

MEMORANDUM TO: Jake Zunamon  
HTG Arlington, LP

FROM: Luay R. Aboona, PE, PTOE  
Principal

DATE: September 9, 2021

SUBJECT: Traffic Study Addendum  
Proposed Affordable Apartment Development  
Arlington Heights, Illinois

As requested, Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) has conducted a follow-up traffic evaluation at the intersections of Chestnut Avenue with Rand Road/Techny Road and Waverly Road in Arlington Heights, Illinois. This included traffic count data collected on Wednesday and Thursday, August 25 and 26, 2021 when the schools were in session. In addition, a gap study was also conducted on both days at the intersection of Rand Road with Chestnut Avenue/Techny Road to measure the frequency and length of interruptions in the Rand Road traffic stream.

## Traffic Counts

As indicated above, traffic counts were conducted at the intersections of Chestnut Avenue with Rand Road/Techny Road and Waverly Road on Wednesday and Thursday, August 25 and 26, 2021. The counts were conducted in the morning between 7:00 and 9:00 A.M. and in the afternoon between 2:30 and 6:00 P.M. Summaries of the traffic counts indicated that generally the peak hours occurred between 7:30-8:30 A.M. on both days and between 4:45-5:45 P.M. on August 25 and 4:00-5:00 P.M. on August 26, 2021. **Figure 1** illustrates the results of the traffic counts on both days while **Table 1** compares the results of the traffic counts at the intersection of Rand Road with Chestnut Avenue/Techny Road with those utilized in the April 15, 2021 Traffic Impact Study completed by KLOA, Inc.

In reviewing the results of the comparison, it was determined that overall the intersection of Rand Road with Chestnut Avenue/Techny Road carried similar amounts of traffic during the peak hours. The only noticeable difference was an increase in traffic on Chestnut Avenue during the morning peak hour, which can be attributed to traffic utilizing Chestnut Avenue/Waverly Road to access Chicago Futabakai School. There was no significant increase in traffic during the evening peak hour. Further review of the count data along Chestnut Avenue between Rand Road and Waverly Road did not indicate that a significant cut through issue is occurring. As indicated above, the increase in traffic in the weekday morning peak hour is attributed to traffic to/from the school.

# LEGEND

- 00 - AM PEAK HOUR
- (00) - PM PEAK HOUR

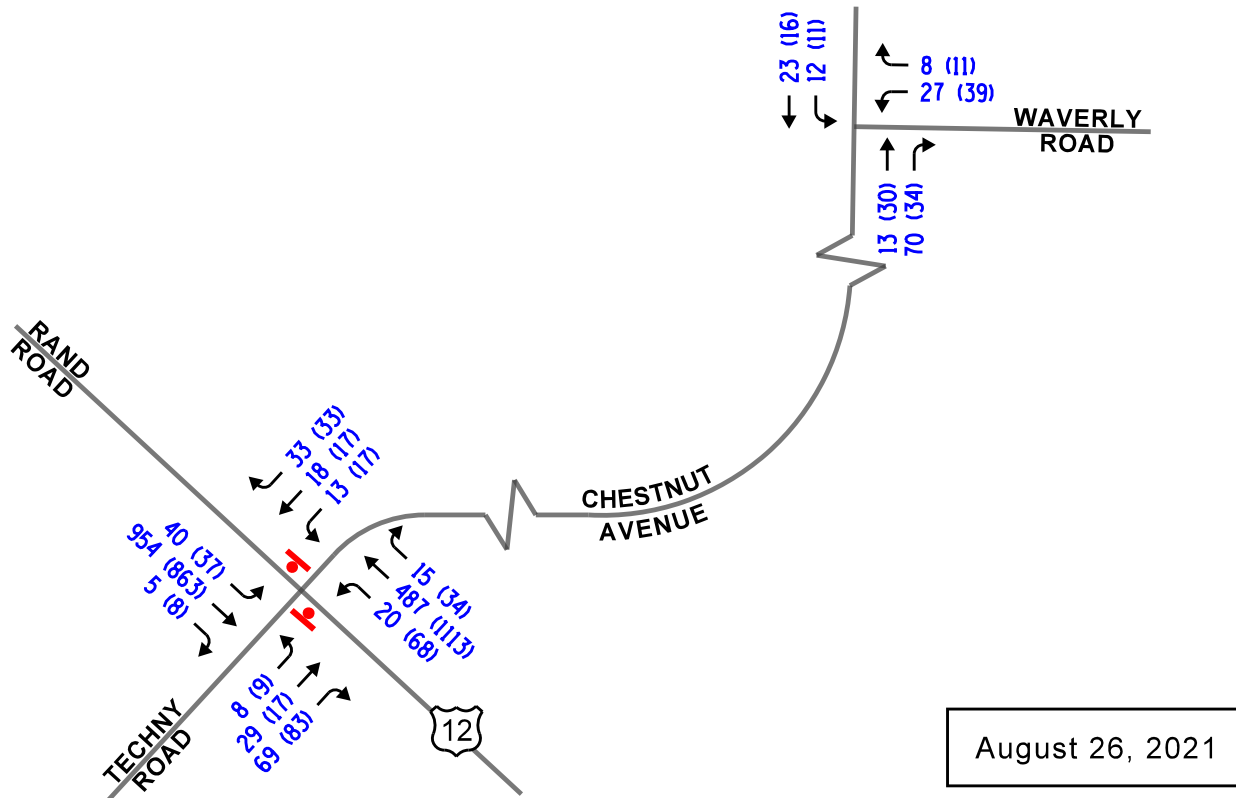
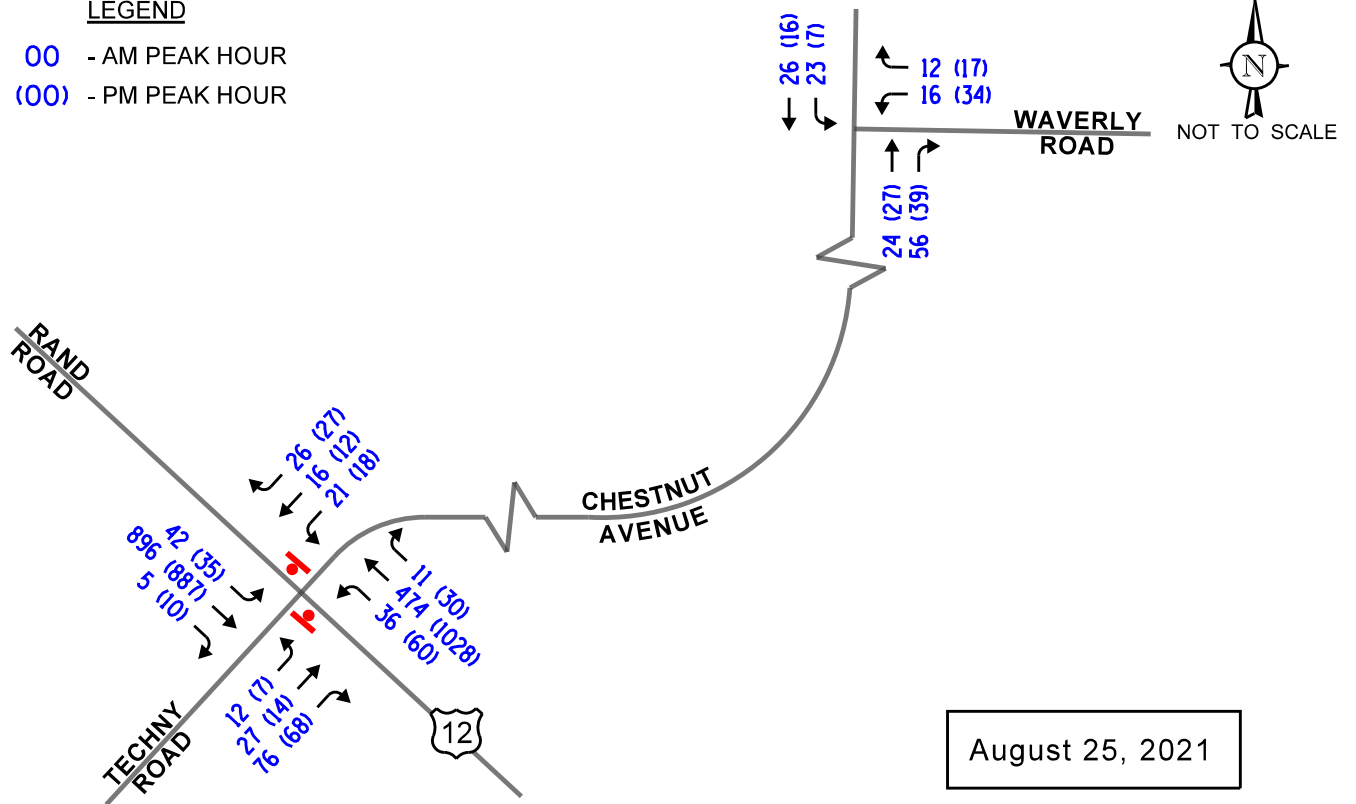


Table 1

## TRAFFIC COUNT COMPARISON – RAND ROAD WITH CHESTNUT AVENUE/TECHNY ROAD

Date/Time	Overall Intersection	Chestnut Avenue								Two-Way Total
		Eastbound				Westbound				
		Left Turn	Through	Right Turn	Total	Left Turn	Through	Right Turn	Total	
April 2021										
• Morning	1,526	21	13	6	40	13	9	12	34	74
• Evening	2,291	33	14	32	79	15	9	34	58	137
August 25, 2021										
• Morning	1,642	42	27	11	80	21	16	26	63	143
• Evening	2,196	35	14	30	79	18	12	27	57	136
Difference <sup>1</sup>	+116	+21	+14	+5	+40	+8	+7	+14	+29	+69
	+5	+2	0	-2	0	+3	+3	-7	-1	-1
August 26, 2021										
• Morning	1,691	40	29	15	84	13	18	33	64	148
• Evening	2,299	37	17	24	78	17	17	33	67	145
Difference <sup>1</sup>	+165	+19	+16	+9	+44	0	+9	+21	+30	+74
	+8	+4	+3	-8	-1	+2	+8	-1	+9	+8
1 – Compared to April 2021										

## Capacity Analysis

The intersections of Chestnut Avenue with Rand Road/Techny Road and Waverly Road were analyzed during the morning and evening peak hours under existing conditions utilizing the traffic count data for both days and under future conditions with the addition of site-generated traffic utilizing the traffic assignment contained in the April 15, 2021 Traffic Impact Study. **Tables 2 and 3** summarize the results of the capacity analyses expressed in terms of Levels of Service (LOS) and delays (measured in seconds) for both intersections under existing and existing plus site conditions.

As can be seen, the critical left-turn movements from Chestnut Avenue onto Rand Road operate at acceptable levels of service during the weekday morning peak hour on both days and will continue to do so with the addition of site-generated traffic. During the weekday evening peak hour, the movements operate at LOS E on both days and will experience an increase of two seconds with the addition of site-generated traffic. These results are expected when a minor roadway intersects a major roadway such as Rand Road. It should be noted that these analyses do not take into account the proximity of the intersection to the signals to the north at Kennicott Drive and to the south at Arlington Plaza. These signals, as shown in the next section, create additional gaps in the traffic stream allowing vehicles to exit more efficiently and with less delays than reflected in the results of the capacity analyses.

At the intersection of Chestnut Avenue with Waverly Road, the results of the capacity analyses indicated that the intersection is and will continue to operate at LOS A during both peak hours.

Table 2

## CAPACITY ANALYSIS RESULTS – EXISTING CONDITIONS

Intersection	August 25, 2021				August 26, 2021			
	Morning		Evening		Morning		Evening	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
<b>Rand Road with Chestnut Avenue/Techny Road</b>								
Northwest-bound Left Turns (Rand Road)	B	10.1	B	10.2	B	10.6	B	10.9
Eastbound Left Turns	D	25.4	D	30.0	D	28.2	D	34.6
Eastbound Through/Right Turns	C	18.4	C	18.5	C	21.2	C	21.4
Westbound Left Turns	C	23.3	E	38.1	D	25.4	E	48.2
Westbound Through/Right Turns	C	16.4	C	21.4	C	17.9	D	26.7
Southeast-bound Left Turns (Rand Road)	A	8.5	B	11.0	A	8.7	B	12.4
<b>Chestnut Avenue with Waverly Road</b>								
Overall	A	7.2	A	7.2	A	7.2	A	7.3
Westbound Approach	A	7.2	A	7.3	A	7.4	A	7.5
Northbound Approach	A	7.1	A	7.1	A	7.1	A	7.1
Southbound Approach	A	7.4	A	7.4	A	7.3	A	7.3

Table 3

## CAPACITY ANALYSIS RESULTS – EXISTING PLUS SITE CONDITIONS

Intersection	August 25, 2021				August 26, 2021			
	Morning		Evening		Morning		Evening	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
<b>Rand Road with Chestnut Avenue/Techny Road</b>								
Northwest-bound Left Turns (Rand Road)	B	10.1	B	10.2	B	10.6	B	10.9
Eastbound Left Turns	D	25.7	D	30.8	D	28.6	D	35.6
Eastbound Through/Right Turns	C	18.4	C	19.1	C	21.2	C	22.5
Westbound Left Turns	C	23.7	E	40.1	D	26.1	F	51.5
Westbound Through/Right Turns	C	16.4	C	21.4	C	17.9	D	26.7
Southeast-bound Left Turns (Rand Road)	A	8.5	B	11.1	A	8.7	B	12.5
<b>Chestnut Avenue with Waverly Road</b>								
Overall	A	7.2	A	7.2	A	7.2	A	7.3
Westbound Approach	A	7.2	A	7.3	A	7.4	A	7.5
Northbound Approach	A	7.1	A	7.1	A	7.1	A	7.1
Southbound Approach	A	7.4	A	7.4	A	7.3	A	7.3

## Gap Study

A gap study was performed on Rand Road at Chestnut Avenue/Techny Road during the weekday morning and evening peak hours in order to determine the availability of gaps or interruptions in the Rand Road traffic stream. The gap study was conducted on Wednesday, August 25, 2021, and on Thursday, August 26, 2021, during the morning and evening peak hours. The study examined gaps in the northwest-bound direction along Rand Road, which would allow vehicles to turn left from Rand Road onto Chestnut Avenue and right from Chestnut Avenue onto Rand Road, as well as gaps in both directions that would allow vehicles to turn left from Chestnut Avenue onto Rand Road and travel between Chestnut Avenue and Techny Road. The results of the gap study for Wednesday and Thursday, showing the total number of potential movements based on gaps available for the peak hours, are summarized in **Tables 4** and **5**, respectively.

Table 4

GAP STUDY SUMMARY – RAND ROAD – WEDNESDAY, AUGUST 25, 2021

<b>Movement</b>	<b>Weekday Morning Peak Hour Potential Movements</b>	<b>Weekday Evening Peak Hour Potential Movements</b>
Left Turn from Rand Road	763	495
Left Turn from Chestnut Avenue	133	73
Right Turn from Chestnut Avenue	415	252

Table 5

GAP STUDY SUMMARY – RAND ROAD – THURSDAY, AUGUST 26, 2021

<b>Movement</b>	<b>Weekday Morning Peak Hour Potential Movements</b>	<b>Weekday Evening Peak Hour Potential Movements</b>
Left Turn from Rand Road	674	410
Left Turn from Chestnut Avenue	116	43
Right Turn from Chestnut Avenue	363	199

## Gap Study Evaluation

**Tables 6 and 7** show the total number of potential movements compared to the number of required gaps that are needed to accommodate the total projected traffic volumes turning to and from Chestnut Avenue/Techny Road based on the traffic counts conducted on Wednesday and Thursday, respectively. As shown in Tables 6 and 7, there are more than sufficient gaps in the Rand Road traffic stream to accommodate the left turns onto Chestnut Avenue, right turns onto Rand Road from Chestnut Avenue, left turns onto Rand Road from Chestnut Avenue/Techny Road and through movements between Chestnut Avenue and Techny Road during the weekday morning and evening peak hours of adjacent roadway traffic. These results indicate that these movements will be completed efficiently and without significant delays.

Table 6

REQUIRED GAPS – RAND ROAD – WEDNESDAY, AUGUST 25, 2021

Time Periods	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
Movement	Potential Movements	Required Gaps	Potential Movements	Required Gaps
Left Turn from Rand Road	763	2	495	5
Left Turn from Chestnut Avenue	133	4	73	4
Right Turn from Chestnut Avenue	415	5	252	4

Table 7

REQUIRED GAPS – RAND ROAD – THURSDAY, AUGUST 26, 2021

Time Periods	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
Movement	Potential Movements	Required Gaps	Potential Movements	Required Gaps
Left Turn from Rand Road	674	2	410	5
Left Turn from Chestnut Avenue	116	4	43	4
Right Turn from Chestnut Avenue	363	5	199	4



## Conclusion

Based on the results of the analysis and the gap study evaluation, the following has been determined:

- The results of the traffic counts indicated that overall the intersection of Rand Road with Chestnut Avenue/Techny Road carried similar amount of traffic when compared to the April 2021 counts and that the increase in traffic on Chestnut Avenue during the morning peak hour can be attributed to traffic to/from the school on Waverly Road.
- Exiting movements from Chestnut Avenue onto Rand Road are operating at acceptable levels of service for a location of this type and will experience minimal increases in delay with the addition of site-generated traffic.
- The results of the gap study indicated that there are more than adequate gaps or interruptions in the Rand Road traffic stream to accommodate the increase in traffic resulting from the proposed development.

MEMORANDUM TO: Jake Zunamon  
HTG Arlington, LP

FROM: Luay R. Aboona, PE, PTOE  
Principal

DATE: September 14, 2021

SUBJECT: School Bus Traffic  
Proposed Affordable Apartment Development  
Arlington Heights, Illinois

As requested, Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) has reviewed the traffic count data collected at the intersection of Rand Road with Chestnut Avenue/Techny Road to determine the amount of bus traffic that turns in and out of Chestnut Avenue during the weekday morning and afternoon peak periods. The count data was based on the updated traffic counts conducted by KLOA, Inc. on Wednesday and Thursday, August 25 and 26, 2021 during the morning (7:00 to 9:00 A.M.) and afternoon (2:30 to 6:00 P.M.) peak periods. The results of the counts were provided in the September 9, 2021 Traffic Study Addendum.

Based on a review of the count data, the following number of buses were observed.

#### Wednesday, August 25, 2021

- A total of five buses were observed over a one-hour period between 7:30 and 8:30 A.M., all of which turned right from Rand Road onto Chestnut Avenue.
- One bus was observed in the afternoon at 3:30 P.M. turning right from Chestnut Avenue onto Rand Road.

#### Thursday, August 26, 2021

- A total of five buses were observed over a one-hour period between 7:30 and 8:30 A.M., all of which turned right from Rand Road onto Chestnut Avenue.
- A total of three buses were observed in the afternoon. One bus turned left from Rand Road onto Chestnut Avenue at 3:45 P.M. and two buses turned right from Chestnut Avenue onto Rand Road over a 45-minute period between 4:45 and 5:30 P.M.

With the low volume of bus traffic traversing the intersection of Rand Road with Chestnut Avenue/Techny Road and the fact that buses did not cluster or arrive at the intersection at the same time nor did they turn left out onto Rand Road, the impact the buses had on the intersection was minimized and no congestion or undue delays were observed. These findings were confirmed by the results of the traffic analyses and the gap study as summarized in the Traffic Study Addendum.