



MEMORANDUM TO: David Larrance  
NewHope Academy

FROM: Brendan S. May  
Consultant

Luay R. Aboona, PE  
Principal

DATE: January 11, 2017

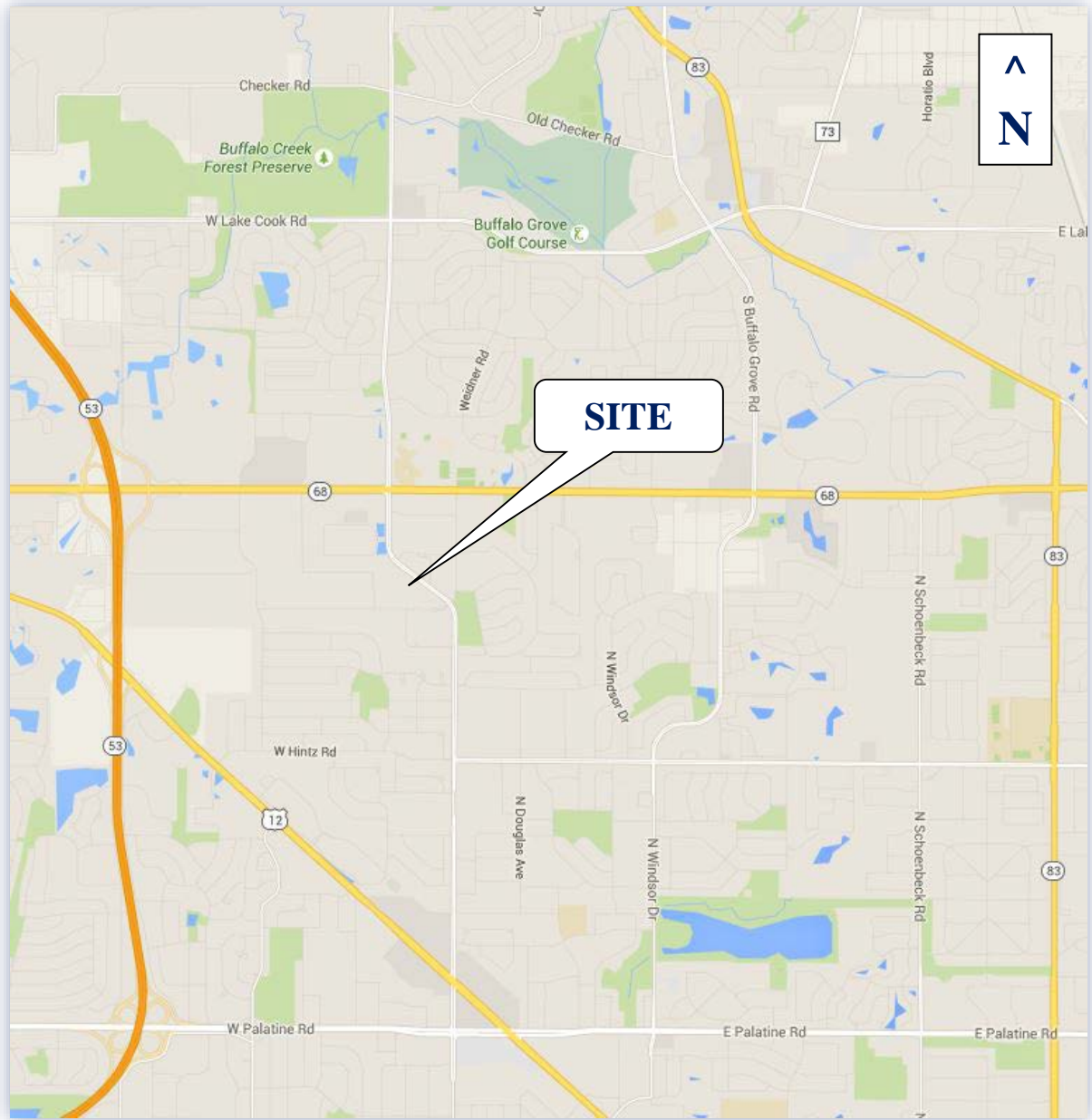
SUBJECT: NewHope Academy Relocation  
Arlington Heights, Illinois

This memorandum summarizes the methodologies, results and findings of a traffic impact study conducted by Kenig, Lindgren, O’Hara, Aboona, Inc. (KLOA, Inc.) for the relocation of the NewHope Academy from its existing location at 6289 Howard St in Niles, Illinois to 3250 N. Arlington Heights Road in Arlington Heights, Illinois. The site, which is currently vacant office tenant space, is located on the west side of Arlington Heights Road approximately 550 feet north of University Drive. **Figure 1** shows the location of the site in relation to the area roadway system. **Figure 2** shows an aerial view of the site as it relates to the surrounding area.

The NewHope Academy (NHA) is a free standing therapeutic day school serving the needs of students with emotional challenges. NHA serves students grades 6 through 12 with emotional disabilities, autism, learning disability, and other health impairments who are in need of an alternative school program, which is supportive, therapeutic and educational. As proposed, NHA will occupy approximately 16,000 square feet in the southwest vacant wing within the office building. Access to the building is to be provided via the two existing access drives off Arlington Heights Road.

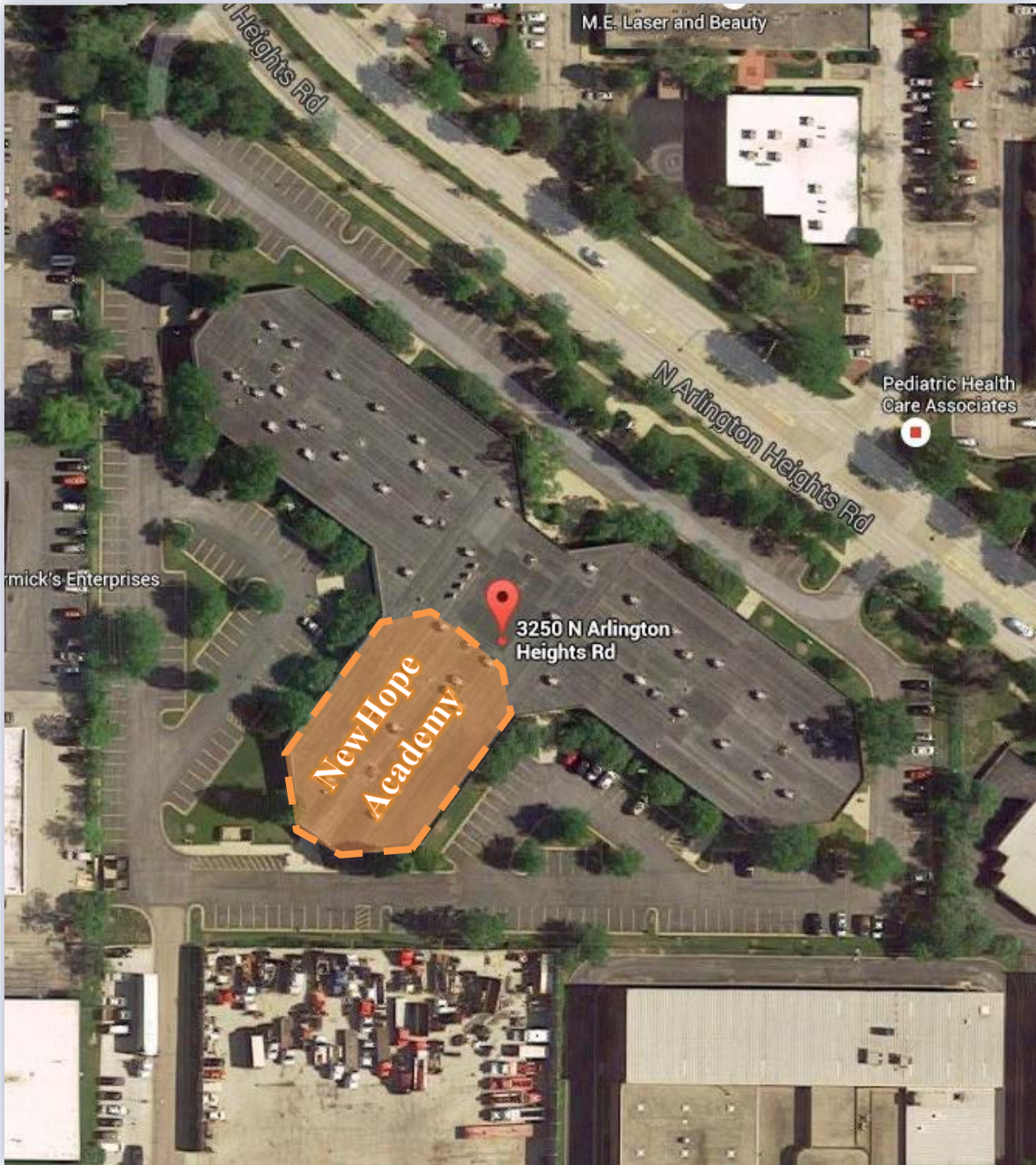
The following sections of this memorandum present the following.

- Existing roadway conditions including traffic volumes for the weekday morning and weekday afternoon peak hours
- A detailed description of the school and proposed operations
- Vehicle trip generation for the proposed school
- Directional distribution of school-generated traffic
- Future transportation conditions including access to and from the school
- Evaluation of the parking supply



**Site Location**

**Figure 1**



**Aerial View of Proposed School**

**Figure 2**

## Existing Conditions

Existing traffic and roadway conditions were documented based on field visits and traffic counts conducted by KLOA, Inc. The following provides a detailed description of the physical characteristics of the roadways including geometry and traffic control, adjacent land uses and peak hour traffic flows along area roadways.

### Site Location

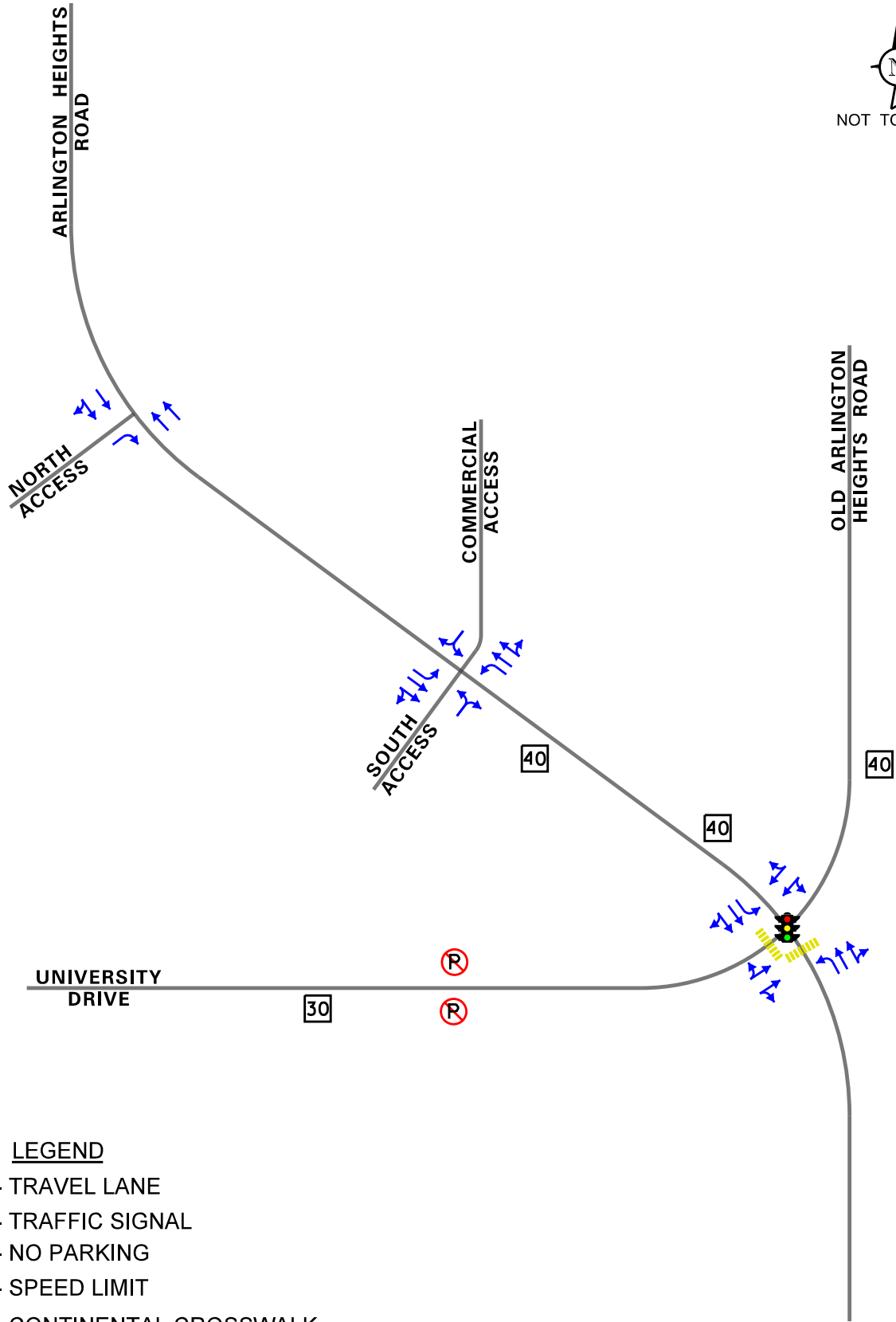
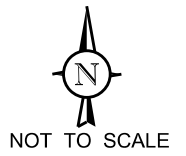
The site is located at 3250 N. Arlington Heights Road and contains a three wing office building totaling approximately 72,000 square-feet. Two wings of the office building are vacant with a total of 35,000 square feet of tenant space and the third wing containing of six tenants and 20,460 square feet of available tenant space. As proposed, the school will occupy the southwest vacant wing of the office building. Access to the site is currently provided via two access drives on Arlington Heights Road. The site provides a total of 271 parking spaces. Land uses in the vicinity of the site are primarily commercial and industrial to the north, south and west and primarily residential to the east.

### Existing Roadway System Characteristics

The characteristics of the existing roadways that surround the proposed location of the schools are illustrated in **Figure 3** and described below.

*Arlington Heights Road* is a north-south roadway that provides two lanes in each direction separated by a raised landscaped median. At its signalized intersection with University Drive, Arlington Heights Road provides an exclusive left-turn lane, a through lane and a shared through/right-turn lane on both approaches. The northbound approach provides a high visibility crosswalk. At its unsignalized intersection with the site's southern access drive and the commercial access drive located opposite the south access drive, Arlington Heights Road provides an exclusive left-turn lane, through lane and shared through/right-turn lane on both approaches. At its unsignalized intersection with the site's northern access drive, Arlington Heights Road provides a through lane and a shared through/right-turn lane on the southbound approach. The raised landscape median creates a physical barrier limiting the north access drive to right-in/right-out movements only. Arlington Heights Road is under the jurisdiction of the Cook County Department of Transportation and Highways, carries an average daily traffic (ADT) volume of 21,800 vehicles and has a posted speed limit of 40 miles per hour.

*University Drive* is an east-west roadway that provides one lane in each direction. At its signalized intersection with Arlington Heights Road, University Drive provides a shared left-turn/through lane, a shared through/right-turn lane and a high visibility crosswalk on the eastbound approach. The westbound approach at this intersection is Old Arlington Heights Road that provides a shared left-turn/through land and a shared through/right-turn lane. University Drive is under the jurisdiction of the Village of Arlington Heights and has a posted speed limit of 30 miles per hour. Old Arlington Heights Road is under the jurisdiction of the Illinois Department of Transportation (IDOT) and has a posted speed limit of 40 miles per hour.



PROJECT:  
 NewHope Academy  
 Relocation  
 Arlington Heights, Illinois

TITLE:  
 Existing Roadway Characteristics

**KLOA**  
 Job No: 17-006

Figure: 3

## **NewHope Academy Operations**

The NHA is an alternative day schools for students, grades 6 to 12, who are in need of an alternative school program, which is supportive, therapeutic and educational and for students who may be identified with emotional disabilities, autism, learning disability, and other health impairments. The school day for NHA is from 8:15 A.M. to 2:30 P.M. and NHA currently has approximately 26 staff members and approximately 65 students. Office hours for the schools are 7:00 A.M. to 5:00 P.M. and majority of the staff arrives before 8:00 A.M. and leaves after 4:00 P.M.

## **Pick-Up/Drop-Off Operations**

Students for NHA arrive via buses, vans or taxis. These vehicles transport the students from their home school and are provided by the home school district in which the student lives in. Drop-off operations for NHA begin at 8:15 A.M. with vehicles beginning to queue at 8:00 A.M. Pick-up operations begin at 2:30 P.M. with vehicles beginning to queue at 2:00 P.M. During both activities, multiple staff members advance vehicles waiting in queue to the front door while other faculty members walk students between the school building and their vehicle. There are currently 14 parking spaces within the vicinity of the existing school reserved for use by NHA. Pick-up/drop-off activities occur in front of these parking spaces to not obstruct parking spaces of other businesses while loading students. Based on the operations of NHA, staff arrival/departure occur before and after student drop-off/pick-up

## **Existing Traffic Volumes**

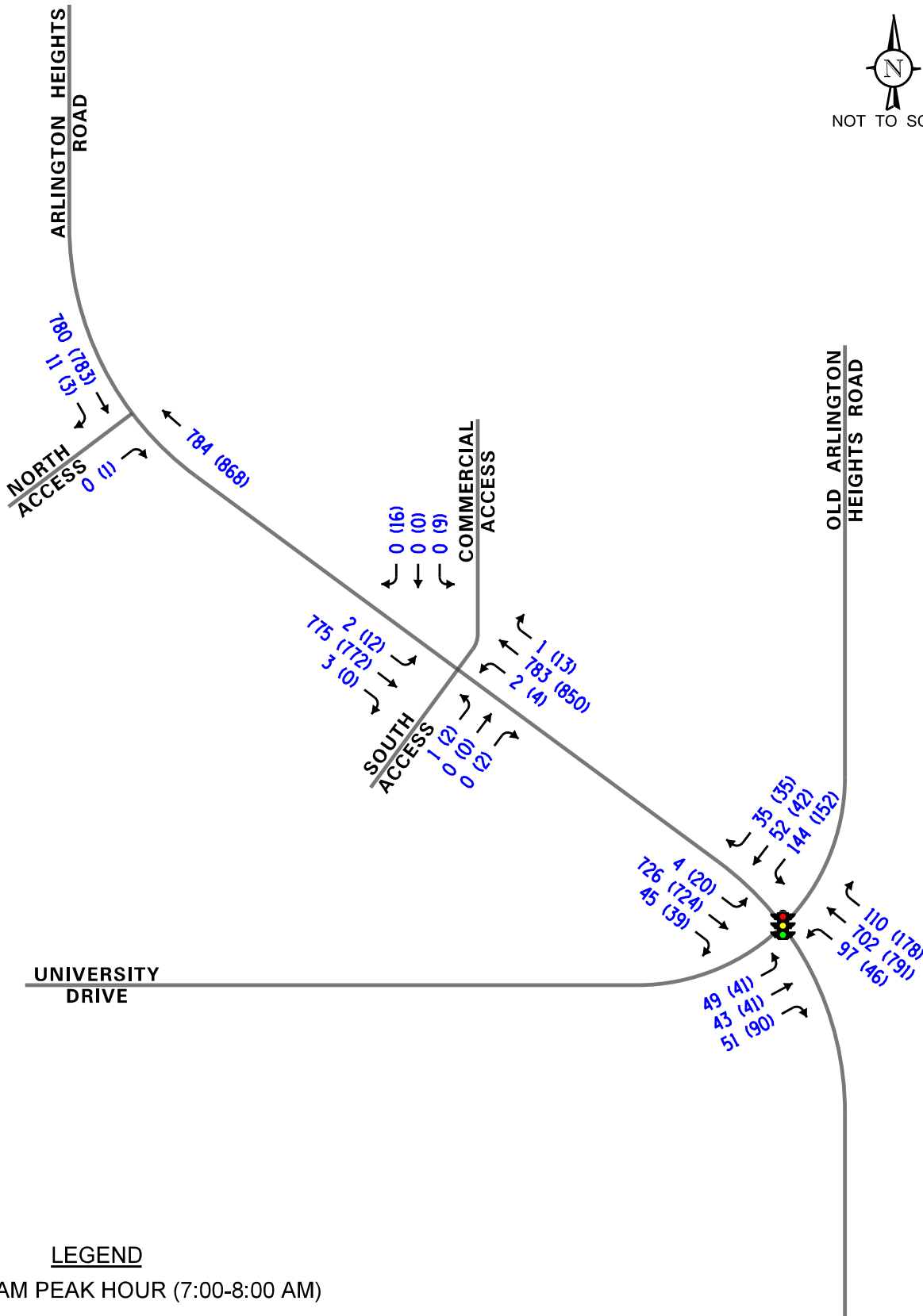
Manual turning movement traffic counts using Miovision Scout Collection Units were conducted on Wednesday, January 4, 2017 during the morning (7:00 to 9:00 A.M.) and the afternoon (2:00 to 4:00 P.M.) peak hours at the following intersections:

- Arlington Heights Road with the Southern Full Movement Access Drive
- Arlington Heights Road with the Northern Right-In/Right-Out Access Drive

These counts were supplemented with counts previously conducted at the intersection of Arlington Heights Road with Old Arlington Heights Road/University Drive on Tuesday, April 19, 2016. These time periods were selected as they represent the peak periods of the proposed school. The results of the traffic counts showed that the weekday morning peak hour of traffic occurs from 7:00 A.M. to 8:00 A.M. and the afternoon peak hour of traffic occurs from 3:00 P.M. to 4:00 P.M. The existing peak hour traffic volumes are illustrated in **Figure 4**. These peak hours were utilized in the traffic study even though the student drop-off activities occur after 8:00 A.M. and pick up activities occur at 2:30 P.M.



NOT TO SCALE



LEGEND

- 00 - AM PEAK HOUR (7:00-8:00 AM)
- (00) - PM PEAK HOUR (3:00-4:00 PM)

PROJECT:

NewHope Academy  
Relocation  
Arlington Heights, Illinois

TITLE:

Existing Traffic Volumes



Job No: 17-006

Figure: 4

## **Traffic Characteristics and Operation of NewHope Academy**

To evaluate the impact of the school on the area roadway system, it was necessary to quantify the number of vehicle trips the school will generate during the weekday morning and weekday afternoon peak hours and then determine the directions from which this traffic will approach and depart the site.

### **Proposed Operations of NewHope Academy**

As proposed, the existing school buildings located in Niles, Illinois will be relocated to the office building at 3250 Arlington Heights Road. NHA will be located in the southwest wing of the building and will occupy approximately 16,000 square-feet of building space. With the relocation to the new facility, the school is projected to maintain their current hours of operation. However, the number of staff is projected to increase to 30 and the number of students is projected to increase to 80. Access to the schools will be provided via the two existing access drives on Arlington Heights Road. The southern access drive is a full movement access drive and provides one inbound lane and one outbound lane and the northern right-in/right-out access drive provides one inbound lane and one outbound lane. Both access drives are under stop sign control.

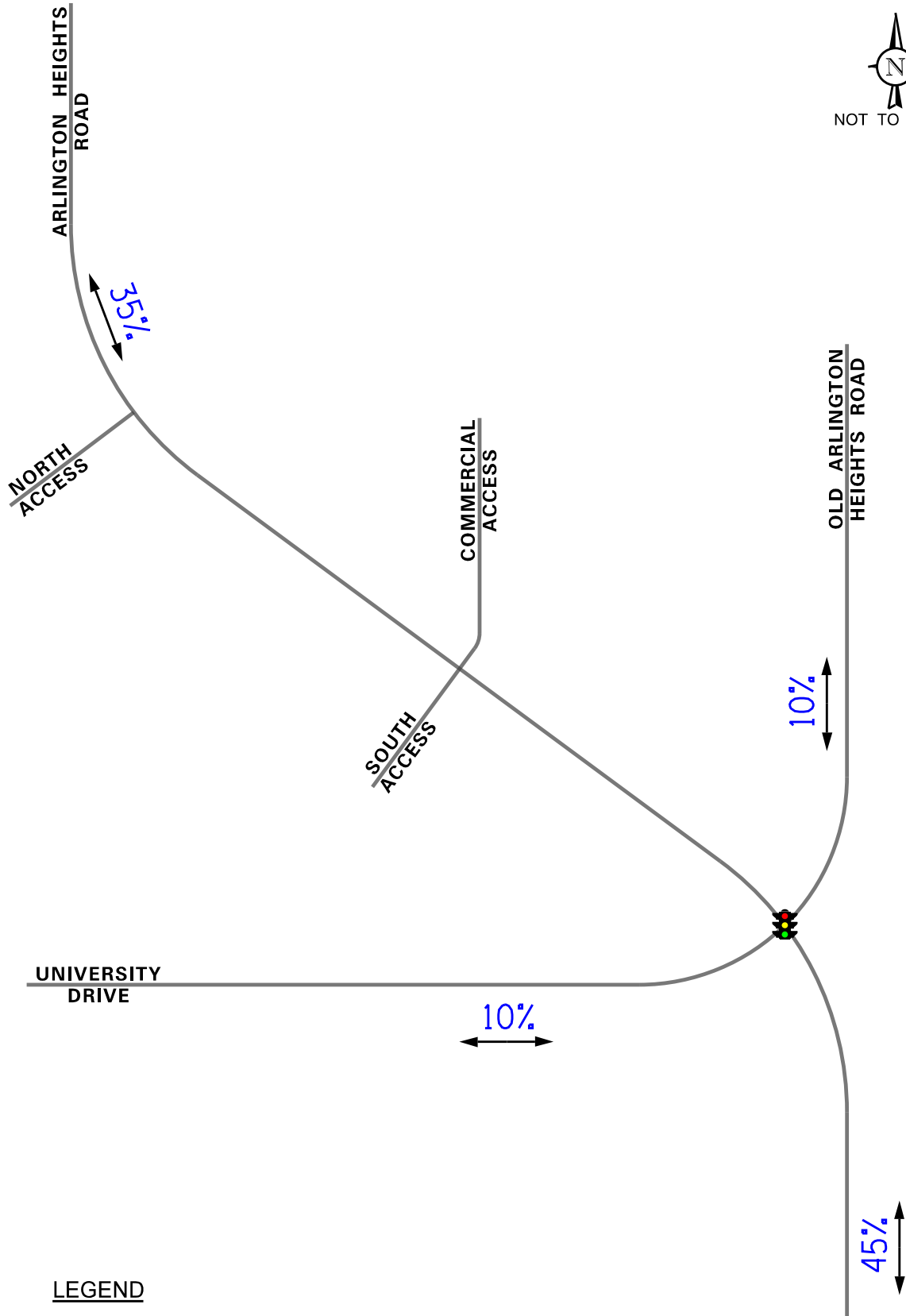
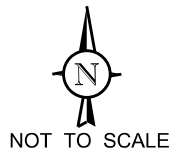
### **Pick-Up and Drop-Off Operations**

In order to provide efficient drop-off and pick-up of students, it is recommended that the pick-up and drop-off traffic enter the parking lot via the southern access drive and circulate clockwise around the site. The loading zone for NHA is proposed to be along the south side of the building. With queues starting at the intersection of the east-west drive aisle with the north-south drive aisle to the west of the vestibule. Consistent with the existing pick-up and drop-off operations and with the assistance of staff members, students will be unloaded one vehicle at a time at the main entrance. One or more staff members will be used to advance vehicles within the loading zone to efficiently manage the queue of vehicles. The pick-up and drop-off traffic will then exit the site via the northern access drive. These operations will be similar to the operations currently in effect at the school which will be a system familiar by both staff and the drivers of student transportation vehicles. Similar to their existing facility, it is recommended that 20 parking spaces on the south side of the east-west drive aisle in the vicinity of the school be reserved for NHA due to the projected increase in the number of staff members.

### **Directional Distribution of Site Traffic**

The directional distribution of how traffic will approach and depart NHA was based on the existing travel patterns, the existing roadway characteristics and the traffic controls surrounding the site. **Figure 5** illustrates the estimated directional distribution for NHA traffic. As previously indicated it is recommended that the pick-up/drop-off traffic exit the site via the northern access drive to promote efficient on site circulation. Due to the raised median, all traffic will be required to turn right. As such, the percentage of traffic projected to travel north on Arlington Heights Road upon egress was assigned to turn left onto Old Arlington Heights Road or right onto University Drive.





LEGEND

00% - PERCENT DISTRIBUTION

PROJECT:  
 NewHope Academy  
 Relocation  
 Arlington Heights, Illinois

TITLE:  
 Estimated Directional Distribution

**KLOA**  
 Job No: 17-006

Figure: 5

## Site Traffic Generation

The estimate of traffic to be generated by the proposed school was based on observations of drop-off and pick-up activity occurring at the existing school during the drop-off/pick-up time periods. School officials have indicated that they expect the number of students to increase from 65 to 80 students. Therefore, the existing student transportation vehicles observed were increased proportionally to reflect increased student enrollment. **Table 1** summarizes the existing student transportation vehicle observed and the projected number of student transportation vehicles based on increased student enrollment.

## Site Traffic Assignment

The peak hour traffic volumes projected to be generated by the student transportation vehicles were assigned to the area roadways based on the directional distribution analysis (Figure 5) and are shown in **Figure 6**. It should be noted that the peak hour of student activity occurs between 8:00 and 9:00 A.M. and 2:00 to 3:00 P.M. In order to provide a conservative (worst case) analysis, the traffic projected to be generated by the student transportation vehicles was transposed onto the adjacent roadway peak hours (7:00 to 8:00 A.M. and 3:00 to 4:00 P.M.) where traffic along Arlington Heights Road was higher than during the school peak hours of activity.

## Other Development Traffic

To account for the full occupancy of the office building, vehicle trips were generated for the remaining 39,460 square-feet of vacant tenant space located in the northwest and southeast wings of the office building. The volume of traffic generated was estimated using data published in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9<sup>th</sup> Edition. **Table 2** tabulates the total trips anticipated from this vacant office space for the weekday morning and weekday evening peak hours and the peak hour traffic volumes were assigned to the area roadway based on the direction distribution analysis (Figure 5) and are shown in **Figure 7**.

## Total Projected Traffic Conditions

**Figure 8** illustrates the total projected traffic volumes that include the existing traffic volumes (Figure 4), the traffic projected to be generated by the school drop-off/pick-up activity (Figure 6) and the traffic projected to be generated by the vacant office space (Figure 7). It should be noted that the total projected traffic volumes represent a worst case condition due to the fact that the school pick-up/drop-off generated traffic was transposed on the roadway peak hour of traffic. Furthermore, the evening peak hours of traffic for the office building were transposed onto the evening peak hours of traffic for the proposed schools when operating hours for office buildings generally occur between 4:00 and 6:00 P.M. while the evening peak hours of operations for schools generally occur between 2:00 and 4:00 P.M.

Table 1

ESTIMATED SCHOOL-GENERATED TRAFFIC VOLUMES

NewHope Academy	Morning Peak Hour			Afternoon. Peak Hour		
	In	Out	Total	In	Out	Total
Existing Student Transportation Vehicles <sup>1</sup>	19	19	38	18	18	36
<b>Projected Student Transportation Vehicles<sup>2</sup></b>	<b>23</b>	<b>23</b>	<b>46</b>	<b>22</b>	<b>22</b>	<b>44</b>
1-As observed at the existing school						
2-Increased by 23 percent due to increased student enrollment						

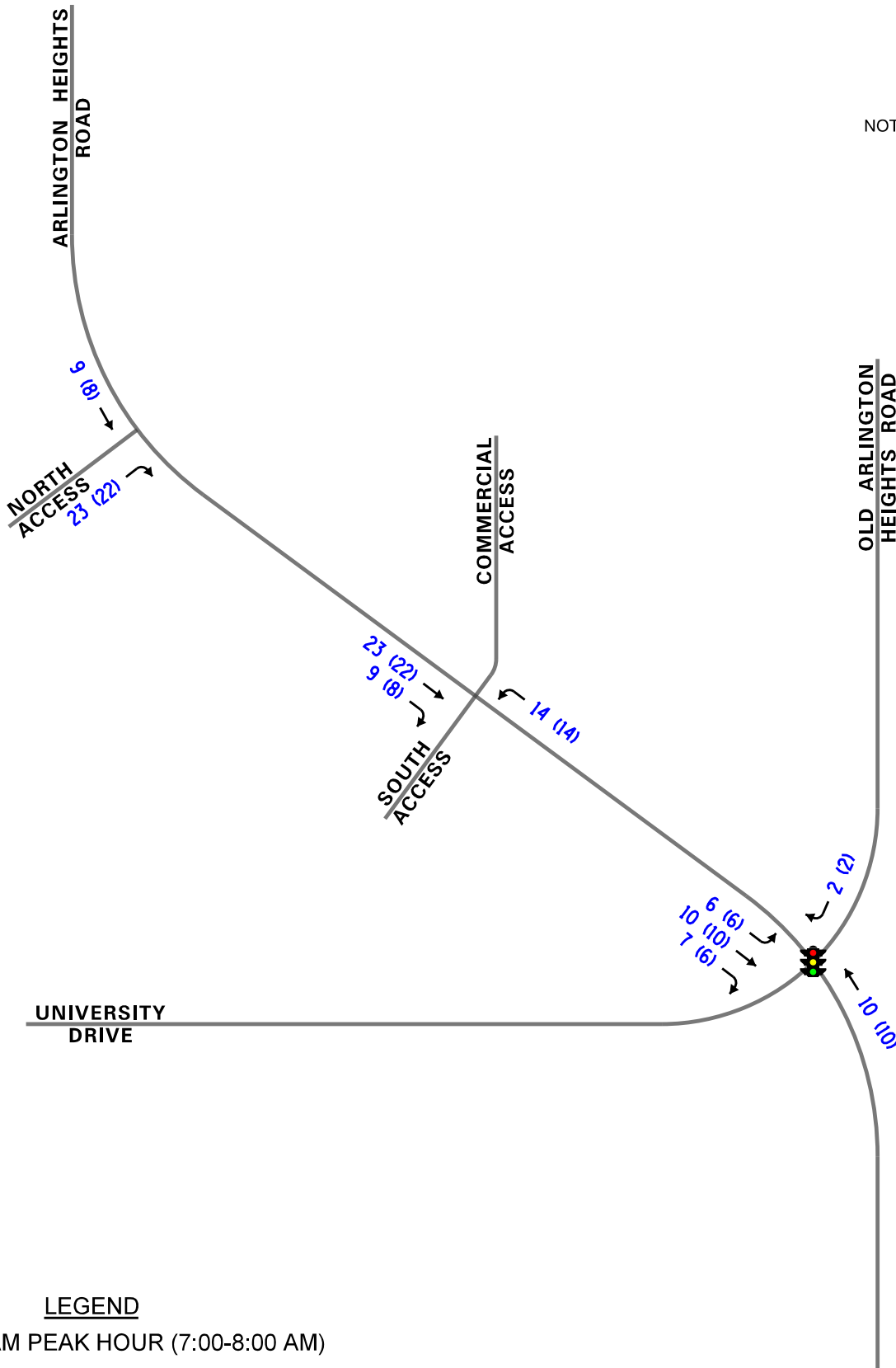
Table 2

ESTIMATED VACANT OFFICE BUILDING-GENERATED TRAFFIC VOLUMES

Land Use	Morning Peak Hour			Evening Peak Hour		
	In	Out	Total	In	Out	Total
Vacant Office Building Tenant Space (39,460 s.f.)	80	11	91	21	102	123



NOT TO SCALE



LEGEND

00 - AM PEAK HOUR (7:00-8:00 AM)

(00) - PM PEAK HOUR (3:00-4:00 PM)

PROJECT:

NewHope Academy  
Relocation  
Arlington Heights, Illinois

TITLE:

Estimated Site Traffic Assignment

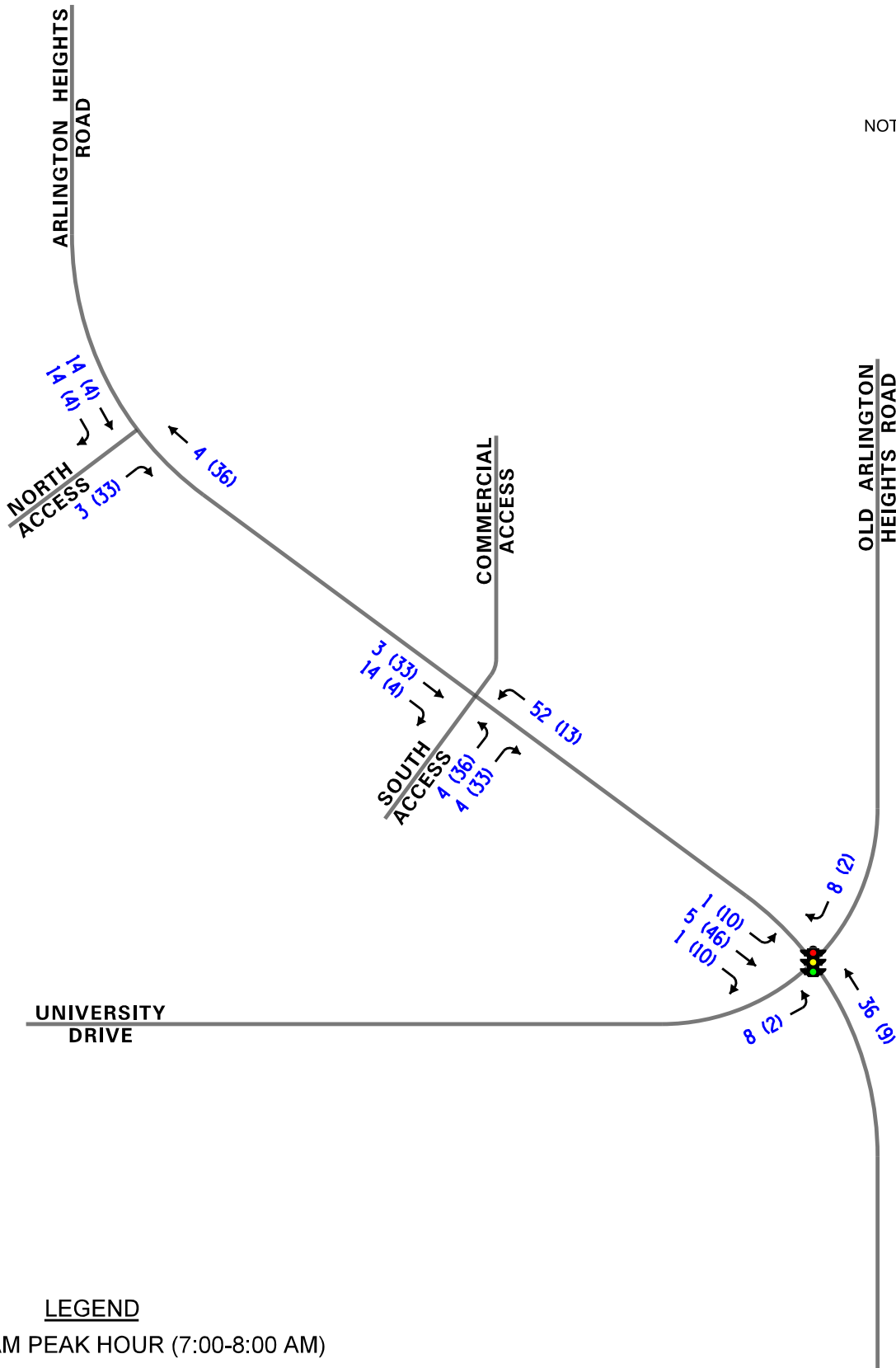


Job No: 17-006

Figure: 6



NOT TO SCALE



LEGEND

00 - AM PEAK HOUR (7:00-8:00 AM)

(00) - PM PEAK HOUR (3:00-4:00 PM)

PROJECT:

NewHope Academy  
Relocation  
Arlington Heights, Illinois

TITLE:

Vacant Office Space  
Traffic Assignment

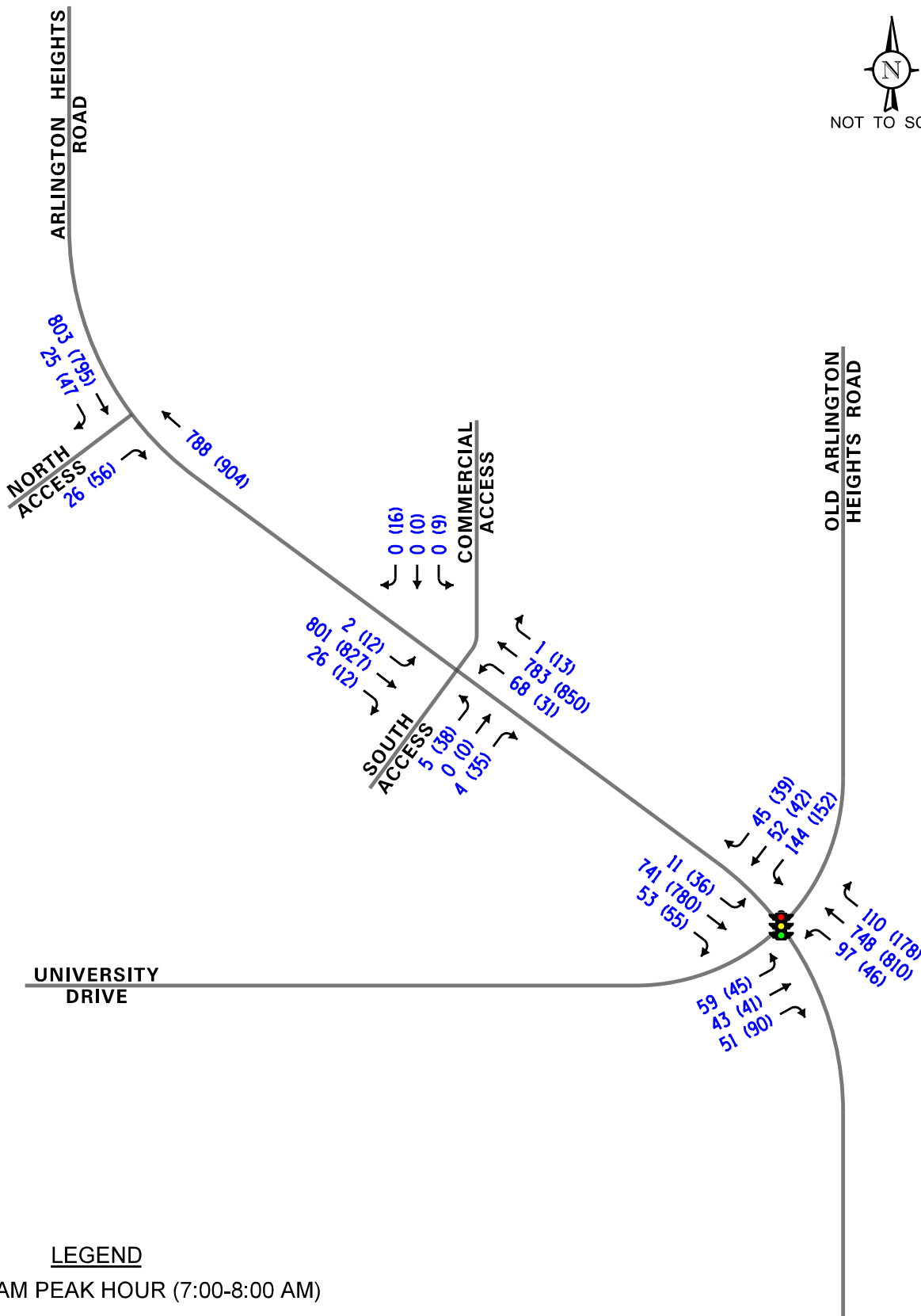


Job No: 17-006

Figure: 7



NOT TO SCALE



LEGEND

- 00 - AM PEAK HOUR (7:00-8:00 AM)
- (00) - PM PEAK HOUR (3:00-4:00 PM)

PROJECT:

NewHope Academy  
Relocation  
Arlington Heights, Illinois

TITLE:

Total Projected Traffic Volumes



Job No: 17-006

Figure: 8

## Traffic Analysis and Recommendations

The following provides an evaluation conducted for the weekday morning and weekday afternoon peak hour periods. 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 modification are required.

### Traffic Analyses

Roadway and adjacent or nearby intersection analyses were performed for the weekday morning and afternoon peak hours for the existing and projected traffic volumes.

The traffic analyses were performed using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM), 2010* and analyzed using the Synchro/SimTraffic 8 software. The analysis for the traffic-signal controlled intersections were accomplished using field measured cycle lengths and phasings 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 existing and projected conditions are presented in **Tables 3** and **4**, respectively. A discussion of the intersections follows. Summary sheets for the capacity analyses are included in the Appendix.

Table 3  
CAPACITY ANALYSES RESULTS – EXISTING CONDITIONS

Location	Morning Peak Hour		Afternoon Peak Hour	
	LOS	Delay	LOS	Delay
Arlington Heights Road with University Drive <sup>1</sup>				
- Overall	B	12.1	B	12.4
- Northbound Approach	A	8.1	B	10.0
- Southbound Approach	B	12.2	B	10.4
- Eastbound Approach	B	17.1	B	14.9
- Westbound Approach	C	24.9	C	28.3
Arlington Heights Road with South Access Drive <sup>2</sup>				
- Eastbound Approach	E	35.3	C	19.8
- Westbound Approach	--	--	C	17.5
- Northbound Lefts	A	9.9	A	9.4
- Southbound Lefts	A	9.5	A	9.2
Arlington Heights Road with North Access Drive <sup>2</sup>				
- Eastbound Approach	--	--	B	11.0
LOS - Level of Service Delay is measured in seconds. 1-Signalized Intersection 2-Unsignalized Intersection				



Table 4  
CAPACITY ANALYSES RESULTS – PROJECTED CONDITIONS

Location	Morning Peak Hour		Afternoon Peak Hour	
	LOS	Delay	LOS	Delay
Arlington Heights Road with University Drive <sup>1</sup>				
- Overall	B	12.7	B	13.1
- Northbound Approach	A	8.9	B	11.4
- Southbound Approach	B	13.0	B	10.7
- Eastbound Approach	B	17.6	B	15.1
- Westbound Approach	C	23.4	C	28.0
Arlington Heights Road with South Access Drive <sup>2</sup>				
- Eastbound Approach	E	38.5	D	34.5
- Westbound Approach	--	--	C	21.2
- Northbound Lefts	B	11.1	B	10.5
- Southbound Lefts	A	9.5	A	9.2
Arlington Heights Road with North Access Drive <sup>2</sup>				
- Eastbound Approach	B	12.6	B	12.0
LOS - Level of Service Delay is measured in seconds. 1-Signalized Intersection 2-Unsignalized Intersection				

## **Discussion and Recommendations**

The following summarizes how the intersections are projected to operate and identify any roadway and traffic control improvements needed to accommodate the school traffic.

### *Arlington Heights Road with University Drive and Old Arlington Heights Road*

The results of the capacity analyses indicate that overall this intersection currently operates at level of service (LOS) B during the weekday morning and weekday evening peak hours. Assuming future conditions, this intersection is projected to continue operating at LOS B during both peak hours with increases in delay of less than one second. Furthermore, all of the approaches are projected to continue operating at existing levels of service with increases in delay of less than two seconds. As such, the proposed relocation of NHA will have a limited impact on the operations of this intersection and no roadway improvements or signal modifications will be required.

### *Arlington Heights Road with South Access Drive and Commercial Access Drive*

The results of the capacity analyses indicate that the eastbound approach at this intersection currently operates at LOS E during the weekday morning peak hour and at LOS C during the weekday evening peak hour. Assuming future conditions, the eastbound approach is projected to continue operating at LOS E during the weekday morning peak hour with increase in delay of approximately three seconds and is projected to operate at LOS D during the weekday evening peak hour with increase in delay of approximately fifteen seconds. Furthermore, the 95<sup>th</sup> percentile queues for the eastbound approach are projected to be one to two vehicles during both peak hours. The westbound approach currently operates at LOS C during the weekday evening peak hour and is projected to continue operating at LOS C with increases in delay of approximately four seconds. Additionally, northbound and southbound left-turns onto the access drives are projected to operate at LOS B or better during the peak hours with 95<sup>th</sup> percentile queues of one to two vehicles which can be contained within the provided storage. As such, this access drive will be adequate in accommodating the traffic projected to be generated by the proposed development and will provide flexible access and efficient on-site circulation.

### *Arlington Heights Road with Northern Access Drive*

The results of the capacity analyses indicate that the eastbound approach currently operates at LOS B during the weekday evening peak hour. Assuming future conditions, the eastbound approach is projected to continue operating at LOS B during the peak hours with increases in delay of approximately one second and 95<sup>th</sup> percentile queues of one to two vehicles. As such, this access drive will be adequate in accommodating the traffic projected to be generated by the proposed development and will provide flexible access and promote efficient on-site circulation.

## **Pick-up and Drop-off Operations Evaluation**

As proposed, the pick-up and drop-off traffic will enter the parking lot via the southern access drive and circulate clockwise around the site and exit at the northern access drive. The loading zone for NHA is recommended to be along the south side of the building. Using the southern access drive for inbound movements only and the northern access drive for outbound movements only will promote one-way circulation around the site and will minimize the potential conflicts between inbound and outbound vehicles at the southern access drive. As previously indicated, peak pick-up and drop-off activity lasts for approximately 15 to 20-minutes for the school and this activity will not occur during the peak hour activity for the faculty and staff of the school or the peak hour of activity for the remainder of the office building tenants.

It should be noted that the queueing of vehicles along the school's southern frontage will block the parking spaces for the proposed school and a portion of the existing office building tenant parking. Since all faculty and staff will arrive before drop-off and leave prior to pick-up operations, blocking the school spaces will not have an impact on site circulation if these spaces are reserved for NHA use only. Additionally, faculty and staff should be used to ensure loading zone queueing advances promptly and does not obstruct office tenant parking spaces.

## **Conclusion**

Based on the proposed school plans and the preceding traffic impact study the following was determined.

- The traffic to be generated by the proposed schools will not have a significant impact on the operations of the site or the surrounding roadway network.
- The existing access system can accommodate the traffic projected to be generated by NHA and full occupancy of the vacant office building space.
- The peak hours of the pick-up and drop-off operations of the schools do not coincide with the peak hours for the arrival and departure of faculty and staff and the full occupancy of the office space.
- Pick-up and drop-off queuing will occur along the south frontages of the proposed school wing. A queue of approximately 19 vehicles (mix of buses and passenger vehicles) can be accommodated on the south frontages of the school with vehicles double stacked within the drive aisle.
- Similar to their existing facility, it is recommended that 20 parking spaces on the south side of the east-west drive aisle in the vicinity of the school be reserved for NHA due to the projected increase in the number of staff members.
- Student transportation vehicles will enter the site via the southern access drive and exit via the northern access drive which will ensure vehicles will traverse clockwise around the subject office building and minimize conflicts occurring between inbound and outbound vehicles at the southern access drive.

# **Appendix**

# **Traffic Counts**



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

Count Name: Arlington Heights and Old  
 Arlington Heights  
 Site Code:  
 Start Date: 04/19/2016  
 Page No: 1

### Turning Movement Data

Start Time	University Drive Eastbound						Old Arlington Heights Road Westbound						Arlington Heights Road Northbound						Arlington Heights Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	27	13	7	0	47	0	31	12	13	0	56	0	19	245	23	0	287	0	2	155	11	0	168	558
7:15 AM	0	10	13	15	0	38	0	34	8	8	0	50	0	17	168	28	0	213	0	1	228	16	0	245	546
7:30 AM	0	7	7	15	0	29	0	50	15	9	0	74	0	20	133	29	0	182	0	1	177	8	0	186	471
7:45 AM	0	5	10	14	0	29	0	29	17	5	0	51	0	41	156	30	0	227	0	0	166	10	0	176	483
Hourly Total	0	49	43	51	0	143	0	144	52	35	0	231	0	97	702	110	0	909	0	4	726	45	0	775	2058
8:00 AM	0	4	11	14	0	29	0	38	12	6	0	56	0	24	132	35	0	191	0	2	154	5	0	161	437
8:15 AM	0	9	10	8	0	27	0	27	6	3	0	36	0	23	136	42	0	201	0	3	163	10	0	176	440
8:30 AM	0	8	4	10	0	22	0	56	6	11	0	73	0	20	160	29	0	209	0	5	161	9	0	175	479
8:45 AM	0	11	12	17	0	40	0	42	14	5	0	61	0	25	163	36	0	224	0	4	156	14	0	174	499
Hourly Total	0	32	37	49	0	118	0	163	38	25	0	226	0	92	591	142	0	825	0	14	634	38	0	686	1855
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	14	10	17	0	41	0	42	12	8	0	62	0	21	215	43	0	279	1	5	176	6	0	188	570
4:15 PM	0	7	8	20	0	35	0	37	4	7	0	48	0	24	218	51	0	293	1	6	172	16	0	195	571
4:30 PM	0	24	16	38	0	78	0	37	8	7	0	52	0	19	225	52	0	296	0	8	197	8	0	213	639
4:45 PM	0	13	6	33	0	52	0	54	20	9	0	83	0	30	199	52	0	281	0	6	222	12	0	240	656
Hourly Total	0	58	40	108	0	206	0	170	44	31	0	245	0	94	857	198	0	1149	2	25	767	42	0	836	2436
5:00 PM	0	26	25	63	0	114	0	64	18	3	0	85	0	17	212	46	0	275	0	4	211	11	0	226	700
5:15 PM	0	16	17	20	0	53	0	68	14	6	0	88	0	23	245	54	0	322	0	4	185	13	0	202	665
5:30 PM	0	5	11	20	0	36	0	56	13	6	0	75	0	15	222	58	0	295	0	9	206	9	0	224	630
5:45 PM	0	6	7	20	0	33	0	53	8	4	0	65	0	20	245	42	0	307	0	4	189	9	0	202	607
Hourly Total	0	53	60	123	0	236	0	241	53	19	0	313	0	75	924	200	0	1199	0	21	791	42	0	854	2602
Grand Total	0	192	180	331	0	703	0	718	187	110	0	1015	0	358	3074	650	0	4082	2	64	2918	167	0	3151	8951
Approach %	0.0	27.3	25.6	47.1	-	-	0.0	70.7	18.4	10.8	-	-	0.0	8.8	75.3	15.9	-	-	0.1	2.0	92.6	5.3	-	-	-
Total %	0.0	2.1	2.0	3.7	-	7.9	0.0	8.0	2.1	1.2	-	11.3	0.0	4.0	34.3	7.3	-	45.6	0.0	0.7	32.6	1.9	-	35.2	-
Lights	0	184	178	316	-	678	0	701	186	109	-	996	0	351	3002	636	-	3989	2	62	2846	160	-	3070	8733
% Lights	-	95.8	98.9	95.5	-	96.4	-	97.6	99.5	99.1	-	98.1	-	98.0	97.7	97.8	-	97.7	100.0	96.9	97.5	95.8	-	97.4	97.6
Buses	0	1	1	1	-	3	0	7	0	1	-	8	0	0	24	8	-	32	0	1	22	1	-	24	67
% Buses	-	0.5	0.6	0.3	-	0.4	-	1.0	0.0	0.9	-	0.8	-	0.0	0.8	1.2	-	0.8	0.0	1.6	0.8	0.6	-	0.8	0.7
Single-Unit Trucks	0	6	1	12	-	19	0	9	1	0	-	10	0	7	39	6	-	52	0	0	41	2	-	43	124
% Single-Unit Trucks	-	3.1	0.6	3.6	-	2.7	-	1.3	0.5	0.0	-	1.0	-	2.0	1.3	0.9	-	1.3	0.0	0.0	1.4	1.2	-	1.4	1.4
Articulated Trucks	0	1	0	2	-	3	0	1	0	0	-	1	0	0	9	0	-	9	0	1	9	4	-	14	27
% Articulated Trucks	-	0.5	0.0	0.6	-	0.4	-	0.1	0.0	0.0	-	0.1	-	0.0	0.3	0.0	-	0.2	0.0	1.6	0.3	2.4	-	0.4	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	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	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-



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Rosemont, Illinois, United States 60018  
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Count Name: Arlington Heights and Old  
Arlington Heights  
Site Code:  
Start Date: 04/19/2016  
Page No: 4

### Turning Movement Peak Hour Data (7:00 AM)

Start Time	University Drive Eastbound						Old Arlington Heights Road Westbound						Arlington Heights Road Northbound						Arlington Heights Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	27	13	7	0	47	0	31	12	13	0	56	0	19	245	23	0	287	0	2	155	11	0	168	558
7:15 AM	0	10	13	15	0	38	0	34	8	8	0	50	0	17	168	28	0	213	0	1	228	16	0	245	546
7:30 AM	0	7	7	15	0	29	0	50	15	9	0	74	0	20	133	29	0	182	0	1	177	8	0	186	471
7:45 AM	0	5	10	14	0	29	0	29	17	5	0	51	0	41	156	30	0	227	0	0	166	10	0	176	483
Total	0	49	43	51	0	143	0	144	52	35	0	231	0	97	702	110	0	909	0	4	726	45	0	775	2058
Approach %	0.0	34.3	30.1	35.7	-	-	0.0	62.3	22.5	15.2	-	-	0.0	10.7	77.2	12.1	-	-	0.0	0.5	93.7	5.8	-	-	-
Total %	0.0	2.4	2.1	2.5	-	6.9	0.0	7.0	2.5	1.7	-	11.2	0.0	4.7	34.1	5.3	-	44.2	0.0	0.2	35.3	2.2	-	37.7	-
PHF	0.000	0.454	0.827	0.850	-	0.761	0.000	0.720	0.765	0.673	-	0.780	0.000	0.591	0.716	0.917	-	0.792	0.000	0.500	0.796	0.703	-	0.791	0.922
Lights	0	49	43	46	-	138	0	143	52	35	-	230	0	95	676	107	-	878	0	4	701	43	-	748	1994
% Lights	-	100.0	100.0	90.2	-	96.5	-	99.3	100.0	100.0	-	99.6	-	97.9	96.3	97.3	-	96.6	-	100.0	96.6	95.6	-	96.5	96.9
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	11	2	-	13	0	0	7	1	-	8	21
% Buses	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	1.6	1.8	-	1.4	-	0.0	1.0	2.2	-	1.0	1.0
Single-Unit Trucks	0	0	0	5	-	5	0	0	0	0	-	0	0	2	13	1	-	16	0	0	14	1	-	15	36
% Single-Unit Trucks	-	0.0	0.0	9.8	-	3.5	-	0.0	0.0	0.0	-	0.0	-	2.1	1.9	0.9	-	1.8	-	0.0	1.9	2.2	-	1.9	1.7
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	2	0	-	2	0	0	4	0	-	4	7
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.7	0.0	0.0	-	0.4	-	0.0	0.3	0.0	-	0.2	-	0.0	0.6	0.0	-	0.5	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	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	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





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Count Name: Arlington Heights Road with Old  
 Arlington Heights Road  
 Site Code:  
 Start Date: 04/19/2016  
 Page No: 1

### Turning Movement Data

Start Time	University Drive Eastbound						Old Arlington Heights Road Westbound						Arlington Heights Road Northbound						Arlington Heights Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
3:00 PM	0	6	10	25	0	41	0	33	12	8	0	53	0	15	179	39	0	233	0	2	168	5	0	175	502
3:15 PM	0	10	9	14	0	33	0	46	8	11	0	65	0	12	192	37	0	241	0	4	180	8	0	192	531
3:30 PM	0	10	16	30	0	56	0	33	9	9	1	51	0	8	213	60	1	281	0	5	168	11	0	184	572
3:45 PM	0	15	6	21	1	42	0	40	13	7	0	60	0	11	207	42	0	260	0	9	187	15	0	211	573
Grand Total	0	41	41	90	1	172	0	152	42	35	1	229	0	46	791	178	1	1015	0	20	703	39	0	762	2178
Approach %	0.0	23.8	23.8	52.3	-	-	0.0	66.4	18.3	15.3	-	-	0.0	4.5	77.9	17.5	-	-	0.0	2.6	92.3	5.1	-	-	-
Total %	0.0	1.9	1.9	4.1	-	7.9	0.0	7.0	1.9	1.6	-	10.5	0.0	2.1	36.3	8.2	-	46.6	0.0	0.9	32.3	1.8	-	35.0	-
Lights	0	40	40	84	-	164	0	145	42	34	-	221	0	42	759	175	-	976	0	20	688	34	-	742	2103
% Lights	-	97.6	97.6	93.3	-	95.3	-	95.4	100.0	97.1	-	96.5	-	91.3	96.0	98.3	-	96.2	-	100.0	97.9	87.2	-	97.4	96.6
Buses	0	0	0	0	-	0	0	4	0	1	-	5	0	0	15	2	-	17	0	0	2	0	-	2	24
% Buses	-	0.0	0.0	0.0	-	0.0	-	2.6	0.0	2.9	-	2.2	-	0.0	1.9	1.1	-	1.7	-	0.0	0.3	0.0	-	0.3	1.1
Single-Unit Trucks	0	0	1	5	-	6	0	3	0	0	-	3	0	2	13	1	-	16	0	0	11	3	-	14	39
% Single-Unit Trucks	-	0.0	2.4	5.6	-	3.5	-	2.0	0.0	0.0	-	1.3	-	4.3	1.6	0.6	-	1.6	-	0.0	1.6	7.7	-	1.8	1.8
Articulated Trucks	0	1	0	1	-	2	0	0	0	0	-	0	0	2	4	0	-	6	0	0	2	2	-	4	12
% Articulated Trucks	-	2.4	0.0	1.1	-	1.2	-	0.0	0.0	0.0	-	0.0	-	4.3	0.5	0.0	-	0.6	-	0.0	0.3	5.1	-	0.5	0.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	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	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



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Count Name: Arlington Heights Road with Old  
Arlington Heights Road  
Site Code:  
Start Date: 04/19/2016  
Page No: 2

### Turning Movement Peak Hour Data (3:00 PM)

Start Time	University Drive Eastbound						Old Arlington Heights Road Westbound						Arlington Heights Road Northbound						Arlington Heights Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
3:00 PM	0	6	10	25	0	41	0	33	12	8	0	53	0	15	179	39	0	233	0	2	168	5	0	175	502
3:15 PM	0	10	9	14	0	33	0	46	8	11	0	65	0	12	192	37	0	241	0	4	180	8	0	192	531
3:30 PM	0	10	16	30	0	56	0	33	9	9	1	51	0	8	213	60	1	281	0	5	168	11	0	184	572
3:45 PM	0	15	6	21	1	42	0	40	13	7	0	60	0	11	207	42	0	260	0	9	187	15	0	211	573
Total	0	41	41	90	1	172	0	152	42	35	1	229	0	46	791	178	1	1015	0	20	703	39	0	762	2178
Approach %	0.0	23.8	23.8	52.3	-	-	0.0	66.4	18.3	15.3	-	-	0.0	4.5	77.9	17.5	-	-	0.0	2.6	92.3	5.1	-	-	-
Total %	0.0	1.9	1.9	4.1	-	7.9	0.0	7.0	1.9	1.6	-	10.5	0.0	2.1	36.3	8.2	-	46.6	0.0	0.9	32.3	1.8	-	35.0	-
PHF	0.000	0.683	0.641	0.750	-	0.768	0.000	0.826	0.808	0.795	-	0.881	0.000	0.767	0.928	0.742	-	0.903	0.000	0.556	0.940	0.650	-	0.903	0.950
Lights	0	40	40	84	-	164	0	145	42	34	-	221	0	42	759	175	-	976	0	20	688	34	-	742	2103
% Lights	-	97.6	97.6	93.3	-	95.3	-	95.4	100.0	97.1	-	96.5	-	91.3	96.0	98.3	-	96.2	-	100.0	97.9	87.2	-	97.4	96.6
Buses	0	0	0	0	-	0	0	4	0	1	-	5	0	0	15	2	-	17	0	0	2	0	-	2	24
% Buses	-	0.0	0.0	0.0	-	0.0	-	2.6	0.0	2.9	-	2.2	-	0.0	1.9	1.1	-	1.7	-	0.0	0.3	0.0	-	0.3	1.1
Single-Unit Trucks	0	0	1	5	-	6	0	3	0	0	-	3	0	2	13	1	-	16	0	0	11	3	-	14	39
% Single-Unit Trucks	-	0.0	2.4	5.6	-	3.5	-	2.0	0.0	0.0	-	1.3	-	4.3	1.6	0.6	-	1.6	-	0.0	1.6	7.7	-	1.8	1.8
Articulated Trucks	0	1	0	1	-	2	0	0	0	0	-	0	0	2	4	0	-	6	0	0	2	2	-	4	12
% Articulated Trucks	-	2.4	0.0	1.1	-	1.2	-	0.0	0.0	0.0	-	0.0	-	4.3	0.5	0.0	-	0.6	-	0.0	0.3	5.1	-	0.5	0.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	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	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



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Count Name: Arlington Heights Road and South Access  
Site Code:  
Start Date: 01/04/2017  
Page No: 1

### Turning Movement Data

Start Time	South Access Drive Eastbound						Off-Site Access Drive Westbound						Arlington Heights Road Northbound						Arlington Heights Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	276	1	0	279	0	0	175	0	0	175	454
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	197	0	0	197	0	1	194	1	0	196	393
7:30 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	128	0	0	128	0	0	221	1	0	222	351
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	160	0	0	160	0	1	152	1	0	154	314
Hourly Total	0	1	0	0	0	1	0	0	0	0	0	0	0	2	761	1	0	764	0	2	742	3	0	747	1512
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	144	0	0	145	0	1	152	1	0	154	299
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	168	3	0	172	0	8	181	0	0	189	361
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	136	1	0	138	0	6	152	0	0	158	296
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	167	4	0	171	0	12	180	0	0	192	364
Hourly Total	0	0	0	0	0	0	0	0	0	1	0	1	0	3	615	8	0	626	0	27	665	1	0	693	1320
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 PM	0	1	0	1	0	2	0	3	0	3	0	6	0	0	140	4	0	144	1	2	129	0	0	132	284
2:15 PM	0	0	0	0	0	0	0	2	0	3	0	5	0	0	168	3	0	171	1	1	147	0	0	149	325
2:30 PM	0	0	0	0	0	0	0	4	0	4	0	8	0	0	164	8	0	172	2	4	156	0	0	162	342
2:45 PM	0	0	0	2	0	2	0	1	0	1	0	2	0	0	165	2	0	167	0	0	173	0	0	173	344
Hourly Total	0	1	0	3	0	4	0	10	0	11	0	21	0	0	637	17	0	654	4	7	605	0	0	616	1295
3:00 PM	0	0	0	0	0	0	0	3	0	6	0	9	0	1	173	3	0	177	0	0	207	0	0	207	393
3:15 PM	0	1	0	0	0	1	0	4	0	0	0	4	0	2	202	1	0	205	0	3	176	0	0	179	389
3:30 PM	0	1	0	0	0	1	0	2	0	5	0	7	0	1	230	4	0	235	0	5	168	0	0	173	416
3:45 PM	0	0	0	2	0	2	0	0	0	5	0	5	1	0	185	5	0	191	1	4	201	0	0	206	404
Hourly Total	0	2	0	2	0	4	0	9	0	16	0	25	1	4	790	13	0	808	1	12	752	0	0	765	1602
Grand Total	0	4	0	5	0	9	0	19	0	28	0	47	1	9	2803	39	0	2852	5	48	2764	4	0	2821	5729
Approach %	0.0	44.4	0.0	55.6	-	-	0.0	40.4	0.0	59.6	-	-	0.0	0.3	98.3	1.4	-	-	0.2	1.7	98.0	0.1	-	-	-
Total %	0.0	0.1	0.0	0.1	-	0.2	0.0	0.3	0.0	0.5	-	0.8	0.0	0.2	48.9	0.7	-	49.8	0.1	0.8	48.2	0.1	-	49.2	-
Lights	0	4	0	5	-	9	0	19	0	28	-	47	1	8	2713	39	-	2761	5	48	2699	4	-	2756	5573
% Lights	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	100.0	88.9	96.8	100.0	-	96.8	100.0	100.0	97.6	100.0	-	97.7	97.3
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	57	0	-	57	0	0	29	0	-	29	86
% Buses	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	2.0	0.0	-	2.0	0.0	0.0	1.0	0.0	-	1.0	1.5
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	28	0	-	29	0	0	30	0	-	30	59
% Single-Unit Trucks	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	11.1	1.0	0.0	-	1.0	0.0	0.0	1.1	0.0	-	1.1	1.0
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	5	0	-	5	0	0	6	0	-	6	11
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	0.2	0.0	-	0.2	0.0	0.0	0.2	0.0	-	0.2	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	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	0.0	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-



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Count Name: Arlington Heights Road and South  
Access  
Site Code:  
Start Date: 01/04/2017  
Page No: 4

### Turning Movement Peak Hour Data (7:00 AM)

Start Time	South Access Drive Eastbound						Off-Site Access Drive Westbound						Arlington Heights Road Northbound						Arlington Heights Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	276	1	0	279	0	0	175	0	0	175	454
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	197	0	0	197	0	1	194	1	0	196	393
7:30 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	128	0	0	128	0	0	221	1	0	222	351
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	160	0	0	160	0	1	152	1	0	154	314
Total	0	1	0	0	0	1	0	0	0	0	0	0	0	2	761	1	0	764	0	2	742	3	0	747	1512
Approach %	0.0	100.0	0.0	0.0	-	-	NaN	NaN	NaN	NaN	-	-	0.0	0.3	99.6	0.1	-	-	0.0	0.3	99.3	0.4	-	-	-
Total %	0.0	0.1	0.0	0.0	-	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	50.3	0.1	-	50.5	0.0	0.1	49.1	0.2	-	49.4	-
PHF	0.000	0.250	0.000	0.000	-	0.250	0.000	0.000	0.000	0.000	-	0.000	0.000	0.250	0.689	0.250	-	0.685	0.000	0.500	0.839	0.750	-	0.841	0.833
Lights	0	1	0	0	-	1	0	0	0	0	-	0	0	2	732	1	-	735	0	2	728	3	-	733	1469
% Lights	-	100.0	-	-	-	100.0	-	-	-	-	-	-	-	100.0	96.2	100.0	-	96.2	-	100.0	98.1	100.0	-	98.1	97.2
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	16	0	-	16	0	0	5	0	-	5	21
% Buses	-	0.0	-	-	-	0.0	-	-	-	-	-	-	-	0.0	2.1	0.0	-	2.1	-	0.0	0.7	0.0	-	0.7	1.4
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	11	0	-	11	0	0	8	0	-	8	19
% Single-Unit Trucks	-	0.0	-	-	-	0.0	-	-	-	-	-	-	-	0.0	1.4	0.0	-	1.4	-	0.0	1.1	0.0	-	1.1	1.3
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	2	0	0	1	0	-	1	3
% Articulated Trucks	-	0.0	-	-	-	0.0	-	-	-	-	-	-	-	0.0	0.3	0.0	-	0.3	-	0.0	0.1	0.0	-	0.1	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	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	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Access  
Site Code:  
Start Date: 01/04/2017  
Page No: 6

### Turning Movement Peak Hour Data (3:00 PM)

Start Time	South Access Drive Eastbound						Off-Site Access Drive Westbound						Arlington Heights Road Northbound						Arlington Heights Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
3:00 PM	0	0	0	0	0	0	0	3	0	6	0	9	0	1	173	3	0	177	0	0	207	0	0	207	393
3:15 PM	0	1	0	0	0	1	0	4	0	0	0	4	0	2	202	1	0	205	0	3	176	0	0	179	389
3:30 PM	0	1	0	0	0	1	0	2	0	5	0	7	0	1	230	4	0	235	0	5	168	0	0	173	416
3:45 PM	0	0	0	2	0	2	0	0	0	5	0	5	1	0	185	5	0	191	1	4	201	0	0	206	404
Total	0	2	0	2	0	4	0	9	0	16	0	25	1	4	790	13	0	808	1	12	752	0	0	765	1602
Approach %	0.0	50.0	0.0	50.0	-	-	0.0	36.0	0.0	64.0	-	-	0.1	0.5	97.8	1.6	-	-	0.1	1.6	98.3	0.0	-	-	-
Total %	0.0	0.1	0.0	0.1	-	0.2	0.0	0.6	0.0	1.0	-	1.6	0.1	0.2	49.3	0.8	-	50.4	0.1	0.7	46.9	0.0	-	47.8	-
PHF	0.000	0.500	0.000	0.250	-	0.500	0.000	0.563	0.000	0.667	-	0.694	0.250	0.500	0.859	0.650	-	0.860	0.250	0.600	0.908	0.000	-	0.924	0.963
Lights	0	2	0	2	-	4	0	9	0	16	-	25	1	3	765	13	-	782	1	12	739	0	-	752	1563
% Lights	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	100.0	75.0	96.8	100.0	-	96.8	100.0	100.0	98.3	-	-	98.3	97.6
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	19	0	-	19	0	0	9	0	-	9	28
% Buses	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	2.4	0.0	-	2.4	0.0	0.0	1.2	-	-	1.2	1.7
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	6	0	-	7	0	0	2	0	-	2	9
% Single-Unit Trucks	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	25.0	0.8	0.0	-	0.9	0.0	0.0	0.3	-	-	0.3	0.6
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	2	2
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.3	-	-	0.3	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
% 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	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: Arlington Heights Road with North  
 Access  
 Site Code:  
 Start Date: 01/04/2017  
 Page No: 1

### Turning Movement Data

Start Time	Right-in/Right-out Access Drive Eastbound					Arlington Heights Road Northbound					Arlington Heights Road Southbound					Int. Total
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	
7:00 AM	0	0	0	0	0	0	0	271	0	271	0	164	0	0	164	435
7:15 AM	0	0	0	0	0	0	0	201	0	201	0	201	4	0	205	406
7:30 AM	0	0	0	0	0	0	0	129	0	129	0	223	2	0	225	354
7:45 AM	0	0	0	0	0	0	0	156	0	156	0	153	5	0	158	314
Hourly Total	0	0	0	0	0	0	0	757	0	757	0	741	11	0	752	1509
8:00 AM	0	0	0	0	0	0	0	143	0	143	0	168	4	0	172	315
8:15 AM	0	0	1	0	1	0	0	160	0	160	0	177	1	0	178	339
8:30 AM	0	0	0	0	0	0	0	143	0	143	0	178	0	0	178	321
8:45 AM	0	0	0	0	0	0	0	156	0	156	0	172	2	0	174	330
Hourly Total	0	0	1	0	1	0	0	602	0	602	0	695	7	0	702	1305
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 PM	0	0	0	0	0	0	0	150	0	150	0	140	2	0	142	292
2:15 PM	0	0	1	0	1	0	0	170	0	170	0	145	1	0	146	317
2:30 PM	0	0	1	0	1	0	0	172	0	172	0	170	1	0	171	344
2:45 PM	0	0	0	0	0	0	0	158	0	158	0	165	0	0	165	323
Hourly Total	0	0	2	0	2	0	0	650	0	650	0	620	4	0	624	1276
3:00 PM	0	0	1	0	1	0	0	183	0	183	0	213	1	0	214	398
3:15 PM	0	0	0	0	0	0	0	218	0	218	0	183	1	0	184	402
3:30 PM	0	0	0	0	0	0	0	232	0	232	0	162	0	0	162	394
3:45 PM	0	0	0	1	0	0	0	188	0	188	0	225	1	0	226	414
Hourly Total	0	0	1	1	1	0	0	821	0	821	0	783	3	0	786	1608
Grand Total	0	0	4	1	4	0	0	2830	0	2830	0	2839	25	0	2864	5698
Approach %	0.0	0.0	100.0	-	-	0.0	0.0	100.0	-	-	0.0	99.1	0.9	-	-	-
Total %	0.0	0.0	0.1	-	0.1	0.0	0.0	49.7	-	49.7	0.0	49.8	0.4	-	50.3	-
Lights	0	0	4	-	4	0	0	2739	-	2739	0	2774	24	-	2798	5541
% Lights	-	-	100.0	-	100.0	-	-	96.8	-	96.8	-	97.7	96.0	-	97.7	97.2
Buses	0	0	0	-	0	0	0	57	-	57	0	30	0	-	30	87
% Buses	-	-	0.0	-	0.0	-	-	2.0	-	2.0	-	1.1	0.0	-	1.0	1.5
Single-Unit Trucks	0	0	0	-	0	0	0	30	-	30	0	29	1	-	30	60
% Single-Unit Trucks	-	-	0.0	-	0.0	-	-	1.1	-	1.1	-	1.0	4.0	-	1.0	1.1
Articulated Trucks	0	0	0	-	0	0	0	4	-	4	0	6	0	-	6	10
% Articulated Trucks	-	-	0.0	-	0.0	-	-	0.1	-	0.1	-	0.2	0.0	-	0.2	0.2
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
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-







# **Level of Service Criteria**

## LEVEL OF SERVICE CRITERIA

<b>Signalized Intersections</b>		
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
<b>Unsignalized Intersections</b>		
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**

Lanes, Volumes, Timings

1: University Drive/Old Arlington Heights Road & Arlington Heights Road

1/10/2017



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↖	↗		↖	↗			↖↗			↖↗	
Volume (vph)	4	726	45	97	702	110	49	43	51	144	42	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	190		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	140			100			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.991			0.980			0.947			0.976	
Flt Protected	0.950			0.950				0.983			0.968	
Satd. Flow (prot)	1805	3471	0	1770	3406	0	0	3245	0	0	3389	0
Flt Permitted	0.322			0.268				0.774			0.727	
Satd. Flow (perm)	612	3471	0	499	3406	0	0	2555	0	0	2545	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			33			55			28	
Link Speed (mph)		40			40			30			40	
Link Distance (ft)		859			737			497			467	
Travel Time (s)		14.6			12.6			11.3			8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	4%	2%	4%	3%	0%	0%	10%	1%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	838	0	105	883	0	0	155	0	0	241	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	38.0		10.0	38.0		22.0	22.0		22.0	22.0	
Total Split (s)	10.0	38.0		10.0	38.0		22.0	22.0		22.0	22.0	
Total Split (%)	14.3%	54.3%		14.3%	54.3%		31.4%	31.4%		31.4%	31.4%	
Yellow Time (s)	3.5	4.5		3.5	4.5		4.5	4.5		4.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0			6.0			6.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effect Green (s)	40.0	33.2		42.9	39.2			11.7			11.7	
Actuated g/C Ratio	0.62	0.51		0.66	0.61			0.18			0.18	
v/c Ratio	0.01	0.47		0.23	0.43			0.31			0.50	
Control Delay	4.5	12.2		5.6	8.4			17.1			24.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	4.5	12.2		5.6	8.4			17.1			24.9	
LOS	A	B		A	A			B			C	
Approach Delay		12.2			8.1			17.1			24.9	
Approach LOS		B			A			B			C	
Queue Length 50th (ft)	1	110		12	73			18			40	
Queue Length 95th (ft)	3	176		31	181			41			72	
Internal Link Dist (ft)		779			657			417			387	

Lanes, Volumes, Timings

1: University Drive/Old Arlington Heights Road & Arlington Heights Road

1/10/2017



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Turn Bay Length (ft)	150			190								
Base Capacity (vph)	505	1785		459	2076			677			654	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.01	0.47		0.23	0.43			0.23			0.37	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	64.7
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.50
Intersection Signal Delay:	12.1
Intersection LOS:	B
Intersection Capacity Utilization	54.9%
ICU Level of Service	A
Analysis Period (min)	15



















Splits and Phases: 1: University Drive/Old Arlington Heights Road & Arlington Heights Road

10 s	38 s	22 s
10 s	38 s	22 s

# HCM Unsignalized Intersection Capacity Analysis

## 2: South Access Drive/Commercial Access Drive & Arlington Heights Road

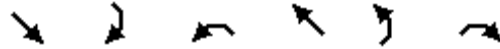
1/10/2017

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	2	775	3	2	783	1	1	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	2	934	4	2	943	1	1	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					859							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	945			937			1417	1890	469	1420	1891	472
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	713			937			1239	1765	469	1243	1766	188
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	100	100	100
cM capacity (veh/h)	805			739			120	76	547	119	76	745
Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3	NE 1	SW 1				
Volume Total	2	622	315	2	629	316	1	0				
Volume Left	2	0	0	2	0	0	1	0				
Volume Right	0	0	4	0	0	1	0	0				
cSH	805	1700	1700	739	1700	1700	120	1700				
Volume to Capacity	0.00	0.37	0.19	0.00	0.37	0.19	0.01	0.00				
Queue Length 95th (ft)	0	0	0	0	0	0	1	0				
Control Delay (s)	9.5	0.0	0.0	9.9	0.0	0.0	35.3	0.0				
Lane LOS	A			A			E	A				
Approach Delay (s)	0.0			0.0			35.3	0.0				
Approach LOS							E	A				
Intersection Summary												
Average Delay			0.0									
Intersection Capacity Utilization			31.7%		ICU Level of Service			A				
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 3: North Access Drive & Arlington Heights Road

1/10/2017



Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Volume (veh/h)	780	11	0	784	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	897	13	0	901	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			909		1353	455
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			909		1353	455
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			757		143	558

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1
Volume Total	598	311	451	451	0
Volume Left	0	0	0	0	0
Volume Right	0	13	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.35	0.18	0.27	0.27	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

Intersection Summary					
Average Delay			0.0		
Intersection Capacity Utilization			25.2%	ICU Level of Service	A
Analysis Period (min)			15		

Lanes, Volumes, Timings

1: University Drive/Old Arlington Heights Road & Arlington Heights Road

1/10/2017



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	20	724	39	46	791	178	41	41	90	152	42	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	190		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	140			100			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.992			0.972			0.921			0.977	
Flt Protected	0.950			0.950				0.988			0.968	
Satd. Flow (prot)	1805	3492	0	1656	3386	0	0	3140	0	0	3290	0
Flt Permitted	0.243			0.305				0.812			0.713	
Satd. Flow (perm)	462	3492	0	532	3386	0	0	2580	0	0	2423	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			38			95			24	
Link Speed (mph)		40			40			30			40	
Link Distance (ft)		859			737			503			467	
Travel Time (s)		14.6			12.6			11.4			8.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	13%	9%	4%	2%	2%	2%	7%	5%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	803	0	48	1020	0	0	181	0	0	241	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	45.0		10.0	45.0		35.0	35.0		35.0	35.0	
Total Split (s)	10.0	45.0		10.0	45.0		35.0	35.0		35.0	35.0	
Total Split (%)	11.1%	50.0%		11.1%	50.0%		38.9%	38.9%		38.9%	38.9%	
Yellow Time (s)	3.5	4.5		3.5	4.5		4.5	4.5		4.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0			6.0			6.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effect Green (s)	45.4	39.5		46.4	41.6			12.6			12.6	
Actuated g/C Ratio	0.65	0.57		0.66	0.60			0.18			0.18	
v/c Ratio	0.05	0.41		0.11	0.50			0.33			0.53	
Control Delay	4.6	10.6		4.8	10.2			14.9			28.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	4.6	10.6		4.8	10.2			14.9			28.3	
LOS	A	B		A	B			B			C	
Approach Delay		10.4			10.0			14.9			28.3	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	2	108		6	96			17			47	
Queue Length 95th (ft)	10	170		18	227			44			82	
Internal Link Dist (ft)		779			657			423			387	



Lanes, Volumes, Timings

1: University Drive/Old Arlington Heights Road & Arlington Heights Road

1/10/2017



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Turn Bay Length (ft)	150			190								
Base Capacity (vph)	428	1981		459	2031			1139			1032	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.05	0.41		0.10	0.50			0.16			0.23	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	69.8
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.53
Intersection Signal Delay:	12.4
Intersection LOS:	B
Intersection Capacity Utilization:	64.3%
ICU Level of Service:	C
Analysis Period (min):	15




















Splits and Phases: 1: University Drive/Old Arlington Heights Road & Arlington Heights Road

10 s	45 s	35 s
10 s	45 s	35 s

# HCM Unsignalized Intersection Capacity Analysis

## 2: South Access Drive/Commercial Access Drive & Arlington Heights Road

1/10/2017

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	12	772	0	4	850	13	2	0	2	9	0	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	12	804	0	4	885	14	2	0	2	9	0	17
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					859							
pX, platoon unblocked	0.87						0.87	0.87		0.87	0.87	0.87
vC, conflicting volume	899			804			1297	1736	402	1330	1730	449
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	593			804			1049	1552	402	1086	1544	78
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			99	100	100	94	100	98
cM capacity (veh/h)	867			829			156	98	603	148	99	850
Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3	NE 1	SW 1				
Volume Total	12	536	268	4	590	309	4	26				
Volume Left	12	0	0	4	0	0	2	9				
Volume Right	0	0	0	0	0	14	2	17				
cSH	867	1700	1700	829	1700	1700	247	315				
Volume to Capacity	0.01	0.32	0.16	0.01	0.35	0.18	0.02	0.08				
Queue Length 95th (ft)	1	0	0	0	0	0	1	7				
Control Delay (s)	9.2	0.0	0.0	9.4	0.0	0.0	19.8	17.5				
Lane LOS	A			A			C	C				
Approach Delay (s)	0.1			0.0			19.8	17.5				
Approach LOS							C	C				
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			33.9%		ICU Level of Service			A				
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 3: North Access Drive & Arlington Heights Road

1/10/2017



Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Volume (veh/h)	783	3	0	868	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	807	3	0	895	0	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			810		1256	405
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			810		1256	405
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			825		166	601

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1
Volume Total	538	272	447	447	1
Volume Left	0	0	0	0	0
Volume Right	0	3	0	0	1
cSH	1700	1700	1700	1700	601
Volume to Capacity	0.32	0.16	0.26	0.26	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	11.0
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.0
Approach LOS					B

Intersection Summary					
Average Delay			0.0		
Intersection Capacity Utilization			31.7%	ICU Level of Service	A
Analysis Period (min)			15		

Lanes, Volumes, Timings

1: University Drive/Old Arlington Heights Road & Arlington Heights Road

1/10/2017



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↖	↗		↖	↗			↖↗			↖↗	
Volume (vph)	11	741	53	97	748	110	59	43	51	144	52	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	190		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	140			100			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.990			0.981			0.950			0.972	
Flt Protected	0.950			0.950				0.981			0.971	
Satd. Flow (prot)	1805	3468	0	1770	3409	0	0	3256	0	0	3387	0
Flt Permitted	0.296			0.248				0.752			0.733	
Satd. Flow (perm)	562	3468	0	462	3409	0	0	2496	0	0	2557	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			31			55			37	
Link Speed (mph)		40			40			30			40	
Link Distance (ft)		859			737			499			467	
Travel Time (s)		14.6			12.6			11.3			8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	4%	2%	4%	3%	0%	0%	10%	1%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	863	0	105	933	0	0	166	0	0	263	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	38.0		10.0	38.0		17.0	17.0		17.0	17.0	
Total Split (s)	10.0	38.0		10.0	38.0		22.0	22.0		22.0	22.0	
Total Split (%)	14.3%	54.3%		14.3%	54.3%		31.4%	31.4%		31.4%	31.4%	
Yellow Time (s)	3.5	4.5		3.5	4.5		4.5	4.5		4.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0			6.0			6.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effect Green (s)	35.7	28.8		38.3	34.6			12.0			12.0	
Actuated g/C Ratio	0.59	0.47		0.63	0.57			0.20			0.20	
v/c Ratio	0.03	0.52		0.24	0.48			0.31			0.49	
Control Delay	4.5	13.1		5.8	9.2			17.6			23.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	4.5	13.1		5.8	9.2			17.6			23.4	
LOS	A	B		A	A			B			C	
Approach Delay		13.0			8.9			17.6			23.4	
Approach LOS		B			A			B			C	
Queue Length 50th (ft)	1	115		12	81			20			43	
Queue Length 95th (ft)	7	183		31	197			44			76	
Internal Link Dist (ft)		779			657			419			387	

Lanes, Volumes, Timings

1: University Drive/Old Arlington Heights Road & Arlington Heights Road

1/10/2017



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Turn Bay Length (ft)	150			190								
Base Capacity (vph)	474	1908		437	2145			724			728	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.03	0.45		0.24	0.43			0.23			0.36	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	60.7
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.52
Intersection Signal Delay:	12.7
Intersection LOS:	B
Intersection Capacity Utilization	55.5%
ICU Level of Service	B
Analysis Period (min)	15



















Splits and Phases: 1: University Drive/Old Arlington Heights Road & Arlington Heights Road

10 s	38 s	22 s
10 s	38 s	22 s

# HCM Unsignalized Intersection Capacity Analysis

## 2: South Access Drive/Commercial Access Drive & Arlington Heights Road

1/10/2017

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	2	801	26	68	783	1	5	0	4	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	2	965	31	82	943	1	6	0	5	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					859							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	945			996			1621	2094	498	1600	2109	472
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	734			996			1480	2001	498	1456	2018	213
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			92	100	99	100	100	100
cM capacity (veh/h)	799			672			73	48	523	75	47	724
Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3	NE 1	SW 1				
Volume Total	2	643	353	82	629	316	11	0				
Volume Left	2	0	0	82	0	0	6	0				
Volume Right	0	0	31	0	0	1	5	0				
cSH	799	1700	1700	672	1700	1700	118	1700				
Volume to Capacity	0.00	0.38	0.21	0.12	0.37	0.19	0.09	0.00				
Queue Length 95th (ft)	0	0	0	10	0	0	7	0				
Control Delay (s)	9.5	0.0	0.0	11.1	0.0	0.0	38.5	0.0				
Lane LOS	A			B			E	A				
Approach Delay (s)	0.0			0.9			38.5	0.0				
Approach LOS							E	A				
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization		40.1%		ICU Level of Service	A							
Analysis Period (min)		15										

# HCM Unsignalized Intersection Capacity Analysis

## 3: North Access Drive & Arlington Heights Road

1/10/2017



Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Volume (veh/h)	803	25	0	788	0	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	923	29	0	906	0	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			952		1390	476
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			952		1390	476
tC, single (s)			4.1		6.8	7.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	94
cM capacity (veh/h)			730		136	502

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1
Volume Total	615	336	453	453	30
Volume Left	0	0	0	0	0
Volume Right	0	29	0	0	30
cSH	1700	1700	1700	1700	502
Volume to Capacity	0.36	0.20	0.27	0.27	0.06
Queue Length 95th (ft)	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	12.6
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.6
Approach LOS					B

Intersection Summary					
Average Delay			0.2		
Intersection Capacity Utilization			33.0%	ICU Level of Service	A
Analysis Period (min)			15		

Lanes, Volumes, Timings

1: University Drive/Old Arlington Heights Road & Arlington Heights Road

1/10/2017



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	36	780	55	46	810	178	45	41	90	152	42	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	190		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	140			100			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.990			0.973			0.923			0.975	
Flt Protected	0.950			0.950				0.987			0.968	
Satd. Flow (prot)	1805	3479	0	1656	3389	0	0	3145	0	0	3283	0
Flt Permitted	0.222			0.282				0.804			0.713	
Satd. Flow (perm)	422	3479	0	492	3389	0	0	2562	0	0	2418	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			37			95			27	
Link Speed (mph)		40			40			30			40	
Link Distance (ft)		859			737			503			467	
Travel Time (s)		14.6			12.6			11.4			8.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	13%	9%	4%	2%	2%	2%	7%	5%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	879	0	48	1040	0	0	185	0	0	245	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	45.0		10.0	45.0		35.0	35.0		35.0	35.0	
Total Split (s)	10.0	45.0		10.0	45.0		35.0	35.0		35.0	35.0	
Total Split (%)	11.1%	50.0%		11.1%	50.0%		38.9%	38.9%		38.9%	38.9%	
Yellow Time (s)	3.5	4.5		3.5	4.5		4.5	4.5		4.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0			6.0			6.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effect Green (s)	45.5	39.5		45.6	39.6			12.7			12.7	
Actuated g/C Ratio	0.65	0.57		0.65	0.57			0.18			0.18	
v/c Ratio	0.10	0.45		0.11	0.54			0.34			0.53	
Control Delay	4.8	10.9		4.9	11.7			15.1			28.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	4.8	10.9		4.9	11.7			15.1			28.0	
LOS	A	B		A	B			B			C	
Approach Delay		10.7			11.4			15.1			28.0	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	5	121		6	148			18			47	
Queue Length 95th (ft)	15	191		18	236			45			82	
Internal Link Dist (ft)		779			657			423			387	



Lanes, Volumes, Timings

1: University Drive/Old Arlington Heights Road & Arlington Heights Road

1/10/2017



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Turn Bay Length (ft)	150			190								
Base Capacity (vph)	406	1974		432	1938			1133			1033	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.09	0.45		0.11	0.54			0.16			0.24	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	69.8
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.54
Intersection Signal Delay:	13.1
Intersection LOS:	B
Intersection Capacity Utilization	64.8%
ICU Level of Service	C
Analysis Period (min)	15




















Splits and Phases: 1: University Drive/Old Arlington Heights Road & Arlington Heights Road

10 s	45 s	35 s
10 s	45 s	35 s

# HCM Unsignalized Intersection Capacity Analysis

## 2: South Access Drive/Commercial Access Drive & Arlington Heights Road

1/10/2017

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	12	827	12	31	850	13	38	0	35	9	0	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	12	861	12	32	885	14	40	0	36	9	0	17
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					859							
pX, platoon unblocked	0.86						0.86	0.86		0.86	0.86	0.86
vC, conflicting volume	899			874			1417	1856	437	1449	1856	449
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	569			874			1168	1677	437	1205	1676	49
tC, single (s)	4.1			4.4			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			68	100	94	91	100	98
cM capacity (veh/h)	876			685			122	78	573	109	78	878
Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3	NE 1	SW 1				
Volume Total	12	574	300	32	590	309	76	26				
Volume Left	12	0	0	32	0	0	40	9				
Volume Right	0	0	12	0	0	14	36	17				
cSH	876	1700	1700	685	1700	1700	196	249				
Volume to Capacity	0.01	0.34	0.18	0.05	0.35	0.18	0.39	0.10				
Queue Length 95th (ft)	1	0	0	4	0	0	43	9				
Control Delay (s)	9.2	0.0	0.0	10.5	0.0	0.0	34.5	21.2				
Lane LOS	A			B			D	C				
Approach Delay (s)	0.1			0.4			34.5	21.2				
Approach LOS							D	C				
Intersection Summary												
Average Delay				1.9								
Intersection Capacity Utilization			39.0%			ICU Level of Service		A				
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 3: North Access Drive & Arlington Heights Road

1/10/2017



Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Volume (veh/h)	795	7	0	904	0	56
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	820	7	0	932	0	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			827	1289	413	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			827	1289	413	
tC, single (s)			4.1	6.8	7.0	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.4	
p0 queue free %			100	100	90	
cM capacity (veh/h)			813	158	574	

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1
Volume Total	546	280	466	466	58
Volume Left	0	0	0	0	0
Volume Right	0	7	0	0	58
cSH	1700	1700	1700	1700	574
Volume to Capacity	0.32	0.16	0.27	0.27	0.10
Queue Length 95th (ft)	0	0	0	0	8
Control Delay (s)	0.0	0.0	0.0	0.0	12.0
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.0
Approach LOS					B

Intersection Summary					
Average Delay			0.4		
Intersection Capacity Utilization			32.3%	ICU Level of Service	A
Analysis Period (min)			15		