Out	Total
Indoor Miniature Golf Facility	25	25	50	45	45	90

4. Projected Traffic Conditions

The total projected traffic volumes include the existing traffic volumes, increase in background traffic due to growth, and the traffic estimated to be generated by the proposed subject facility.

Facility Traffic Assignment

The estimated weekday evening and Saturday midday peak hour traffic volumes that will be generated by the proposed facility were assigned to the roadway system in accordance with the previously described directional distribution (Figure 5). **Figure 6** illustrates the traffic assignment of the proposed facility.

Background (No-Build) Traffic Conditions

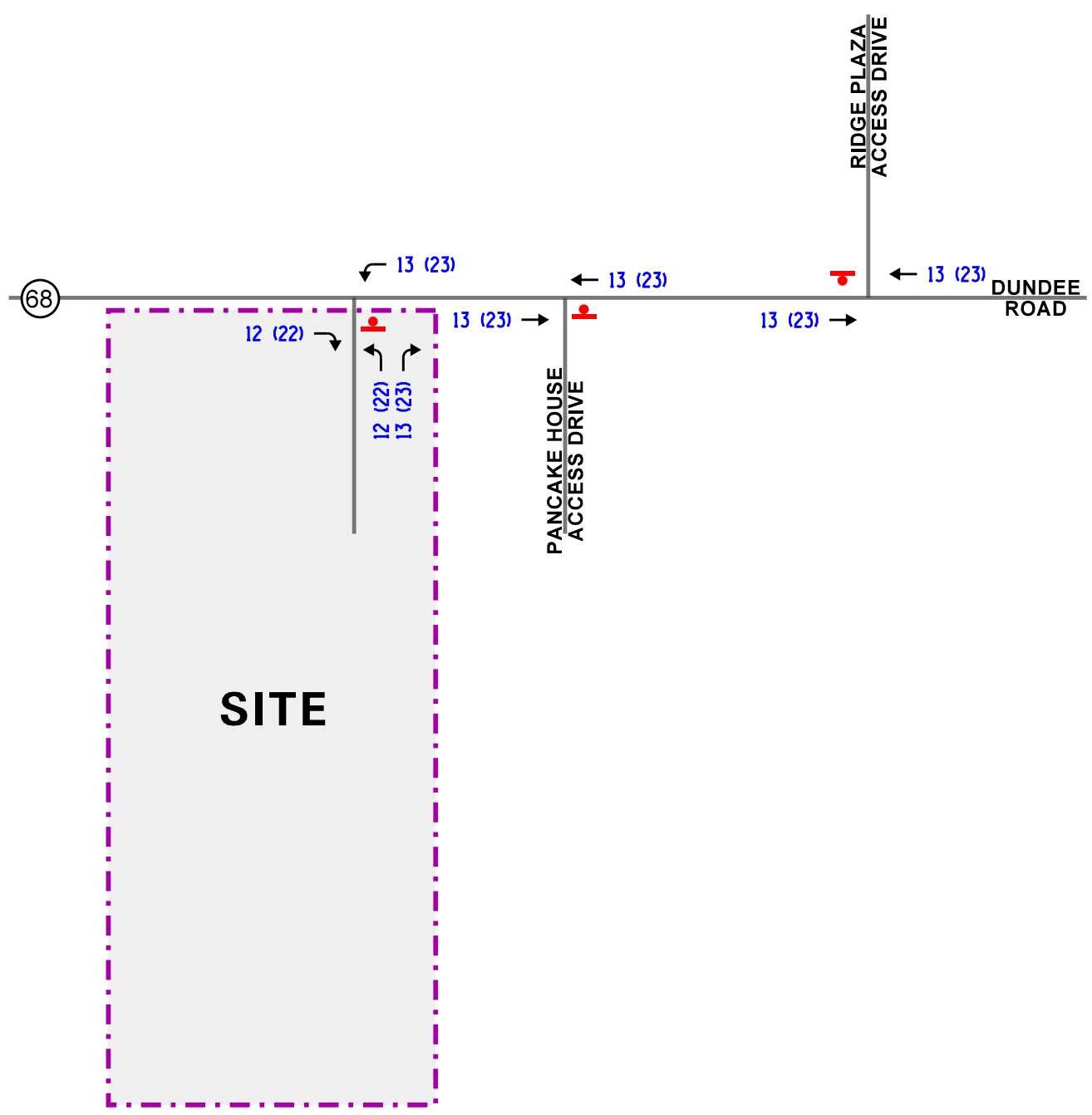
The Year 2021 base traffic volumes (Figure 4) were increased by a regional growth factor to account for the increase in existing traffic related to regional growth in the area (i.e., not attributable to any particular planned development). Based on ADT projections provided by the Chicago Metropolitan Agency for Planning (CMAP), the existing traffic volumes were increased by an annually compounded growth rate of 0.45 percent per year for five years (buildout year plus five years) for a total of 2.2 percent to project Year 2026 no-build conditions. A copy of the CMAP 2050 projections letter is included in the Appendix.

Total Projected Traffic Volumes

The facility-generated traffic was added to the Year 2026 no-build traffic volumes to determine the Year 2026 total projected traffic volumes as illustrated in **Figure 7**.



NOT TO SCALE



LEGEND

- 00 - PM PEAK HOUR (4:00-5:00 PM)
- (00) - SATURDAY MIDDAY PEAK HOUR (1:00-2:00 PM)

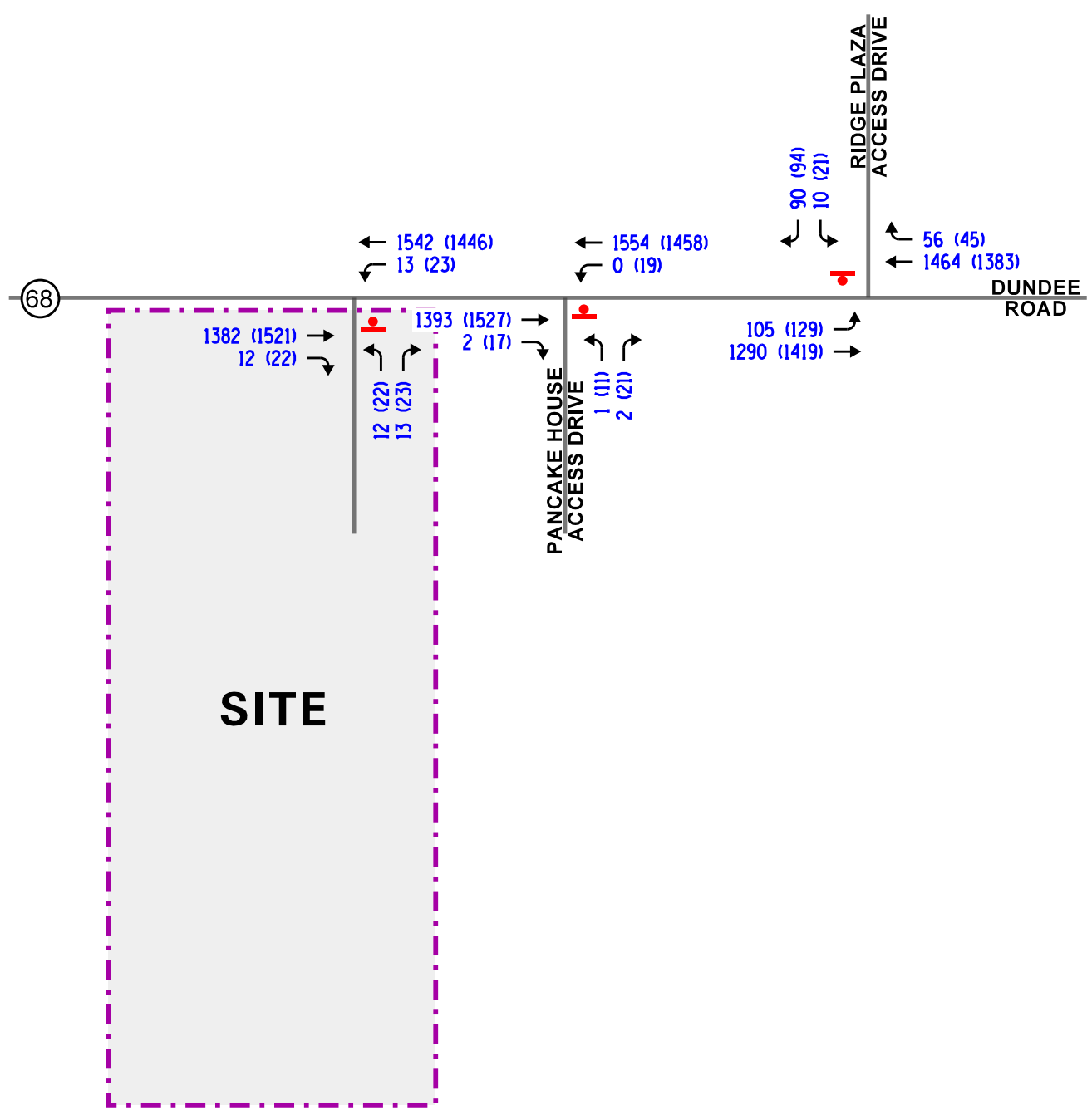
Indoor Miniature
Golf Facility
Arlington Heights, Illinois

Estimated Site-Generated
Traffic Volumes

KLOA
Kenig, Lindgren, O'Hara, Aboona, Inc.
Job No: 21-079 Figure: 6



NOT TO SCALE



LEGEND

- 00 - PM PEAK HOUR (4:00-5:00 PM)
- (00) - SATURDAY MIDDAY PEAK HOUR (1:00-2:00 PM)

5. Traffic Analysis and Recommendations

The following provides an evaluation conducted for the weekday evening and Saturday midday peak hours. The analysis includes conducting capacity analyses to determine how well the roadway system and access drives are projected to operate and whether any roadway improvements or modifications are required.

Traffic Analyses

Roadway and adjacent or nearby intersection analyses were performed for the weekday evening and Saturday midday peak hours for the Year 2021 base and Year 2026 total projected traffic volumes.

The traffic analyses were performed using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM)*, 6th Edition and analyzed using the Synchro/SimTraffic 10 software. The analysis for the traffic signal-controlled intersections were performed using actual cycle lengths, phasings and offsets to determine the average overall vehicle delay and levels of service.

The analyses for the unsignalized intersections determine the average control delay to vehicles at an intersection. Control delay is the elapsed time from a vehicle joining the queue at a stop sign (includes the time required to decelerate to a stop) until its departure from the stop sign and resumption of free flow speed. The methodology analyzes each intersection approach controlled by a stop sign and considers traffic volumes on all approaches and lane characteristics.

The ability of an intersection to accommodate traffic flow is expressed in terms of level of service, which is assigned a letter from A to F based on the average control delay experienced by vehicles passing through the intersection. The *Highway Capacity Manual* definitions for levels of service and the corresponding control delay for signalized intersections and unsignalized intersections are included in the Appendix of this report.

Summaries of the traffic analysis results showing the level of service and overall intersection delay (measured in seconds) for the Year 2021 base and Year 2026 total projected conditions are presented in **Tables 3** and **4**. A discussion of each intersection follows. Summary sheets for the capacity analyses are included in the Appendix.

Table 3

CAPACITY ANALYSIS RESULTS – YEAR 2021 BASE CONDITIONS – UNSIGNALIZED

Intersection	Weekday Evening Peak Hour		Saturday Midday Peak Hour	
	LOS	Delay	LOS	Delay
Dundee Road with Ridge Plaza Access Drive				
• Southbound Approach	D	25.9	E	38.5
• Eastbound Left Turn	C	15.7	C	15.7
Dundee Road with Pancake House Access Drive				
• Northbound Approach	C	20.6	D	25.8
• Westbound Left Turn	A	0.1	B	13.6
LOS = Level of Service Delay is measured in seconds.				

Table 4

CAPACITY ANALYSIS RESULTS – YEAR 2026 TOTAL CONDITIONS – UNSIGNALIZED

Intersection	Weekday Evening Peak Hour		Saturday Midday Peak Hour	
	LOS	Delay	LOS	Delay
Dundee Road with Ridge Plaza Access Drive				
• Southbound Approach	D	27.4	E	43.2
• Eastbound Left Turn	C	16.3	C	16.5
Dundee Road with Pancake House Access Drive				
• Northbound Approach	C	21.5	D	27.2
• Westbound Left Turn	A	0.1	B	14.1
Dundee Road with Facility Access Drive				
• Northbound Approach	D	27.4	E	36.7
• Westbound Left Turn	B	13.0	B	14.4
LOS = Level of Service Delay is measured in seconds.				

Discussion and Recommendations

The following summarizes how the intersections are projected to operate and identifies any roadway and traffic control improvements necessary to accommodate the facility-generated traffic.

Dundee Road with Pancake House Access Drive

The results of the capacity analysis indicate that the critical movements at this intersection currently operate at Level of Service (LOS) D or better during the weekday evening and Saturday midday peak hours. Assuming the Year 2026 total traffic conditions, all of the critical movements are projected to continue to operate at LOS D or better during both peak hours. As such, this intersection has sufficient reserve capacity to accommodate the traffic to be generated by the proposed facility and no roadway improvements and/or traffic control modifications are required.

Dundee Road with Ridge Plaza Access Drive

The results of the capacity analysis indicate that the critical movements at this intersection currently operate at LOS D or better during the weekday evening and Saturday midday peak hours except the access drive approach, which operates at LOS E during the Saturday midday peak hour. It should be noted that the traffic is able to exit onto Dundee Road. However, this traffic may experience some additional delay during the Saturday midday peak period. This is typical for a stop sign controlled approach along a principal arterial roadway such as Dundee Road. Further, the access drive is likely operating better than the capacity analyses indicate, given the additional gaps in the Dundee Road traffic stream created by the signalized intersections along Dundee Road with Kennicott Avenue to the west and Ridge Avenue to the east. Assuming the Year 2026 total traffic conditions, all of the critical movements are projected to continue to operate at the same levels of service as existing conditions. As such, this intersection generally has sufficient reserve capacity to accommodate the traffic to be generated by the proposed facility and no roadway improvements and/or traffic control modifications are required.

Dundee Road with Facility Access Drive

Access to the facility will be provided via the site's existing access drive located on the south side of Dundee Road at the east end of the site. The access drive provides one inbound lane and one outbound lane. Left-turn movements to the access drive are generally made from the striped median on Dundee Road.

Assuming the Year 2026 total traffic conditions, all of the critical movements are projected to operate at LOS D or better during the weekday evening and Saturday midday peak hours except the access drive approach, which is projected to operate on the threshold between LOS D/E during the Saturday midday peak hour. As such, the existing access drive will be sufficient to accommodate the traffic to be generated by the proposed facility with limited impact on the existing Dundee Road traffic.

6. Parking Evaluation

As proposed, the indoor miniature golf facility is to provide a total of 69 parking spaces. With a total of 8,023 square feet, the facility will provide a parking ratio of 8.60 parking spaces per 1,000 square feet. The adequacy of the parking demand was determined based on the Village of Arlington Heights zoning ordinance as well as the operation of the proposed facility as summarized below.

Village of Arlington Heights Zoning Ordinance Parking Requirements

The Village's zoning ordinance does not provide specific requirements for indoor miniature golf facilities. However, the zoning ordinance does provide the following guidance:

For uses not listed heretofore in the schedule of parking requirements, parking spaces shall be provided on the same basis as required for the most similar uses.

The following provides the parking requirements of two similar uses within the Village of Arlington Heights zoning ordinance:

- *Recreational Facilities* require the parking spaces to equal in number to 30 percent of capacity. With a total capacity of 169 people, the facility will require a total of 51 parking spaces. As such, the 69 parking spaces to be provided by the facility exceeds the Village's requirements for recreational facilities.
- *Amusement Device Arcades* require one parking space for each 300 square feet of floor area. With a total square footage of 8,023 square feet, the facility will require 27 parking spaces. As such, the 69 parking spaces to be provided by the facility exceeds the Village's requirements for amusement device arcades.

Therefore, the 69 parking spaces to be provided by the facility exceeds the parking requirements of the Village of Arlington Heights.

Parking Demand Based on the Facility's Operations

According to the operator, the facility will have a peak occupancy of approximately 70 to 80 patrons. In addition, the facility will have a maximum of three employees working at any one time. Assuming an average auto occupancy of 2.5 people per vehicle and the three employees, the facility is projected to have a peak parking demand of approximately 40 to 45 vehicles. It should be noted that the peak parking demand is likely a conservative (worst case) estimate as it assumes none of the patrons will be dropped off and picked up. As indicated above, the facility will have a maximum occupancy of 169 people. Assuming the maximum capacity of the facility and no one is dropped off and picked up, which provides for a worst-case scenario, the facility is projected to have a peak parking demand of 68 parking spaces. As such, the 69 parking spaces will be sufficient to accommodate the projected peak parking demand of the facility.

7. Conclusion

Based on the preceding analyses and recommendations, the following conclusions have been made:

- The subject site formerly contained a Chuck E. Cheese, which was a similar type of entertainment use as the proposed indoor miniature golf facility. As such, the Chuck E. Cheese likely generated a similar volume of traffic as the proposed indoor miniature golf facility.
- Access to the facility is to be provided via the site's existing access drive located on the south side of Dundee Road at the east end of the site. The access drive provides one inbound lane and one outbound lane. Left-turn movements to the access drive are generally made from the striped median on Dundee Road. In addition, future cross access may be provided between the site and Arlington Lanes.
- Other than the potential cross access to Arlington Lanes, no other modifications are proposed to the site's existing internal circulation system.
- The site's existing access drive and circulation system will be sufficient to accommodate the traffic to be generated by the proposed indoor miniature golf facility.
- The existing roadway system generally has sufficient reserve capacity to accommodate the traffic to be generated by the proposed facility and no roadway improvements and/or traffic control modifications are required.
- The 69 parking spaces to be provided by the indoor miniature golf facility exceeds the Village of Arlington Heights requirements and the peak parking demand of the facility based on its project operation.

Appendix

Traffic Count Summary Sheets
Preliminary Site Plan
CMAP Projections Letter
Level of Service Table
Capacity Analysis Summary Sheets

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Kenig Lindgren O'Hara Aboona, Inc.
 9575 W. Higgins Rd., Suite 400
 Rosemont, Illinois, United States 60018
 (847)518-9990

Count Name: Dundee Road with Walkers
 Brothers Access Drive
 Site Code:
 Start Date: 03/13/2021
 Page No: 1

Turning Movement Data

Start Time	Dundee Road Eastbound					Dundee Road Westbound					Access Drive Northbound					Int. Total
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
12:00 PM	0	301	6	0	307	0	1	327	0	328	0	7	3	2	10	645
12:15 PM	0	295	4	0	299	0	7	288	0	295	0	6	7	1	13	607
12:30 PM	0	296	3	0	299	0	4	306	0	310	0	4	6	4	10	619
12:45 PM	0	304	5	0	309	0	2	316	0	318	0	5	6	0	11	638
Hourly Total	0	1196	18	0	1214	0	14	1237	0	1251	0	22	22	7	44	2509
1:00 PM	0	332	6	0	338	0	5	321	0	326	0	4	4	0	8	672
1:15 PM	0	333	2	0	335	0	7	303	0	310	0	4	9	0	13	658
1:30 PM	0	318	5	0	323	0	4	372	0	376	0	1	4	0	5	704
1:45 PM	0	382	4	0	386	0	3	306	0	309	0	2	4	1	6	701
Hourly Total	0	1365	17	0	1382	0	19	1302	0	1321	0	11	21	1	32	2735
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	334	0	0	334	0	0	357	0	357	0	0	1	0	1	692
4:15 PM	0	275	1	0	276	0	0	333	0	333	0	0	1	0	1	610
4:30 PM	0	328	1	0	329	0	0	375	0	375	0	1	0	1	1	705
4:45 PM	0	304	0	0	304	0	0	333	0	333	0	0	0	0	0	637
Hourly Total	0	1241	2	0	1243	0	0	1398	0	1398	0	1	2	1	3	2644
5:00 PM	0	271	0	0	271	0	0	355	0	355	0	0	0	0	0	626
5:15 PM	0	365	0	0	365	0	0	310	0	310	0	0	0	0	0	675
5:30 PM	0	309	0	0	309	0	0	319	0	319	0	0	0	0	0	628
5:45 PM	0	346	0	0	346	0	0	322	0	322	0	0	0	0	0	668
Hourly Total	0	1291	0	0	1291	0	0	1306	0	1306	0	0	0	0	0	2597
Grand Total	0	5093	37	0	5130	0	33	5243	0	5276	0	34	45	9	79	10485
Approach %	0.0	99.3	0.7	-	-	0.0	0.6	99.4	-	-	0.0	43.0	57.0	-	-	-
Total %	0.0	48.6	0.4	-	48.9	0.0	0.3	50.0	-	50.3	0.0	0.3	0.4	-	0.8	-
Lights	0	5037	37	-	5074	0	33	5180	-	5213	0	34	45	-	79	10366
% Lights	-	98.9	100.0	-	98.9	-	100.0	98.8	-	98.8	-	100.0	100.0	-	100.0	98.9
Buses	0	10	0	-	10	0	0	6	-	6	0	0	0	-	0	16
% Buses	-	0.2	0.0	-	0.2	-	0.0	0.1	-	0.1	-	0.0	0.0	-	0.0	0.2
Single-Unit Trucks	0	30	0	-	30	0	0	41	-	41	0	0	0	-	0	71
% Single-Unit Trucks	-	0.6	0.0	-	0.6	-	0.0	0.8	-	0.8	-	0.0	0.0	-	0.0	0.7
Articulated Trucks	0	16	0	-	16	0	0	16	-	16	0	0	0	-	0	32
% Articulated Trucks	-	0.3	0.0	-	0.3	-	0.0	0.3	-	0.3	-	0.0	0.0	-	0.0	0.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Turning Movement Peak Hour Data (1:00 PM)

Start Time	Dundee Road Eastbound					Dundee Road Westbound					Access Drive Northbound					Int. Total
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
1:00 PM	0	332	6	0	338	0	5	321	0	326	0	4	4	0	8	672
1:15 PM	0	333	2	0	335	0	7	303	0	310	0	4	9	0	13	658
1:30 PM	0	318	5	0	323	0	4	372	0	376	0	1	4	0	5	704
1:45 PM	0	382	4	0	386	0	3	306	0	309	0	2	4	1	6	701
Total	0	1365	17	0	1382	0	19	1302	0	1321	0	11	21	1	32	2735
Approach %	0.0	98.8	1.2	-	-	0.0	1.4	98.6	-	-	0.0	34.4	65.6	-	-	-
Total %	0.0	49.9	0.6	-	50.5	0.0	0.7	47.6	-	48.3	0.0	0.4	0.8	-	1.2	-
PHF	0.000	0.893	0.708	-	0.895	0.000	0.679	0.875	-	0.878	0.000	0.688	0.583	-	0.615	0.971
Lights	0	1353	17	-	1370	0	19	1292	-	1311	0	11	21	-	32	2713
% Lights	-	99.1	100.0	-	99.1	-	100.0	99.2	-	99.2	-	100.0	100.0	-	100.0	99.2
Buses	0	2	0	-	2	0	0	2	-	2	0	0	0	-	0	4
% Buses	-	0.1	0.0	-	0.1	-	0.0	0.2	-	0.2	-	0.0	0.0	-	0.0	0.1
Single-Unit Trucks	0	9	0	-	9	0	0	6	-	6	0	0	0	-	0	15
% Single-Unit Trucks	-	0.7	0.0	-	0.7	-	0.0	0.5	-	0.5	-	0.0	0.0	-	0.0	0.5
Articulated Trucks	0	1	0	-	1	0	0	2	-	2	0	0	0	-	0	3
% Articulated Trucks	-	0.1	0.0	-	0.1	-	0.0	0.2	-	0.2	-	0.0	0.0	-	0.0	0.1
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Kenig Lindgren O'Hara Aboona, Inc.
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Count Name: Dundee Road with Walkers
 Brothers Access Drive
 Site Code:
 Start Date: 03/13/2021
 Page No: 3

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Dundee Road Eastbound					Dundee Road Westbound					Access Drive Northbound					Int. Total
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
4:00 PM	0	334	0	0	334	0	0	357	0	357	0	0	1	0	1	692
4:15 PM	0	275	1	0	276	0	0	333	0	333	0	0	1	0	1	610
4:30 PM	0	328	1	0	329	0	0	375	0	375	0	1	0	1	705	
4:45 PM	0	304	0	0	304	0	0	333	0	333	0	0	0	0	637	
Total	0	1241	2	0	1243	0	0	1398	0	1398	0	1	2	1	3	2644
Approach %	0.0	99.8	0.2	-	-	0.0	0.0	100.0	-	-	0.0	33.3	66.7	-	-	-
Total %	0.0	46.9	0.1	-	47.0	0.0	0.0	52.9	-	52.9	0.0	0.0	0.1	-	0.1	-
PHF	0.000	0.929	0.500	-	0.930	0.000	0.000	0.932	-	0.932	0.000	0.250	0.500	-	0.750	0.938
Lights	0	1223	2	-	1225	0	0	1366	-	1366	0	1	2	-	3	2594
% Lights	-	98.5	100.0	-	98.6	-	-	97.7	-	97.7	-	100.0	100.0	-	100.0	98.1
Buses	0	5	0	-	5	0	0	2	-	2	0	0	0	-	0	7
% Buses	-	0.4	0.0	-	0.4	-	-	0.1	-	0.1	-	0.0	0.0	-	0.0	0.3
Single-Unit Trucks	0	8	0	-	8	0	0	21	-	21	0	0	0	-	0	29
% Single-Unit Trucks	-	0.6	0.0	-	0.6	-	-	1.5	-	1.5	-	0.0	0.0	-	0.0	1.1
Articulated Trucks	0	5	0	-	5	0	0	9	-	9	0	0	0	-	0	14
% Articulated Trucks	-	0.4	0.0	-	0.4	-	-	0.6	-	0.6	-	0.0	0.0	-	0.0	0.5
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	-	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Kenig Lindgren O'Hara Aboona, Inc.
 9575 W. Higgins Rd., Suite 400
 Rosemont, Illinois, United States 60018
 (847)518-9990

Count Name: Dundee Road with Kohls Access Drive
 Site Code:
 Start Date: 03/13/2021
 Page No: 1

Turning Movement Data

Start Time	Dundee Road Eastbound					Dundee Road Westbound					Access Drive Southbound					Int. Total
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
12:00 PM	0	20	284	0	304	0	280	12	0	292	0	2	21	0	23	619
12:15 PM	0	29	254	0	283	0	293	8	1	301	0	6	28	0	34	618
12:30 PM	0	27	277	0	304	0	281	15	0	296	0	4	31	3	35	635
12:45 PM	0	22	257	0	279	0	298	10	0	308	0	4	24	0	28	615
Hourly Total	0	98	1072	0	1170	0	1152	45	1	1197	0	16	104	3	120	2487
1:00 PM	0	30	305	0	335	0	305	11	0	316	0	2	29	1	31	682
1:15 PM	0	37	287	0	324	0	321	8	0	329	0	6	26	0	32	685
1:30 PM	0	32	299	0	331	0	329	11	0	340	0	6	16	2	22	693
1:45 PM	1	30	335	0	366	0	327	15	0	342	0	7	23	0	30	738
Hourly Total	1	129	1226	0	1356	0	1282	45	0	1327	0	21	94	3	115	2798
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	34	258	0	292	0	322	14	0	336	0	2	20	0	22	650
4:15 PM	0	24	274	0	298	0	326	16	0	342	0	1	29	0	30	670
4:30 PM	1	17	294	0	312	0	346	16	0	362	0	6	14	0	20	694
4:45 PM	0	29	294	0	323	0	321	10	1	331	0	1	27	1	28	682
Hourly Total	1	104	1120	0	1225	0	1315	56	1	1371	0	10	90	1	100	2696
5:00 PM	0	18	247	0	265	0	331	11	0	342	0	3	15	0	18	625
5:15 PM	0	19	299	0	318	0	286	14	0	300	0	1	15	0	16	634
5:30 PM	0	23	310	0	333	0	313	17	0	330	0	6	17	0	23	686
5:45 PM	0	32	261	0	293	0	306	19	0	325	0	5	22	0	27	645
Hourly Total	0	92	1117	0	1209	0	1236	61	0	1297	0	15	69	0	84	2590
Grand Total	2	423	4535	0	4960	0	4985	207	2	5192	0	62	357	7	419	10571
Approach %	0.0	8.5	91.4	-	-	0.0	96.0	4.0	-	-	0.0	14.8	85.2	-	-	-
Total %	0.0	4.0	42.9	-	46.9	0.0	47.2	2.0	-	49.1	0.0	0.6	3.4	-	4.0	-
Lights	2	423	4479	-	4904	0	4908	207	-	5115	0	62	357	-	419	10438
% Lights	100.0	100.0	98.8	-	98.9	-	98.5	100.0	-	98.5	-	100.0	100.0	-	100.0	98.7
Buses	0	0	9	-	9	0	6	0	-	6	0	0	0	-	0	15
% Buses	0.0	0.0	0.2	-	0.2	-	0.1	0.0	-	0.1	-	0.0	0.0	-	0.0	0.1
Single-Unit Trucks	0	0	29	-	29	0	52	0	-	52	0	0	0	-	0	81
% Single-Unit Trucks	0.0	0.0	0.6	-	0.6	-	1.0	0.0	-	1.0	-	0.0	0.0	-	0.0	0.8
Articulated Trucks	0	0	17	-	17	0	19	0	-	19	0	0	0	-	0	36
% Articulated Trucks	0.0	0.0	0.4	-	0.3	-	0.4	0.0	-	0.4	-	0.0	0.0	-	0.0	0.3
Bicycles on Road	0	0	1	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Kenig Lindgren O'Hara Aboona, Inc.
 9575 W. Higgins Rd., Suite 400
 Rosemont, Illinois, United States 60018
 (847)518-9990

Count Name: Dundee Road with Kohls Access Drive
 Site Code:
 Start Date: 03/13/2021
 Page No: 2

Turning Movement Peak Hour Data (1:00 PM)

Start Time	Dundee Road Eastbound					Dundee Road Westbound					Access Drive Southbound					Int. Total
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
1:00 PM	0	30	305	0	335	0	305	11	0	316	0	2	29	1	31	682
1:15 PM	0	37	287	0	324	0	321	8	0	329	0	6	26	0	32	685
1:30 PM	0	32	299	0	331	0	329	11	0	340	0	6	16	2	22	693
1:45 PM	1	30	335	0	366	0	327	15	0	342	0	7	23	0	30	738
Total	1	129	1226	0	1356	0	1282	45	0	1327	0	21	94	3	115	2798
Approach %	0.1	9.5	90.4	-	-	0.0	96.6	3.4	-	-	0.0	18.3	81.7	-	-	-
Total %	0.0	4.6	43.8	-	48.5	0.0	45.8	1.6	-	47.4	0.0	0.8	3.4	-	4.1	-
PHF	0.250	0.872	0.915	-	0.926	0.000	0.974	0.750	-	0.970	0.000	0.750	0.810	-	0.898	0.948
Lights	1	129	1214	-	1344	0	1266	45	-	1311	0	21	94	-	115	2770
% Lights	100.0	100.0	99.0	-	99.1	-	98.8	100.0	-	98.8	-	100.0	100.0	-	100.0	99.0
Buses	0	0	2	-	2	0	2	0	-	2	0	0	0	-	0	4
% Buses	0.0	0.0	0.2	-	0.1	-	0.2	0.0	-	0.2	-	0.0	0.0	-	0.0	0.1
Single-Unit Trucks	0	0	9	-	9	0	12	0	-	12	0	0	0	-	0	21
% Single-Unit Trucks	0.0	0.0	0.7	-	0.7	-	0.9	0.0	-	0.9	-	0.0	0.0	-	0.0	0.8
Articulated Trucks	0	0	1	-	1	0	2	0	-	2	0	0	0	-	0	3
% Articulated Trucks	0.0	0.0	0.1	-	0.1	-	0.2	0.0	-	0.2	-	0.0	0.0	-	0.0	0.1
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Kenig Lindgren O'Hara Aboona, Inc.
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Count Name: Dundee Road with Kohls Access Drive
 Site Code:
 Start Date: 03/13/2021
 Page No: 3

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Dundee Road Eastbound					Dundee Road Westbound					Access Drive Southbound					Int. Total
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
4:00 PM	0	34	258	0	292	0	322	14	0	336	0	2	20	0	22	650
4:15 PM	0	24	274	0	298	0	326	16	0	342	0	1	29	0	30	670
4:30 PM	1	17	294	0	312	0	346	16	0	362	0	6	14	0	20	694
4:45 PM	0	29	294	0	323	0	321	10	1	331	0	1	27	1	28	682
Total	1	104	1120	0	1225	0	1315	56	1	1371	0	10	90	1	100	2696
Approach %	0.1	8.5	91.4	-	-	0.0	95.9	4.1	-	-	0.0	10.0	90.0	-	-	-
Total %	0.0	3.9	41.5	-	45.4	0.0	48.8	2.1	-	50.9	0.0	0.4	3.3	-	3.7	-
PHF	0.250	0.765	0.952	-	0.948	0.000	0.950	0.875	-	0.947	0.000	0.417	0.776	-	0.833	0.971
Lights	1	104	1101	-	1206	0	1279	56	-	1335	0	10	90	-	100	2641
% Lights	100.0	100.0	98.3	-	98.4	-	97.3	100.0	-	97.4	-	100.0	100.0	-	100.0	98.0
Buses	0	0	5	-	5	0	2	0	-	2	0	0	0	-	0	7
% Buses	0.0	0.0	0.4	-	0.4	-	0.2	0.0	-	0.1	-	0.0	0.0	-	0.0	0.3
Single-Unit Trucks	0	0	8	-	8	0	25	0	-	25	0	0	0	-	0	33
% Single-Unit Trucks	0.0	0.0	0.7	-	0.7	-	1.9	0.0	-	1.8	-	0.0	0.0	-	0.0	1.2
Articulated Trucks	0	0	5	-	5	0	9	0	-	9	0	0	0	-	0	14
% Articulated Trucks	0.0	0.0	0.4	-	0.4	-	0.7	0.0	-	0.7	-	0.0	0.0	-	0.0	0.5
Bicycles on Road	0	0	1	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.1	-	0.1	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Dundee Road and Salon Access - TMC

Wed Nov 1, 2017

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)

All Movements

ID: 466540, Location: 42.139106, -87.994632



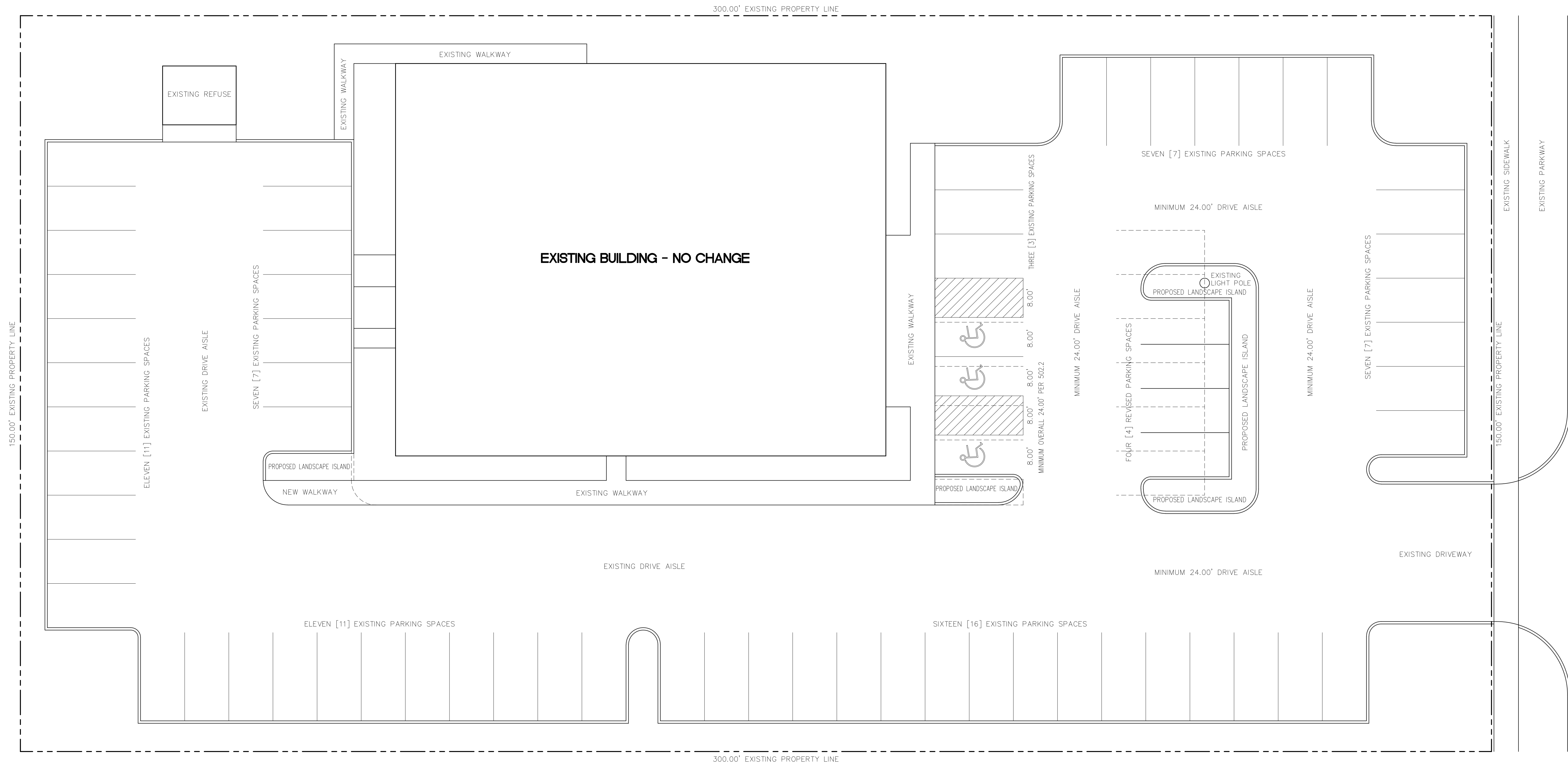
Provided by: Kenig Lindgren O'Hara Aboona, Inc.

9575 W. Higgins Rd., Suite 400, Rosemont, IL, 60018, US

Leg Direction	Dundee Road Eastbound						Dundee Road Westbound						Salon Access Northbound						Elegant Home Access Southbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2017-11-01 7:00AM	0	486	3	0	489	0	0	219	0	0	219	0	0	0	0	0	0	0	3	0	0	0	3	0	711
7:15AM	1	453	6	0	460	0	0	250	0	0	250	0	0	0	0	0	0	0	3	0	0	0	3	0	713
7:30AM	1	492	1	0	494	0	0	237	1	0	238	0	1	0	0	0	1	0	6	0	0	0	6	0	739
7:45AM	1	501	11	0	513	0	0	230	0	0	230	0	0	0	0	0	0	0	6	0	0	0	6	0	749
Hourly Total	3	1932	21	0	1956	0	0	936	1	0	937	0	1	0	0	0	1	0	18	0	0	0	18	0	2912
8:00AM	4	484	4	0	492	0	2	237	0	0	239	0	0	0	0	0	0	0	6	0	1	0	7	1	738
8:15AM	2	447	4	0	453	0	1	238	0	0	239	0	0	0	0	0	0	0	7	0	0	0	7	2	699
8:30AM	0	432	10	0	442	0	0	249	0	0	249	0	0	0	1	0	1	0	11	0	0	0	11	0	703
8:45AM	4	443	14	0	461	0	0	261	2	0	263	0	1	0	1	0	2	0	6	0	0	0	6	0	732
Hourly Total	10	1806	32	0	1848	0	3	985	2	0	990	0	1	0	2	0	3	0	30	0	1	0	31	3	2872
4:00PM	3	324	8	0	335	0	1	380	2	0	383	0	1	0	2	0	3	0	9	0	0	0	9	0	730
4:15PM	0	322	3	0	325	0	0	382	0	0	382	0	1	0	1	0	2	0	9	0	0	0	9	0	718
4:30PM	0	338	1	0	339	0	0	368	2	0	370	0	1	0	0	0	1	0	7	0	0	0	7	0	717
4:45PM	1	320	5	0	326	0	1	374	1	0	376	0	4	0	0	0	4	0	12	0	0	0	12	0	718
Hourly Total	4	1304	17	0	1325	0	2	1504	5	0	1511	0	7	0	3	0	10	0	37	0	0	0	37	0	2883
5:00PM	1	401	4	0	406	0	1	271	1	0	273	0	1	0	0	0	1	0	7	0	0	0	7	0	687
5:15PM	1	347	3	0	351	0	0	319	1	0	320	0	1	0	0	0	1	0	8	0	0	0	8	0	680
5:30PM	2	362	4	0	368	0	0	397	1	0	398	0	5	0	1	0	6	0	11	0	0	0	11	0	783
5:45PM	3	350	5	0	358	0	1	341	4	0	346	0	5	0	0	0	5	0	12	0	0	0	12	0	721
Hourly Total	7	1460	16	0	1483	0	2	1328	7	0	1337	0	12	0	1	0	13	0	38	0	0	0	38	0	2871
Total	24	6502	86	0	6612	0	7	4753	15	0	4775	0	21	0	6	0	27	0	123	0	1	0	124	3	11538
% Approach	0.4%	98.3%	1.3%	0%	-	-	0.1%	99.5%	0.3%	0%	-	-	77.8%	0%	22.2%	0%	-	-	99.2%	0%	0.8%	0%	-	-	-
% Total	0.2%	56.4%	0.7%	0%	57.3%	-	0.1%	41.2%	0.1%	0%	41.4%	-	0.2%	0%	0.1%	0%	0.2%	-	1.1%	0%	0%	0%	1.1%	-	-
Lights	22	6365	83	0	6470	-	7	4625	15	0	4647	-	19	0	6	0	25	-	122	0	1	0	123	-	11265
% Lights	91.7%	97.9%	96.5%	0%	97.9%	-	100%	97.3%	100%	0%	97.3%	-	90.5%	0%	100%	0%	92.6%	-	99.2%	0%	100%	0%	99.2%	-	97.6%
Single-Unit Trucks	1	52	2	0	55	-	0	69	0	0	69	-	1	0	0	0	1	-	0	0	0	0	0	-	125
% Single-Unit Trucks	4.2%	0.8%	2.3%	0%	0.8%	-	0%	1.5%	0%	0%	1.4%	-	4.8%	0%	0%	0%	3.7%	-	0%	0%	0%	0%	0%	-	1.1%
Articulated Trucks	0	57	1	0	58	-	0	40	0	0	40	-	0	0	0	0	0	-	0	0	0	0	0	-	98
% Articulated Trucks	0%	0.9%	1.2%	0%	0.9%	-	0%	0.8%	0%	0%	0.8%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0.8%
Buses	1	28	0	0	29	-	0	18	0	0	18	-	1	0	0	0	1	-	0	0	0	0	0	-	48
% Buses	4.2%	0.4%	0%	0%	0.4%	-	0%	0.4%	0%	0%	0.4%	-	4.8%	0%	0%	0%	3.7%	-	0%	0%	0%	0%	0%	-	0.4%
Bicycles on Road	0	0	0	0	0	-	0	1	0	0	1	-	0	0	0	0	0	-	1	0	0	0	1	-	2
% Bicycles on Road	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0.8%	0%	0%	0%	0.8%	-	0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Preliminary Site Plan



PROPOSED PRELIMINARY SITE PLAN

SCALE: 1" = 10'-0"



EXISTING PARKING INFORMATION

EXISTING PARKING SPACES	71 SPACES
EXISTING ADA PARKING SPACES	2 SPACES
EXISTING TOTAL PARKING SPACES	73 SPACES

PROPOSED PARKING INFORMATION

EXISTING PARKING SPACES TO REMAIN	62 SPACES
PROPOSED REVISED PARKING SPACES	4 SPACES
PROPOSED ADA PARKING SPACES	3 SPACES
PROPOSED TOTAL PARKING SPACES	69 SPACES

CMAP Projections Letter



Chicago Metropolitan Agency for Planning

433 West Van Buren Street
Suite 450
Chicago, IL 60607
312-454-0400
cmap.illinois.gov

March 30, 2021

Andrew Bowen
Traffic Engineer
Kenig, Lindgren, O'Hara and Aboona, Inc.
9575 West Higgins Road
Suite 400
Rosemont, IL 60018

Subject: Dundee Road east of Kennicott Avenue
IDOT

Dear Mr. Bowen:

In response to a request made on your behalf and dated March 30, 2021, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current Volumes	Year 2050 ADT
Dundee Rd east of Kennicott Ave	25,700	29,300

Traffic projections are developed using existing ADT data provided in the request letter and the results from the June 2020 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2050 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

If you have any questions, please call me at (312) 386-8806.

Sincerely,

Jose Rodriguez, PTP, AICP
Senior Planner, Research & Analysis

cc: Quigley (IDOT)
2021_CY_TrafficForecast\ArlingtonHeights\ck-41-21\ck-41-21.docx

Level of Service Table

LEVEL OF SERVICE CRITERIA

Signalized Intersections		
Level of Service	Interpretation	Average Control Delay (seconds per vehicle)
A	Favorable progression. Most vehicles arrive during the green indication and travel through the intersection without stopping.	≤10
B	Good progression, with more vehicles stopping than for Level of Service A.	>10 - 20
C	Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear. Number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 - 35
D	The volume-to-capacity ratio is high and either progression is ineffective or the cycle length is too long. Many vehicles stop and individual cycle failures are noticeable.	>35 - 55
E	Progression is unfavorable. The volume-to-capacity ratio is high and the cycle length is long. Individual cycle failures are frequent.	>55 - 80
F	The volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	>80.0
Unsignalized Intersections		
Level of Service	Average Total Delay (SEC/VEH)	
A	0 - 10	
B	> 10 - 15	
C	> 15 - 25	
D	> 25 - 35	
E	> 35 - 50	
F	> 50	

Source: *Highway Capacity Manual*, 2010.

Capacity Analysis Summary Sheets
Weekday Evening Peak Hour – Existing Conditions

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	1340	2	0	1510	1	2
Future Vol, veh/h	1340	2	0	1510	1	2
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	1426	2	0	1606	1	2

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1429	0	2231
Stage 1	-	-	-	-	1428
Stage 2	-	-	-	-	803
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	482	-	37
Stage 1	-	-	-	-	191
Stage 2	-	-	-	-	406
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	482	-	37
Mov Cap-2 Maneuver	-	-	-	-	133
Stage 1	-	-	-	-	191
Stage 2	-	-	-	-	406

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	234	-	-	482	-
HCM Lane V/C Ratio	0.014	-	-	-	-
HCM Control Delay (s)	20.6	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC
2: Dundee Road & Shopping Center Access Drive

03/31/2021

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	105	1237	1420	56	10	90
Future Vol, veh/h	105	1237	1420	56	10	90
Conflicting Peds, #/hr	1	0	0	1	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	2	3	0	0	0
Mvmt Flow	108	1275	1464	58	10	93

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1523	0	0 2349 762
Stage 1	-	-	- 1494 -
Stage 2	-	-	- 855 -
Critical Hdwy	4.1	-	- 6.8 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 5.8 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	444	-	- 31 352
Stage 1	-	-	- 176 -
Stage 2	-	-	- 382 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	444	-	- 23 352
Mov Cap-2 Maneuver	-	-	- 91 -
Stage 1	-	-	- 133 -
Stage 2	-	-	- 382 -

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	25.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	444	-	-	-	274
HCM Lane V/C Ratio	0.244	-	-	-	0.376
HCM Control Delay (s)	15.7	-	-	-	25.9
HCM Lane LOS	C	-	-	-	D
HCM 95th %tile Q(veh)	0.9	-	-	-	1.7

Capacity Analysis Summary Sheets
Saturday Midday Peak Hour – Existing Conditions

HCM 6th TWSC

1: Pancake House Access Drive & Dundee Road

03/31/2021

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↗	
Traffic Vol, veh/h	1474	17	19	1406	11	21
Future Vol, veh/h	1474	17	19	1406	11	21
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	1520	18	20	1449	11	22

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1539	0	2295
Stage 1	-	-	-	-	1530
Stage 2	-	-	-	-	765
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	438	-	34
Stage 1	-	-	-	-	168
Stage 2	-	-	-	-	425
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	438	-	32
Mov Cap-2 Maneuver	-	-	-	-	116
Stage 1	-	-	-	-	160
Stage 2	-	-	-	-	425

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	25.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	206	-	-	438	-
HCM Lane V/C Ratio	0.16	-	-	0.045	-
HCM Control Delay (s)	25.8	-	-	13.6	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

HCM 6th TWSC
 2: Dundee Road & Shopping Center Access Drive

03/31/2021

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	129	1366	1331	45	21	94
Future Vol, veh/h	129	1366	1331	45	21	94
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	136	1438	1401	47	22	99

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1451	0	-	0	2419 727
Stage 1	-	-	-	-	1428 -
Stage 2	-	-	-	-	991 -
Critical Hdwy	4.1	-	-	-	6.8 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	473	-	-	-	28 371
Stage 1	-	-	-	-	191 -
Stage 2	-	-	-	-	325 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	472	-	-	-	~ 20 370
Mov Cap-2 Maneuver	-	-	-	-	81 -
Stage 1	-	-	-	-	136 -
Stage 2	-	-	-	-	324 -

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	38.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	472	-	-	-	224
HCM Lane V/C Ratio	0.288	-	-	-	0.54
HCM Control Delay (s)	15.7	-	-	-	38.5
HCM Lane LOS	C	-	-	-	E
HCM 95th %tile Q(veh)	1.2	-	-	-	2.9

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Capacity Analysis Summary Sheets
Weekday Evening Peak Hour – Projected Conditions

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	1393	2	0	1554	1	2
Future Vol, veh/h	1393	2	0	1554	1	2
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	1482	2	0	1653	1	2

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1485	0	2311
Stage 1	-	-	-	-	1484
Stage 2	-	-	-	-	827
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	459	-	33
Stage 1	-	-	-	-	178
Stage 2	-	-	-	-	395
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	459	-	33
Mov Cap-2 Maneuver	-	-	-	-	125
Stage 1	-	-	-	-	178
Stage 2	-	-	-	-	395

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	222	-	-	459	-
HCM Lane V/C Ratio	0.014	-	-	-	-
HCM Control Delay (s)	21.5	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC
2: Dundee Road & Shopping Center Access Drive

03/31/2021

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	105	1290	1464	56	10	90
Future Vol, veh/h	105	1290	1464	56	10	90
Conflicting Peds, #/hr	1	0	0	1	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	2	3	0	0	0
Mvmt Flow	108	1330	1509	58	10	93

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1568	0	-	0	2421 785
Stage 1	-	-	-	-	1539 -
Stage 2	-	-	-	-	882 -
Critical Hdwy	4.1	-	-	-	6.8 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	426	-	-	-	28 340
Stage 1	-	-	-	-	166 -
Stage 2	-	-	-	-	370 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	426	-	-	-	21 340
Mov Cap-2 Maneuver	-	-	-	-	85 -
Stage 1	-	-	-	-	124 -
Stage 2	-	-	-	-	370 -

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	27.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	426	-	-	-	262
HCM Lane V/C Ratio	0.254	-	-	-	0.393
HCM Control Delay (s)	16.3	-	-	-	27.4
HCM Lane LOS	C	-	-	-	D
HCM 95th %tile Q(veh)	1	-	-	-	1.8

HCM 6th TWSC
3: Site Access Drive & Dundee Road

03/31/2021

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	1382	12	13	1542	12	13
Future Vol, veh/h	1382	12	13	1542	12	13
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	1455	13	14	1623	13	14

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1469	0	2303
Stage 1	-	-	-	-	1463
Stage 2	-	-	-	-	840
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	465	-	33
Stage 1	-	-	-	-	183
Stage 2	-	-	-	-	389
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	465	-	32
Mov Cap-2 Maneuver	-	-	-	-	122
Stage 1	-	-	-	-	177
Stage 2	-	-	-	-	389

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	27.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	187	-	-	465	-
HCM Lane V/C Ratio	0.141	-	-	0.029	-
HCM Control Delay (s)	27.4	-	-	13	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Capacity Analysis Summary Sheets
Saturday Midday Peak Hour – Projected Conditions

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↗	
Traffic Vol, veh/h	1527	17	19	1458	11	21
Future Vol, veh/h	1527	17	19	1458	11	21
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	1574	18	20	1503	11	22

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1593	0	2376 797
Stage 1	-	-	-	-	1584 -
Stage 2	-	-	-	-	792 -
Critical Hdwy	-	-	4.1	-	6.8 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	417	-	30 334
Stage 1	-	-	-	-	157 -
Stage 2	-	-	-	-	412 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	417	-	29 334
Mov Cap-2 Maneuver	-	-	-	-	109 -
Stage 1	-	-	-	-	149 -
Stage 2	-	-	-	-	412 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	27.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	195	-	-	417	-
HCM Lane V/C Ratio	0.169	-	-	0.047	-
HCM Control Delay (s)	27.2	-	-	14.1	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

HCM 6th TWSC
 2: Dundee Road & Shopping Center Access Drive

03/31/2021

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	129	1419	1383	45	21	94
Future Vol, veh/h	129	1419	1383	45	21	94
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	136	1494	1456	47	22	99

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1506	0	-	0	2502 755
Stage 1	-	-	-	-	1483 -
Stage 2	-	-	-	-	1019 -
Critical Hdwy	4.1	-	-	-	6.8 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	450	-	-	-	24 356
Stage 1	-	-	-	-	178 -
Stage 2	-	-	-	-	314 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	449	-	-	-	~ 17 355
Mov Cap-2 Maneuver	-	-	-	-	74 -
Stage 1	-	-	-	-	124 -
Stage 2	-	-	-	-	313 -

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	43.2
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	449	-	-	-	210
HCM Lane V/C Ratio	0.302	-	-	-	0.576
HCM Control Delay (s)	16.5	-	-	-	43.2
HCM Lane LOS	C	-	-	-	E
HCM 95th %tile Q(veh)	1.3	-	-	-	3.2

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
 3: Site Access Drive & Dundee Road

03/31/2021

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↗	
Traffic Vol, veh/h	1521	22	23	1446	22	23
Future Vol, veh/h	1521	22	23	1446	22	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	1601	23	24	1522	23	24

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1624	0	2422
Stage 1	-	-	-	-	1613
Stage 2	-	-	-	-	809
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	406	-	28
Stage 1	-	-	-	-	152
Stage 2	-	-	-	-	403
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	406	-	26
Mov Cap-2 Maneuver	-	-	-	-	104
Stage 1	-	-	-	-	143
Stage 2	-	-	-	-	403

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	36.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	160	-	-	406	-
HCM Lane V/C Ratio	0.296	-	-	0.06	-
HCM Control Delay (s)	36.7	-	-	14.4	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	1.2	-	-	0.2	-