Joint Public Safety Training Campus (JPSTC)
Traffic Impact Study

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For Chicago Department of Transportation Review

June 11, 2020

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Executive Summary

The City of Chicago has contracted the Public Safety and Community Builders Joint Venture to design and build the new Joint Public Safety Training Campus (JPSTC) for the City's first responders. The 30-acre project site is located at 4301 W. Chicago Avenue and will provide Chicago Fire and Police departments (CPD and CFD) with a modern facility where scenario-based training can occur. The main training facility will have 380 off-street parking spaces. Access to this surface lot will be off of Kilbourne Avenue. In addition to this facility, the proposed campus will contain two restaurants. One of these is a 9,000 square foot sit-down breakfast restaurant with no drive-through service (Peaches) and the other is a 7,000 square foot fast casual restaurant (Culver's) with drive-through service. As part of this development, the Chicago Transit Authority (CTA) access route currently at Kostner Avenue will be realigned to Kolin Avenue. This campus will be constructed in multiple phases with estimated groundbreaking in December 2020 and completion in December 2022.

This study evaluates traffic operations on the nearby road network in existing year (2020) and future year (2022) scenarios for the AM and PM peak hour. Future (2022) traffic volumes within the study area include the background traffic growth due to regional population or employment changes, and site generated traffic volumes from the proposed site development. This report has not considered other potential developments which may be occurring with the study area.

The Chicago Metropolitan Agency for Planning (CMAP) provided projections for the surrounding roadway network. Their travel demand model indicated a 1% total growth rate from existing (2020) to future (2022) background traffic volumes. This growth rate was applied to existing (2020) traffic volumes at all study intersections to project future (2022) background traffic volumes.

The JPSTC site generated traffic includes traffic that would be added to the system as a result of the JPSTC, Peaches and Culvers end users. The CPD and CFD users will arrive at the site significantly earlier than the AM peak hour of the surrounding roadway network while the Peaches and Culvers traffic will coincide with the AM peak hour of the surrounding street network. Therefore, only the Peaches and Culvers traffic is captured in the AM peak analysis. All traffic contributing to the JPSTC training facility will depart in concurrence with the surrounding networks PM peak hour. Site generated traffic due to the JPSTC campus will add 103 vehicles[1] during the AM peak and 638 vehicles during the PM peak.

Synchro traffic analysis software was used to determine the intersection level of service (LOS) and 95th percentile queue lengths in the existing (2020) and future (2022) conditions. Key findings of the analysis are listed below:

<u>W Chicago Avenue and N Kilbourn Avenue (West)</u>

This intersection is operating at a LOS D in existing condition (2020) during the AM peak hour and a LOS C in the PM peak hour with the lowest LOS experienced by the eastbound through (EBT) movement at LOS E during the AM peak hour. The 95th percentile queues along W Chicago Avenue are greatest in the EB direction during the AM peak (approximately 800 feet) and in the WB direction during the PM peak (approximately 700 feet). The long queues are created by reducing the four-lane cross section to a two-lane cross section at this intersection due to the viaduct constraint.

In the 2022 Build condition, this intersection is expected to operate at a LOS C and LOS D in the AM and PM, respectively, with signal timing adjustment. All individual movements operate at a

[1] Representing only restaurant trips during AM peak hour of surrounding street. For more details refer Section 4 of this report.

LOS D or better indicating no significant impact from proposed development. However, restriping the westbound approach at N Kilbourne and Chicago Avenue to provide a left turn lane to improve safety for this movement is recommended as part of this study.

W Chicago Avenue and N Kolin Avenue

Due to the realignment of the CTA Access Road, the northbound approach at this intersection is expected to operate a LOS F during the 2022 Build condition. The northbound left turn will experience an average delay of 95 seconds in the AM peak and 105 seconds in the PM peak compared to an existing 25 seconds of delay. Although northbound approach experiences such a high delay, the 95th percentile queues will not be longer than 4 vehicles at this approach. A signal warrant analysis was performed for this intersection to determine if the intersection warrants a traffic signal in 2022. Based on the analysis, the W Chicago Avenue and N Kolin Avenue intersection does not warrant a traffic signal in 2022. That said the implementation of a signal would improve the LOS for this intersection and likely improve on the queue length for the CTA. A decision to place a signal at this intersection should be discussed between CDOT and the CTA.

N Kilbourne Avenue and Ohio Street

All-Way Stop Controlled (AWSC) Intersection on N Kilbourne Avenue at Ohio St and Lake St is operating with LOS C or better in the existing and 2022 no-build conditions, and LOS F for southbound movement during PM peak hour during 2022 build condition with approx. 250 feet queue lengths. Once, development is in place, it is expected to add northbound/southbound traffic on N Kilbourne Avenue and hence, conversion of ‘Two-Way Stop Controlled (TWSC)’ with stop sign at Ohio St will improve this intersection to LOS C or better for 2022 build condition.

All other intersections within the study area are operating with LOS D or better in the existing and 2022 conditions with reasonable queue lengths.

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1. Introduction

1.1 Project Background

The City of Chicago has contracted the Public Safety and Community Builders Joint Venture to design and build the new Joint Public Safety Training Campus for the City's first responders. The 30-acre project site is located at 4301 W. Chicago Avenue and will provide Chicago Fire and Police departments (CFD and CPD) with a modern facility where scenario-based training can occur. The campus is located east of N Kilbourn Ave and south of W Chicago Ave. The campus will consist of a 185,000 square foot primary training and office building, approximately 380 off-street parking spaces, and an outdoor training facility which will include a mock streetscape, a six-story burn tower, and a drive training pad. An outdoor plaza space, approximately 16,000 square foot, has been dedicated for community use and programming. The plaza will have a prime location on Chicago Avenue and will be located in between the primary training building and the development lots.

The proposed Chicago Avenue development will also contain two restaurants on positioned on lots which front Chicago Avenue. One restaurant is 9,000 square foot with no drive-through service (/Peaches). The other restaurant is a 7,000 square foot fast casual restaurant (Culver's) with drive-through service.

1.2 Purpose and Objectives

The purpose of this report is to summarize and evaluate the following:

- **Existing Conditions (2020) -** Section 2 provides a description of the existing road network, transit service, and traffic volumes of vehicles, bikes and pedestrians at study intersections.
- **Proposed Development**. Section 3 presents the proposed development plan including vehicle trip generation and distribution.
- **Future Conditions (2022)**. Section 4 presents estimated total traffic volumes in the full build out year (2022). This traffic is the sum of background traffic growth and the site generated trips.
- **Traffic Analysis.** Section 5 reports the results from existing (2020) and future (2022) traffic analysis, including delays, LOS and 95th-percentile queue length from Synchro evaluations.
- **Conclusion** Section 6 summarizes the key assumptions and findings of this traffic study.

The objective of this study is to evaluate and mitigate the impacts of the proposed development on the nearby street network.

2. Existing (2020) Conditions

This section provides a description of the existing road network in the vicinity of the proposed JPSTC site, existing transit service that serves the site, and collected traffic volumes of vehicles, bikes and pedestrians at study intersections.

2.1 Site Location and Study Area

The proposed JPSTC is located at 4301 W Chicago Ave in Chicago, Illinois, east of N Kilbourn Ave and south of W Chicago Ave. The 30-acre site is currently undeveloped and is surrounded by residential, commercial and manufacturing land uses. There are no nearby planned developments at this time.

Figure 1: Site location with Respect to the Surrounding Street System

2.2 Transportation System

2.2.1 Roadway Characteristics

The study area is comprised of the following streets:

W Chicago Avenue is a 30-mph minor arterial four lane cross section with two 11' lanes in the eastbound direction and two 11' lanes in the westbound direction. Left turn lanes are provided at major cross streets such as N Kostner Avenue. At the West N Kilbourn Avenue intersection, Chicago Ave narrows from a four-lane section to a two-lane section to accommodate the narrow Belt Ry. Co. of Chicago (BRC)[2] railway viaduct.

IDOT function class: Minor Arterial

CDOT classification: Thoroughfare

Jurisdiction: CDOT

N Kilbourn Avenue is a 30-mph north-south street separated by Chicago Avenue into two segments. N Kilbourn Avenue to the south of Chicago Avenue is a two-lane two-way street connecting Chicago Avenue and Lake Street. N Kilbourn Avenue to the north of Chicago Avenue is a one-way northbound street. Within the study area N Kilbourne Avenue passes predominantly through industrial developments.

IDOT function class: Local Road

CDOT classification: Neighborhood Street

Jurisdiction: CDOT

N Kostner Avenue is a 30-mph two-lane cross section with one lane in the northbound direction and one lane in the southbound direction. The segment south of Chicago Avenue (also called CTA Access Road) provides access to CTA's Chicago Avenue Garage. The CTA utilizes this garage daily. N Kostner Avenue is surrounded by mostly residential developments and provides access to the local street network.

IDOT function class: Local Road

CDOT classification: Neighborhood Street

Jurisdiction: CDOT

N Kolin Avenue is a 30-mph residential one-way southbound roadway. It provides parking on both sides of the corridor. N Kolin Avenue provides access to the driveways of the residential developments.

IDOT function class: Local Road

CDOT classification: Neighborhood Street

Jurisdiction: CDOT

[2] http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Maps-&-Charts/RailRoad-Maps/2015_RR_MAP_CHICAGO_STLOUIS_AREA.pdf

W Ohio Street is a 30-mph east-west roadway serving an industrial development, which is generally comprised of two lanes, one in each direction, and parking on both sides of the corridor.

IDOT function class: Local Road or Street

CDOT classification: Neighborhood Street

Jurisdiction: CDOT

W Lake Street is a 30-mph major east-west arterial that runs in parallel with CTA's Green Line service. The roadway is comprised of four lanes, two lanes each direction with bike lanes and parking on both sides of the corridor. The piers of the elevated track separate the travel lanes of the same direction.

IDOT function class: Major Arterial

CDOT classification: Thoroughfare

Jurisdiction: CDOT

2.2.2 Public Transportation

- CTA Bus Route 66 runs along Chicago Avenue serving the study area and future development site. Route 66 operates between Navy Pier and Austin Boulevard with connections to the CTA Blue, Brown, Red, and Purple lines. Service is provided seven days a week.

- CTA Bus Route 54 also operates through nearby areas of the proposed site (Cicero & Chicago (North), Stop ID: 10301/15299, approx. 0.3 mile from proposed JPSTC) and serves areas between Cicero and W Chicago Avenue along N Cicero Avenue.

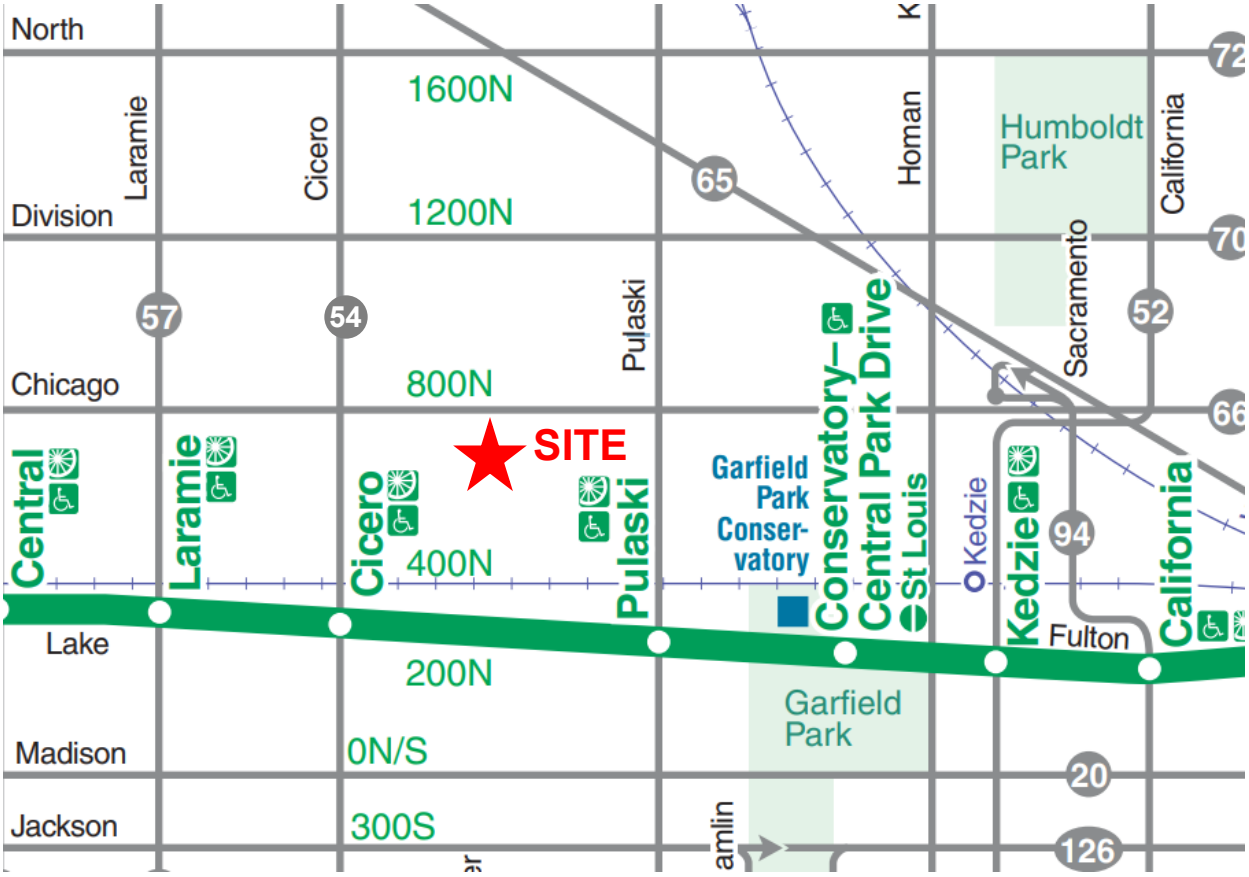


Figure 2: Public Transportation routes near JPSTC Site (Route 66 and 54)

2.2.3 Pedestrian Network

Pedestrian sidewalks (approximately 7 feet wide) are generally provided on both sides of all major streets within the study area.

2.2.4 Bicycle Network

A buffered bike lane is provided along Lake Street. Lake Street is considered a spoke route of Chicago's bicycle network. There are no other dedicated or shared bike lanes provided on any streets within the study area.

2.2.5 Parking Facilities

On-street parallel parking is available on both sides of the W Chicago Avenue east of N Kilbourne Ave (East) intersection. This on-street parking is 8 feet wide. Parallel parking is also permitted on both sides of N Kilbourne Avenue.

2.3 Traffic Characteristics

2.3.1 Peak Hour Turning Movement Counts

Traffic data was collected on Tuesday, March 3, 2020 at six intersections as shown in **Figure 3.** It is important to note that the traffic data captured occurred before any shelter-in-place directions were put in place. As such, we are of the considered opinion that the data captured represents typical traffic data.

1. W Chicago Avenue and N Kilbourn Avenue (West) – Signalized and W Chicago Avenue and N Kilbourn Avenue (East) – Unsignalized[3]
2. W Chicago Avenue and N Kostner Avenue - Signalized
3. W Chicago Avenue and N Kolin Avenue – Unsignalized (TWSC)
4. N Kilbourn Avenue and W Ohio Street – Unsignalized (AWSC)
5. N Kilbourn Avenue and W Lake Street – Signalized

Figure 3: Study Intersections

Turning movement counts were collected for passenger cars, heavy vehicles, pedestrians and bicyclists during the AM peak hours (7am – 9am) and PM peak hours (3pm – 6pm). Additional

[3] Third leg at this intersection is one-way so, no conflicting movement from third leg approaching this intersection and no stop sign. Eastbound left operates permissive.

data was collected from 6 am-7 am at the intersection of Kolin Avenue and Chicago Avenue to facilitate signal warrant analysis. **Based on the traffic counts, the AM peak hour for the study area is between 7:15 am and 8:15 am. The PM peak hour is between 3:45 pm and 4:45 pm**.

Figure 5 shows the existing peak hour vehicle traffic volumes**. Figure 6** shows the existing peak hour pedestrian and bicycle traffic volumes. Traffic count details are shown in **Appendix B**.

2.3.2 Average Annual Daily Traffic

Annual average daily traffic (AADT) data for all streets within the study area was obtained from the Illinois Department of Transportation's online traffic count database system.

Table 1 shows the existing AADT of major corridor segments within the study area.

Table 1. Existing AADT of Major Study Corridors

Corridor	AADT (vpd)
W Chicago Avenue	17,800
N Kilbourn Avenue (South)	6,350
N Kilbourn Avenue (North)	N/A
N Kostner Avenue	7,250
N Kolin Avenue	N/A
W Ohio Street	N/A
W Lake Avenue	13,100

Source: IDOT Website (http://www.gettingaroundillinois.com/gai.htm?mt=aadt)

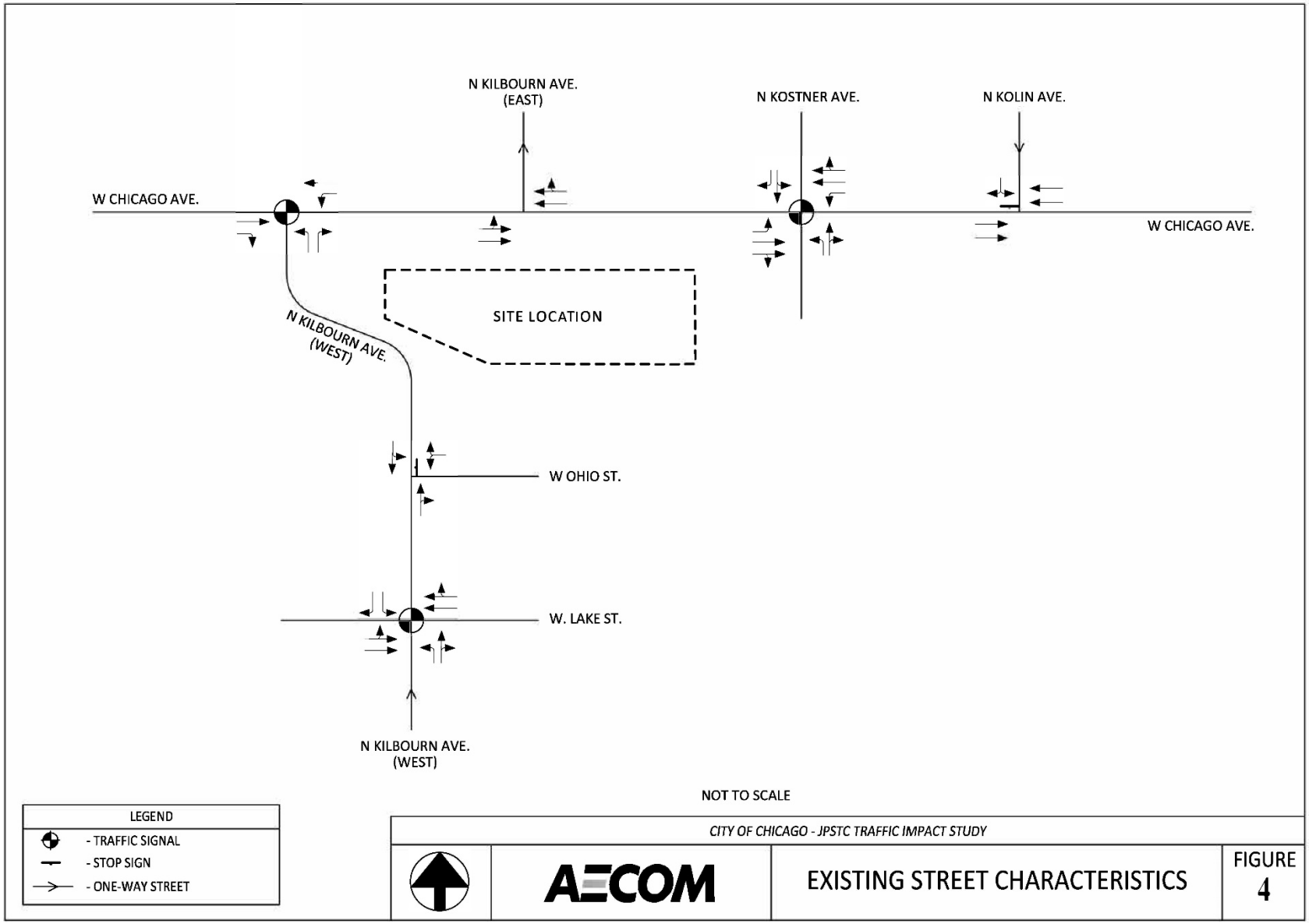


Figure 4: Lane Configurations at Study Intersections

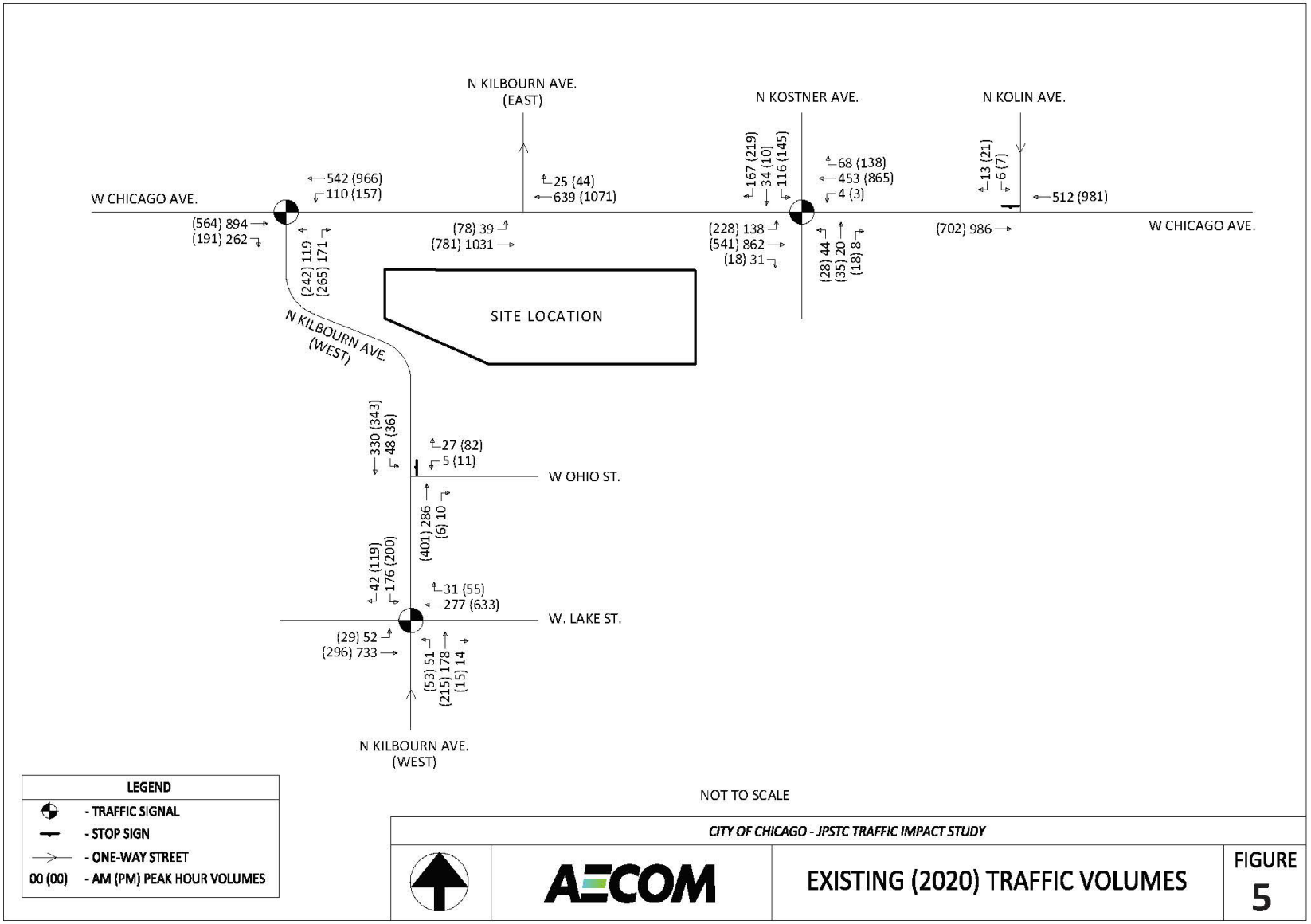


Figure 5: Existing (2020) Peak Hour Vehicle Traffic Volumes

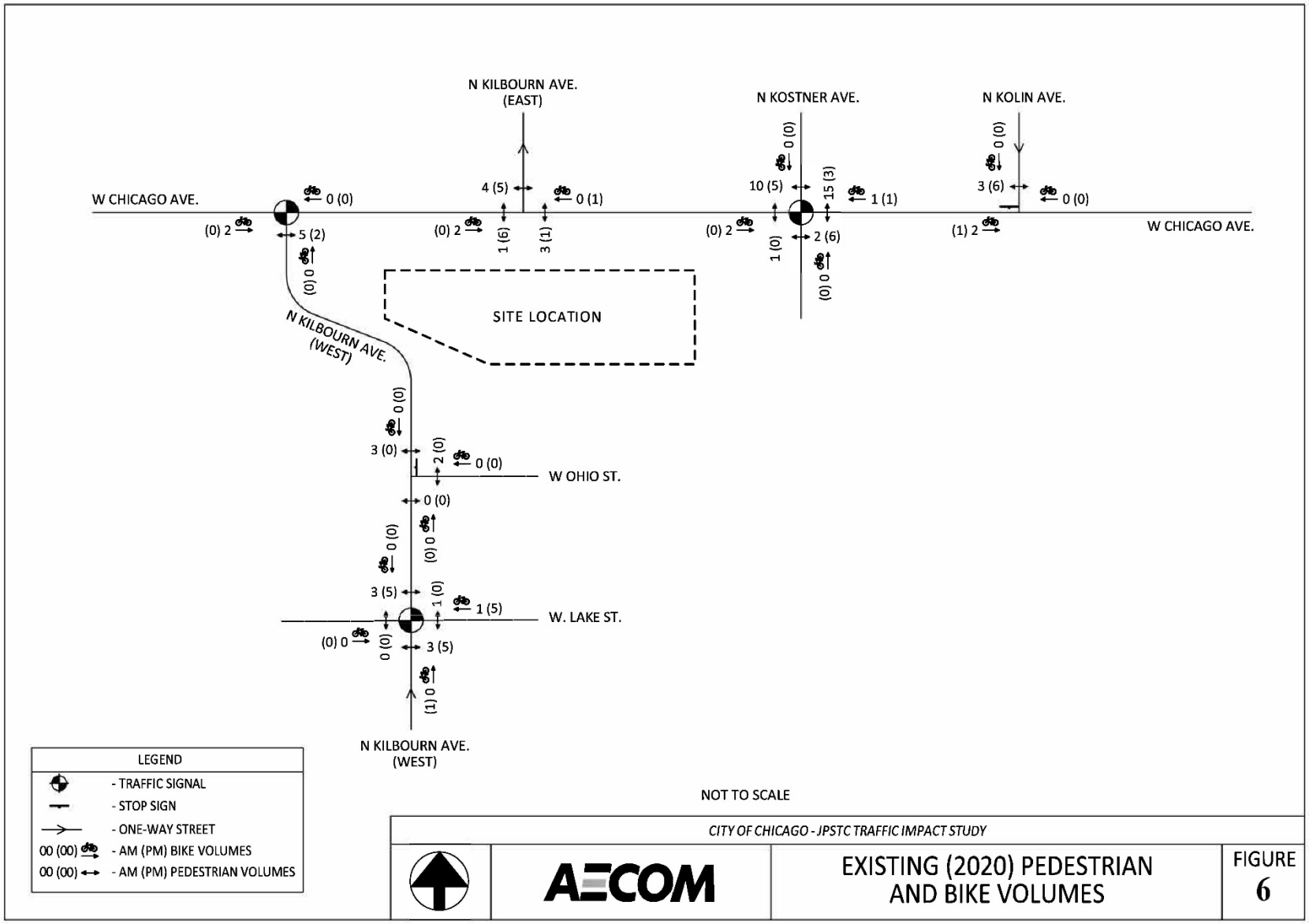


Figure 6: Existing (2020) Peak Hour Pedestrian and Bicycle Traffic Volumes

3. Proposed Development

3.1 Site Plan

Appendix A shows the proposed site plan for the campus.

3.2 Proposed Land Use(s) and Intensity

The campus will consist of a 185,000 square foot primary training and office building, approximately 380 off-street parking spaces and an outdoor training facility which will include a mock streetscape, a six-story burn tower, and a drive training pad.

An outdoor plaza space, approximately 16,000 square foot, has been dedicated for community use and programming. The plaza will have a prime location on Chicago Avenue and will be located in between the primary training building and the development lots.

The campus will also have two restaurants on site. One restaurant is 9,000 square feet with no drive-through service (Peaches). The other is a 7,000 square foot fast casual restaurant (Culver's) with drive-through service.

3.3 Proposed Site Access Locations

The City of Chicago has contracted the Public Safety and Community Builders Joint Venture (PSCB) to design and build the new Joint Public Safety Training Campus for the City's first responders. The 32-acre project site is located at 4301 W. Chicago Avenue and will provide Chicago Fire and Police departments with a modern facility where scenario-based training can occur.

The current site plan offers 380 off-street parking spaces for the training facility. Vehicles access to the surface parking lot for the main training building is from N Kilbourn Avenue and access to the small 32 spaces visitor parking is through a driveway on W Chicago Avenue expected to be used during off-peak hours by relatively small number of the visitors. Vehicles access to both of the restaurants is through the intersection at N Kostner Avenue and W Chicago Avenue.

Bike racks are proposed on the west side of the training building close to the entrance. Pedestrians could access the campus via the existing sidewalks along W Chicago Avenue and N Kilbourn Avenue. The loading dock is proposed to be located on the south side of the training building. Trucks will access the loading dock via N Kilbourn Avenue.

The CTA Access Road that aligns with Kostner Avenue in existing conditions will be shifted east and realigned with Kolin Avenue due to the campus development.

3.4 Project Phasing and Estimated Time Schedule

The construction of the campus will have one phase with estimated groundbreaking in November 2020 and completion in December 2022.

3.5 On-site Parking Facility

The current site plan offers 380 off-street parking spaces for the training facility.

However, the City has advised that there are potential options for additional off-street parking to assist in accommodating the end users for this facility.

1. The City has developed a phased master plan for the neighbor which considers additional scope being added to the current planned JPSTC Development. In Phase III of their four phases plan the City is considering the purchase of property directly to the south of the JPSTC site located on the east side of N. Kilbourn Avenue. The intent is that this property will be used for additional parking. This addition would help to address any shortfall in onsite parking.
2. The City has evaluated the possibility of converting the paved portion of the City owned transfer station, southwest of the project site (also on N. Kilbourn Ave), into overflow JPSTC dedicated parking. In the initial concept this potential lot could accommodate an additional +290 parking space.

4. Future (2022) Traffic

Future (2022) traffic volumes within the study area include the background traffic growth due to regional population or employment changes, and generated traffic volumes from proposed site development. This study has not considered other potential development sites and/or projects within the study area.

4.1 Background Traffic Growth

Chicago Metropolitan Agency for Planning (CMAP) provided 2050 ADT projections for the study area. CMAP developed traffic projections for 2050 using existing traffic volumes and the results from the October 2019 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. **Appendix G** shows the detailed growth rate information provided by CMAP.

Based on the information from CMAP a total growth rate of 1% was derived and applied to existing (2020) traffic volumes at all study intersections to estimate future (2022) background traffic volumes due to regional developments.

4.2 Trip Generation and Modal Split

For the JPSTC training building, the city estimated a maximum of 910 attendees would arriving or departing the campus within following timetable:

1. CPD
   a. AM: 0600-0700 hrs
   b. PM: 1530-1630 hrs
   c. Assume 65% of 910 total attendees
2. CFD
   a. AM: 0600-0700 hrs
   b. PM: 1500-1600 hrs
   c. Assume 35% of 910 total attendees

Since this incoming traffic is outside of the observed AM peak hour of the surrounding street network (7:15 am and 8:15 am), these morning trips are not considered as part of this traffic analysis.

Since part of this departing traffic falls within the PM peak hour (3:45 pm to 4:45 pm) of surrounding street networks, these trips are included as part of the PM peak analysis as per following:

- Due to the location of this facility within the neighborhood, it is assumed that 80% of the attendees arrive/leave by driving alone and the remaining 20% use other modes such as public transport, walking, biking or carpooling. This converts to 728 car trips.
- CPD: conservatively, all 65% assumed travelling during the observed PM peak hour '3:45 to 4:45PM'
- CFD: only a quarter of the 35% assumed traveling during the observed PM peak '3:45 - 4:45PM'
- JPSTC - total 65% + 9% = 74% added on '3:45 - 4:45PM'
- 74% of 728 cars = 539 cars are added on the street network for '3:45 - 4:45PM'

The generated vehicle trips from the two restaurants are estimated based on trip generation rates contained in the Trip Generation Manual, 10th Edition, published by the Institute of Transportation Engineers (ITE). **Table 2** summarizes the estimated entering and exiting trips during the AM and PM peak hour.

Table 2. Estimated Site-Generated Traffic Volumes

ITE Code	ITE Category	Quantity	AM			PM		
			Total	In	Out	Total	In	Out
Restaurants								
930	Fast Casual Restaurant (Culver's)	7,000 square foot	14	9	5	99	54	45
932	High-Turnover (Sit-Down) Restaurant (Peaches)	9,000 square foot	89	49	40	Restaurant is expected to close at 3PM.		
		Subtotal	**103**	**58**	**45**	**99**	**54**	**45**
JPSTC Training Facility			0	0	0	539	0	539[a]
		Total	**103**	**58**	**45**	**638**	**54**	**584**

Note:
a. 74% of 80% of 911 attendees who will leave by cars during PM peak hour (911*80%*74% = 539).

4.3 Trip Distribution

The restaurant generated trips are assigned to the traffic network based on the existing traffic patterns at adjacent intersections. However, the training facility trips have a different distribution from the restaurants as the training building serves as a major attraction for the work-based trips in the region. It is assumed that 50% of the trips will use I-290 to access the site via Kilbourn Avenue, and 50% of trips use Chicago Avenue. At a high level, the trips from I-290 capture trips which typically originate from the south and west while Chicago Avenue captures trips originating from the north and east; **Figure 7** and **Figure 8** shows the directional distribution of trips generated from the restaurants and the JPSTC training building, respectively. **Figure 9** shows the assignment of site-generated trips.

4.4 Total Future (2022) Traffic Volumes

Total future (2022) traffic volumes within the study area include the background traffic growth due to regional population or employment changes and generated traffic volumes from proposed site development. **Figure 10** shows total future (2022) projected traffic volumes.

Please note the decision to model the AM peak period from 7:15-8:15 AM (considered as 7 AM – 8 AM from IDOT TCDS) versus 6:00-7:00 AM which would coincide with the CPD/CFD break was based on historical count data from Illinois' Traffic Count Database System 2018 counts. The existing traffic volumes along Chicago Avenue from 6:00-7:00 AM are significantly lower than 7:00-8:00 AM. So much so that the existing 6:00-7:00 AM count volumes and CPD/CFD traffic combined is less than the 7:00-8:00 volumes. Please see **Table 3** for comparison of two peak hours during the morning peak period.

Table 3 Morning peak hour selection

Hour	Direction (Chicago Avenue)	Existing Traffic (IDOT TCDS)	JPSTC Training Facility	Restaurants	Total
6:00-7:00[4]	EB	575	182[5]	0[6]	757
	WB	355	182	0	537
7:00-8:00[7]	EB	1,109	0	35[8]	1137
	WB	594	0	20[9]	607

This table illustrates that the greatest burden on the street network is realized at a later time period than the CPD/CFD AM peak.

[4] Volumes from https://idot.ms2soft.com/tcds/tsearch.asp?loc=Idot&mod=
[5] 728 cars (80% of 911 attendees) X 25% on each of eastbound and westbound Chicago Avenue
[6] Restaurants are not expected to attract additional significant (other than pass by/destine) traffic during 6AM to 7AM.
[7] Volumes from https://idot.ms2soft.com/tcds/tsearch.asp?loc=Idot&mod=
[8] Eastbound on Chicago Avenue between N Kilbourne West and N Kostner Ave
[9] Westbound on Chicago Avenue between N Kilbourne East and N Kostner Ave

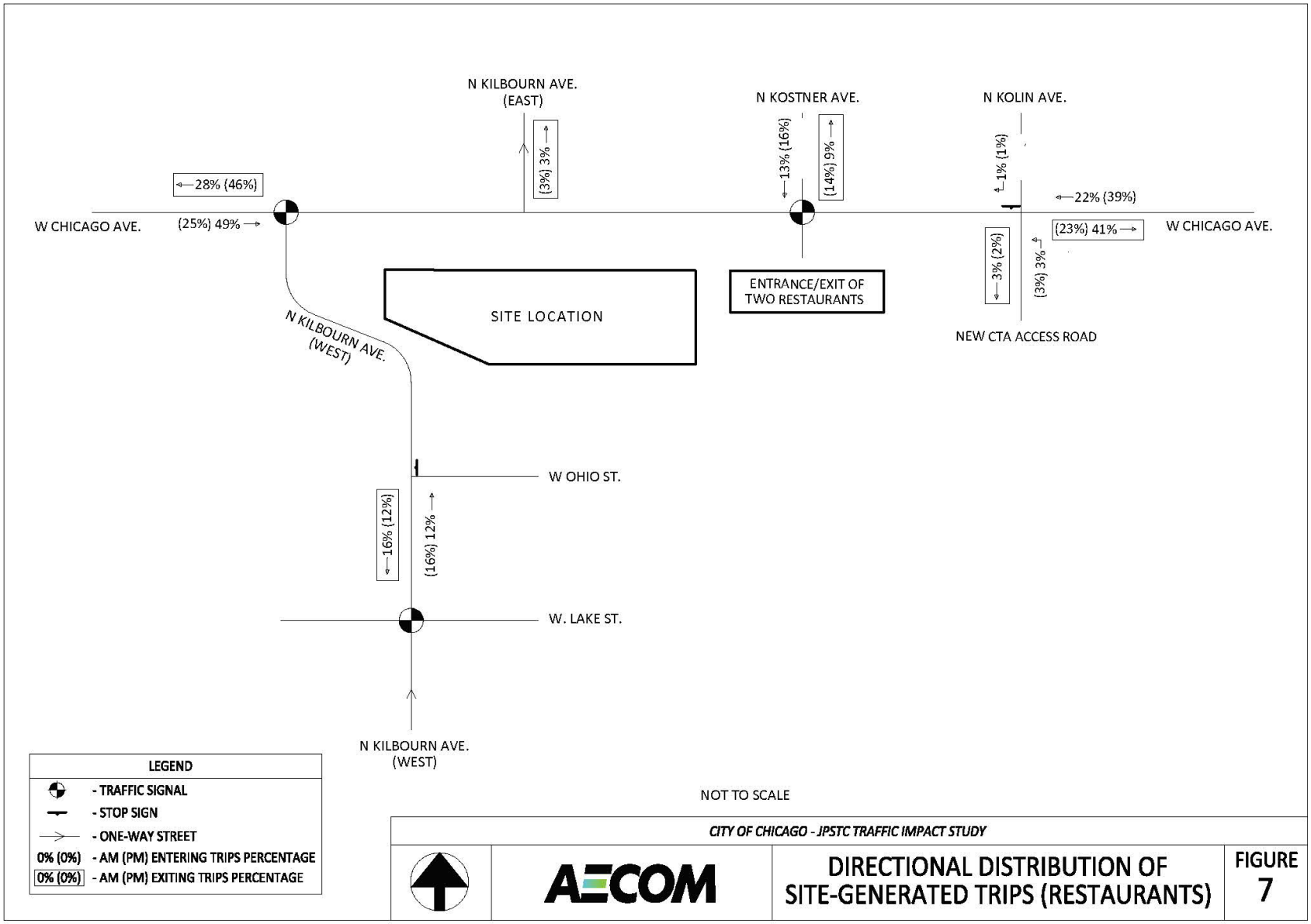


Figure 7: Directional Distribution of Site-Generated Trips (Restaurants)

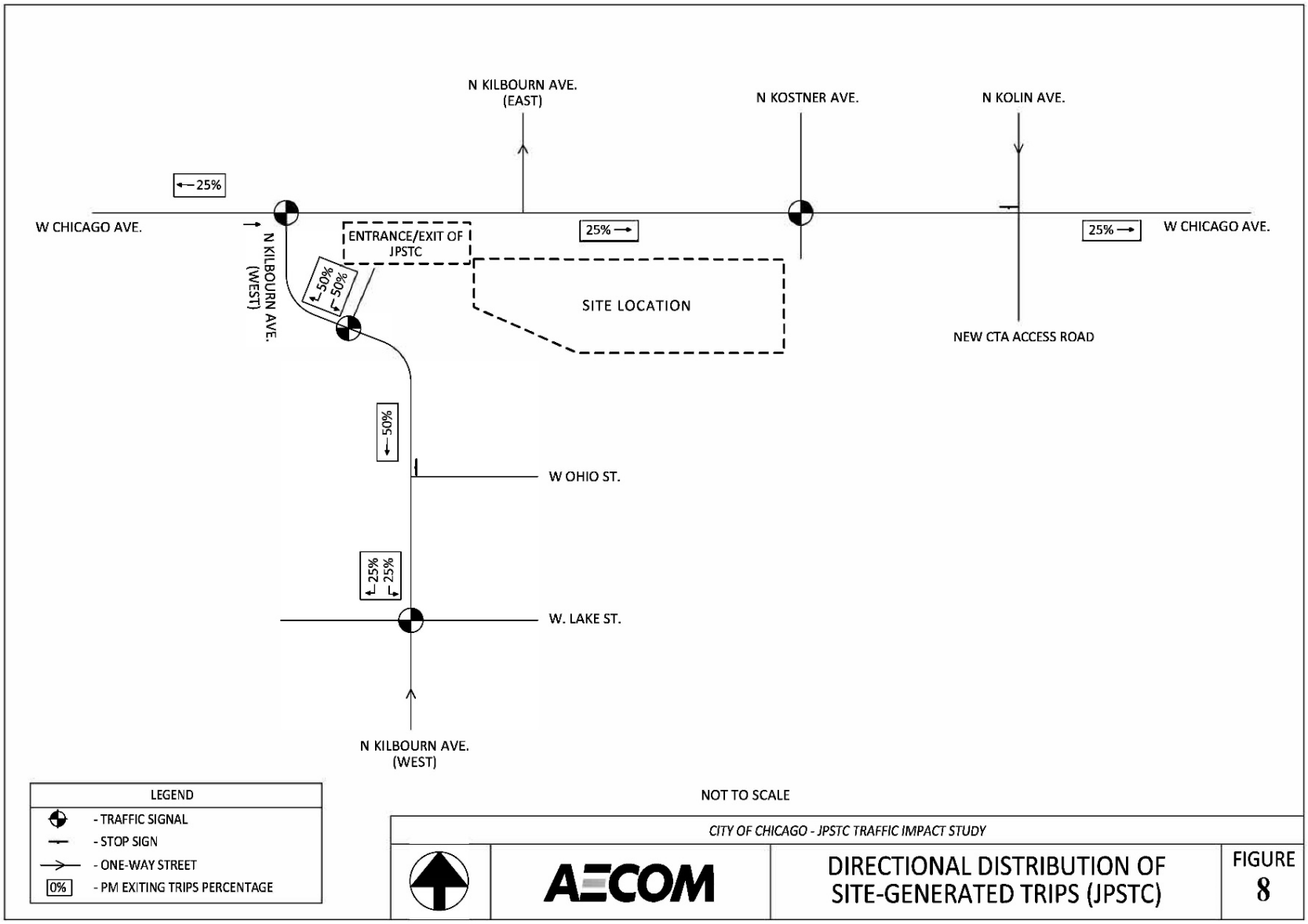


Figure 8: Directional Distribution of Site-Generated Trips (Training Building)

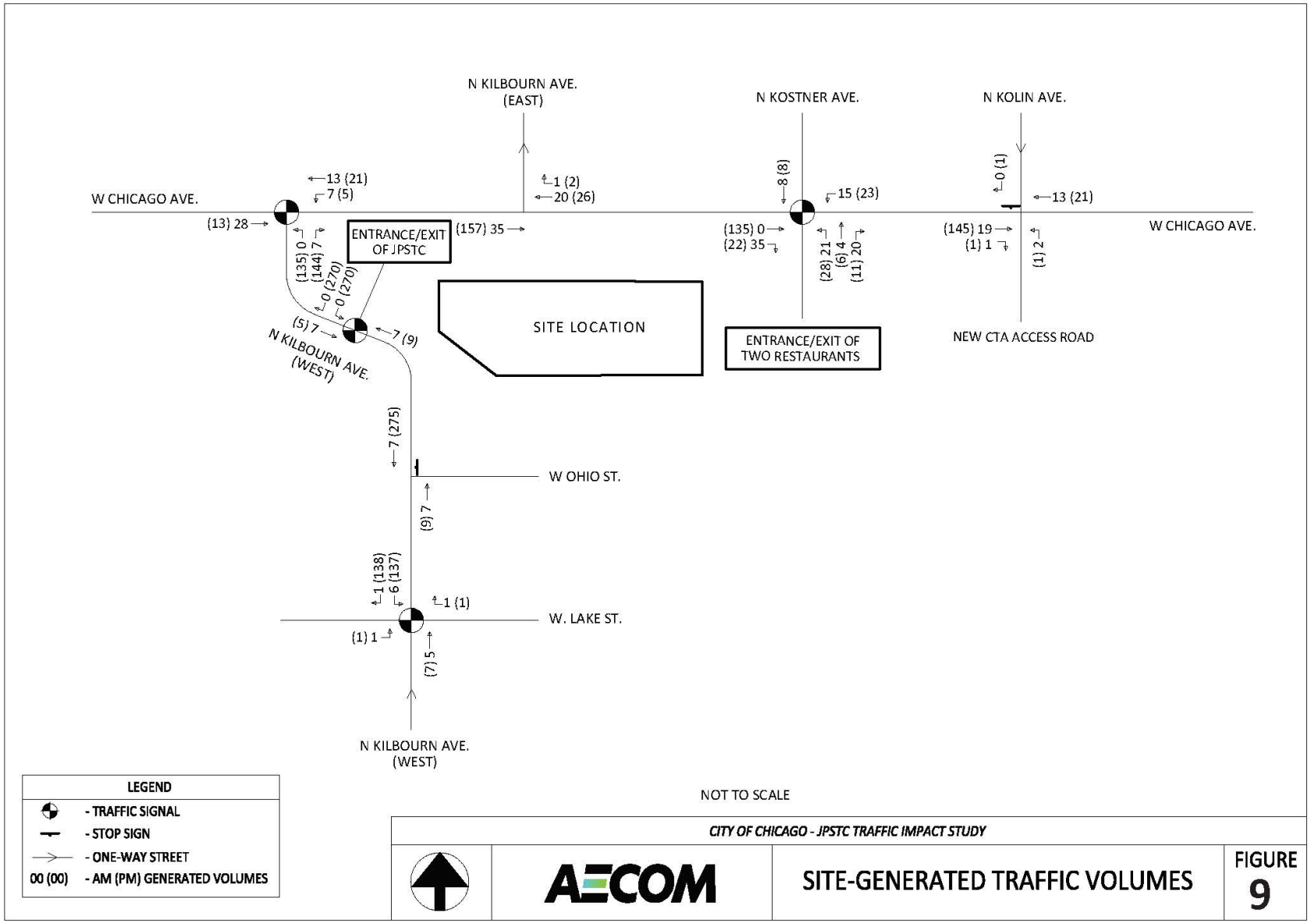


Figure 9: Site-Generated Traffic Volumes

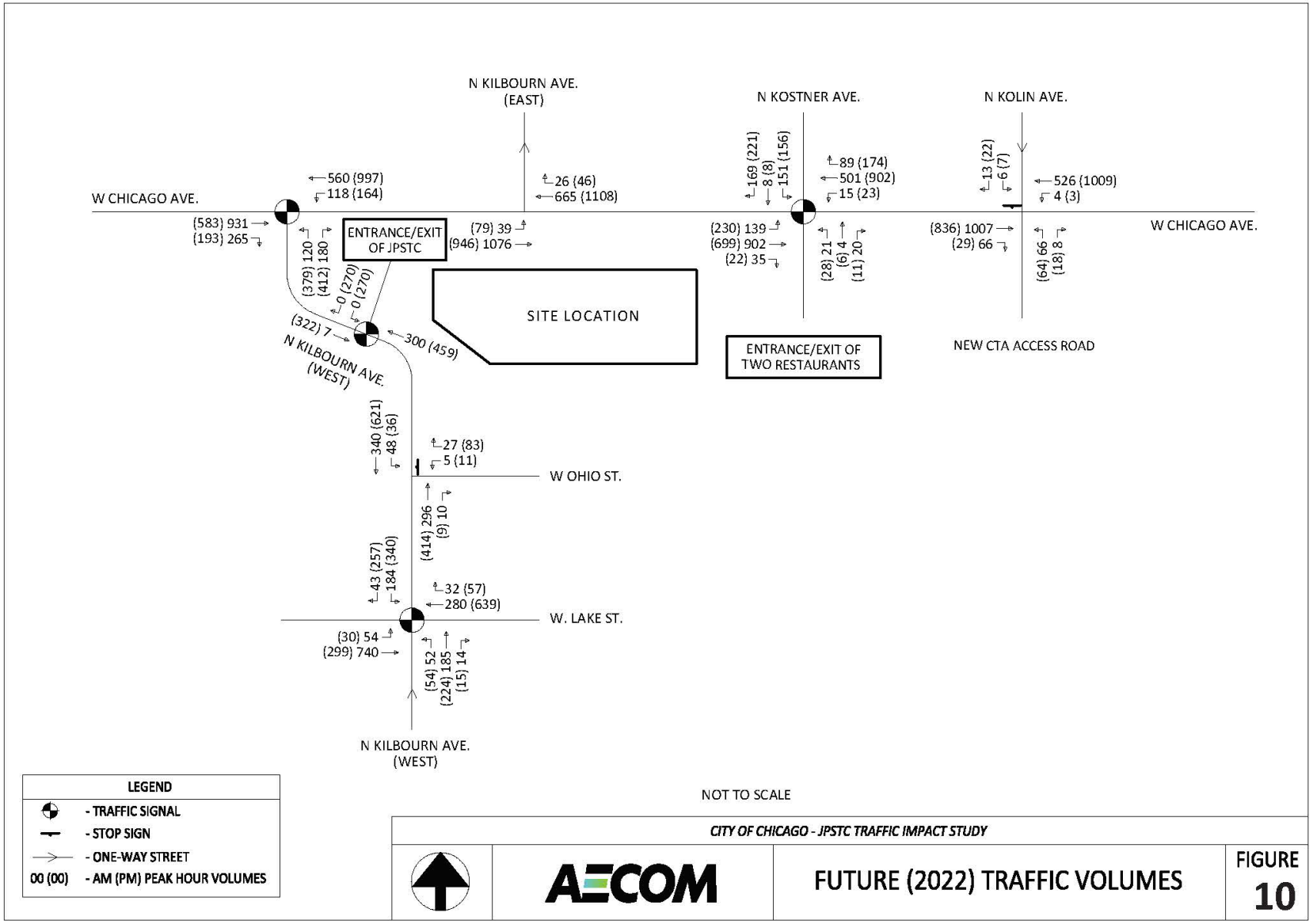


Figure 10: Total Future (2022) Projected Traffic Volumes

5. Traffic Analysis

5.1 Methodology and Level of Service Description

In order to quantify intersection traffic operations at the study area intersections, LOS values were determined using the industry-standard methodology presented in the *Highway Capacity Manual* (6th Edition)[10], published by the Transportation Research Board (TRB). Synchro traffic analysis software (version 11), based on the *Highway Capacity Manual* (6th Edition) methodologies, was used to perform the analysis.

The term "level of service" (LOS) denotes how well (or poorly) a traffic movement operates under given traffic demands, lane configurations, and traffic controls. Each level is determined by the average amount of control delay per vehicle. Control delay is the total delay associated with stopping for a traffic signal or stop sign, and includes four components: deceleration delay, queue move up time, stopped delay, and final acceleration delay.

Table 3 shows the LOS criteria for signalized and unsignalized intersections per HCM 6th Edition. LOS A indicates small average control delays (less than 10 seconds per vehicle), whereas LOS F indicates intersection failure, resulting in extensive vehicular queues and long delays (over 80 seconds per vehicle at a signalized intersection). For the signalized intersections, the intersection delay represents the average delay of all the vehicles accessing the intersection within one hour. For the two-way stop-controlled intersections, the movement with the highest delay was used to represent the intersection delay.

Table 4. LOS Criteria at Intersections

Level of Service	Signalized Intersections (sec)	Unsignalized Intersections (sec)
A	<10	<10
B	10 – 20	10 – 15
C	20 – 35	15 – 25
D	35 – 55	25 – 35
E	55 – 80	35 – 50
F	>80	>50

Source: HCM 6th Edition

Existing signal timing at signalized intersections were provided by CDOT and used in Synchro models for this traffic analysis. **Appendix C** shows the existing signal timing plans from CDOT.

5.2 Existing and Future Capacity Analyses

Table 4 shows the intersection delay and LOS during the AM and PM peak hours for existing (2020) and future (2022) conditions. A summary of the intersection delay and LOS results by individual movements for each of the study intersections in the existing and future conditions are presented in **Table 5** to **Table 9**. Detailed Synchro outputs are documented in **Appendix D**.

[10] Wherever HCS 6th edition results are not possible (such as Non-NEMA Phasing), Synchro results have been provided.

Table 5. Intersection Delay and LOS Results by Movement #1 - N Kilbourne Ave (West) & Chicago Ave

			Total	Eastbound			Westbound		Northbound	
		Signalized		Chicago Ave			Chicago Ave		N Kilbourne Ave (West)	
					T	R	L	T	L	R
AM Peak Hour	SC1_Existing 2020	Delay (s/veh)	**37**	-	70.8	10.6	18.3	8.5	31	7.1
		LOS	D	-	E	B	B	A	C	A
	SC2_No Build 2022	Delay (s/veh)	**25.4**	-	44.8	8.4	17.6	6	36.9	8.8
		LOS	**C**	-	D	A	B	A	D	A
	SC3_Build 2022	Delay (s/veh)	**33.6**	-	52.6	8.5	19.4	6.6	36.9	8.8
		LOS	**C**	-	D	A	B	A	D	A
PM Peak hour	SC1_Existing 2020	Delay (s/veh)	**26.4**	-	32.9	12	12.4	29.9	38.6	6.9
		LOS	**C**	-	C	B	B	C	D	A
	SC2_No Build 2022	Delay (s/veh)	**26.7**	-	33.5	12.1	12.4	30.2	38.8	7
		LOS	**C**	-	C	B	B	C	D	A
	SC3_Build 2022	Delay (s/veh)	**33.6**	-	42	13.5	16.6	41	42.3	12.2
		LOS	**C**	-	D	B	B	D	D	B

LOS = Level of Service

Table 6. Intersection Delay and LOS Results by Movement #3 - N Kostner Ave & Chicago Ave

			Total	Eastbound		Westbound		Northbound		Southbound	
		Signalized		Chicago Ave		Chicago Ave		N Kostner Ave		N Kostner Ave	
				L	TT/R	L	TT/R	L	T/R	L/T	R
AM Peak Hour	SC1_Existing 2020	Delay (s/veh)	**17.5**	16.9	20.5	12.5	14.4	22.3	16	24.5	4.8
		LOS	**B**	B	C	B	B	C	B	C	A
	SC2_No Build 2022	Delay (s/veh)	**17.2**	16.3	19.9	12.5	14.4	22.3	16	24.6	4.7
		LOS	**B**	B	B	B	B	C	B	C	A
	SC3_Build 2022	Delay (s/veh)	**17.4**	16.4	20.1	13.6	14.9	20.8	10	25.6	4.7
		LOS	**B**	B	C	B	B	C	A	C	A
PM Peak hour	SC1_Existing 2020	Delay (s/veh)	**16.3**	39.4	8.1	9.7	15	24.5	17.9	31.9	6.9
		LOS	**B**	D	A	A	B	C	B	C	A
	SC2_No Build 2022	Delay (s/veh)	**16.6**	41.4	8.2	9.7	15.1	24.5	17.9	32	7.2
		LOS	**B**	D	A	A	B	C	B	C	A
	SC3_Build 2022	Delay (s/veh)	**17.3**	49.5	8.8	10.6	15.7	24.5	14.6	32	7.7
		LOS	**B**	D	A	B	B	C	B	C	A

Table 7. Intersection Delay and LOS Results by Movement #4 – N Kolin Ave/CTA Drive & Chicago Ave (TWSC)

			Total	Eastbound			Westbound			Northbound		Southbound		
		TWSC[11]		Chicago Ave			Chicago Ave			CTA Drive		N Kolin Ave		
				L	TT/R		L/T	T		L	R	L/T/R		
AM Peak Hour	SC1_Existing 2020	LOS	B	0	0	-	0	0	-	Movements not available during Ex/No-Build.	-	B	-	-
		Delay (s/veh)	14	0	0	-	0	0	-		-	14	-	-
	SC2_No Build 2022	LOS	B	0	0	-	0	0	-		-	B	-	-
		Delay (s/veh)	14.1	0	0	-	0	0	-		-	14.1	-	-
	SC3_Build 2022	LOS	F	0	0	-	B	0	-	F	-	C	-	-
		Delay (s/veh)	**94.8**	0	0	-	10	0	-	94.8	-	16	-	-
PM Peak hour	SC1_Existing 2020	LOS	C	0	0	-	0	0	-	Movements not available during Ex/No-Build.	-	C	-	-
		Delay (s/veh)	18.7	0	0	-	0	0	-		-	18.7	-	-
	SC2_No Build 2022	LOS	C	0	0	-	0	0	-		-	C	-	-
		Delay (s/veh)	18.8	0	0	-	0	0	-		-	18.8	-	-
	SC3_Build 2022	LOS	F	0	0	-	A	0	-	F	-	C	-	-
		Delay (s/veh)	**105.1**	0	0	-	10	0	-	105.1	-	24.2	-	-

[11] For unsignalized intersection, movement with highest delay is shown to represent the intersection delay for two-way stop-controlled intersection.

Table 8. Intersection Delay and LOS Results by Movement #5 - N Kilbourne Ave & W Ohio St (AWSC)

			Westbound			Northbound			Southbound		
		AWSC[12]	W Ohio St			N Kilbourne Ave			N Kilbourne Ave		
			L/T			T/R			L/T		
AM Peak Hour	SC1_Existing 2020	LOS	A	-	-	B	-	-	B	-	-
		Delay (s/veh)	8.6	-	-	11.3	-	-	13.1	-	-
	SC2_No Build 2022	LOS	A	-	-	B	-	-	B	-	-
		Delay (s/veh)	8.6	-	-	11.4	-	-	13.2	-	-
	SC3_Build 2022	LOS	A	-	-	B	-	-	B	-	-
		Delay (s/veh)	8.7	-	-	11.6	-	-	13.5	-	-
PM Peak hour	SC1_Existing 2020	LOS	A	-	-	B	-	-	B	-	-
		Delay (s/veh)	9.6	-	-	15	-	-	14.5	-	-
	SC2_No Build 2022	LOS	A	-	-	C	-	-	B	-	-
		Delay (s/veh)	9.7	-	-	15.2	-	-	14.7	-	-
	SC3_Build 2022	LOS	B	-	-	C	-	-	F[13]	-	-
		Delay (s/veh)	10.8	-	-	18.7	-	-	61.6	-	-

[12] For unsignalized intersection, movement with highest delay is shown to represent the intersection delay for two-way stop-controlled intersection.

[13] This intersection is recommended to be converted to Two-Way Stop Controlled 'TWSC' and delay for TWSC on westbound (Ohio St) is LOS B with 12 Seconds delay and LOS C with 15 Seconds delay for AM peak hour and PM peak hour respectively for Build 2022 condition. The delay on Northbound and Southbound (N Kilbourne Ave) for TWSC is 0 second.

Table 9. Intersection Delay and LOS Results by Movement #6 - N Kilbourne Ave & W Lake St

			Total	Eastbound	Westbound	Northbound		Southbound	
		Signalized		W Lake St	W Lake St	N Kilbourne Ave		N Kilbourne Ave	
				L/TT	TT/R	L	T/R	L	R
AM Peak Hour	SC1_Existing 2020	Delay (s/veh)	**13.0**	10.6	7.7	14.4	17.6	29.6	4.7
		LOS	**B**	B	A	B	B	C	A
	SC2_No Build 2022	Delay (s/veh)	**13.1**	10.7	7.7	14.3	17.6	30	4.7
		LOS	**B**	B	A	B	B	C	A
	SC3_Build 2022	Delay (s/veh)	**13.4**	10.9	7.8	14.2	17.5	31.1	4.6
		LOS	**B**	B	A	B	B	C	A
PM Peak hour	SC1_Existing 2020	Delay (s/veh)	**12.9**	8.7	9.6	13.9	18	30.3	3.7
		LOS	**B**	A	A	B	B	C	A
	SC2_No Build 2022	Delay (s/veh)	**12.9**	8.7	9.6	13.9	17.9	30.7	3.6
		LOS	**B**	A	A	B	B	C	A
	SC3_Build 2022	Delay (s/veh)	**17.7**	11.2	12.5	11.4	14.1	45.3	7.8
		LOS	**B**	B	B	B	B	D	A

5.3 Existing and Future 95% Queues

A summary of the 95th-percentile queue lengths for the study intersections in the existing (2020) and future conditions (2022) are presented in **Table 10** and **Table 11**. Detailed Synchro outputs are documented in **Appendix D**.

Table 10. 95th Percentile Queue Lengths – AM Peak Hour

Intersection	Scenario	95th Percentile Queue by Movement (Feet)[a]											
		Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
W Chicago Avenue and N Kilbourn Avenue (West) - Signalized	Ex AM	-	814	116	77	211	-	111	-	51	-	-	-
	Future AM	-	815	102	85	171	-	119	-	56	-	-	-
W Chicago Avenue and N Kostner Avenue - Signalized	Ex AM	67	230	230	7	130	130	45	27	27	119	119	42
	Future AM	65	256	256	16	148	148	26	19	19	128	128	43
W Chicago Avenue and N Kolin Avenue – Unsignalized (TWSC)	Ex AM	-	-	-	-	-	-	-	-	-	-	-	3
	Future AM	-	0	0	0	0	-	57	-	1	-	-	3
N Kilbourn Avenue and W Ohio Street - Unsignalized (AWSC)	Ex AM	-	-	-	3	-	3	-	35	35	53	53	-
	Future AM	-	-	-	3	-	3	-	37	37	55	55	-
N Kilbourn Avenue and W Lake Street - Signalized	Ex AM	185	185	-	-	62	62	31	92	92	109	-	16
	Future AM	188	188	-	-	63	63	32	96	96	116	-	16

Note:

[a]Chicago Ave, Ohio Street and Lake Street are eastbound/westbound. All other roadways are northbound/southbound.

Table 11. 95th Percentile Queue Lengths – PM Peak Hour

Intersection	Scenario	95th Percentile Queue by Movement (Feet)[a]											
		Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
W Chicago Avenue and N Kilbourn Avenue (West) - Signalized	Ex PM	-	455	92	101	685	-	204	-	61	-	-	-
	Future PM	-	502	99	113	793	-	340	-	144	-	-	-
W Chicago Avenue and N Kostner Avenue - Signalized	Ex PM	111	109	109	5	250	250	34	43	43	137	137	60
	Future PM	124	142	142	19	277	277	34	18	18	143	143	66
W Chicago Avenue and N Kolin Avenue – Unsignalized (TWSC)	Ex PM	-	-	-	-	-	-	-	-	-	5	-	5
	Future PM	-	0	0	0	0	-	61	-	1	8	-	8
N Kilbourn Avenue and W Ohio Street – Unsignalized (AWSC)[14]	Ex PM	-	-	-	12	-	12	-	63	63	57	57	-
	Future PM	-	-	-	14	-	14	-	81	81	264	264	-
N Kilbourn Avenue and W Lake Street - Signalized	Ex PM	67	67	-	-	141	141	31	106	106	120	-	26
	Future PM	68	68	-	-	143	143	31	109	109	269	-	76

Note:

[a]Chicago Ave, Ohio Street and Lake Street are eastbound/westbound. All other roadways are northbound/southbound.

[14] This intersection is recommended to be converted to Two-Way Stop Controlled 'TWSC' and 95th percentile queue length for TWSC on westbound (Ohio St) is LOS B with 5 feet and LOS C with 20 feet 95th percentile queue length for AM peak hour and PM peak hour respectively for Build 2022 condition. The delay on Northbound and Southbound (N Kilbourne Ave) for TWSC is 0 second.

5.4 Discussion and Recommendations

W Chicago Avenue and N Kilbourn Avenue (West)

This intersection is operating at a LOS D in existing condition (2020) during the AM peak hour and a LOS C in the PM peak hour with the lowest LOS experienced by the eastbound through (EBT) movement at LOS E during the AM peak hour. The 95th percentile queues along W Chicago Avenue are greatest in the EB direction during the AM peak (approximately 800 feet) and in the WB direction during the PM peak (approximately 700 feet). The long queues are created by reducing the four-lane cross section to a two-lane cross section at this intersection due to the viaduct constraint.

In the 2022 Build condition, this intersection is expected to operate at a LOS C and LOS D in the AM and PM, respectively, with signal timing adjustment. All individual movements operate at a LOS D or better indicating no significant impact from proposed development. However, restriping the westbound approach at N Kilbourne and Chicago Avenue to provide a left turn lane to improve safety for this movement is recommended as part of this study.

This intersection does not have any pedestrian facility and all three legs/corners have pedestrian barricades/railing restricting pedestrian to cross any roadways at this location.

W Chicago Avenue and N Kilbourn Avenue (East) intersection has three legs, but third leg is one-way and hence, no signal or stop sign at this intersection. This intersection has continental crosswalks on all three legs without pedestrian signal heads or crosswalk regulatory signage.

W Chicago Avenue and N Kostner Avenue

This intersection is operating at a LOS B in existing (2020), no-build (2022) and build (2022) conditions during the AM peak hour and a LOS B in the PM peak hour with the lowest LOS experienced by the eastbound left turn (EBL)movement during the AM Peak hour at LOS D. The 95th percentile queues along W Chicago Avenue are moderate in the EB direction during the AM peak (approximately 250 feet) and in the WB direction during the PM peak (approximately 300 feet).

This intersection has continental crosswalks on all four legs with pedestrian signal heads / flashing hand and countdown timer.

W Chicago Avenue and N Kolin Avenue

Due to the realignment of the CTA Access Road, the northbound approach at this intersection is expected to operate a LOS F during the 2022 Build condition. The northbound left turn will experience an average delay of 95 seconds in the AM peak and 105 seconds in the PM peak compared to an existing 25 seconds of delay. Although northbound approach experiences such a high delay, the 95th percentile queues will not be longer than 4 vehicles at this approach. A signal warrant analysis was performed for this intersection to determine if the intersection warrants a traffic signal in 2022. Based on the analysis, the W Chicago Avenue and N Kolin Avenue intersection does not warrant a traffic signal in 2022. That said the implementation of a signal would improve the LOS for this intersection and likely improve on the queue length for the CTA. A decision to place a signal at this intersection should be discussed between CDOT and the CTA.

Appendix E shows the results of signal warrant analysis working sheet.

N Kilbourne Avenue and Ohio Street

All-Way Stop Controlled (AWSC) Intersection on N Kilbourne Avenue at Ohio St and Lake St is operating with LOS C or better in the existing and 2022 no-build conditions, and LOS F for southbound movement during PM peak hour during 2022 build condition with approx. 250 feet queue lengths. Once, development is in place, it is expected to add northbound/southbound traffic on N Kilbourne Avenue and hence, conversion of 'Two-Way Stop Controlled (TWSC)' will improve this intersection to LOS C or better for 2022 build condition. N Kilbourne and Ferdinand St intersection is approx. 650 feet from this studied intersection with AWSC and hence, the same recommendation is extended to Ferdinand St intersection as well.

N Kilbourne and Lake St

The N Kilbourne Avenue at Lake St intersection is operating at LOS D or better for the existing, 2022 no-build and 2022 build conditions with reasonable queue lengths. It has continental marked crosswalks on all four legs with pedestrian signal heads / flashing hand.

It is expected that loading area and service areas located near to the N Kilbourne Avenue entrance will be used during off-peak hours for loading and unloading activities and will not have any negative impact on existing street network. **Appendix F** shows turning movement diagrams with WB-40 (intermediate semi-trailer – 45 feet long) near the entrance and the service area.

The development of JPSTC has marginal traffic impacts on the existing network.

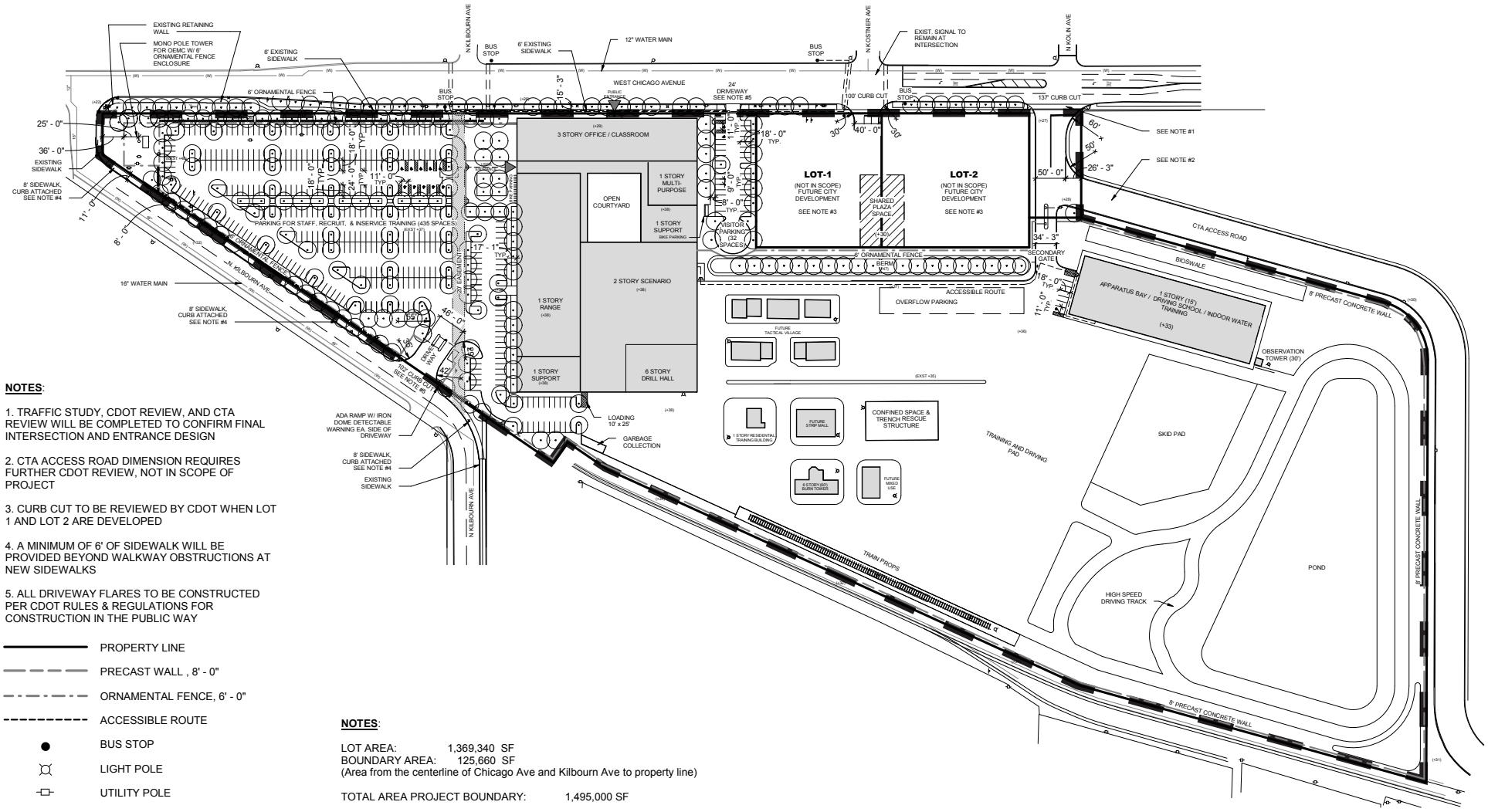
6. Conclusion

The City of Chicago intends to construct a Joint Public Safety Training Campus (JPSTC) at 4301 W Chicago Ave in Chicago, Illinois. The proposed campus contains a main training building and two restaurants. One restaurant is 9,000 square foot with no drive-through service (Peaches). The other restaurant is a 7,000 square foot fast casual restaurant (Culver's) with drive-through service. The construction of the campus will have one phase with estimated groundbreaking in November 2020 and completion in December 2022.

Based on the analyses, the study recommends the following:

- Approval of this traffic study for JPSTC campus development as traffic generated by the proposed development can be accommodated on the surrounding road network with majority of the movements within acceptable level of service.
- Restripe the westbound approach at N Kilbourne and Chicago Avenue to provide a left turn lane to improve the safety of this movement.
- Realigning the Northbound movement of the CTA Access drive to the stop-controlled N Kolin Ave intersection will result in increases in delay. Whereas the signal analysis does not warrant the addition the implementation of a signal would improve the LOS for this intersection and likely improve on the queue length for the CTA. A decision to place a signal at this intersection should be discussed between CDOT and the CTA.
- N Kilbourne and Ohio St intersection (including Ferdinand St) to Two-Way Stop Control (TWSC).
- Provide pedestrian crossing regulatory signage (W11-2) at the pedestrian crossing at W Chicago Avenue and N Kilbourn Avenue (East) to improve pedestrian safety.

Appendix A
Proposed Site Plan



NOTES:

1. TRAFFIC STUDY, CDOT REVIEW, AND CTA REVIEW WILL BE COMPLETED TO CONFIRM FINAL INTERSECTION AND ENTRANCE DESIGN

2. CTA ACCESS ROAD DIMENSION REQUIRES FURTHER CDOT REVIEW, NOT IN SCOPE OF PROJECT

3. CURB CUT TO BE REVIEWED BY CDOT WHEN LOT 1 AND LOT 2 ARE DEVELOPED

4. A MINIMUM OF 6' OF SIDEWALK WILL BE PROVIDED BEYOND WALKWAY OBSTRUCTIONS AT NEW SIDEWALKS

5. ALL DRIVEWAY FLARES TO BE CONSTRUCTED PER CDOT RULES & REGULATIONS FOR CONSTRUCTION IN THE PUBLIC WAY

PROPERTY LINE

PRECAST WALL , 8' - 0"

ORNAMENTAL FENCE, 6' - 0"

ACCESSIBLE ROUTE

BUS STOP

LIGHT POLE

UTILITY POLE

SIGN

FIRE HYDRANT

NOTES:

LOT AREA: 1,369,340 SF
BOUNDARY AREA: 125,660 SF
(Area from the centerline of Chicago Ave and Kilbourn Ave to property line)

TOTAL AREA PROJECT BOUNDARY: 1,495,000 SF

PROPOSED SITE PLAN

NORTH

SCALE 1:250

2FM AECOM

Applicant : Alderman Emma Mitts on behalf of the City of Chicago
Address : 4301 W. Chicago Avenue

Date Filed : 1/23/2019
Plan Commission : 2/21/2019

Appendix B
Traffic Counts

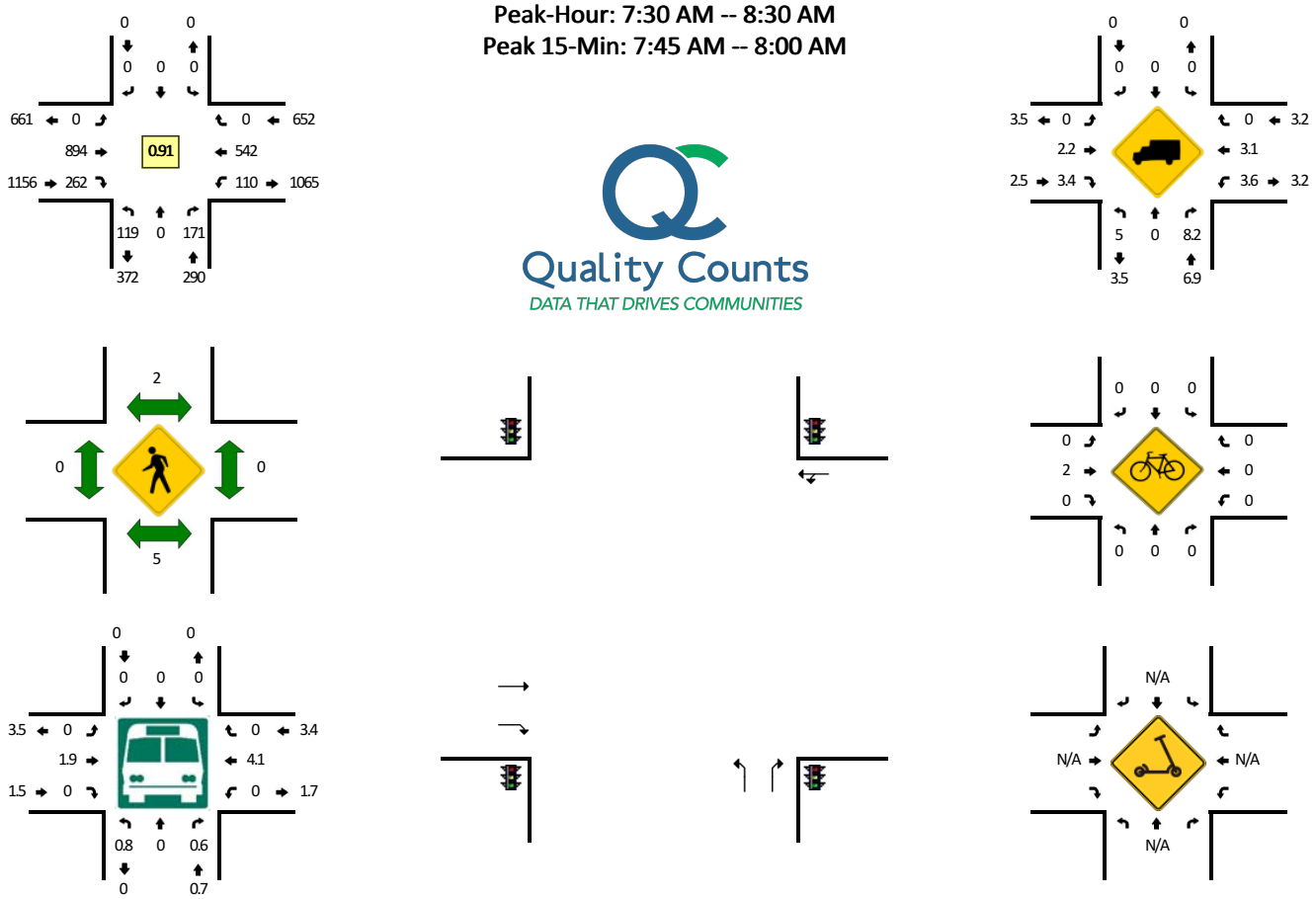
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kilbourne Ave (West) -- W Chicago Ave
CITY/STATE: Chicago, IL

QC JOB #: 15023907
DATE: Tue, Mar 3 2020

Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM



Quality Counts
DATA THAT DRIVES COMMUNITIES

15-Min Count Period Beginning At	N Kilbourne Ave (West) (Northbound)				N Kilbourne Ave (West) (Southbound)				W Chicago Ave (Eastbound)				W Chicago Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	22	0	24	0	0	0	0	0	0	195	34	0	22	86	0	0	383	
7:15 AM	24	0	30	0	0	0	0	0	0	240	59	0	22	112	0	0	487	
7:30 AM	19	0	44	0	0	0	0	0	0	264	61	0	24	132	0	0	544	
7:45 AM	39	0	43	0	0	0	0	0	0	224	77	0	35	158	0	0	576	1990
8:00 AM	32	0	40	0	0	0	0	0	0	187	79	0	29	116	0	0	483	2090
8:15 AM	29	0	44	0	0	0	0	0	0	219	45	0	22	136	0	0	495	2098
8:30 AM	30	0	43	0	0	0	0	0	0	190	46	0	29	129	0	0	467	2021
8:45 AM	24	0	27	0	0	0	0	0	0	204	34	0	18	122	0	0	429	1874

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	156	0	172	0	0	0	0	0	0	896	308	0	140	632	0	0	2304
Heavy Trucks	8	0	12		0	0	0		0	32	4		4	8	0		68
Buses	0	0	4		0	0	0		0	24	0		0	24	0		52
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4
Scooters																	

Comments:

Report generated on 3/6/2020 9:55 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

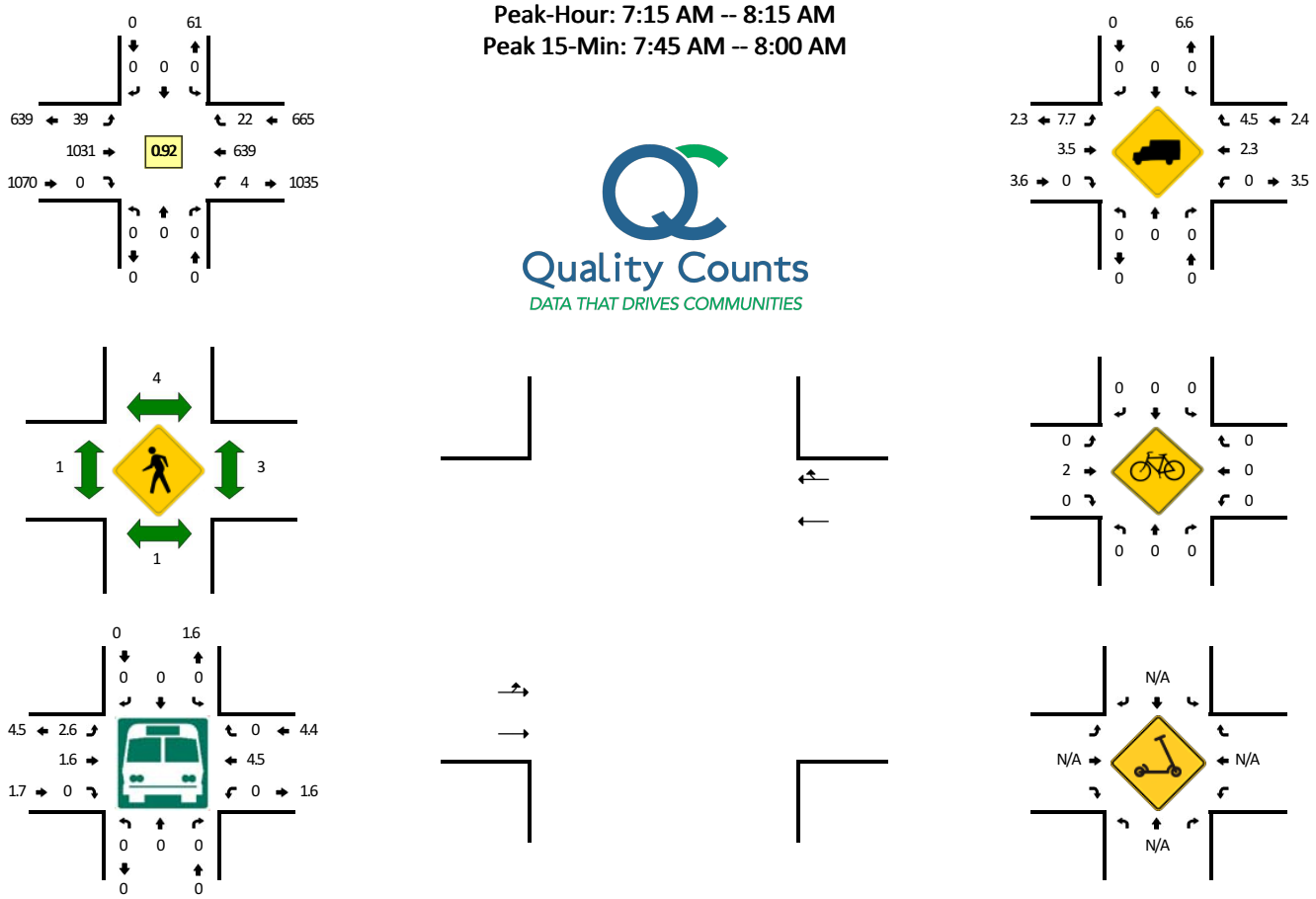
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kilbourne Ave (East) -- W Chicago Ave
CITY/STATE: Chicago, IL

QC JOB #: 15023905
DATE: Tue, Mar 3 2020

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM



Quality Counts
DATA THAT DRIVES COMMUNITIES

15-Min Count Period Beginning At	N Kilbourne Ave (East) (Northbound)				N Kilbourne Ave (East) (Southbound)				W Chicago Ave (Eastbound)				W Chicago Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	12	201	0	0	0	116	6	0	335	
7:15 AM	0	0	0	0	0	0	0	0	5	269	0	0	0	139	4	0	417	
7:30 AM	0	0	0	0	0	0	0	0	14	288	0	0	0	153	8	1	464	
7:45 AM	0	0	0	0	0	0	0	0	13	255	0	0	0	196	4	1	469	1685
8:00 AM	0	0	0	0	0	0	0	0	7	219	0	0	0	151	6	2	385	1735
8:15 AM	0	0	0	0	0	0	0	0	7	247	0	0	0	151	2	0	407	1725
8:30 AM	0	0	0	0	0	0	0	0	10	227	0	0	0	159	5	0	401	1662
8:45 AM	0	0	0	0	0	0	0	0	11	214	0	0	0	135	4	0	364	1557

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	52	1020	0	0	0	784	16	4	1876
Heavy Trucks	0	0	0		0	0	0		0	48	0		0	16	0		64
Buses	0	0	0		0	0	0		0	24	0		0	24	0		48
Pedestrians		4				4				0				0			8
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4
Scooters																	

Comments:

Report generated on 3/6/2020 9:55 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

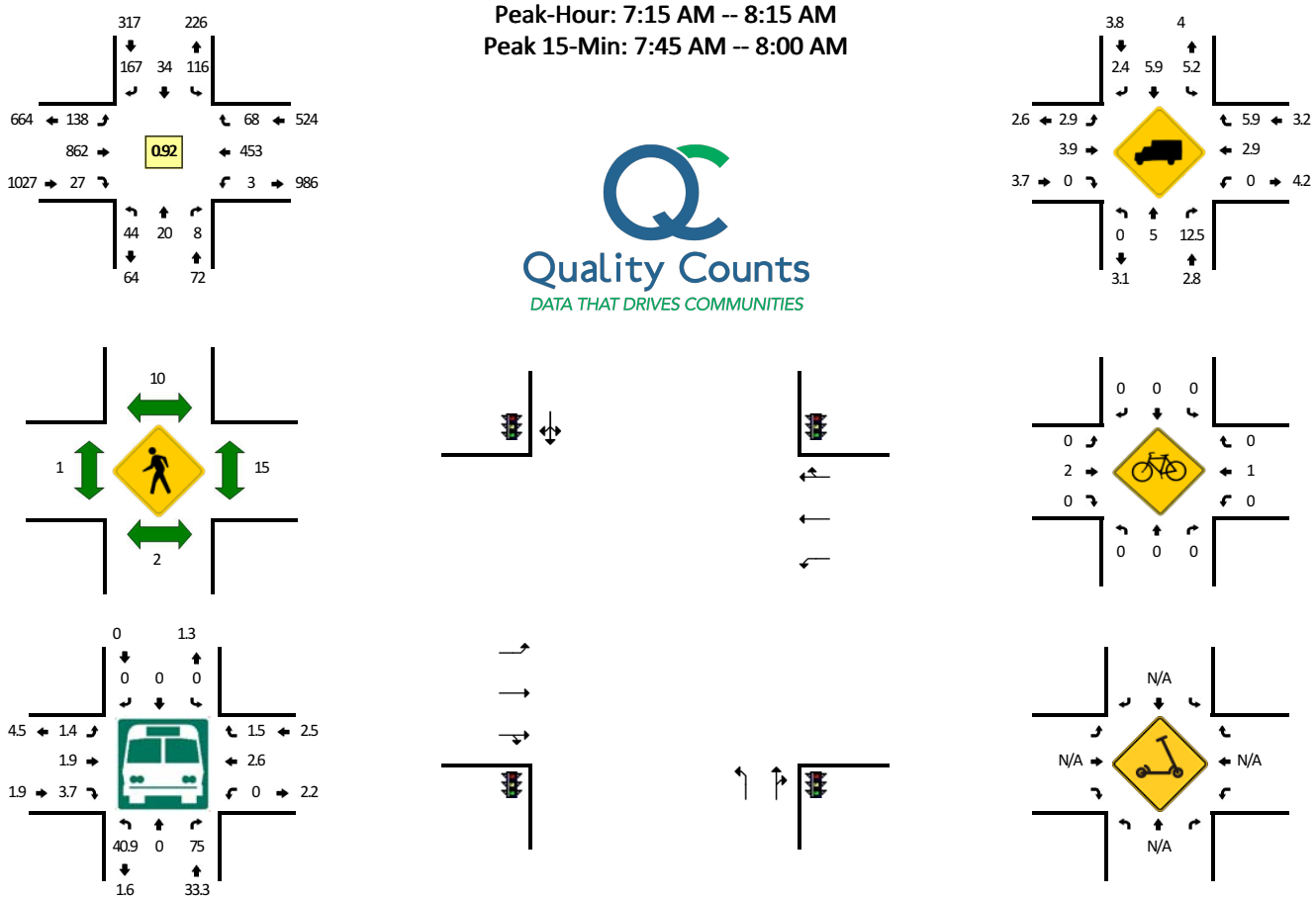
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kostner Ave -- W Chicago Ave
CITY/STATE: Chicago, IL

QC JOB #: 15023903
DATE: Tue, Mar 3 2020

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM



15-Min Count Period Beginning At	N Kostner Ave (Northbound)				N Kostner Ave (Southbound)				W Chicago Ave (Eastbound)				W Chicago Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	11	4	2	0	24	4	29	0	27	158	5	0	0	84	13	0	361	
7:15 AM	11	4	5	0	34	4	32	0	38	237	2	0	2	99	19	0	487	
7:30 AM	10	6	0	0	27	7	40	0	37	236	10	0	0	110	16	0	499	
7:45 AM	17	6	0	0	30	15	52	0	34	208	10	0	1	133	19	0	525	1872
8:00 AM	6	4	3	0	25	8	43	0	29	181	5	0	0	111	14	0	429	1940
8:15 AM	6	5	0	0	35	6	29	0	42	195	4	0	1	114	19	0	456	1909
8:30 AM	1	2	1	0	30	5	47	0	45	182	3	0	0	122	20	0	458	1868
8:45 AM	7	3	0	0	39	5	29	0	30	188	2	0	0	106	21	0	430	1773

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	68	24	0	0	120	60	208	0	136	832	40	0	4	532	76	0	2100
Heavy Trucks	0	0	0		8	4	4		0	44	0		0	16	8		84
Buses	12	0	0		0	0	0		0	28	4		0	8	0		52
Pedestrians		4				32				4				28			68
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/6/2020 9:55 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

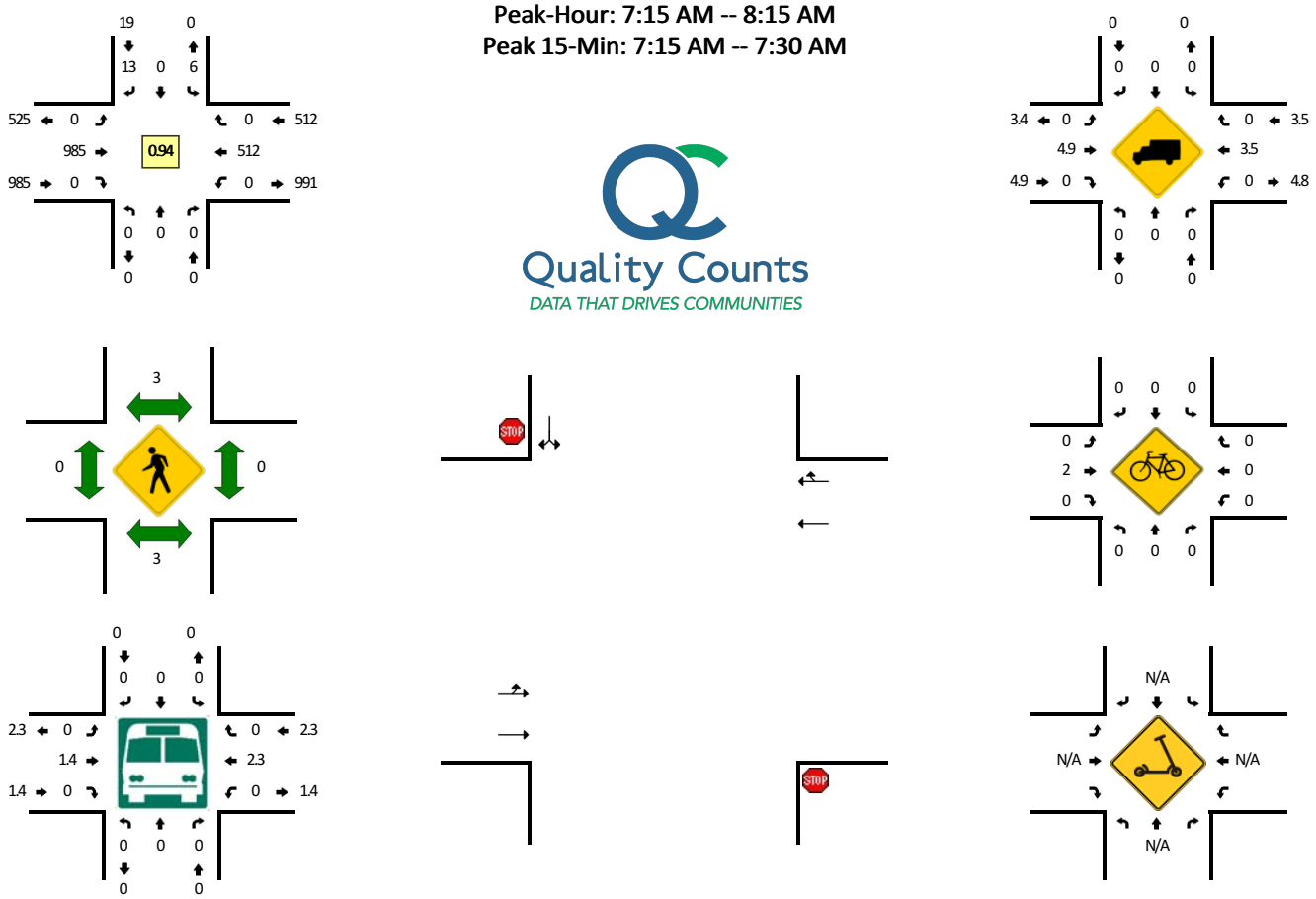
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kolin Ave -- W Chicago Ave
CITY/STATE: Chicago, IL

QC JOB #: 15023901
DATE: Tue, Mar 3 2020

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:15 AM -- 7:30 AM



15-Min Count Period Beginning At	N Kolin Ave (Northbound)				N Kolin Ave (Southbound)				W Chicago Ave (Eastbound)				W Chicago Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	6	0	2	0	0	88	0	0	0	61	0	0	157	
6:15 AM	0	0	0	0	1	0	0	0	0	101	0	0	0	85	0	0	187	
6:30 AM	0	0	0	0	2	0	2	0	0	120	0	0	0	124	0	0	248	
6:45 AM	0	0	0	0	2	0	0	0	0	172	0	0	0	108	0	0	282	874
7:00 AM	0	0	0	0	2	0	1	0	0	179	0	1	0	95	0	0	278	995
7:15 AM	0	0	0	0	1	0	4	0	0	277	0	0	0	120	0	0	402	1210
7:30 AM	0	0	0	0	1	0	2	0	0	264	0	0	0	121	0	0	388	1350
7:45 AM	0	0	0	0	3	0	3	0	0	236	0	0	0	156	0	0	398	1466
8:00 AM	0	0	0	0	1	0	4	0	0	208	0	0	0	115	0	0	328	1516
8:15 AM	0	0	0	0	7	0	4	0	0	235	0	0	0	140	0	0	386	1500
8:30 AM	0	0	0	0	0	0	2	0	0	216	0	0	0	130	0	0	348	1460
8:45 AM	0	0	0	0	1	0	1	0	0	225	0	0	0	128	0	0	355	1417

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	16	0	0	1108	0	0	0	480	0	0	1608
Heavy Trucks	0	0	0		0	0	0		0	28	0		0	16	0		44
Buses	0	0	0		0	0	0		0	28	0		0	12	0		40
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/6/2020 9:55 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

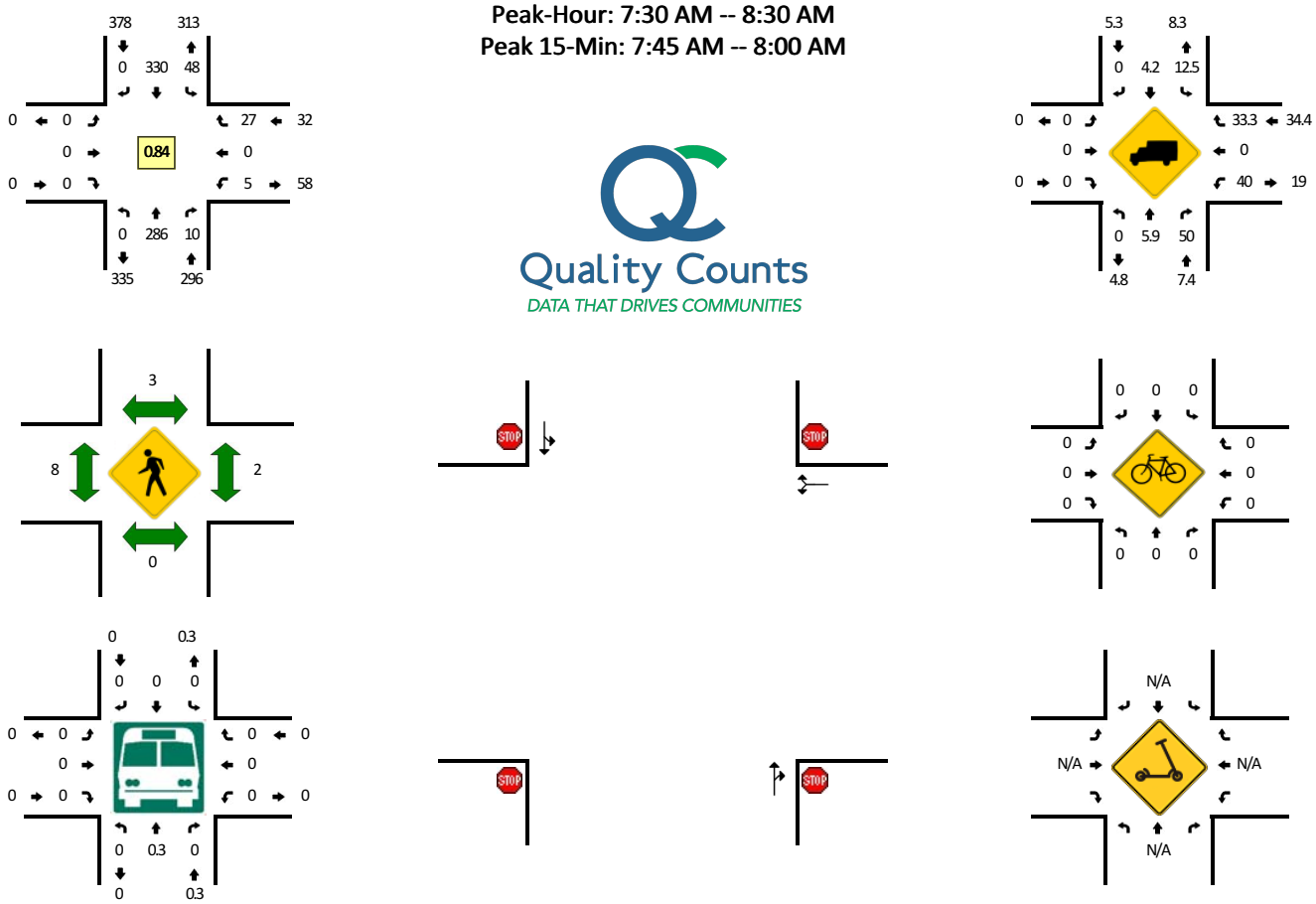
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kilbourn Ave -- W Ohio St
CITY/STATE: Chicago, IL

QC JOB #: 15023909
DATE: Tue, Mar 3 2020

Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM



Quality Counts
DATA THAT DRIVES COMMUNITIES

15-Min Count Period Beginning At	N Kilbourn Ave (Northbound)				N Kilbourn Ave (Southbound)				W Ohio St (Eastbound)				W Ohio St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	45	6	0	8	49	0	0	0	0	0	0	1	0	7	1	117	
7:15 AM	0	44	2	0	7	66	0	0	0	0	0	0	0	0	5	0	124	
7:30 AM	0	65	3	0	9	79	0	0	0	0	0	0	1	0	7	0	164	
7:45 AM	0	84	3	0	16	101	0	0	0	0	0	0	1	0	5	0	210	615
8:00 AM	0	61	0	0	12	93	0	0	0	0	0	0	1	0	9	0	176	674
8:15 AM	0	76	4	0	11	57	0	0	0	0	0	0	2	0	6	0	156	706
8:30 AM	0	71	2	0	11	60	0	0	0	0	0	0	4	0	4	0	152	694
8:45 AM	0	52	4	0	8	58	0	0	0	0	0	0	3	0	2	0	127	611

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	336	12	0	64	404	0	0	0	0	0	0	4	0	20	0	840
Heavy Trucks	0	12	8		4	8	0		0	0	0		0	0	8		40
Buses	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/6/2020 9:55 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

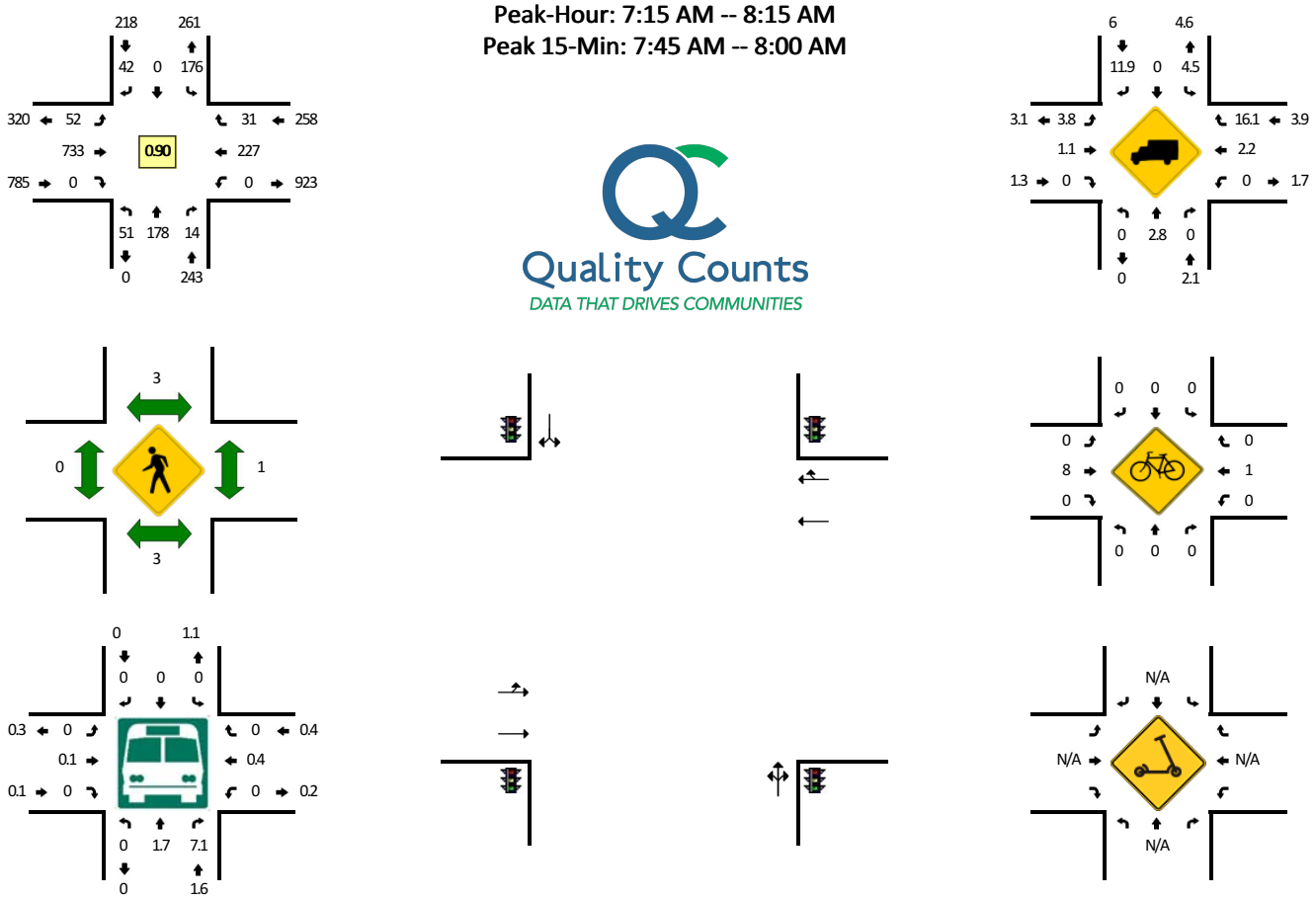
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kilbourn Ave -- W Lake St
CITY/STATE: Chicago, IL

QC JOB #: 15023911
DATE: Tue, Mar 3 2020

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM



Quality Counts
DATA THAT DRIVES COMMUNITIES

15-Min Count Period Beginning At	N Kilbourn Ave (Northbound)				N Kilbourn Ave (Southbound)				W Lake St (Eastbound)				W Lake St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	5	36	2	0	20	0	10	0	15	116	0	0	0	33	7	0	244	
7:15 AM	14	30	0	0	36	0	7	0	13	163	0	0	0	60	3	0	326	
7:30 AM	14	44	4	0	40	0	10	0	12	193	0	0	0	50	12	0	379	
7:45 AM	17	59	4	0	54	0	12	0	15	184	0	0	0	60	11	0	416	1365
8:00 AM	6	45	6	0	46	0	13	0	12	193	0	0	0	57	5	0	383	1504
8:15 AM	7	51	5	0	34	0	8	0	11	131	0	0	0	48	8	0	303	1481
8:30 AM	10	49	1	0	40	0	10	0	8	124	0	0	0	45	5	0	292	1394
8:45 AM	10	35	4	0	33	0	5	0	15	132	0	0	0	50	6	0	290	1268

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	68	236	16	0	216	0	48	0	60	736	0	0	0	240	44	0	1664
Heavy Trucks	0	0	0		4	0	0		4	4	0		0	0	0		12
Buses	0	8	4		0	0	0		0	4	0		0	0	0		16
Pedestrians		4				4				0				0			8
Bicycles	0	0	0		0	0	0		0	20	0		0	0	0		20
Scooters																	

Comments:

Report generated on 3/6/2020 9:55 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

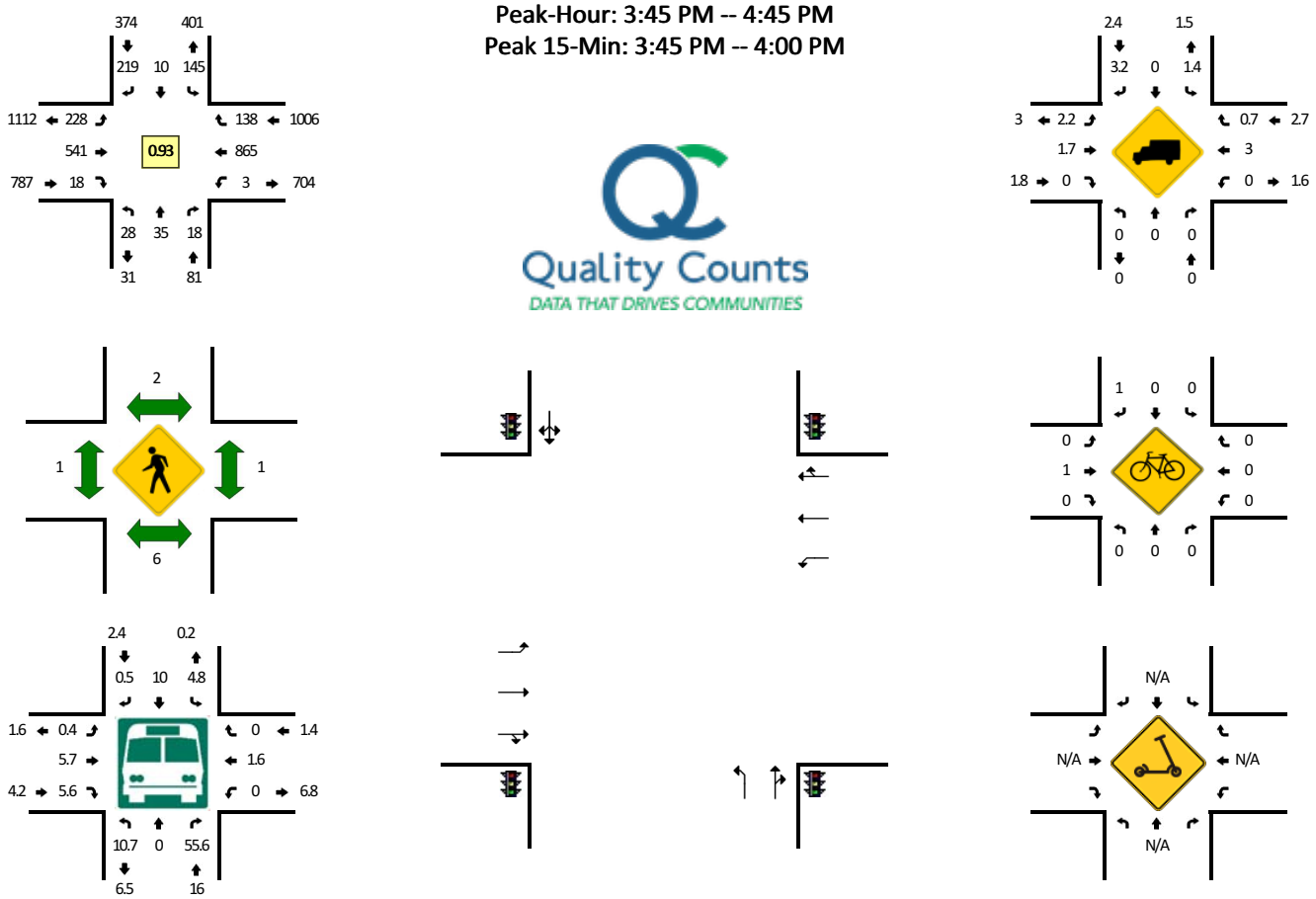
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kostner Ave -- W Chicago Ave
CITY/STATE: Chicago, IL

QC JOB #: 15023904
DATE: Tue, Mar 3 2020

Peak-Hour: 3:45 PM -- 4:45 PM
Peak 15-Min: 3:45 PM -- 4:00 PM



15-Min Count Period Beginning At	N Kostner Ave (Northbound)				N Kostner Ave (Southbound)				W Chicago Ave (Eastbound)				W Chicago Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	16	9	4	0	28	3	42	0	39	112	2	0	0	148	30	0	433	
3:15 PM	7	7	4	0	37	3	53	0	40	126	1	0	0	173	26	0	477	
3:30 PM	13	16	4	0	42	10	66	0	58	125	5	0	2	188	30	0	559	
3:45 PM	8	11	7	0	33	2	55	0	65	144	4	0	2	226	47	0	604	2073
4:00 PM	11	3	7	0	41	3	54	0	60	132	5	0	0	191	33	0	540	2180
4:15 PM	2	7	4	0	29	1	47	0	54	131	3	0	1	209	22	0	510	2213
4:30 PM	7	14	0	0	42	4	63	0	49	134	6	0	0	239	36	0	594	2248
4:45 PM	6	8	4	0	35	7	58	0	47	93	1	0	1	215	46	0	521	2165
5:00 PM	5	10	0	0	21	3	63	0	49	120	5	0	1	228	41	0	546	2171
5:15 PM	6	10	0	0	37	11	72	0	41	124	2	0	0	229	26	0	558	2219
5:30 PM	7	6	2	0	37	6	58	0	40	120	2	0	0	241	47	0	566	2191
5:45 PM	6	7	0	0	41	6	53	0	38	124	2	0	0	233	36	0	546	2216

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	44	28	0	132	8	220	0	260	576	16	0	8	904	188	0	2416
Heavy Trucks	0	0	0		4	0	4		12	4	0		0	28	0		52
Buses	4	0	20		4	0	0		4	8	0		0	16	0		56
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/22/2020 9:10 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

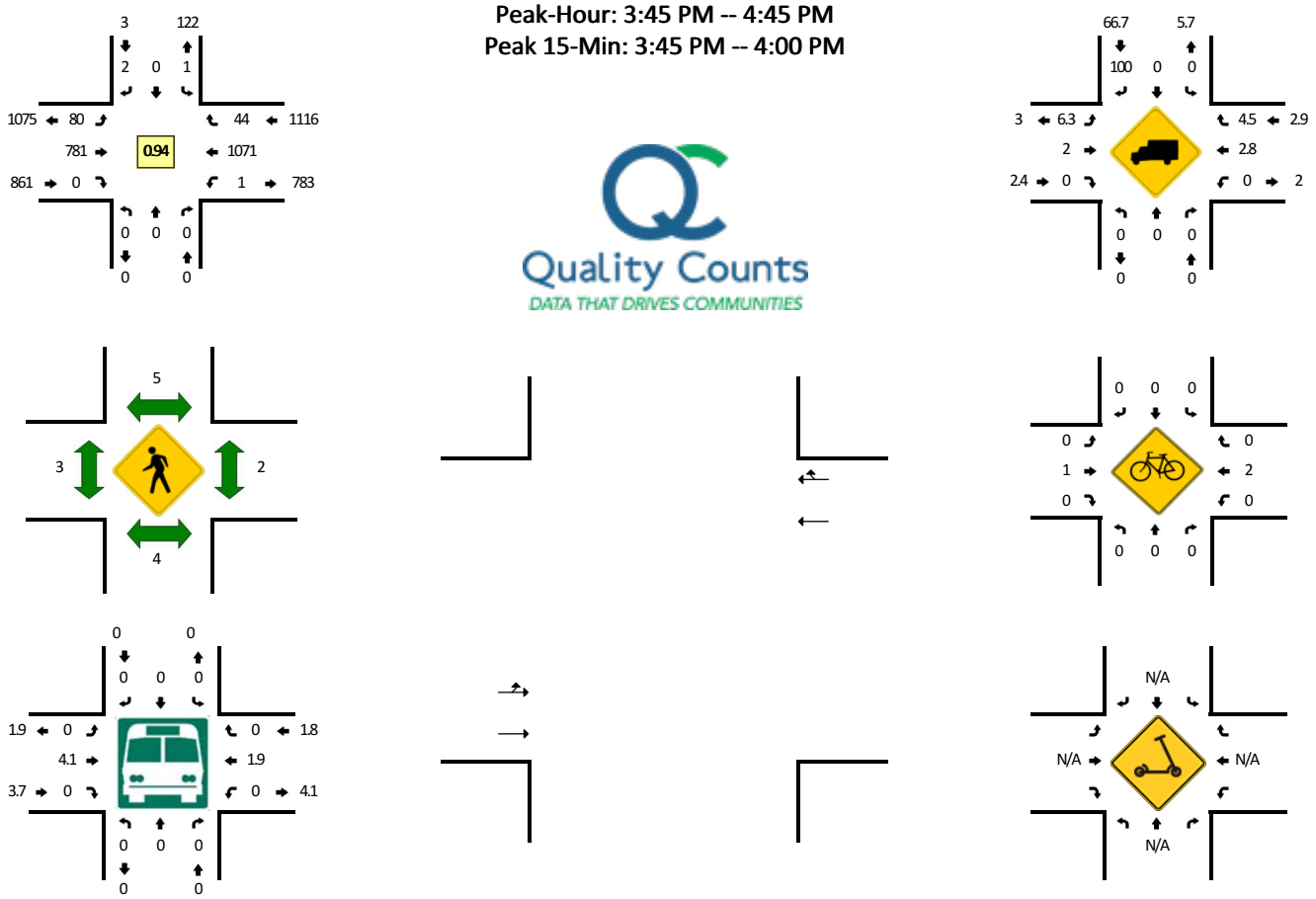
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kilbourne Ave (East) -- W Chicago Ave
CITY/STATE: Chicago, IL

QC JOB #: 15023906
DATE: Tue, Mar 3 2020

Peak-Hour: 3:45 PM -- 4:45 PM
Peak 15-Min: 3:45 PM -- 4:00 PM



15-Min Count Period Beginning At	N Kilbourne Ave (East) (Northbound)				N Kilbourne Ave (East) (Southbound)				W Chicago Ave (Eastbound)				W Chicago Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	0	0	0	0	16	153	0	0	0	205	5	0	379	
3:15 PM	0	0	0	0	0	0	0	0	6	170	0	0	0	226	6	0	408	
3:30 PM	0	0	0	0	0	0	0	0	15	191	0	1	0	257	10	0	474	
3:45 PM	0	0	0	0	0	0	0	0	24	210	0	0	0	277	15	1	527	1788
4:00 PM	0	0	0	0	1	0	2	0	18	200	0	0	0	246	11	0	478	1887
4:15 PM	0	0	0	0	0	0	0	0	12	182	0	1	0	252	15	0	462	1941
4:30 PM	0	0	0	0	0	0	0	0	24	189	0	1	0	296	3	0	513	1980
4:45 PM	0	0	0	0	0	0	0	0	11	140	0	0	0	278	8	0	437	1890
5:00 PM	0	0	0	0	0	0	1	0	15	173	0	0	0	292	6	0	487	1899
5:15 PM	0	0	0	0	0	0	0	0	14	168	0	1	0	298	6	0	487	1924
5:30 PM	0	0	0	0	0	0	0	0	12	157	0	0	0	304	12	0	485	1896
5:45 PM	0	0	0	0	0	0	0	0	13	165	0	0	0	274	8	0	460	1919

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	96	840	0	0	0	1108	60	4	2108
Heavy Trucks	0	0	0		0	0	0		8	20	0		0	28	4		60
Buses	0	0	0		0	0	0		0	8	0		0	24	0		32
Pedestrians		0				8				4				4			16
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4
Scooters																	

Comments:

Report generated on 5/22/2020 9:10 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

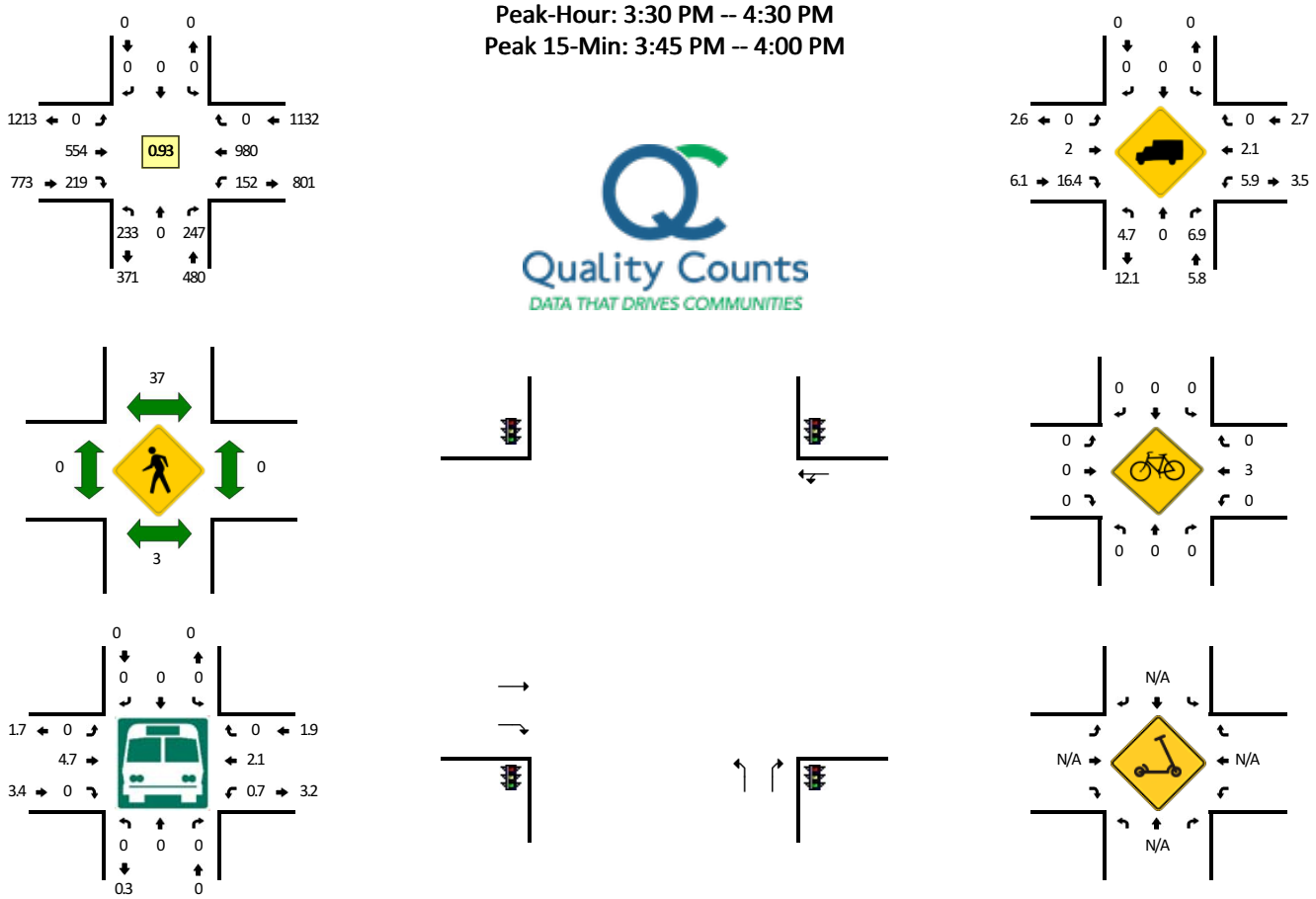
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kilbourne Ave (West) -- W Chicago Ave
CITY/STATE: Chicago, IL

QC JOB #: 15023908
DATE: Tue, Mar 3 2020

Peak-Hour: 3:30 PM -- 4:30 PM
Peak 15-Min: 3:45 PM -- 4:00 PM



15-Min Count Period Beginning At	N Kilbourne Ave (West) (Northbound)				N Kilbourne Ave (West) (Southbound)				W Chicago Ave (Eastbound)				W Chicago Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	46	0	41	0	0	0	0	0	0	133	55	0	39	171	0	0	485	
3:15 PM	55	0	51	0	0	0	0	0	0	124	49	0	37	183	0	0	499	
3:30 PM	59	0	51	0	0	0	0	0	0	122	70	0	36	270	0	0	608	
3:45 PM	61	0	84	0	0	0	0	0	0	145	55	0	45	253	0	0	643	2235
4:00 PM	64	0	59	0	0	0	0	0	0	149	54	0	33	232	0	0	591	2341
4:15 PM	49	0	53	0	0	0	0	0	0	138	40	0	38	225	0	0	543	2385
4:30 PM	65	0	69	0	0	0	0	0	0	132	42	0	41	253	0	0	602	2379
4:45 PM	42	0	38	1	0	0	0	0	0	121	30	0	43	249	0	0	524	2260
5:00 PM	61	0	47	0	0	0	0	0	0	129	30	0	46	248	0	0	561	2230
5:15 PM	60	0	54	0	0	0	0	0	0	136	38	0	47	257	0	0	592	2279
5:30 PM	48	0	36	0	0	0	0	0	0	130	46	0	40	266	0	0	566	2243
5:45 PM	43	0	38	0	0	0	0	0	0	138	36	0	41	242	0	0	538	2257

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	244	0	336	0	0	0	0	0	0	580	220	0	180	1012	0	0	2572
Heavy Trucks	16	0	24		0	0	0		0	4	52		12	24	0		132
Buses	0	0	0		0	0	0		0	8	0		0	24	0		32
Pedestrians		4				28				0				0			32
Bicycles	0	0	0		0	0	0		0	0	0		0	8	0		8
Scooters																	

Comments:

Report generated on 5/22/2020 9:10 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

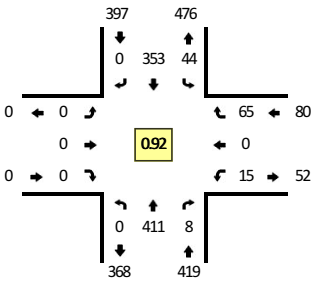
Type of peak hour being reported: Intersection Peak

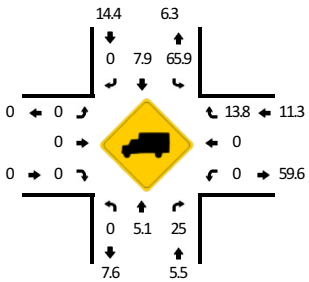
Method for determining peak hour: Total Entering Volume

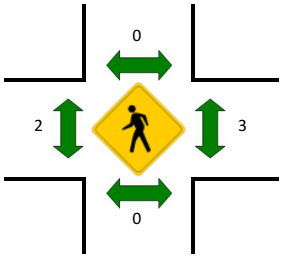
LOCATION: N Kilbourn Ave -- W Ohio St
CITY/STATE: Chicago, IL

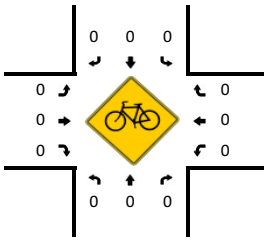
QC JOB #: 15023910
DATE: Tue, Mar 3 2020

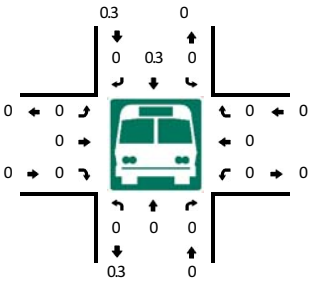
Peak-Hour: 3:30 PM -- 4:30 PM
Peak 15-Min: 3:45 PM -- 4:00 PM

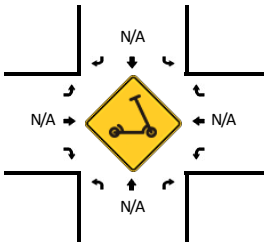












15-Min Count Period Beginning At	N Kilbourn Ave (Northbound)				N Kilbourn Ave (Southbound)				W Ohio St (Eastbound)				W Ohio St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	78	3	0	3	106	0	0	0	0	0	0	2	0	15	0	207	
3:15 PM	0	82	1	0	7	72	0	0	0	0	0	0	1	0	7	0	170	
3:30 PM	0	108	3	0	8	88	0	0	0	0	0	0	8	0	21	0	236	
3:45 PM	0	105	1	0	21	95	0	0	0	0	0	0	2	0	20	0	244	857
4:00 PM	0	105	0	0	11	91	0	0	0	0	0	0	3	0	16	0	226	876
4:15 PM	0	93	4	0	4	79	0	0	0	0	0	0	2	0	8	0	190	896
4:30 PM	0	98	1	0	0	78	0	0	0	0	0	0	4	0	38	0	219	879
4:45 PM	0	73	1	0	3	69	0	0	0	0	0	0	3	0	8	0	157	792
5:00 PM	0	83	3	0	3	82	0	0	0	0	0	0	5	0	14	0	190	756
5:15 PM	0	96	0	1	3	84	0	0	0	0	0	0	3	0	10	0	197	763
5:30 PM	0	73	0	0	8	77	0	0	0	0	0	0	3	0	9	0	170	714
5:45 PM	0	76	0	0	9	67	0	0	0	0	0	0	5	0	4	0	161	718

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	420	4	0	84	380	0	0	0	0	0	0	8	0	80	0	976
Heavy Trucks	0	24	0		56	44	0		0	0	0		0	0	12		136
Buses	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/22/2020 9:10 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

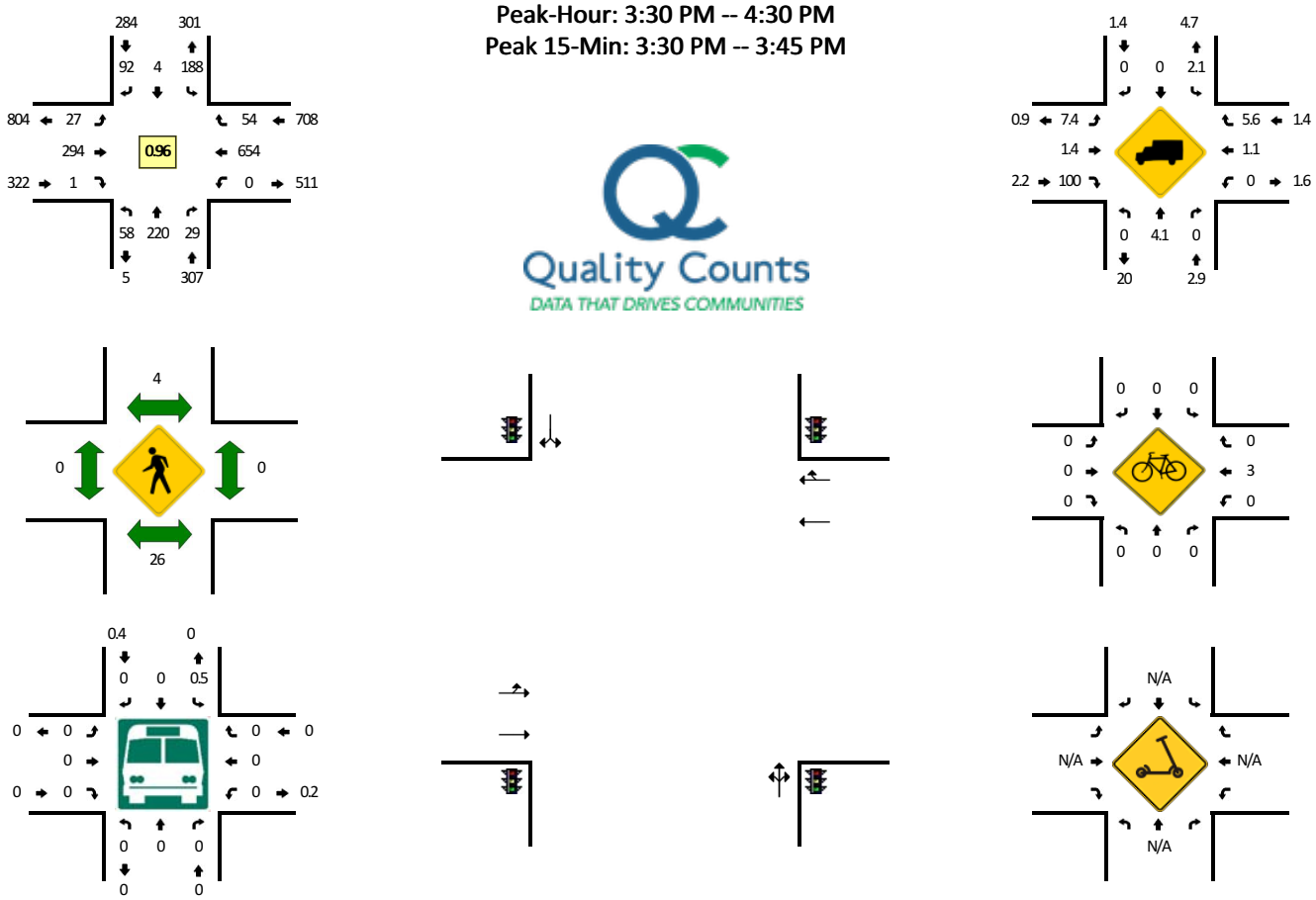
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kilbourn Ave -- W Lake St
CITY/STATE: Chicago, IL

QC JOB #: 15023912
DATE: Tue, Mar 3 2020

Peak-Hour: 3:30 PM -- 4:30 PM
Peak 15-Min: 3:30 PM -- 3:45 PM



15-Min Count Period Beginning At	N Kilbourn Ave (Northbound)				N Kilbourn Ave (Southbound)				W Lake St (Eastbound)				W Lake St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	13	39	13	0	51	0	32	0	5	50	0	0	0	119	14	0	336	
3:15 PM	10	46	5	0	40	0	22	0	7	69	0	0	0	113	9	0	321	
3:30 PM	18	60	17	0	44	3	19	0	7	75	0	0	0	168	13	0	424	
3:45 PM	12	56	3	0	51	1	15	0	4	73	1	0	0	149	16	0	381	1462
4:00 PM	14	55	5	0	49	0	33	0	7	64	0	0	0	180	15	0	422	1548
4:15 PM	14	49	4	0	44	0	25	0	9	82	0	0	0	157	10	0	394	1621
4:30 PM	13	55	3	0	56	0	46	0	9	77	0	0	0	147	14	0	420	1617
4:45 PM	9	47	11	0	40	0	21	0	4	67	0	0	0	155	4	0	358	1594
5:00 PM	13	48	4	0	41	0	29	0	10	55	0	0	0	156	17	0	373	1545
5:15 PM	13	41	3	0	57	1	22	0	3	62	0	0	0	140	19	0	361	1512
5:30 PM	10	44	1	0	53	0	15	0	14	55	0	0	0	175	20	0	387	1479
5:45 PM	16	48	2	0	43	0	28	0	3	52	0	0	0	143	10	0	345	1466

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	72	240	68	0	176	12	76	0	28	300	0	0	0	672	52	0	1696
Heavy Trucks	0	12	0		4	0	0		0	0	0		0	0	8		24
Buses	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		84				12				0				0			96
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4
Scooters																	

Comments:

Report generated on 5/22/2020 9:10 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

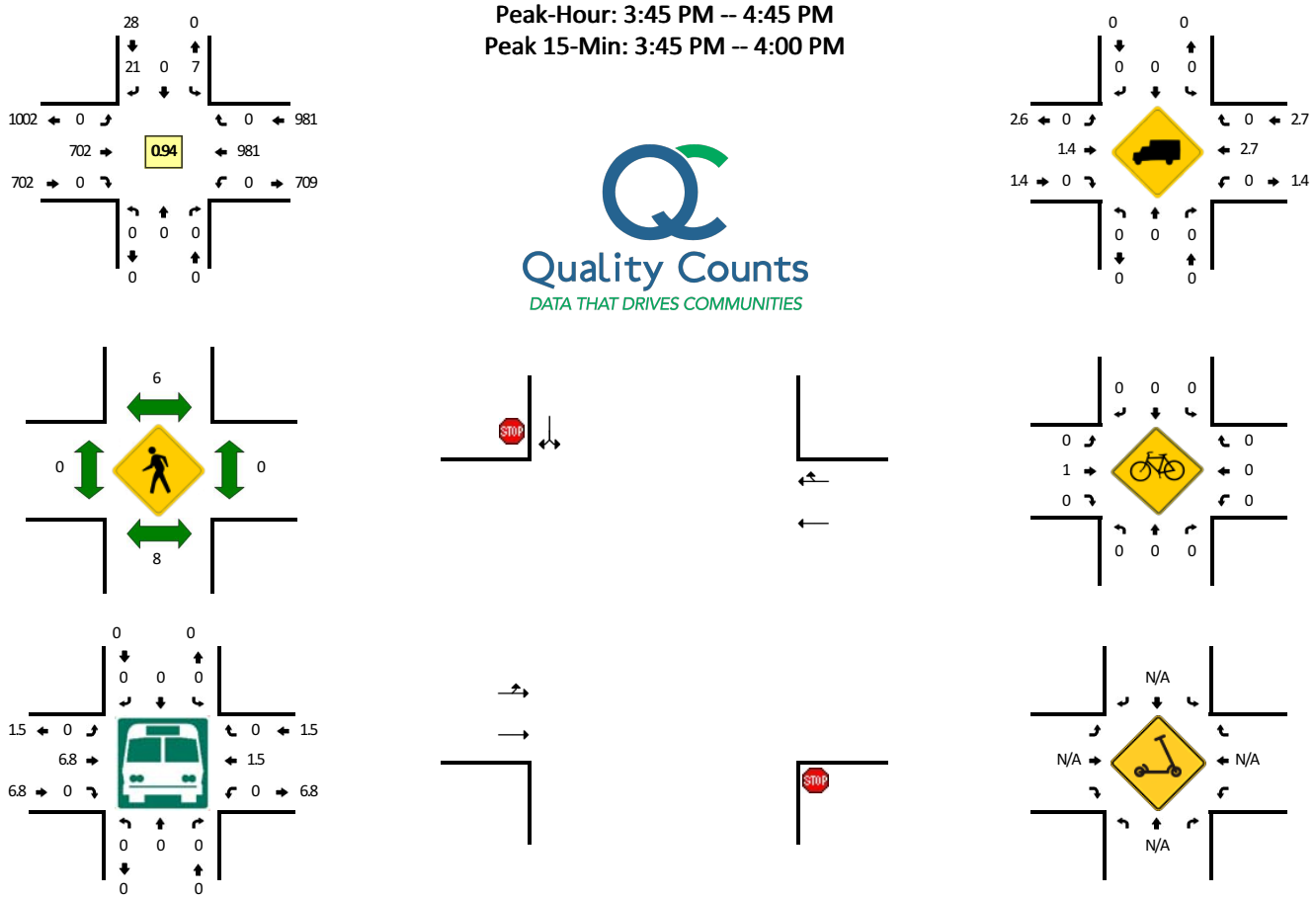
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kolin Ave -- W Chicago Ave
CITY/STATE: Chicago, IL

QC JOB #: 15023902
DATE: Tue, Mar 3 2020

Peak-Hour: 3:45 PM -- 4:45 PM
Peak 15-Min: 3:45 PM -- 4:00 PM



15-Min Count Period Beginning At	N Kolin Ave (Northbound)				N Kolin Ave (Southbound)				W Chicago Ave (Eastbound)				W Chicago Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	1	0	1	0	0	142	0	0	0	176	0	0	320	
3:15 PM	0	0	0	0	2	0	1	0	0	169	0	0	0	195	0	0	367	
3:30 PM	0	0	0	0	2	0	4	0	0	175	0	0	0	230	0	0	411	
3:45 PM	0	0	0	0	1	0	5	0	0	186	0	0	0	265	0	0	457	1555
4:00 PM	0	0	0	0	2	0	5	0	0	177	0	0	0	219	0	0	403	1638
4:15 PM	0	0	0	0	3	0	4	0	0	164	0	0	0	234	0	0	405	1676
4:30 PM	0	0	0	0	1	0	7	0	0	175	0	0	0	263	0	0	446	1711
4:45 PM	0	0	0	0	7	0	3	0	0	131	0	0	0	266	0	0	407	1661
5:00 PM	0	0	0	0	1	0	5	0	0	144	0	0	0	261	0	0	411	1669
5:15 PM	0	0	0	0	0	0	0	0	0	158	0	1	0	256	0	0	415	1679
5:30 PM	0	0	0	0	2	0	1	0	0	161	0	0	0	286	0	0	450	1683
5:45 PM	0	0	0	0	0	0	3	0	0	163	0	0	0	264	0	0	430	1706

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	20	0	0	744	0	0	0	1060	0	0	1828
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	24	0		28
Buses	0	0	0		0	0	0		0	32	0		0	16	0		48
Pedestrians		8				0				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/6/2020 9:55 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix C
Signal Timing Permits

DRAWN: CRC
DATE: 1-31-06
CHECKED:
DATE:

CITY OF CHICAGO
DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL TIMING SCHEDULE

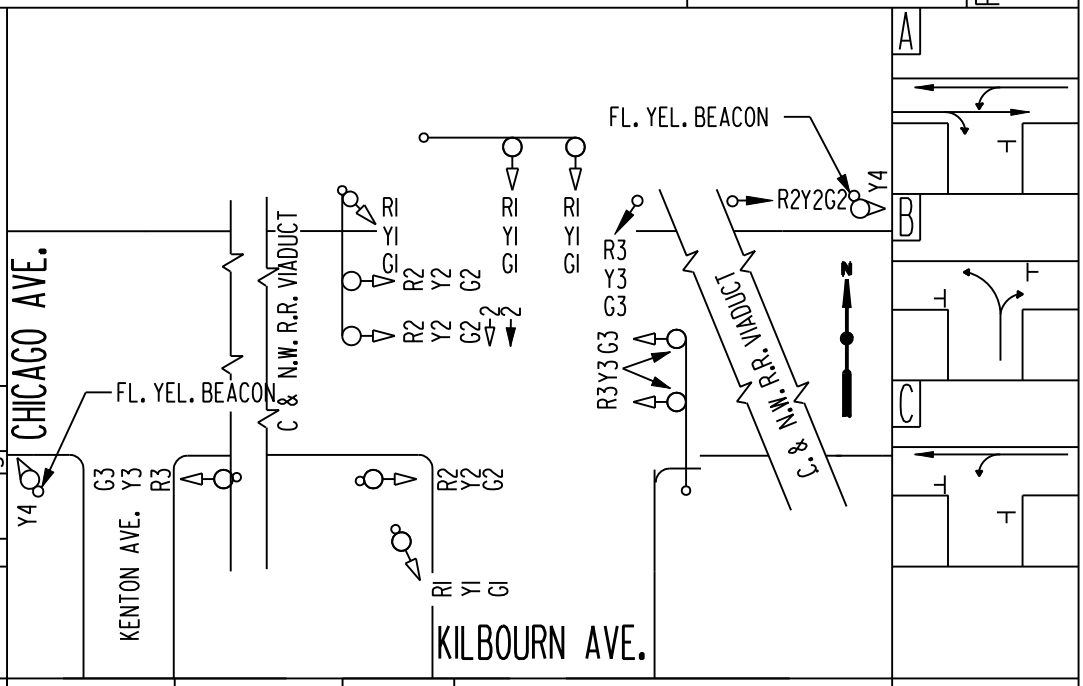
N. KILBOURN AVE. & W. CHICAGO AVE.

800 N./4550 W.

APPROVED:
TRAFFIC ENGINEER
CITY TRAFFIC ENGINEER

Times Of Operation:	Offset:	Dial:
ALL OTHER TIMES	1 65"	1 85" SEC
6:00 AM TO 10:00 AM M-F	2 72"	
	3	
3:00 PM TO 7:00 PM M-F	1 75"	2 85" SEC
	2	
	3	
	1	3
	2	
	3	
	1	4
	2	
	3	

FLASH OPERATION: Y2, Y3, Y4, ARROWS OFF



SIGNAL:	PHASE:	A			B			C	
INDICATIONS:	INTERVAL:	1	2	3	4	5	6	7	8
KILBOURN AVE.	GI				■				
" "	YI					■			
" "	RI	■	■	■			■	■	■
CHICAGO AVE. (WB)	G2	■						■	■
" "	Y2		■						
" "	R2			■	■	■	■		
" "	LT GA2							■	
" "	LT YA2								■
CHICAGO AVE. (EB)	G3	■							
" "	Y3		■						
" "	R3			■	■	■	■	■	■
FL. YEL. BEACONS	Y4	■	■	■	■	■	■	■	■

DIAL 1, ELAPSED TIME	0	43	46	47	66	69	70	82	85
SECONDS/INTERVAL	43	3	1	19	3	1	12	3	

DIAL 2, ELAPSED TIME	0	35	38	39	58	61	62	82	85
SECONDS/INTERVAL	35	3	1	19	3	1	20	3	

DATE:

SENT:
10-11-2013

INSTALLED:

AS BUILT REV.:

OEMC Drwg. No.

DRAWN: CRC
DATE: 5-13-10
CHECKED:
DATE:

CITY OF CHICAGO
OFFICE OF EMERGENCY MANAGEMENT & COMMUNICATION
TRAFFIC MANAGEMENT AUTHORITY
TRAFFIC SIGNAL TIMING SCHEDULE

N. KOSTNER AVE. & W. CHICAGO AVE.

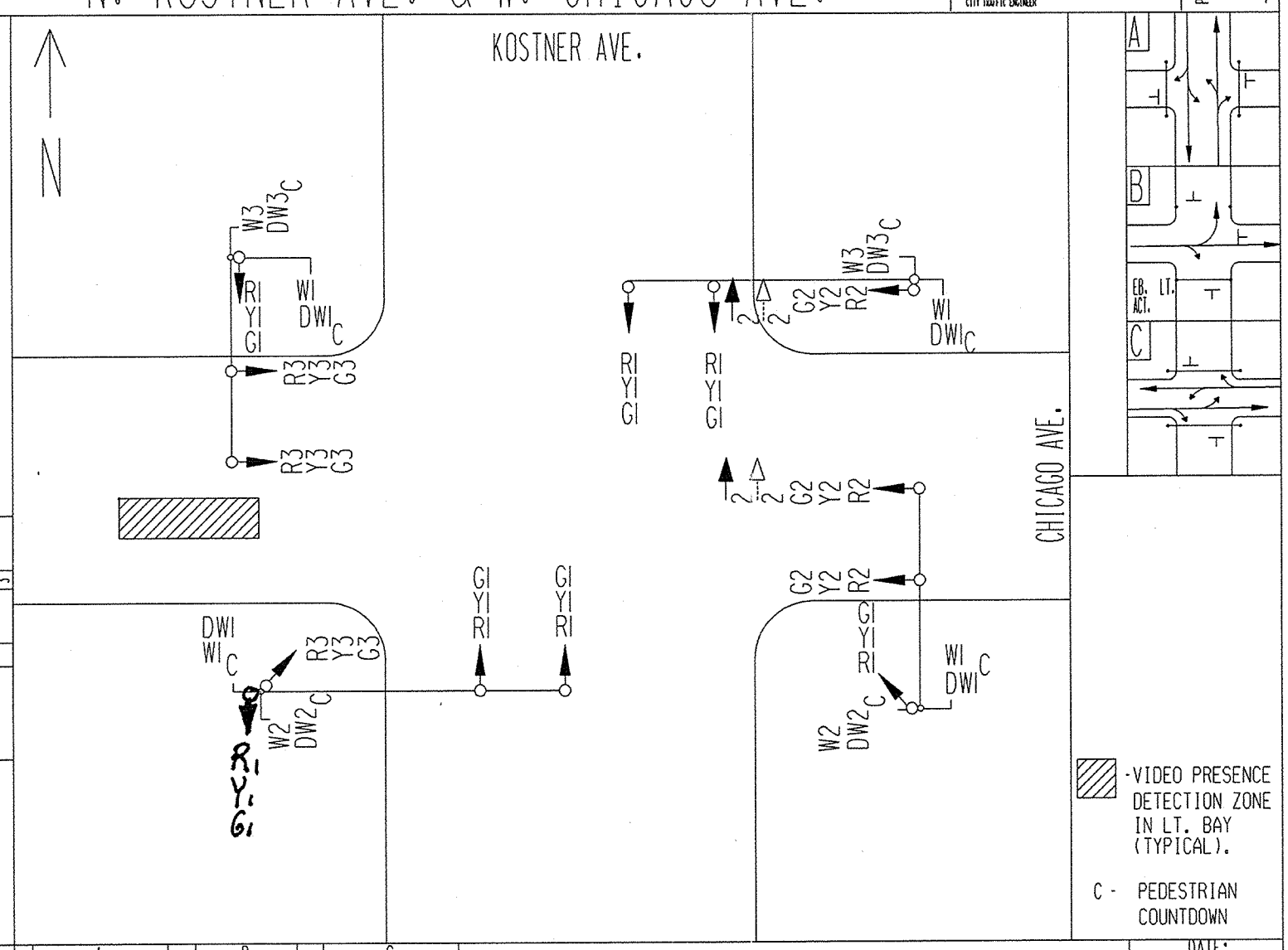
800 N./4400 W.

APPROVED: NICK AN
TRAFFIC ENGINEER
CITY TRAFFIC ENGINEER

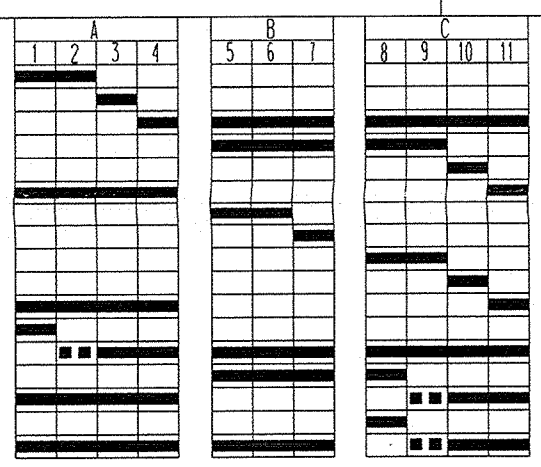
PAGE 1 OF 1

Times Of Operation:	Offset:	Dial:
ALL OTHER TIMES	1 74"	1 85"
6AM-10AM, MON. - FRI.	2 70"	
3-7PM, MON. - FRI.	3 79"	2 85
		3
		4

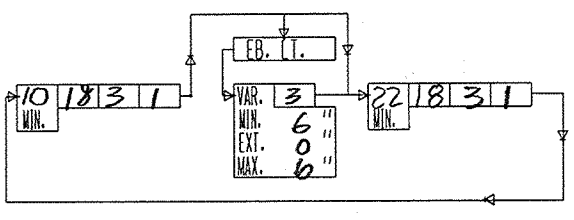
FLASH OPERATION: R1, R2, R3; W., DW., 'S-OFF.



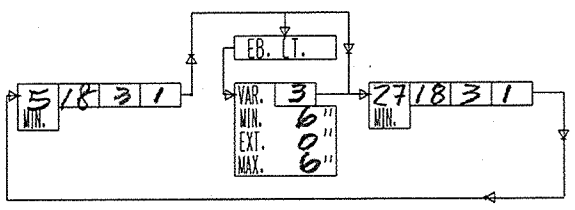
SIGNAL INDICATIONS:	PHASE: / INTERVAL:
KOSTNER (NB./SB.)	G1
" "	Y1
" "	R1
CHICAGO (EB.)	G2
" "	Y2
" "	R2
" " LT. GA	◄—2
" " LT. YA	◁---2
CHICAGO (WB.)	G3
" "	Y3
" "	R3
WALK (E./W. XWALK)	W1
DON'T WALK "	DW1
WALK (S. XWALK)	W2
DON'T WALK "	DW2
WALK (N. XWALK)	W3
DON'T WALK "	DW3



DIAL 1, SECONDS/INTERVAL



DIAL 2, SECONDS/INTERVAL



DATE:

SENT: 5-18-10

INSTALLED: 04-05-11

AS-BUILT REV.:

BoEL Drwg. No. 14901

DRAWN: CRH/AS
DATE: 02/20/2006
CHECKED:
DATE:

CITY OF CHICAGO
OFFICE OF EMERGENCY MANAGEMENT AND COMMUNICATIONS
TRAFFIC MANAGEMENT AUTHORITY

TRAFFIC SIGNAL TIMING SCHEDULE

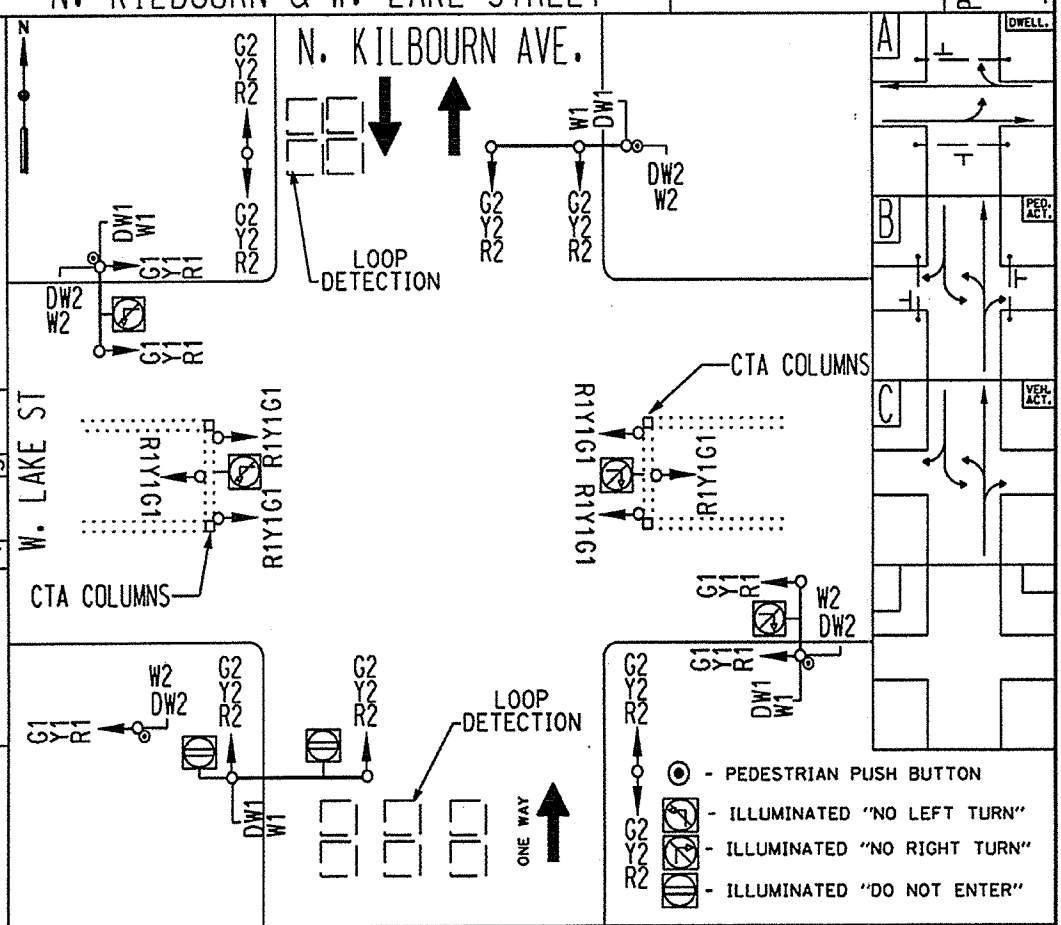
N. KILBOURN & W. LAKE STREET

320 N./4500 W.

APPROVED: NICK AW
TRAFFIC ENGINEER
CITY TRAFFIC ENGINEER

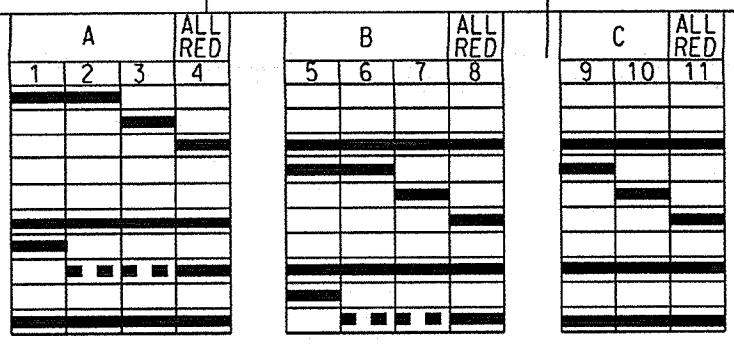
Dial:	Offset:	Times Of Operation:
1 65"	1 0"	ALL TIMES.
	2 12"	6:00AM TO 10:00AM: MON. - FRI.
	3 47"	3:00PM TO 7:00PM: MON. - FRI.
2	1	
	2	
	3	
3	1	
	2	
	3	
4	1	
	2	
	3	

FLASH OPERATION: R1, R2; W, DW - OFF



SIGNAL: PHASE:

INDICATIONS:	INTERVAL:
LAKE STREET	G1
" "	Y1
" "	R1
KILBOURN AVENUE	G2
" "	Y2
" "	R2
WALK	W1
DON'T WALK	DW1
WALK	W2
DON'T WALK	DW2



DATE:

INSTALLED:

DIAL 1, SECONDS/INTERVAL

DWELL: 20 MIN | 9 | 3 | 1

PED. ACT.: 70 | 18 | 3 | 1

VEH. ACT.: VAR. 3 | 1; INIT. 16"; EXT. 4"; MAX. 28"

DIAL 2, SECONDS/INTERVAL

DWELL: MIN

PED. ACT.

VEH. ACT.: VAR.; INIT.; EXT.; MAX.

DIAL 3, SECONDS/INTERVAL

DWELL: MIN

PED. ACT.

VEH. ACT.: VAR.; INIT.; EXT.; MAX.

BOE. Drwg. No.

...\Timing\Kilbourn & Lake-TS.dgn 03/02/2006 11:35:26 AM

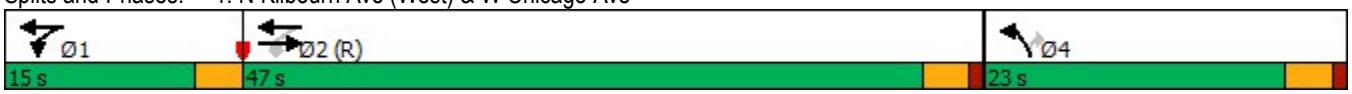
Appendix D
Synchro Results

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	894	262	110	542	119	171
Future Volume (vph)	894	262	110	542	119	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		50	100		0	100
Storage Lanes		1	1		1	1
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98	1.00			
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1827	1553	1687	1776	1671	1495
Flt Permitted			0.093		0.950	
Satd. Flow (perm)	1827	1514	165	1776	1671	1495
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		75				188
Link Speed (mph)	30			30	30	
Link Distance (ft)	715			346	921	
Travel Time (s)	16.3			7.9	20.9	
Confl. Peds. (#/hr)		5	5			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	7%	7%	8%	8%
Adj. Flow (vph)	982	288	121	596	131	188
Shared Lane Traffic (%)						
Lane Group Flow (vph)	982	288	121	596	131	188
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	0	0	0	0	0	0
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	0	0	0	0	0	0
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	NA	Perm	D.P+P	NA	Prot	Perm
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			4
Detector Phase	2	2	1	1 2	4	4
Switch Phase						
Minimum Initial (s)	43.0	43.0	12.0		19.0	19.0
Minimum Split (s)	47.0	47.0	15.0		23.0	23.0
Total Split (s)	47.0	47.0	15.0		23.0	23.0
Total Split (%)	55.3%	55.3%	17.6%		27.1%	27.1%
Maximum Green (s)	43.0	43.0	12.0		19.0	19.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.0	1.0	0.0		1.0	1.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	3.0		4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2	0.2	0.2		0.2	0.2
Recall Mode	C-Max	C-Max	Max		Max	Max
Act Effct Green (s)	43.0	43.0	56.0	59.0	19.0	19.0
Actuated g/C Ratio	0.51	0.51	0.66	0.69	0.22	0.22
v/c Ratio	1.06	0.36	0.37	0.48	0.35	0.39
Control Delay	70.8	10.6	18.3	8.5	31.0	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.8	10.6	18.3	8.5	31.0	7.1
LOS	E	B	B	A	C	A
Approach Delay	57.2			10.2	16.9	
Approach LOS	E			B	B	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 72 (85%), Referenced to phase 2:EBWB, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 37.0	Intersection LOS: D
Intersection Capacity Utilization 82.9%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: N Kilbourn Ave (West) & W Chicago Ave



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	982	288	121	596	131	188
v/c Ratio	1.06	0.36	0.37	0.48	0.35	0.39
Control Delay	70.8	10.6	18.3	8.5	31.0	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.8	10.6	18.3	8.5	31.0	7.1
Queue Length 50th (ft)	~585	62	36	99	59	0
Queue Length 95th (ft)	#814	116	77	211	111	51
Internal Link Dist (ft)	635			266	841	
Turn Bay Length (ft)		50	100			100
Base Capacity (vph)	924	802	323	1232	373	480
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	1.06	0.36	0.37	0.48	0.35	0.39

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

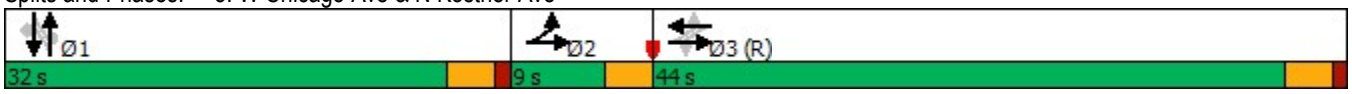
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	862	31	4	453	68	44	20	8	116	34	167
Future Volume (vph)	138	862	31	4	453	68	44	20	8	116	34	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	100			70			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99			0.99	0.99
Frt		0.995			0.980			0.956				0.850
Flt Protected	0.950			0.950			0.950				0.963	
Satd. Flow (prot)	1703	3386	0	1703	3324	0	1327	1326	0	0	1759	1553
Flt Permitted	0.385			0.278			0.615				0.764	
Satd. Flow (perm)	687	3386	0	498	3324	0	859	1326	0	0	1382	1533
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			26			9				182
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		660			361			227			577	
Travel Time (s)		15.0			8.2			5.2			13.1	
Confl. Peds. (#/hr)	10		2	2		10	1		15	15		1
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 (%)	6%	6%	6%	6%	6%	6%	36%	36%	36%	4%	4%	4%
Adj. Flow (vph)	150	937	34	4	492	74	48	22	9	126	37	182
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	971	0	4	566	0	48	31	0	0	163	182
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		0	0		1	0	0
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	0		0	0		0	0		20	0	0
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	D.P+P	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	2	2 3			3			1			1	
Permitted Phases	3			3			1			1		1
Detector Phase	2	2 3		3	3		1	1		1	1	1
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	6.0			22.0	22.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	9.0			44.0	44.0		32.0	32.0		32.0	32.0	32.0
Total Split (s)	9.0			44.0	44.0		32.0	32.0		32.0	32.0	32.0
Total Split (%)	10.6%			51.8%	51.8%		37.6%	37.6%		37.6%	37.6%	37.6%
Maximum Green (s)	6.0			40.0	40.0		28.0	28.0		28.0	28.0	28.0
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0			1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0			0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	3.0			4.0	4.0		4.0	4.0			4.0	4.0
Lead/Lag	Lag						Lead	Lead		Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0			0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None			C-Max	C-Max		Max	Max		Max	Max	Max
Walk Time (s)				22.0	22.0		10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)				18.0	18.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	47.0	50.0		40.0	40.0		28.0	28.0			28.0	28.0
Actuated g/C Ratio	0.55	0.59		0.47	0.47		0.33	0.33			0.33	0.33
v/c Ratio	0.33	0.49		0.02	0.36		0.17	0.07			0.36	0.29
Control Delay	16.9	20.5		12.5	14.4		22.3	16.0			24.5	4.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	16.9	20.5		12.5	14.4		22.3	16.0			24.5	4.8
LOS	B	C		B	B		C	B			C	A
Approach Delay		20.0			14.4			19.8			14.1	
Approach LOS		C			B			B			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 70 (82%), Referenced to phase 3:EBWB, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.49	
Intersection Signal Delay: 17.5	Intersection LOS: B
Intersection Capacity Utilization 90.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: W Chicago Ave & N Kostner Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	150	971	4	566	48	31	163	182
v/c Ratio	0.33	0.49	0.02	0.36	0.17	0.07	0.36	0.29
Control Delay	16.9	20.5	12.5	14.4	22.3	16.0	24.5	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	20.5	12.5	14.4	22.3	16.0	24.5	4.8
Queue Length 50th (ft)	65	227	1	92	18	8	65	0
Queue Length 95th (ft)	m67	m230	7	130	45	27	119	42
Internal Link Dist (ft)		580		281		147	497	
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	451	1994	234	1578	282	442	455	627
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.49	0.02	0.36	0.17	0.07	0.36	0.29

Intersection Summary

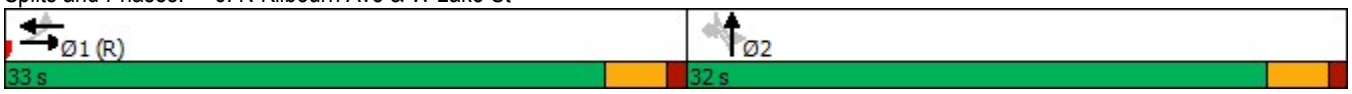
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	733	0	0	277	31	51	178	14	176	0	42
Future Volume (vph)	52	733	0	0	277	31	51	178	14	176	0	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	0		100
Storage Lanes	0		0	0		0	1		0	1		1
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			1.00		1.00		
Frt					0.985			0.989				0.850
Flt Protected		0.997					0.950			0.950		
Satd. Flow (prot)	0	3564	0	0	3411	0	1736	1805	0	1612	0	1442
Flt Permitted		0.908					0.950			0.562		
Satd. Flow (perm)	0	3245	0	0	3411	0	1736	1805	0	953	0	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					23			8				47
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		618			660			642			1899	
Travel Time (s)		14.0			15.0			14.6			43.2	
Confl. Peds. (#/hr)	3		3	3		3			1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	4%	4%	4%	12%	12%	12%
Adj. Flow (vph)	58	814	0	0	308	34	57	198	16	196	0	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	872	0	0	342	0	57	214	0	196	0	47
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0			0		1	1		1		1
Detector Template	Left	Thru			Thru		Left	Thru		Left		Right
Leading Detector (ft)	20	0			0		20	20		20		20
Trailing Detector (ft)	0	0			0		0	0		0		0
Detector 1 Position(ft)	0	0			0		0	0		0		0
Detector 1 Size(ft)	20	6			6		20	20		20		20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Turn Type	Perm	NA			NA		Perm	NA		D.Pm		Perm
Protected Phases		1			1			2				
Permitted Phases	1						2			2		2
Detector Phase	1	1			1		2	2		2		2
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	20.0	20.0			20.0		16.0	16.0		16.0		16.0
Minimum Split (s)	33.0	33.0			33.0		32.0	32.0		32.0		32.0
Total Split (s)	33.0	33.0			33.0		32.0	32.0		32.0		32.0
Total Split (%)	50.8%	50.8%			50.8%		49.2%	49.2%		49.2%		49.2%
Maximum Green (s)	29.0	29.0			29.0		28.0	28.0		28.0		28.0
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0		1.0		1.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		4.0			4.0		4.0	4.0		4.0		4.0
Lead/Lag	Lead	Lead			Lead		Lag	Lag		Lag		Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2			0.2		4.0	4.0		4.0		4.0
Recall Mode	C-Max	C-Max			C-Max		None	None		None		None
Walk Time (s)	20.0	20.0			20.0		10.0	10.0		10.0		10.0
Flash Dont Walk (s)	9.0	9.0			9.0		18.0	18.0		18.0		18.0
Pedestrian Calls (#/hr)	0	0			0		0	0		0		0
Act Effct Green (s)		36.7			36.7		20.3	20.3		20.3		20.3
Actuated g/C Ratio		0.56			0.56		0.31	0.31		0.31		0.31
v/c Ratio		0.48			0.18		0.11	0.38		0.66		0.10
Control Delay		10.6			7.7		14.4	17.6		29.6		4.7
Queue Delay		0.0			0.0		0.0	0.0		0.0		0.0
Total Delay		10.6			7.7		14.4	17.6		29.6		4.7
LOS		B			A		B	B		C		A
Approach Delay		10.6			7.7			16.9			24.8	
Approach LOS		B			A			B			C	

Intersection Summary	
Area Type: Other	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 12 (18%), Referenced to phase 1:EBWB, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 13.0	Intersection LOS: B
Intersection Capacity Utilization 85.1%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: N Kilbourn Ave & W Lake St



Lane Group	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	872	342	57	214	196	47
v/c Ratio	0.48	0.18	0.11	0.38	0.66	0.10
Control Delay	10.6	7.7	14.4	17.6	29.6	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	7.7	14.4	17.6	29.6	4.7
Queue Length 50th (ft)	90	26	16	65	69	0
Queue Length 95th (ft)	185	62	31	92	109	16
Internal Link Dist (ft)	538	580		562		
Turn Bay Length (ft)			100			100
Base Capacity (vph)	1832	1936	747	782	410	647
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	0.48	0.18	0.08	0.27	0.48	0.07

Intersection Summary

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	986	512	0	6	13
Future Vol, veh/h	0	986	512	0	6	13
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	6	6	6	0	0
Mvmt Flow	0	1049	545	0	6	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	1070	273
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	525	-
Critical Hdwy	-	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	219	731
Stage 1	0	-	-	0	551	-
Stage 2	0	-	-	0	564	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	219	731
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	564	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	421
HCM Lane V/C Ratio	-	-	0.048
HCM Control Delay (s)	-	-	14
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.2

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	27	286	10	48	330
Future Vol, veh/h	5	27	286	10	48	330
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	8	8	5	5
Mvmt Flow	6	32	340	12	57	393
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.6	11.3	13.1
HCM LOS	A	B	B

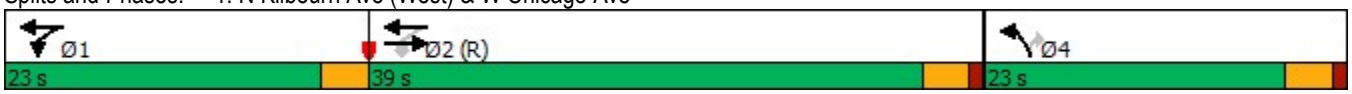
Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	16%	13%
Vol Thru, %	97%	0%	87%
Vol Right, %	3%	84%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	296	32	378
LT Vol	0	5	48
Through Vol	286	0	330
RT Vol	10	27	0
Lane Flow Rate	352	38	450
Geometry Grp	1	1	1
Degree of Util (X)	0.448	0.055	0.56
Departure Headway (Hd)	4.579	5.198	4.479
Convergence, Y/N	Yes	Yes	Yes
Cap	786	686	806
Service Time	2.604	3.249	2.503
HCM Lane V/C Ratio	0.448	0.055	0.558
HCM Control Delay	11.3	8.6	13.1
HCM Lane LOS	B	A	B
HCM 95th-tile Q	2.3	0.2	3.5

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	564	191	157	966	242	265
Future Volume (vph)	564	191	157	966	242	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		50	100		0	100
Storage Lanes		1	1		1	1
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98	1.00			
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1776	1509	1736	1827	1770	1583
Flt Permitted			0.181		0.950	
Satd. Flow (perm)	1776	1476	330	1827	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		73				279
Link Speed (mph)	30			30	30	
Link Distance (ft)	715			346	921	
Travel Time (s)	16.3			7.9	20.9	
Confl. Peds. (#/hr)		2	2			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	7%	4%	4%	2%	2%
Adj. Flow (vph)	594	201	165	1017	255	279
Shared Lane Traffic (%)						
Lane Group Flow (vph)	594	201	165	1017	255	279
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	0	0	0	0	0	0
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	0	0	0	0	0	0
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	NA	Perm	D.P+P	NA	Prot	Perm
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			4
Detector Phase	2	2	1	1 2	4	4
Switch Phase						
Minimum Initial (s)	35.0	35.0	20.0		19.0	19.0
Minimum Split (s)	39.0	39.0	23.0		23.0	23.0
Total Split (s)	39.0	39.0	23.0		23.0	23.0
Total Split (%)	45.9%	45.9%	27.1%		27.1%	27.1%
Maximum Green (s)	35.0	35.0	20.0		19.0	19.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.0	1.0	0.0		1.0	1.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	3.0		4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2	0.2	0.2		0.2	0.2
Recall Mode	C-Max	C-Max	Max		Max	Max
Act Effct Green (s)	35.0	35.0	56.0	59.0	19.0	19.0
Actuated g/C Ratio	0.41	0.41	0.66	0.69	0.22	0.22
v/c Ratio	0.81	0.31	0.30	0.80	0.65	0.49
Control Delay	32.9	12.0	12.4	29.9	38.6	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	12.0	12.4	29.9	38.6	6.9
LOS	C	B	B	C	D	A
Approach Delay	27.6			27.4	22.1	
Approach LOS	C			C	C	

Intersection Summary	
Area Type: Other	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 75 (88%), Referenced to phase 2:EBWB, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 26.4	Intersection LOS: C
Intersection Capacity Utilization 73.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: N Kilbourn Ave (West) & W Chicago Ave



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	594	201	165	1017	255	279
v/c Ratio	0.81	0.31	0.30	0.80	0.65	0.49
Control Delay	32.9	12.0	12.4	29.9	38.6	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	12.0	12.4	29.9	38.6	6.9
Queue Length 50th (ft)	273	43	58	539	124	0
Queue Length 95th (ft)	#455	92	101	685	204	61
Internal Link Dist (ft)	635			266	841	
Turn Bay Length (ft)		50	100			100
Base Capacity (vph)	731	650	548	1268	395	570
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	0.81	0.31	0.30	0.80	0.65	0.49

Intersection Summary

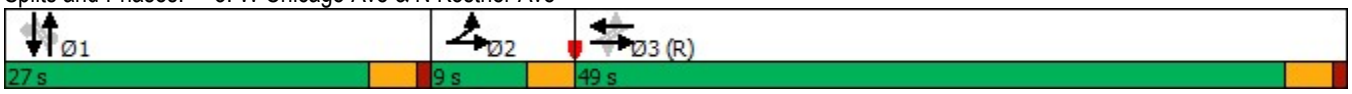
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	228	541	18	3	865	138	28	35	18	145	10	219
Future Volume (vph)	228	541	18	3	865	138	28	35	18	145	10	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	100			70			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			1.00	
Frt		0.995			0.979			0.950				0.850
Flt Protected	0.950			0.950			0.950				0.955	
Satd. Flow (prot)	1703	3386	0	1736	3387	0	1805	1796	0	0	1728	1538
Flt Permitted	0.180			0.425			0.585				0.699	
Satd. Flow (perm)	322	3386	0	775	3387	0	1112	1796	0	0	1261	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			32			19				220
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		660			361			227			577	
Travel Time (s)		15.0			8.2			5.2			13.1	
Confl. Peds. (#/hr)	5		6	6		5			3	3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	0%	0%	0%	5%	5%	5%
Adj. Flow (vph)	245	582	19	3	930	148	30	38	19	156	11	235
Shared Lane Traffic (%)												
Lane Group Flow (vph)	245	601	0	3	1078	0	30	57	0	0	167	235
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		0	0		1	0	0
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	0		0	0		0	0		20	0	0
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	D.P+P	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	2	2 3			3			1			1	
Permitted Phases	3			3			1			1		1
Detector Phase	2	2 3		3	3		1	1		1	1	1
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	6.0			27.0	27.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.0			49.0	49.0		27.0	27.0		27.0	27.0	27.0
Total Split (s)	9.0			49.0	49.0		27.0	27.0		27.0	27.0	27.0
Total Split (%)	10.6%			57.6%	57.6%		31.8%	31.8%		31.8%	31.8%	31.8%
Maximum Green (s)	6.0			45.0	45.0		23.0	23.0		23.0	23.0	23.0
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0			1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0			0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	3.0			4.0	4.0		4.0	4.0			4.0	4.0
Lead/Lag	Lag						Lead	Lead		Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0			0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None			C-Max	C-Max		Max	Max		Max	Max	Max
Walk Time (s)				27.0	27.0		5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)				18.0	18.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	52.0	55.0		45.0	45.0		23.0	23.0			23.0	23.0
Actuated g/C Ratio	0.61	0.65		0.53	0.53		0.27	0.27			0.27	0.27
v/c Ratio	0.83	0.27		0.01	0.60		0.10	0.11			0.49	0.41
Control Delay	39.4	8.1		9.7	15.0		24.5	17.9			31.9	6.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	39.4	8.1		9.7	15.0		24.5	17.9			31.9	6.9
LOS	D	A		A	B		C	B			C	A
Approach Delay		17.2			15.0			20.2			17.3	
Approach LOS		B			B			C			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 79 (93%), Referenced to phase 3:EBWB, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 16.3	Intersection LOS: B
Intersection Capacity Utilization 80.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: W Chicago Ave & N Kostner Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	245	601	3	1078	30	57	167	235
v/c Ratio	0.83	0.27	0.01	0.60	0.10	0.11	0.49	0.41
Control Delay	39.4	8.1	9.7	15.0	24.5	17.9	31.9	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	8.1	9.7	15.0	24.5	17.9	31.9	6.9
Queue Length 50th (ft)	78	58	1	190	12	15	75	6
Queue Length 95th (ft)	m#111	m109	5	250	34	43	137	60
Internal Link Dist (ft)		580		281		147	497	
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	294	2193	410	1808	300	499	341	576
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.27	0.01	0.60	0.10	0.11	0.49	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

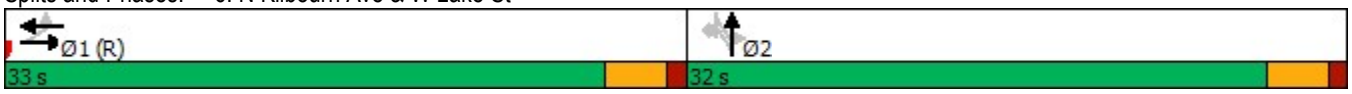
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	296	0	0	633	55	53	215	15	200	0	119
Future Volume (vph)	29	296	0	0	633	55	53	215	15	200	0	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	0		100
Storage Lanes	0		0	0		0	1		0	1		1
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00							
Frt					0.988			0.990				0.850
Flt Protected		0.996					0.950			0.950		
Satd. Flow (prot)	0	3525	0	0	3490	0	1752	1826	0	1770	0	1583
Flt Permitted		0.874					0.950			0.520		
Satd. Flow (perm)	0	3093	0	0	3490	0	1752	1826	0	969	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					18			7				127
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		618			660			642			1899	
Travel Time (s)		14.0			15.0			14.6			43.2	
Confl. Peds. (#/hr)	5					5						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	31	315	0	0	673	59	56	229	16	213	0	127
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	346	0	0	732	0	56	245	0	213	0	127
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0			0		1	1		1		1
Detector Template	Left	Thru			Thru		Left	Thru		Left		Right
Leading Detector (ft)	20	0			0		20	20		20		20
Trailing Detector (ft)	0	0			0		0	0		0		0
Detector 1 Position(ft)	0	0			0		0	0		0		0
Detector 1 Size(ft)	20	6			6		20	20		20		20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Turn Type	Perm	NA			NA		Perm	NA		D.Pm		Perm
Protected Phases		1			1			2				
Permitted Phases	1						2			2		2
Detector Phase	1	1			1		2	2		2		2
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	20.0	20.0			20.0		16.0	16.0		16.0		16.0
Minimum Split (s)	33.0	33.0			33.0		32.0	32.0		32.0		32.0
Total Split (s)	33.0	33.0			33.0		32.0	32.0		32.0		32.0
Total Split (%)	50.8%	50.8%			50.8%		49.2%	49.2%		49.2%		49.2%
Maximum Green (s)	29.0	29.0			29.0		28.0	28.0		28.0		28.0
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0		1.0		1.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		4.0			4.0		4.0	4.0		4.0		4.0
Lead/Lag	Lead	Lead			Lead		Lag	Lag		Lag		Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2			0.2		4.0	4.0		4.0		4.0
Recall Mode	C-Max	C-Max			C-Max		None	None		None		None
Walk Time (s)	20.0	20.0			20.0		10.0	10.0		10.0		10.0
Flash Dont Walk (s)	9.0	9.0			9.0		18.0	18.0		18.0		18.0
Pedestrian Calls (#/hr)	0	0			0		0	0		0		0
Act Effct Green (s)		36.2			36.2		20.8	20.8		20.8		20.8
Actuated g/C Ratio		0.56			0.56		0.32	0.32		0.32		0.32
v/c Ratio		0.20			0.38		0.10	0.42		0.69		0.21
Control Delay		8.7			9.6		13.9	18.0		30.3		3.7
Queue Delay		0.0			0.0		0.0	0.0		0.0		0.0
Total Delay		8.7			9.6		13.9	18.0		30.3		3.7
LOS		A			A		B	B		C		A
Approach Delay		8.7			9.6			17.2			20.4	
Approach LOS		A			A			B			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 47 (72%), Referenced to phase 1:EBWB, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 12.9	Intersection LOS: B
Intersection Capacity Utilization 65.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: N Kilbourn Ave & W Lake St



Lane Group	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	346	732	56	245	213	127
v/c Ratio	0.20	0.38	0.10	0.42	0.69	0.21
Control Delay	8.7	9.6	13.9	18.0	30.3	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.7	9.6	13.9	18.0	30.3	3.7
Queue Length 50th (ft)	31	72	16	74	74	0
Queue Length 95th (ft)	67	141	31	106	120	26
Internal Link Dist (ft)	538	580		562		
Turn Bay Length (ft)			100			100
Base Capacity (vph)	1720	1949	754	790	417	754
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	0.20	0.38	0.07	0.31	0.51	0.17

Intersection Summary

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	0	702	981	0	7	21
Future Vol, veh/h	0	702	981	0	7	21
Conflicting Peds, #/hr	6	0	0	6	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	8	8	4	4	0	0
Mvmt Flow	0	747	1044	0	7	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	1418	522
Stage 1	-	-	-	-	1044	-
Stage 2	-	-	-	-	374	-
Critical Hdwy	-	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	130	505
Stage 1	0	-	-	0	305	-
Stage 2	0	-	-	0	672	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	130	505
Mov Cap-2 Maneuver	-	-	-	-	130	-
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	672	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.7
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	293
HCM Lane V/C Ratio	-	-	0.102
HCM Control Delay (s)	-	-	18.7
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.3

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	82	401	6	36	343
Future Vol, veh/h	11	82	401	6	36	343
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	6	6	4	4	8	8
Mvmt Flow	13	93	456	7	41	390
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.6	15	14.5
HCM LOS	A	B	B

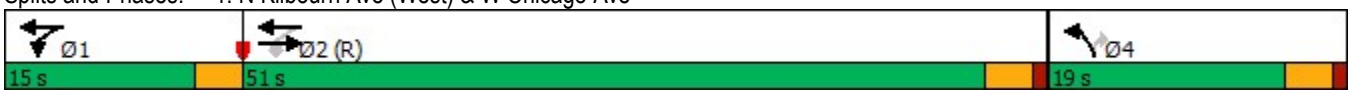
Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	12%	9%
Vol Thru, %	99%	0%	91%
Vol Right, %	1%	88%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	407	93	379
LT Vol	0	11	36
Through Vol	401	0	343
RT Vol	6	82	0
Lane Flow Rate	462	106	431
Geometry Grp	1	1	1
Degree of Util (X)	0.609	0.161	0.581
Departure Headway (Hd)	4.737	5.471	4.856
Convergence, Y/N	Yes	Yes	Yes
Cap	759	648	736
Service Time	2.801	3.571	2.923
HCM Lane V/C Ratio	0.609	0.164	0.586
HCM Control Delay	15	9.6	14.5
HCM Lane LOS	B	A	B
HCM 95th-tile Q	4.2	0.6	3.8

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	903	265	111	547	120	173
Future Volume (vph)	903	265	111	547	120	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		50	100		0	100
Storage Lanes		1	1		1	1
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98	1.00			
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1827	1553	1687	1776	1671	1495
Flt Permitted			0.085		0.950	
Satd. Flow (perm)	1827	1515	151	1776	1671	1495
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		83				190
Link Speed (mph)	30			30	30	
Link Distance (ft)	715			346	921	
Travel Time (s)	16.3			7.9	20.9	
Confl. Peds. (#/hr)		5	5			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	7%	7%	8%	8%
Adj. Flow (vph)	992	291	122	601	132	190
Shared Lane Traffic (%)						
Lane Group Flow (vph)	992	291	122	601	132	190
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	0	0	0	0	0	0
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	0	0	0	0	0	0
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	NA	Perm	D.P+P	NA	Prot	Perm
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			4
Detector Phase	2	2	1	1 2	4	4
Switch Phase						
Minimum Initial (s)	43.0	43.0	12.0		15.0	15.0
Minimum Split (s)	51.0	51.0	15.0		19.0	19.0
Total Split (s)	51.0	51.0	15.0		19.0	19.0
Total Split (%)	60.0%	60.0%	17.6%		22.4%	22.4%
Maximum Green (s)	47.0	47.0	12.0		15.0	15.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.0	1.0	0.0		1.0	1.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	3.0		4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2	0.2	0.2		0.2	0.2
Recall Mode	C-Max	C-Max	Max		Max	Max
Act Effct Green (s)	47.0	47.0	60.0	63.0	15.0	15.0
Actuated g/C Ratio	0.55	0.55	0.71	0.74	0.18	0.18
v/c Ratio	0.98	0.33	0.38	0.46	0.45	0.45
Control Delay	44.8	8.4	17.6	6.0	36.9	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	8.4	17.6	6.0	36.9	8.8
LOS	D	A	B	A	D	A
Approach Delay	36.6			8.0	20.3	
Approach LOS	D			A	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 72 (85%), Referenced to phase 2:EBWB, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 25.4	Intersection LOS: C
Intersection Capacity Utilization 80.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: N Kilbourn Ave (West) & W Chicago Ave



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	992	291	122	601	132	190
v/c Ratio	0.98	0.33	0.38	0.46	0.45	0.45
Control Delay	44.8	8.4	17.6	6.0	36.9	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	8.4	17.6	6.0	36.9	8.8
Queue Length 50th (ft)	483	54	33	83	64	0
Queue Length 95th (ft)	#778	102	74	99	119	55
Internal Link Dist (ft)	635			266	841	
Turn Bay Length (ft)		50	100			100
Base Capacity (vph)	1010	874	323	1316	294	420
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	0.98	0.33	0.38	0.46	0.45	0.45

Intersection Summary

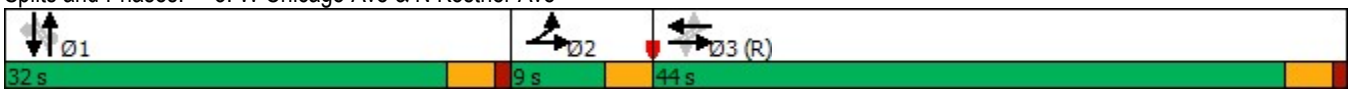
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	871	31	4	457	69	44	20	8	117	34	169
Future Volume (vph)	139	871	31	4	457	69	44	20	8	117	34	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	100			70			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99			0.99	0.99
Frt		0.995			0.980			0.956				0.850
Flt Protected	0.950			0.950			0.950				0.963	
Satd. Flow (prot)	1703	3386	0	1703	3324	0	1327	1326	0	0	1759	1553
Flt Permitted	0.382			0.274			0.613				0.763	
Satd. Flow (perm)	682	3386	0	491	3324	0	856	1326	0	0	1380	1533
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			27			9				184
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		660			361			227			577	
Travel Time (s)		15.0			8.2			5.2			13.1	
Confl. Peds. (#/hr)	10		2	2		10	1		15	15		1
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 (%)	6%	6%	6%	6%	6%	6%	36%	36%	36%	4%	4%	4%
Adj. Flow (vph)	151	947	34	4	497	75	48	22	9	127	37	184
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	981	0	4	572	0	48	31	0	0	164	184
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		0	0		1	0	0
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	0		0	0		0	0		20	0	0
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	D.P+P	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	2	2 3			3			1			1	
Permitted Phases	3			3			1			1		1
Detector Phase	2	2 3		3	3		1	1		1	1	1
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	6.0			22.0	22.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	9.0			44.0	44.0		32.0	32.0		32.0	32.0	32.0
Total Split (s)	9.0			44.0	44.0		32.0	32.0		32.0	32.0	32.0
Total Split (%)	10.6%			51.8%	51.8%		37.6%	37.6%		37.6%	37.6%	37.6%
Maximum Green (s)	6.0			40.0	40.0		28.0	28.0		28.0	28.0	28.0
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0			1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0			0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	3.0			4.0	4.0		4.0	4.0			4.0	4.0
Lead/Lag	Lag						Lead	Lead		Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0			0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None			C-Max	C-Max		Max	Max		Max	Max	Max
Walk Time (s)				22.0	22.0		10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)				18.0	18.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	47.0	50.0		40.0	40.0		28.0	28.0			28.0	28.0
Actuated g/C Ratio	0.55	0.59		0.47	0.47		0.33	0.33			0.33	0.33
v/c Ratio	0.34	0.49		0.02	0.36		0.17	0.07			0.36	0.29
Control Delay	16.3	19.9		12.5	14.4		22.3	16.0			24.6	4.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	16.3	19.9		12.5	14.4		22.3	16.0			24.6	4.7
LOS	B	B		B	B		C	B			C	A
Approach Delay		19.5			14.4			19.8			14.1	
Approach LOS		B			B			B			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 70 (82%), Referenced to phase 3:EBWB, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.49	
Intersection Signal Delay: 17.2	Intersection LOS: B
Intersection Capacity Utilization 90.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: W Chicago Ave & N Kostner Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	151	981	4	572	48	31	164	184
v/c Ratio	0.34	0.49	0.02	0.36	0.17	0.07	0.36	0.29
Control Delay	16.3	19.9	12.5	14.4	22.3	16.0	24.6	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	19.9	12.5	14.4	22.3	16.0	24.6	4.7
Queue Length 50th (ft)	61	234	1	93	18	8	66	0
Queue Length 95th (ft)	m67	m254	7	131	45	27	120	43
Internal Link Dist (ft)		580		281		147	497	
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	449	1994	231	1578	281	442	454	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.49	0.02	0.36	0.17	0.07	0.36	0.29

Intersection Summary

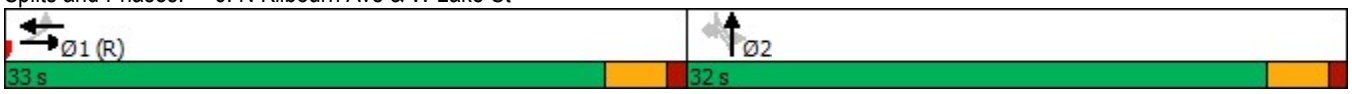
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	740	0	0	280	31	52	180	14	178	0	42
Future Volume (vph)	53	740	0	0	280	31	52	180	14	178	0	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	0		100
Storage Lanes	0		0	0		0	1		0	1		1
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			1.00		1.00		
Frt					0.985			0.989				0.850
Flt Protected		0.997					0.950			0.950		
Satd. Flow (prot)	0	3564	0	0	3411	0	1736	1805	0	1612	0	1442
Flt Permitted		0.907					0.950			0.559		
Satd. Flow (perm)	0	3241	0	0	3411	0	1736	1805	0	948	0	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					23			8				47
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		618			660			642			1899	
Travel Time (s)		14.0			15.0			14.6			43.2	
Confl. Peds. (#/hr)	3		3	3		3			1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	4%	4%	4%	12%	12%	12%
Adj. Flow (vph)	59	822	0	0	311	34	58	200	16	198	0	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	881	0	0	345	0	58	216	0	198	0	47
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0			0		1	1		1		1
Detector Template	Left	Thru			Thru		Left	Thru		Left		Right
Leading Detector (ft)	20	0			0		20	20		20		20
Trailing Detector (ft)	0	0			0		0	0		0		0
Detector 1 Position(ft)	0	0			0		0	0		0		0
Detector 1 Size(ft)	20	6			6		20	20		20		20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Turn Type	Perm	NA			NA		Perm	NA		D.Pm		Perm
Protected Phases		1			1			2				
Permitted Phases	1						2			2		2
Detector Phase	1	1			1		2	2		2		2
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	20.0	20.0			20.0		16.0	16.0		16.0		16.0
Minimum Split (s)	33.0	33.0			33.0		32.0	32.0		32.0		32.0
Total Split (s)	33.0	33.0			33.0		32.0	32.0		32.0		32.0
Total Split (%)	50.8%	50.8%			50.8%		49.2%	49.2%		49.2%		49.2%
Maximum Green (s)	29.0	29.0			29.0		28.0	28.0		28.0		28.0
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0		1.0		1.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		4.0			4.0		4.0	4.0		4.0		4.0
Lead/Lag	Lead	Lead			Lead		Lag	Lag		Lag		Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2			0.2		4.0	4.0		4.0		4.0
Recall Mode	C-Max	C-Max			C-Max		None	None		None		None
Walk Time (s)	20.0	20.0			20.0		10.0	10.0		10.0		10.0
Flash Dont Walk (s)	9.0	9.0			9.0		18.0	18.0		18.0		18.0
Pedestrian Calls (#/hr)	0	0			0		0	0		0		0
Act Effct Green (s)		36.6			36.6		20.4	20.4		20.4		20.4
Actuated g/C Ratio		0.56			0.56		0.31	0.31		0.31		0.31
v/c Ratio		0.48			0.18		0.11	0.38		0.67		0.10
Control Delay		10.7			7.7		14.3	17.6		30.0		4.7
Queue Delay		0.0			0.0		0.0	0.0		0.0		0.0
Total Delay		10.7			7.7		14.3	17.6		30.0		4.7
LOS		B			A		B	B		C		A
Approach Delay		10.7			7.7			16.9			25.1	
Approach LOS		B			A			B			C	

Intersection Summary	
Area Type: Other	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 12 (18%), Referenced to phase 1:EBWB, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 13.1	Intersection LOS: B
Intersection Capacity Utilization 85.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: N Kilbourn Ave & W Lake St



Lane Group	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	881	345	58	216	198	47
v/c Ratio	0.48	0.18	0.11	0.38	0.67	0.10
Control Delay	10.7	7.7	14.3	17.6	30.0	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	7.7	14.3	17.6	30.0	4.7
Queue Length 50th (ft)	92	27	17	66	70	0
Queue Length 95th (ft)	187	63	32	93	111	16
Internal Link Dist (ft)	538	580		562		
Turn Bay Length (ft)			100			100
Base Capacity (vph)	1825	1931	747	782	408	647
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	0.48	0.18	0.08	0.28	0.49	0.07

Intersection Summary

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	0	996	517	0	6	13
Future Vol, veh/h	0	996	517	0	6	13
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	6	6	6	0	0
Mvmt Flow	0	1060	550	0	6	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	1080	275
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	530	-
Critical Hdwy	-	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	216	729
Stage 1	0	-	-	0	547	-
Stage 2	0	-	-	0	560	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	216	729
Mov Cap-2 Maneuver	-	-	-	-	216	-
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	560	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	417
HCM Lane V/C Ratio	-	-	0.048
HCM Control Delay (s)	-	-	14.1
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.2

Intersection	
Intersection Delay, s/veh	12.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	27	289	10	48	333
Future Vol, veh/h	5	27	289	10	48	333
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	8	8	5	5
Mvmt Flow	6	32	344	12	57	396
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.6	11.4	13.2
HCM LOS	A	B	B

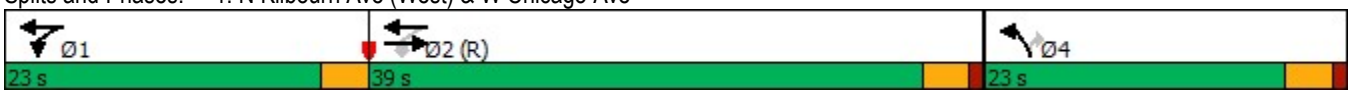
Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	16%	13%
Vol Thru, %	97%	0%	87%
Vol Right, %	3%	84%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	299	32	381
LT Vol	0	5	48
Through Vol	289	0	333
RT Vol	10	27	0
Lane Flow Rate	356	38	454
Geometry Grp	1	1	1
Degree of Util (X)	0.453	0.055	0.565
Departure Headway (Hd)	4.582	5.212	4.483
Convergence, Y/N	Yes	Yes	Yes
Cap	787	684	807
Service Time	2.609	3.265	2.507
HCM Lane V/C Ratio	0.452	0.056	0.563
HCM Control Delay	11.4	8.6	13.2
HCM Lane LOS	B	A	B
HCM 95th-tile Q	2.4	0.2	3.6

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	570	193	159	976	244	268
Future Volume (vph)	570	193	159	976	244	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		50	100		0	100
Storage Lanes		1	1		1	1
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98	1.00			
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1776	1509	1736	1827	1770	1583
Flt Permitted			0.175		0.950	
Satd. Flow (perm)	1776	1476	320	1827	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		73				282
Link Speed (mph)	30			30	30	
Link Distance (ft)	715			346	921	
Travel Time (s)	16.3			7.9	20.9	
Confl. Peds. (#/hr)		2	2			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	7%	4%	4%	2%	2%
Adj. Flow (vph)	600	203	167	1027	257	282
Shared Lane Traffic (%)						
Lane Group Flow (vph)	600	203	167	1027	257	282
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	0	0	0	0	0	0
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	0	0	0	0	0	0
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	NA	Perm	D.P+P	NA	Prot	Perm
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			4
Detector Phase	2	2	1	1 2	4	4
Switch Phase						
Minimum Initial (s)	35.0	35.0	20.0		19.0	19.0
Minimum Split (s)	39.0	39.0	23.0		23.0	23.0
Total Split (s)	39.0	39.0	23.0		23.0	23.0
Total Split (%)	45.9%	45.9%	27.1%		27.1%	27.1%
Maximum Green (s)	35.0	35.0	20.0		19.0	19.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.0	1.0	0.0		1.0	1.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	3.0		4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2	0.2	0.2		0.2	0.2
Recall Mode	C-Max	C-Max	Max		Max	Max
Act Effct Green (s)	35.0	35.0	56.0	59.0	19.0	19.0
Actuated g/C Ratio	0.41	0.41	0.66	0.69	0.22	0.22
v/c Ratio	0.82	0.31	0.31	0.81	0.65	0.49
Control Delay	33.5	12.1	12.4	30.2	38.8	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	12.1	12.4	30.2	38.8	7.0
LOS	C	B	B	C	D	A
Approach Delay	28.1			27.7	22.1	
Approach LOS	C			C	C	

Intersection Summary	
Area Type: Other	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 75 (88%), Referenced to phase 2:EBWB, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 26.7	Intersection LOS: C
Intersection Capacity Utilization 73.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: N Kilbourn Ave (West) & W Chicago Ave



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	600	203	167	1027	257	282
v/c Ratio	0.82	0.31	0.31	0.81	0.65	0.49
Control Delay	33.5	12.1	12.4	30.2	38.8	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	12.1	12.4	30.2	38.8	7.0
Queue Length 50th (ft)	277	44	58	546	125	0
Queue Length 95th (ft)	#462	93	103	693	206	61
Internal Link Dist (ft)	635			266	841	
Turn Bay Length (ft)		50	100			100
Base Capacity (vph)	731	650	544	1268	395	572
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	0.82	0.31	0.31	0.81	0.65	0.49

Intersection Summary

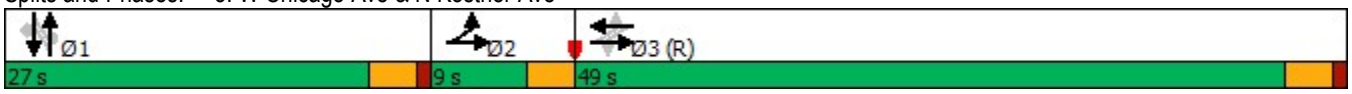
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	546	18	3	874	139	28	35	18	146	10	221
Future Volume (vph)	230	546	18	3	874	139	28	35	18	146	10	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	100			70			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			1.00	
Frt		0.995			0.979			0.950				0.850
Flt Protected	0.950			0.950			0.950				0.955	
Satd. Flow (prot)	1703	3386	0	1736	3387	0	1805	1796	0	0	1728	1538
Flt Permitted	0.177			0.423			0.583				0.699	
Satd. Flow (perm)	317	3386	0	771	3387	0	1108	1796	0	0	1261	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			32			19				218
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		660			361			227			577	
Travel Time (s)		15.0			8.2			5.2			13.1	
Confl. Peds. (#/hr)	5		6	6		5			3	3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	0%	0%	0%	5%	5%	5%
Adj. Flow (vph)	247	587	19	3	940	149	30	38	19	157	11	238
Shared Lane Traffic (%)												
Lane Group Flow (vph)	247	606	0	3	1089	0	30	57	0	0	168	238
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		0	0		1	0	0
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	0		0	0		0	0		20	0	0
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	D.P+P	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	2	2 3			3			1			1	
Permitted Phases	3			3			1			1		1
Detector Phase	2	2 3		3	3		1	1		1	1	1
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	6.0			27.0	27.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.0			49.0	49.0		27.0	27.0		27.0	27.0	27.0
Total Split (s)	9.0			49.0	49.0		27.0	27.0		27.0	27.0	27.0
Total Split (%)	10.6%			57.6%	57.6%		31.8%	31.8%		31.8%	31.8%	31.8%
Maximum Green (s)	6.0			45.0	45.0		23.0	23.0		23.0	23.0	23.0
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0			1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0			0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	3.0			4.0	4.0		4.0	4.0			4.0	4.0
Lead/Lag	Lag						Lead	Lead		Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0			0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None			C-Max	C-Max		Max	Max		Max	Max	Max
Walk Time (s)				27.0	27.0		5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)				18.0	18.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	52.0	55.0		45.0	45.0		23.0	23.0			23.0	23.0
Actuated g/C Ratio	0.61	0.65		0.53	0.53		0.27	0.27			0.27	0.27
v/c Ratio	0.85	0.28		0.01	0.60		0.10	0.11			0.49	0.41
Control Delay	41.4	8.2		9.7	15.1		24.5	17.9			32.0	7.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	41.4	8.2		9.7	15.1		24.5	17.9			32.0	7.2
LOS	D	A		A	B		C	B			C	A
Approach Delay		17.8			15.1			20.2			17.5	
Approach LOS		B			B			C			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 79 (93%), Referenced to phase 3:EBWB, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 16.6	Intersection LOS: B
Intersection Capacity Utilization 80.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: W Chicago Ave & N Kostner Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	247	606	3	1089	30	57	168	238
v/c Ratio	0.85	0.28	0.01	0.60	0.10	0.11	0.49	0.41
Control Delay	41.4	8.2	9.7	15.1	24.5	17.9	32.0	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	8.2	9.7	15.1	24.5	17.9	32.0	7.2
Queue Length 50th (ft)	81	60	1	192	12	15	75	8
Queue Length 95th (ft)	m#113	m109	5	254	34	43	137	62
Internal Link Dist (ft)		580		281		147	497	
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	291	2193	408	1808	299	499	341	575
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.28	0.01	0.60	0.10	0.11	0.49	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

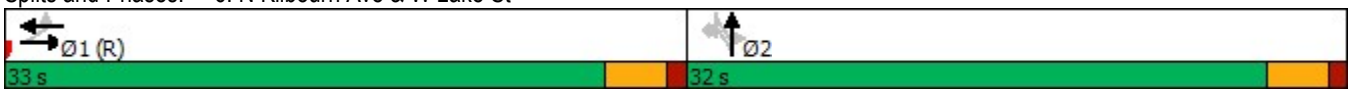
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	299	0	0	639	56	54	217	15	202	0	120
Future Volume (vph)	29	299	0	0	639	56	54	217	15	202	0	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	0		100
Storage Lanes	0		0	0		0	1		0	1		1
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00							
Frt					0.988			0.990				0.850
Flt Protected		0.996					0.950			0.950		
Satd. Flow (prot)	0	3525	0	0	3490	0	1752	1826	0	1770	0	1583
Flt Permitted		0.874					0.950			0.518		
Satd. Flow (perm)	0	3093	0	0	3490	0	1752	1826	0	965	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					18			7				128
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		618			660			642			1899	
Travel Time (s)		14.0			15.0			14.6			43.2	
Confl. Peds. (#/hr)	5					5						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	31	318	0	0	680	60	57	231	16	215	0	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	349	0	0	740	0	57	247	0	215	0	128
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0			0		1	1		1		1
Detector Template	Left	Thru			Thru		Left	Thru		Left		Right
Leading Detector (ft)	20	0			0		20	20		20		20
Trailing Detector (ft)	0	0			0		0	0		0		0
Detector 1 Position(ft)	0	0			0		0	0		0		0
Detector 1 Size(ft)	20	6			6		20	20		20		20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Turn Type	Perm	NA			NA		Perm	NA		D.Pm		Perm
Protected Phases		1			1			2				
Permitted Phases	1						2			2		2
Detector Phase	1	1			1		2	2		2		2
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	20.0	20.0			20.0		16.0	16.0		16.0		16.0
Minimum Split (s)	33.0	33.0			33.0		32.0	32.0		32.0		32.0
Total Split (s)	33.0	33.0			33.0		32.0	32.0		32.0		32.0
Total Split (%)	50.8%	50.8%			50.8%		49.2%	49.2%		49.2%		49.2%
Maximum Green (s)	29.0	29.0			29.0		28.0	28.0		28.0		28.0
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0		1.0		1.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		4.0			4.0		4.0	4.0		4.0		4.0
Lead/Lag	Lead	Lead			Lead		Lag	Lag		Lag		Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2			0.2		4.0	4.0		4.0		4.0
Recall Mode	C-Max	C-Max			C-Max		None	None		None		None
Walk Time (s)	20.0	20.0			20.0		10.0	10.0		10.0		10.0
Flash Dont Walk (s)	9.0	9.0			9.0		18.0	18.0		18.0		18.0
Pedestrian Calls (#/hr)	0	0			0		0	0		0		0
Act Effct Green (s)		36.1			36.1		20.9	20.9		20.9		20.9
Actuated g/C Ratio		0.56			0.56		0.32	0.32		0.32		0.32
v/c Ratio		0.20			0.38		0.10	0.42		0.69		0.22
Control Delay		8.7			9.6		13.9	17.9		30.7		3.6
Queue Delay		0.0			0.0		0.0	0.0		0.0		0.0
Total Delay		8.7			9.6		13.9	17.9		30.7		3.6
LOS		A			A		B	B		C		A
Approach Delay		8.7			9.6			17.2			20.6	
Approach LOS		A			A			B			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 47 (72%), Referenced to phase 1:EBWB, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 12.9	Intersection LOS: B
Intersection Capacity Utilization 65.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: N Kilbourn Ave & W Lake St



Lane Group	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	349	740	57	247	215	128
v/c Ratio	0.20	0.38	0.10	0.42	0.69	0.22
Control Delay	8.7	9.6	13.9	17.9	30.7	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.7	9.6	13.9	17.9	30.7	3.6
Queue Length 50th (ft)	32	74	16	74	74	0
Queue Length 95th (ft)	68	143	31	106	122	26
Internal Link Dist (ft)	538	580		562		
Turn Bay Length (ft)			100			100
Base Capacity (vph)	1717	1946	754	790	415	754
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	0.20	0.38	0.08	0.31	0.52	0.17

Intersection Summary

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	0	709	991	0	7	21
Future Vol, veh/h	0	709	991	0	7	21
Conflicting Peds, #/hr	6	0	0	6	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	8	8	4	4	0	0
Mvmt Flow	0	754	1054	0	7	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	1431	527
Stage 1	-	-	-	-	1054	-
Stage 2	-	-	-	-	377	-
Critical Hdwy	-	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	128	501
Stage 1	0	-	-	0	301	-
Stage 2	0	-	-	0	669	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	128	501
Mov Cap-2 Maneuver	-	-	-	-	128	-
Stage 1	-	-	-	-	301	-
Stage 2	-	-	-	-	669	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.8
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	290
HCM Lane V/C Ratio	-	-	0.103
HCM Control Delay (s)	-	-	18.8
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.3

Intersection	
Intersection Delay, s/veh	14.4
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	83	405	6	36	346
Future Vol, veh/h	11	83	405	6	36	346
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	6	6	4	4	8	8
Mvmt Flow	13	94	460	7	41	393
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.7	15.2	14.7
HCM LOS	A	C	B

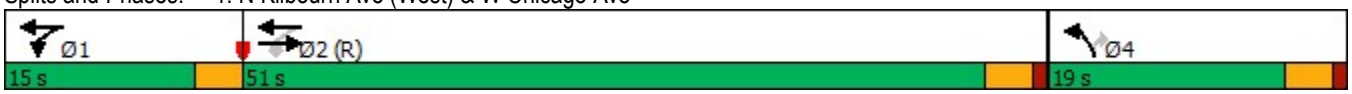
Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	12%	9%
Vol Thru, %	99%	0%	91%
Vol Right, %	1%	88%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	411	94	382
LT Vol	0	11	36
Through Vol	405	0	346
RT Vol	6	83	0
Lane Flow Rate	467	107	434
Geometry Grp	1	1	1
Degree of Util (X)	0.616	0.166	0.587
Departure Headway (Hd)	4.746	5.59	4.867
Convergence, Y/N	Yes	Yes	Yes
Cap	757	645	734
Service Time	2.817	3.59	2.94
HCM Lane V/C Ratio	0.617	0.166	0.591
HCM Control Delay	15.2	9.7	14.7
HCM Lane LOS	C	A	B
HCM 95th-tile Q	4.3	0.6	3.9

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	931	265	118	560	120	180
Future Volume (vph)	931	265	118	560	120	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		50	100		0	100
Storage Lanes		1	1		1	1
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98	1.00			
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1827	1553	1687	1776	1671	1495
Flt Permitted			0.085		0.950	
Satd. Flow (perm)	1827	1515	151	1776	1671	1495
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		81				198
Link Speed (mph)	30			30	30	
Link Distance (ft)	715			346	786	
Travel Time (s)	16.3			7.9	17.9	
Confl. Peds. (#/hr)		5	5			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	7%	7%	8%	8%
Adj. Flow (vph)	1023	291	130	615	132	198
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1023	291	130	615	132	198
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	0	0	0	0	0	0
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	0	0	0	0	0	0
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	NA	Perm	D.P+P	NA	Prot	Perm
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			4
Detector Phase	2	2	1	1 2	4	4
Switch Phase						
Minimum Initial (s)	43.0	43.0	12.0		15.0	15.0
Minimum Split (s)	51.0	51.0	15.0		19.0	19.0
Total Split (s)	51.0	51.0	15.0		19.0	19.0
Total Split (%)	60.0%	60.0%	17.6%		22.4%	22.4%
Maximum Green (s)	47.0	47.0	12.0		15.0	15.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.0	1.0	0.0		1.0	1.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	3.0		4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2	0.2	0.2		0.2	0.2
Recall Mode	C-Max	C-Max	Max		Max	Max
Act Effct Green (s)	47.0	47.0	60.0	63.0	15.0	15.0
Actuated g/C Ratio	0.55	0.55	0.71	0.74	0.18	0.18
v/c Ratio	1.01	0.33	0.40	0.47	0.45	0.46
Control Delay	52.6	8.5	19.4	6.6	36.9	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.6	8.5	19.4	6.6	36.9	8.8
LOS	D	A	B	A	D	A
Approach Delay	42.8			8.8	20.0	
Approach LOS	D			A	C	

Intersection Summary	
Area Type: Other	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 72 (85%), Referenced to phase 2:EBWB, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 29.1	Intersection LOS: C
Intersection Capacity Utilization 81.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: N Kilbourn Ave (West) & W Chicago Ave



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1023	291	130	615	132	198
v/c Ratio	1.01	0.33	0.40	0.47	0.45	0.46
Control Delay	52.6	8.5	19.4	6.6	36.9	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.6	8.5	19.4	6.6	36.9	8.8
Queue Length 50th (ft)	~532	54	40	88	64	0
Queue Length 95th (ft)	#815	102	85	171	119	56
Internal Link Dist (ft)	635			266	706	
Turn Bay Length (ft)		50	100			100
Base Capacity (vph)	1010	873	323	1316	294	426
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	1.01	0.33	0.40	0.47	0.45	0.46

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

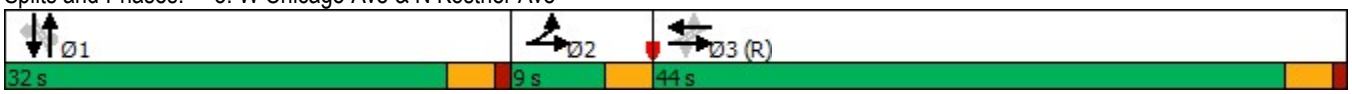
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	902	35	15	501	89	21	4	20	151	8	169
Future Volume (vph)	139	902	35	15	501	89	21	4	20	151	8	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	100			70			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.98			0.99	0.99
Frt		0.994			0.977			0.873				0.850
Flt Protected	0.950			0.950			0.950				0.955	
Satd. Flow (prot)	1703	3382	0	1703	3312	0	1327	1193	0	0	1745	1553
Flt Permitted	0.343			0.259			0.600				0.718	
Satd. Flow (perm)	612	3382	0	464	3312	0	838	1193	0	0	1295	1533
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			32			22				184
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		660			361			221			577	
Travel Time (s)		15.0			8.2			5.0			13.1	
Confl. Peds. (#/hr)	10		2	2		10	1		15	15		1
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 (%)	6%	6%	6%	6%	6%	6%	36%	36%	36%	4%	4%	4%
Adj. Flow (vph)	151	980	38	16	545	97	23	4	22	164	9	184
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	1018	0	16	642	0	23	26	0	0	173	184
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		0	2		1	2	0
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	0		0	0		0	100		20	100	0
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	D.P+P	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	2	2 3			3			1			1	
Permitted Phases	3			3			1			1		1
Detector Phase	2	2 3		3	3		1	1		1	1	1
Switch Phase												
Minimum Initial (s)	6.0			22.0	22.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	9.0			44.0	44.0		32.0	32.0		32.0	32.0	32.0
Total Split (s)	9.0			44.0	44.0		32.0	32.0		32.0	32.0	32.0
Total Split (%)	10.6%			51.8%	51.8%		37.6%	37.6%		37.6%	37.6%	37.6%
Maximum Green (s)	6.0			40.0	40.0		28.0	28.0		28.0	28.0	28.0
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0			1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0			0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	3.0			4.0	4.0		4.0	4.0			4.0	4.0
Lead/Lag	Lag						Lead	Lead		Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0			0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None			C-Max	C-Max		Max	Max		Max	Max	Max
Walk Time (s)				22.0	22.0		10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)				18.0	18.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	47.0	50.0		40.0	40.0		28.0	28.0			28.0	28.0
Actuated g/C Ratio	0.55	0.59		0.47	0.47		0.33	0.33			0.33	0.33
v/c Ratio	0.36	0.51		0.07	0.41		0.08	0.06			0.41	0.29
Control Delay	16.4	20.1		13.6	14.9		20.8	10.0			25.6	4.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	16.4	20.1		13.6	14.9		20.8	10.0			25.6	4.7
LOS	B	C		B	B		C	A			C	A
Approach Delay		19.7			14.9			15.1			14.9	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 70 (82%), Referenced to phase 3:EBWB, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.51
Intersection Signal Delay: 17.4 Intersection LOS: B
Intersection Capacity Utilization 90.0% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 3: W Chicago Ave & N Kostner Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	151	1018	16	642	23	26	173	184
v/c Ratio	0.36	0.51	0.07	0.41	0.08	0.06	0.41	0.29
Control Delay	16.4	20.1	13.6	14.9	20.8	10.0	25.6	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	20.1	13.6	14.9	20.8	10.0	25.6	4.7
Queue Length 50th (ft)	60	244	5	106	8	1	71	0
Queue Length 95th (ft)	m65	m256	16	148	26	19	128	43
Internal Link Dist (ft)		580		281		141	497	
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	415	1992	218	1575	276	407	426	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.51	0.07	0.41	0.08	0.06	0.41	0.29

Intersection Summary

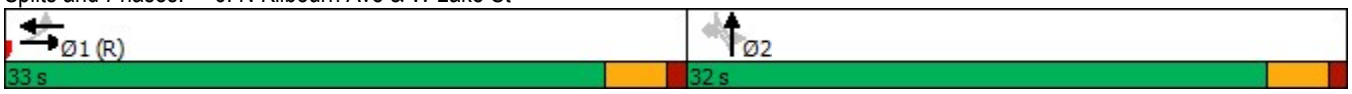
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	740	0	0	280	32	52	185	14	184	0	43
Future Volume (vph)	54	740	0	0	280	32	52	185	14	184	0	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	0		100
Storage Lanes	0		0	0		0	1		0	1		1
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			1.00		1.00		
Frt					0.984			0.989				0.850
Flt Protected		0.997					0.950			0.950		
Satd. Flow (prot)	0	3564	0	0	3407	0	1736	1805	0	1612	0	1442
Flt Permitted		0.906					0.950			0.552		
Satd. Flow (perm)	0	3238	0	0	3407	0	1736	1805	0	936	0	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					24			8				48
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		618			660			642			1899	
Travel Time (s)		14.0			15.0			14.6			43.2	
Confl. Peds. (#/hr)	3		3	3		3			1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	4%	4%	4%	12%	12%	12%
Adj. Flow (vph)	60	822	0	0	311	36	58	206	16	204	0	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	882	0	0	347	0	58	222	0	204	0	48
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0			0		1	1		1		1
Detector Template	Left	Thru			Thru		Left	Thru		Left		Right
Leading Detector (ft)	20	0			0		20	20		20		20
Trailing Detector (ft)	0	0			0		0	0		0		0
Detector 1 Position(ft)	0	0			0		0	0		0		0
Detector 1 Size(ft)	20	6			6		20	20		20		20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Turn Type	Perm	NA			NA		Perm	NA		D.Pm		Perm
Protected Phases		1			1			2				
Permitted Phases	1						2			2		2
Detector Phase	1	1			1		2	2		2		2
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	20.0	20.0			20.0		16.0	16.0		16.0		16.0
Minimum Split (s)	33.0	33.0			33.0		32.0	32.0		32.0		32.0
Total Split (s)	33.0	33.0			33.0		32.0	32.0		32.0		32.0
Total Split (%)	50.8%	50.8%			50.8%		49.2%	49.2%		49.2%		49.2%
Maximum Green (s)	29.0	29.0			29.0		28.0	28.0		28.0		28.0
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0		1.0		1.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		4.0			4.0		4.0	4.0		4.0		4.0
Lead/Lag	Lead	Lead			Lead		Lag	Lag		Lag		Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2			0.2		4.0	4.0		4.0		4.0
Recall Mode	C-Max	C-Max			C-Max		None	None		None		None
Walk Time (s)	20.0	20.0			20.0		10.0	10.0		10.0		10.0
Flash Dont Walk (s)	9.0	9.0			9.0		18.0	18.0		18.0		18.0
Pedestrian Calls (#/hr)	0	0			0		0	0		0		0
Act Effct Green (s)		36.4			36.4		20.6	20.6		20.6		20.6
Actuated g/C Ratio		0.56			0.56		0.32	0.32		0.32		0.32
v/c Ratio		0.49			0.18		0.11	0.38		0.69		0.10
Control Delay		10.9			7.8		14.2	17.5		31.1		4.6
Queue Delay		0.0			0.0		0.0	0.0		0.0		0.0
Total Delay		10.9			7.8		14.2	17.5		31.1		4.6
LOS		B			A		B	B		C		A
Approach Delay		10.9			7.8			16.8			26.1	
Approach LOS		B			A			B			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 12 (18%), Referenced to phase 1:EBWB, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 13.4	Intersection LOS: B
Intersection Capacity Utilization 85.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: N Kilbourn Ave & W Lake St



Lane Group	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	882	347	58	222	204	48
v/c Ratio	0.49	0.18	0.11	0.38	0.69	0.10
Control Delay	10.9	7.8	14.2	17.5	31.1	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	7.8	14.2	17.5	31.1	4.6
Queue Length 50th (ft)	94	27	17	67	72	0
Queue Length 95th (ft)	188	63	32	96	116	16
Internal Link Dist (ft)	538	580		562		
Turn Bay Length (ft)			100			100
Base Capacity (vph)	1813	1918	747	782	403	648
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	0.49	0.18	0.08	0.28	0.51	0.07

Intersection Summary

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1007	66	4	526	0	66	0	8	6	0	13
Future Vol, veh/h	0	1007	66	4	526	0	66	0	8	6	0	13
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	92	92	94	94	92	92	92	94	92	94
Heavy Vehicles, %	6	6	2	2	6	6	2	2	2	0	2	0
Mvmt Flow	0	1071	72	4	560	0	72	0	9	6	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1143	0	0	1395	-	572	1104	1711	280
Stage 1	-	-	-	-	-	-	1107	-	-	568	568	-
Stage 2	-	-	-	-	-	-	288	-	-	536	1143	-
Critical Hdwy	-	-	-	4.14	-	-	7.54	-	6.94	7.5	6.54	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	-	-	6.5	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	-	-	6.5	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	-	3.32	3.5	4.02	3.3
Pot Cap-1 Maneuver	0	-	-	607	-	0	101	0	463	168	90	723
Stage 1	0	-	-	-	-	0	224	0	-	480	505	-
Stage 2	0	-	-	-	-	0	695	0	-	501	273	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	607	-	-	99	-	463	164	89	723
Mov Cap-2 Maneuver	-	-	-	-	-	-	99	-	-	164	89	-
Stage 1	-	-	-	-	-	-	224	-	-	480	501	-
Stage 2	-	-	-	-	-	-	677	-	-	492	273	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	94.8	16
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	99	463	-	-	607	-	348
HCM Lane V/C Ratio	0.725	0.019	-	-	0.007	-	0.058
HCM Control Delay (s)	104.7	12.9	-	-	11	-	16
HCM Lane LOS	F	B	-	-	B	-	C
HCM 95th %tile Q(veh)	3.8	0.1	-	-	0	-	0.2

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	27	296	10	48	340
Future Vol, veh/h	5	27	296	10	48	340
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	8	8	5	5
Mvmt Flow	6	32	352	12	57	405
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.6	11.6	13.5
HCM LOS	A	B	B

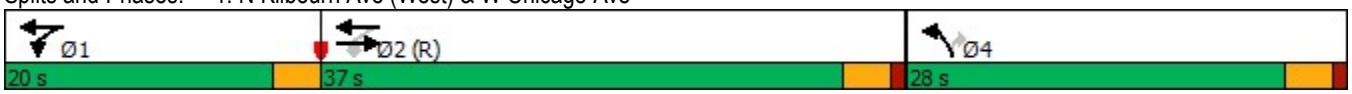
Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	16%	12%
Vol Thru, %	97%	0%	88%
Vol Right, %	3%	84%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	306	32	388
LT Vol	0	5	48
Through Vol	296	0	340
RT Vol	10	27	0
Lane Flow Rate	364	38	462
Geometry Grp	1	1	1
Degree of Util (X)	0.465	0.056	0.576
Departure Headway (Hd)	4.594	5.246	4.493
Convergence, Y/N	Yes	Yes	Yes
Cap	783	680	804
Service Time	2.621	3.302	2.519
HCM Lane V/C Ratio	0.465	0.056	0.575
HCM Control Delay	11.6	8.6	13.5
HCM Lane LOS	B	A	B
HCM 95th-tile Q	2.5	0.2	3.7

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	583	193	164	997	379	412
Future Volume (vph)	583	193	164	997	379	412
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		50	100		0	100
Storage Lanes		1	1		1	1
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98	1.00			
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1776	1509	1736	1827	1770	1583
Flt Permitted			0.132		0.950	
Satd. Flow (perm)	1776	1475	241	1827	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		69				321
Link Speed (mph)	30			30	30	
Link Distance (ft)	715			346	742	
Travel Time (s)	16.3			7.9	16.9	
Confl. Peds. (#/hr)		2	2			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	7%	4%	4%	2%	2%
Adj. Flow (vph)	614	203	173	1049	399	434
Shared Lane Traffic (%)						
Lane Group Flow (vph)	614	203	173	1049	399	434
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	0	0	0	0	0	0
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	0	0	0	0	0	0
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	NA	Perm	D.P+P	NA	Prot	Perm
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			4
Detector Phase	2	2	1	1 2	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0		7.0	7.0
Minimum Split (s)	14.0	14.0	10.0		11.0	11.0
Total Split (s)	37.0	37.0	20.0		28.0	28.0
Total Split (%)	43.5%	43.5%	23.5%		32.9%	32.9%
Maximum Green (s)	33.0	33.0	17.0		24.0	24.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.0	1.0	0.0		1.0	1.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	3.0		4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2	0.2	0.2		0.2	0.2
Recall Mode	C-Max	C-Max	Max		Max	Max
Act Effct Green (s)	33.0	33.0	51.0	54.0	24.0	24.0
Actuated g/C Ratio	0.39	0.39	0.60	0.64	0.28	0.28
v/c Ratio	0.89	0.33	0.39	0.90	0.80	0.64
Control Delay	42.0	13.5	16.6	41.0	42.3	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	13.5	16.6	41.0	42.3	12.2
LOS	D	B	B	D	D	B
Approach Delay	34.9			37.6	26.6	
Approach LOS	C			D	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 75 (88%), Referenced to phase 2:EBWB, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 33.6	Intersection LOS: C
Intersection Capacity Utilization 80.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: N Kilbourn Ave (West) & W Chicago Ave



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	614	203	173	1049	399	434
v/c Ratio	0.89	0.33	0.39	0.90	0.80	0.64
Control Delay	42.0	13.5	16.6	41.0	42.3	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	13.5	16.6	41.0	42.3	12.2
Queue Length 50th (ft)	300	47	69	596	197	47
Queue Length 95th (ft)	#502	99	m113	#793	#340	144
Internal Link Dist (ft)	635			266	662	
Turn Bay Length (ft)		50	100			100
Base Capacity (vph)	689	614	443	1160	499	677
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	0.89	0.33	0.39	0.90	0.80	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

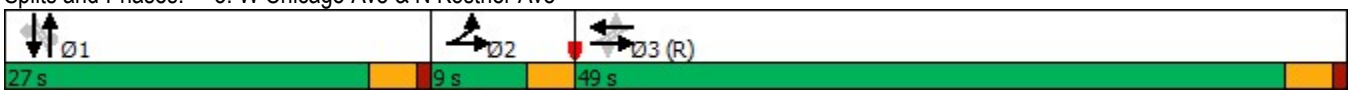
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	699	22	23	902	174	28	6	11	156	8	221
Future Volume (vph)	230	699	22	23	902	174	28	6	11	156	8	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	100			70			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			1.00	
Frt		0.995			0.976			0.900				0.850
Flt Protected	0.950			0.950			0.950				0.955	
Satd. Flow (prot)	1703	3386	0	1736	3374	0	1805	1693	0	0	1728	1538
Flt Permitted	0.155			0.358			0.568				0.724	
Satd. Flow (perm)	278	3386	0	653	3374	0	1079	1693	0	0	1306	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			40			12				211
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		660			361			239			577	
Travel Time (s)		15.0			8.2			5.4			13.1	
Confl. Peds. (#/hr)	5		6	6		5			3	3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	0%	0%	0%	5%	5%	5%
Adj. Flow (vph)	247	752	24	25	970	187	30	6	12	168	9	238
Shared Lane Traffic (%)												
Lane Group Flow (vph)	247	776	0	25	1157	0	30	18	0	0	177	238
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		0	2		1	2	0
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	0		0	0		0	100		20	100	0
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	D.P+P	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	2	2 3			3			1			1	
Permitted Phases	3			3			1			1		1
Detector Phase	2	2 3		3	3		1	1		1	1	1
Switch Phase												
Minimum Initial (s)	6.0			27.0	27.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.0			49.0	49.0		27.0	27.0		27.0	27.0	27.0
Total Split (s)	9.0			49.0	49.0		27.0	27.0		27.0	27.0	27.0
Total Split (%)	10.6%			57.6%	57.6%		31.8%	31.8%		31.8%	31.8%	31.8%
Maximum Green (s)	6.0			45.0	45.0		23.0	23.0		23.0	23.0	23.0
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0			1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0			0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	3.0			4.0	4.0		4.0	4.0			4.0	4.0
Lead/Lag	Lag						Lead	Lead		Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0			0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None			C-Max	C-Max		Max	Max		Max	Max	Max
Walk Time (s)				27.0	27.0		5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)				18.0	18.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	52.0	55.0		45.0	45.0		23.0	23.0			23.0	23.0
Actuated g/C Ratio	0.61	0.65		0.53	0.53		0.27	0.27			0.27	0.27
v/c Ratio	0.91	0.35		0.07	0.64		0.10	0.04			0.50	0.42
Control Delay	49.5	8.8		10.6	15.7		24.5	14.6			32.0	7.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	49.5	8.8		10.6	15.7		24.5	14.6			32.0	7.7
LOS	D	A		B	B		C	B			C	A
Approach Delay		18.6			15.6			20.8			18.1	
Approach LOS		B			B			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 79 (93%), Referenced to phase 3:EBWB, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 17.3 Intersection LOS: B
Intersection Capacity Utilization 80.4% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: W Chicago Ave & N Kostner Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	247	776	25	1157	30	18	177	238
v/c Ratio	0.91	0.35	0.07	0.64	0.10	0.04	0.50	0.42
Control Delay	49.5	8.8	10.6	15.7	24.5	14.6	32.0	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	8.8	10.6	15.7	24.5	14.6	32.0	7.7
Queue Length 50th (ft)	85	95	6	210	12	2	80	11
Queue Length 95th (ft)	m#124	m142	19	277	34	18	143	66
Internal Link Dist (ft)		580		281		159	497	
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	270	2193	345	1805	291	466	353	570
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.35	0.07	0.64	0.10	0.04	0.50	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

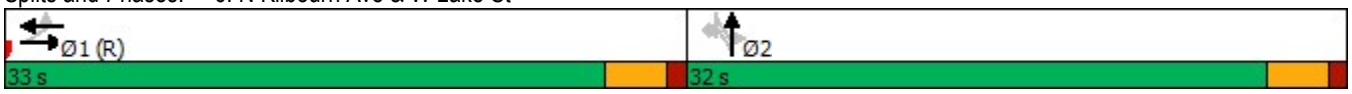
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	299	0	0	639	57	54	224	15	340	0	257
Future Volume (vph)	30	299	0	0	639	57	54	224	15	340	0	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	0		100
Storage Lanes	0		0	0		0	1		0	1		1
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00							
Frt					0.988			0.991				0.850
Flt Protected		0.995					0.950			0.950		
Satd. Flow (prot)	0	3522	0	0	3489	0	1752	1828	0	1770	0	1583
Flt Permitted		0.868					0.950			0.545		
Satd. Flow (perm)	0	3072	0	0	3489	0	1752	1828	0	1015	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					19			7				142
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		618			660			642			1899	
Travel Time (s)		14.0			15.0			14.6			43.2	
Confl. Peds. (#/hr)	5					5						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	32	318	0	0	680	61	57	238	16	362	0	273
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	350	0	0	741	0	57	254	0	362	0	273
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0			0		1	1		1		1
Detector Template	Left	Thru			Thru		Left	Thru		Left		Right
Leading Detector (ft)	20	0			0		20	20		20		20
Trailing Detector (ft)	0	0			0		0	0		0		0
Detector 1 Position(ft)	0	0			0		0	0		0		0
Detector 1 Size(ft)	20	6			6		20	20		20		20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Turn Type	Perm	NA			NA		Perm	NA		D.Pm		Perm
Protected Phases		1			1			2				
Permitted Phases	1						2			2		2
Detector Phase	1	1			1		2	2		2		2
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	20.0	20.0			20.0		16.0	16.0		16.0		16.0
Minimum Split (s)	33.0	33.0			33.0		32.0	32.0		32.0		32.0
Total Split (s)	33.0	33.0			33.0		32.0	32.0		32.0		32.0
Total Split (%)	50.8%	50.8%			50.8%		49.2%	49.2%		49.2%		49.2%
Maximum Green (s)	29.0	29.0			29.0		28.0	28.0		28.0		28.0
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0		1.0		1.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		4.0			4.0		4.0	4.0		4.0		4.0
Lead/Lag	Lead	Lead			Lead		Lag	Lag		Lag		Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2			0.2		4.0	4.0		4.0		4.0
Recall Mode	C-Max	C-Max			C-Max		None	None		None		None
Walk Time (s)	20.0	20.0			20.0		10.0	10.0		10.0		10.0
Flash Dont Walk (s)	9.0	9.0			9.0		18.0	18.0		18.0		18.0
Pedestrian Calls (#/hr)	0	0			0		0	0		0		0
Act Effct Green (s)		31.1			31.1		25.9	25.9		25.9		25.9
Actuated g/C Ratio		0.48			0.48		0.40	0.40		0.40		0.40
v/c Ratio		0.24			0.44		0.08	0.35		0.90		0.38
Control Delay		11.2			12.5		11.4	14.1		45.3		7.8
Queue Delay		0.0			0.0		0.0	0.0		0.0		0.0
Total Delay		11.2			12.5		11.4	14.1		45.3		7.8
LOS		B			B		B	B		D		A
Approach Delay		11.2			12.5			13.6			29.2	
Approach LOS		B			B			B			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 47 (72%), Referenced to phase 1:EBWB, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 17.7	Intersection LOS: B
Intersection Capacity Utilization 73.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: N Kilbourn Ave & W Lake St



Lane Group	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	350	741	57	254	362	273
v/c Ratio	0.24	0.44	0.08	0.35	0.90	0.38
Control Delay	11.2	12.5	11.4	14.1	45.3	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	12.5	11.4	14.1	45.3	7.8
Queue Length 50th (ft)	43	100	13	62	121	31
Queue Length 95th (ft)	68	143	31	109	#269	76
Internal Link Dist (ft)	538	580		562		
Turn Bay Length (ft)			100			100
Base Capacity (vph)	1470	1680	754	791	437	762
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	0.24	0.44	0.08	0.32	0.83	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	836	29	3	1009	0	64	0	18	7	0	22
Future Vol, veh/h	0	836	29	3	1009	0	64	0	18	7	0	22
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	92	92	94	94	92	92	92	94	92	94
Heavy Vehicles, %	8	8	2	2	4	4	2	2	2	0	2	0
Mvmt Flow	0	889	32	3	1073	0	70	0	20	7	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	921	0	0	1448	-	461	1524	2000	537
Stage 1	-	-	-	-	-	-	905	-	-	1079	1079	-
Stage 2	-	-	-	-	-	-	543	-	-	445	921	-
Critical Hdwy	-	-	-	4.14	-	-	7.54	-	6.94	7.5	6.54	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	-	-	6.5	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	-	-	6.5	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	-	3.32	3.5	4.02	3.3
Pot Cap-1 Maneuver	0	-	-	737	-	0	92	0	547	82	59	494
Stage 1	0	-	-	-	-	0	298	0	-	237	293	-
Stage 2	0	-	-	-	-	0	492	0	-	567	347	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	737	-	-	87	-	547	79	59	494
Mov Cap-2 Maneuver	-	-	-	-	-	-	87	-	-	79	59	-
Stage 1	-	-	-	-	-	-	298	-	-	237	292	-
Stage 2	-	-	-	-	-	-	467	-	-	547	347	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	105.1	24.2
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	87	547	-	-	737	-	218
HCM Lane V/C Ratio	0.8	0.036	-	-	0.004	-	0.142
HCM Control Delay (s)	131.4	11.8	-	-	9.9	-	24.2
HCM Lane LOS	F	B	-	-	A	-	C
HCM 95th %tile Q(veh)	4.1	0.1	-	-	0	-	0.5

Intersection	
Intersection Delay, s/veh	42.1
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	83	414	6	36	621
Future Vol, veh/h	11	83	414	6	36	621
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	6	6	4	4	8	8
Mvmt Flow	13	94	470	7	41	706
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	10.8	18.7	61.6
HCM LOS	B	C	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	12%	5%
Vol Thru, %	99%	0%	95%
Vol Right, %	1%	88%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	420	94	657
LT Vol	0	11	36
Through Vol	414	0	621
RT Vol	6	83	0
Lane Flow Rate	477	107	747
Geometry Grp	1	1	1
Degree of Util (X)	0.681	0.183	1.023
Departure Headway (Hd)	5.253	6.337	4.931
Convergence, Y/N	Yes	Yes	Yes
Cap	692	569	724
Service Time	3.253	4.337	3.029
HCM Lane V/C Ratio	0.689	0.188	1.032
HCM Control Delay	18.7	10.8	61.6
HCM Lane LOS	C	B	F
HCM 95th-tile Q	5.4	0.7	17.6

Appendix E
Signal Warrant Analysis

SUMMARY OF TRAFFIC SURVEY

YEAR: **2022**
INTERSECTION: **Chicago Ave & Kolin Ave**
MUNICIPALITY: **CDOT**
COUNTY: **Cook**

2020-2022 Growth Factor **1.01**

		TRAFFIC FROM EAST (WB)				TRAFFIC FROM WEST (EB)					TRAFFIC FROM SOUTH (NB)				TRAFFIC FROM NORTH (SB)					
ROUTE		**Chicago Ave** ☐ SRA				**Chicago Ave** ☐ SRA					**Kolin Ave** ☐ SRA				**Kolin Ave** ☐ SRA					
		E. OF: **Kolin Ave** *GOING*				W. OF: **Kolin Ave** *GOING*					S. OF: **Chicago Ave** *GOING*				N. OF: **Chicago Ave** *GOING*					
	START HOUR	*SOUTH*	*WEST*	*NORTH*	**TOTAL**	*NORTH*	*EAST*	*SOUTH*	**TOTAL**	**TOTAL NORTH AND SOUTH**	*WEST*	*NORTH*	*EAST*	**TOTAL**	*EAST*	*SOUTH*	*WEST*	**TOTAL**	**TOTAL EAST AND WEST**	**GRAND TOTAL**
1	7:00	3	510	0	**513**	0	985	59	**1043**	**1556**	72	0	7	**79**	7	0	10	**17**	**96**	**1652**
2	8:00	1	518	0	**519**	0	893	38	**931**	**1450**	34	0	4	**38**	9	0	11	**20**	**59**	**1509**
3	16:00	2	1035	0	**1037**	0	853	31	**885**	**1922**	62	0	15	**77**	13	0	20	**33**	**110**	**2032**
4	17:00	1	1078	0	**1079**	0	632	37	**670**	**1748**	58	0	2	**60**	3	0	9	**12**	**72**	**1820**
			Major				Major					Minor				Minor				
											☐ Grade Crossing Approach				☐ Grade Crossing Approach					

REVIEW INFORMATION

COUNTS USED:
COUNT DATE(S): 3/3/2020
DATE REVIEWED:
REVIEWED BY

WARRANT 2 ANALYSIS, MUTCD, Section 4C.2, 2009

2022 Data Source: 2020 Projected Volumes

Chicago Ave & Kolin Ave

User Input:

Major Road VPH:	1556	1450	1922	1748
Minor road VPH:	79	38	77	60

Number of lanes, major approach: Chicago Ave 2 lane(s)

Number of lanes, minor approach: Kolin Ave 2 lane(s)

Plotted Values

Major Road VPH:	1556	1450	1922	1748
Minor road VPH:	79	38	77	60

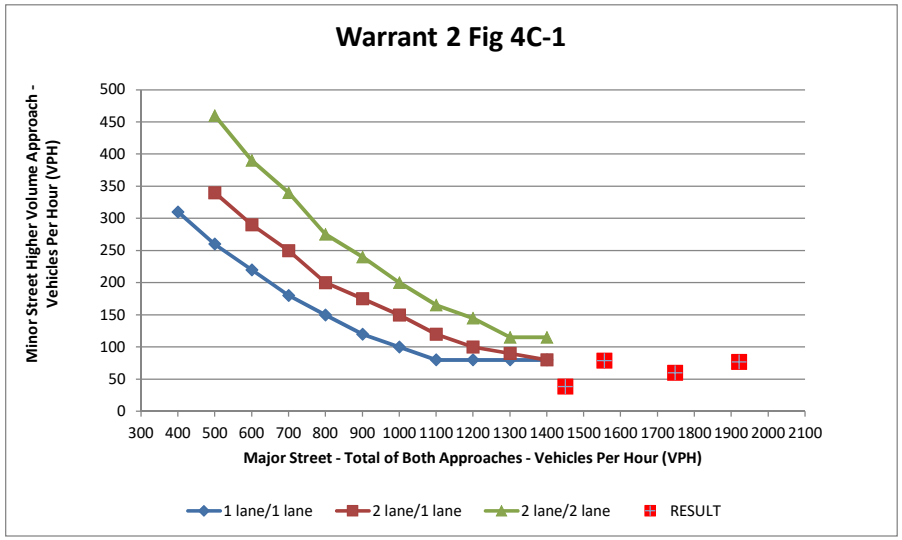
These values are plotted below and shown as the "Result" plotted points

If plotted point is above the controlling lane configuration line, **2 lane(s) major street/2 lane(s) minor street,** for four or more hours during the day, then Traffic Signal Warrant is satisfied.

Engineering Judgement is still a key part in this decision, see MUTCD Section 4C.03, 2009.

Warrant Satisfied? **N** **(Y or N)** N/A

☐ SRA



Data for Figure 4C-1

DO NOT DELETE OR ALTER			
	No. of Lane (Major/Minor)		
Major	1 lane/1 lane	2 ln/1 ln	2 ln/2 ln
1400	80	80	115
1300	80	90	115
1200	80	100	145
1100	80	120	165
1000	100	150	200
900	120	175	240
800	150	200	275
700	180	250	340
600	220	290	390
500	260	340	460
400	310	390	N/A

WARRANT 3 ANALYSIS, MUTCD, Section 4C.3, 2009

2022 Data Source: 2022 Projected Volum

Chicago Ave & Kolin Ave

User Input:

Major Road ADT:		(Road w/out the RR Crossing, Average Daily Traffic, total of each direction)
Minor Road ADT:		(Road with the RR crossing, approach to short storage ONLY)
Major Road VPH:		(If know, override existing #, else ADT x K factor (say .095, Highway Cap. Manual Exhibit 9-2, 2000) is used for Vehicles Per Hour)
Minor road VPH:		(If know, override existing #, else ADT x K factor (say .095) is used for Vehicles Per Hour)
Number of lanes, major approach:	2	lane(s)
Number of lanes, minor approach:	2	lane(s)

Plotted Values

Major Road VPH:	1556	1450	1922	1748
Minor road VPH:	79	38	77	60

These values are plotted below and shown as the "Result" plotted point

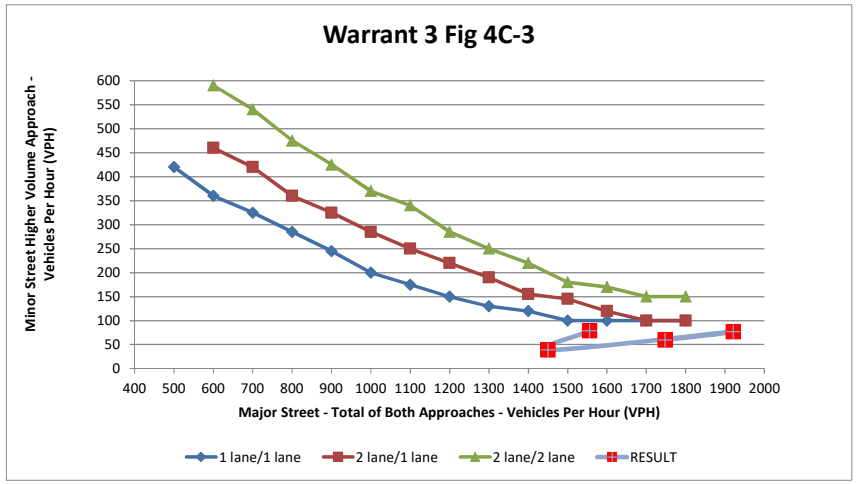
If plotted point is above the controlling lane configuration line, **2 lane(s) major street/2 lane(s) minor street,**

then Traffic Signal Warrant is satisfied.

Engineering Judgement is still a key part in this decision, see MUTCD Section 4C.04, 2009.

Warrant Satisfied? **N** **(Y or N)** N/A

☐ SRA



Data for Figure 4C-3

DO NOT DELETE OR ALTER			
	No. of Lane (Major/Minor)		
Major	1 lane/1 lane	2 ln/1 ln	2 ln/2 ln
1800	100	100	150
1700	100	100	150
1600	100	120	170
1500	100	145	180
1400	120	155	220
1300	130	190	250
1200	150	220	285
1100	175	250	340
1000	200	285	370
900	245	325	425
800	285	360	475
700	325	420	540
600	360	460	590
500	420	N/A	N/A

2022 SIGNAL WARRANT REVIEW SHEET

Chicago & Kolin

SRA: YES NO

INTERSECTION: **Chicago Ave and Kolin Ave**

COUNTY: **Cook**

MUNICIPALITY: **CDOT, IL**

Speed Limit on Major Route **30 MPH**

Speed Limit on Minor Route **30 MPH**

Number of Lanes on Major Approach 2

Number of Lanes on Minor Approach 2

HOUR BEGIN	MAJOR STREET VOLUME (Both Approaches)	ADJ. MINOR STREET VOLUME (Higher Vol Approach)	CHECK ANY HOURS WHICH MEET THE FOLLOWING WARRANTS: WARRANT 1 A 100% of A	WARRANT 1 B 100% of B	WARRANT 7: 8 hrs of one of the following WARRANT 1 A/B: 80% of A	80% of B	8 hrs of BOTH: 80% of Warr #4
6:00	1556	80	NO	YES	NO	NO	
7:00	1450	39	NO	NO	NO	NO	
16:00	1922	78	NO	YES	NO	NO	
17:00	1748	60	NO	NO	NO	NO	

*Note: Volume Requirements Reduced Due to Speed

Hours Met:		0	2	0	0	
Volume Requirements	MAJOR:	600	900	480	720	
	MINOR:	150	75	120	60	

REVIEW INFORMATION

COUNTS USED:

COUNT DATE(S):

DATE REVIEWED:

REVIEWED BY

Traffic Signal Approved:

COMMENTS

*MINOR STREET VOLUME REQUIREMENTS FOR CONDITION B INCREASED ALONG SRA ROUTE FROM 75 TO 100 FOR SINGLE LANE APPROACH AND FROM 100 TO 150 FOR A TWO OR MORE LANE APPROACH. CORRESPONDING 80% VOLUMES FOR WARRANT 7 ARE ALSO INCREASED ACCORDINGLY, FROM 60 TO 80 FOR SINGLE LANE MINOR APPROACH AND FROM 80 TO 120 FOR A TWO OR MORE LANE MINOR APPROACH ALONG AN SRA ROUTE.

WARRANT 1 Yes **No**

Warrant 1 is met if any of the following conditions are met:

*** Condition A** 0 Yes No

MINIMUM VEHICULAR VOLUME

*** Condition B** 2 Yes No

INTERRUPTION OF CONTINUOUS TRAFFIC

*** Condition A/B** 0 Yes No

COMBINATION OF WARRANTS

WARRANT 2 Yes **No**

4-HOUR VEHICULAR VOLUME

WARRANT 3 Yes **No**

PEAK HOUR VOLUME

WARRANT 4 Yes **No**

PEDESTRIAN VOLUME

WARRANT 5 Yes **No**

SCHOOL CROSSING

WARRANT 6 Yes **No**

COORDINATED SIGNAL SYSTEM

WARRANT 7 Yes **No**

ACCIDENT EXPERIENCE

	08	09	10	11
TOTAL NO. CRASHES				
NO. CORRECTABLE CRASHES				

TRIED LESS RESTRICTIVE METHODS?

ARE VOLUME REQUIREMENTS MET?

WARRANT 8 Yes **No**

ROADWAY NETWORK

WARRANT 9 Yes **No**

Intersection Near a Grade Crossing

STOP OR YIELD CONTROLLED LEG WITH GRADE CROSSING

D (Clear Storage Distance) =

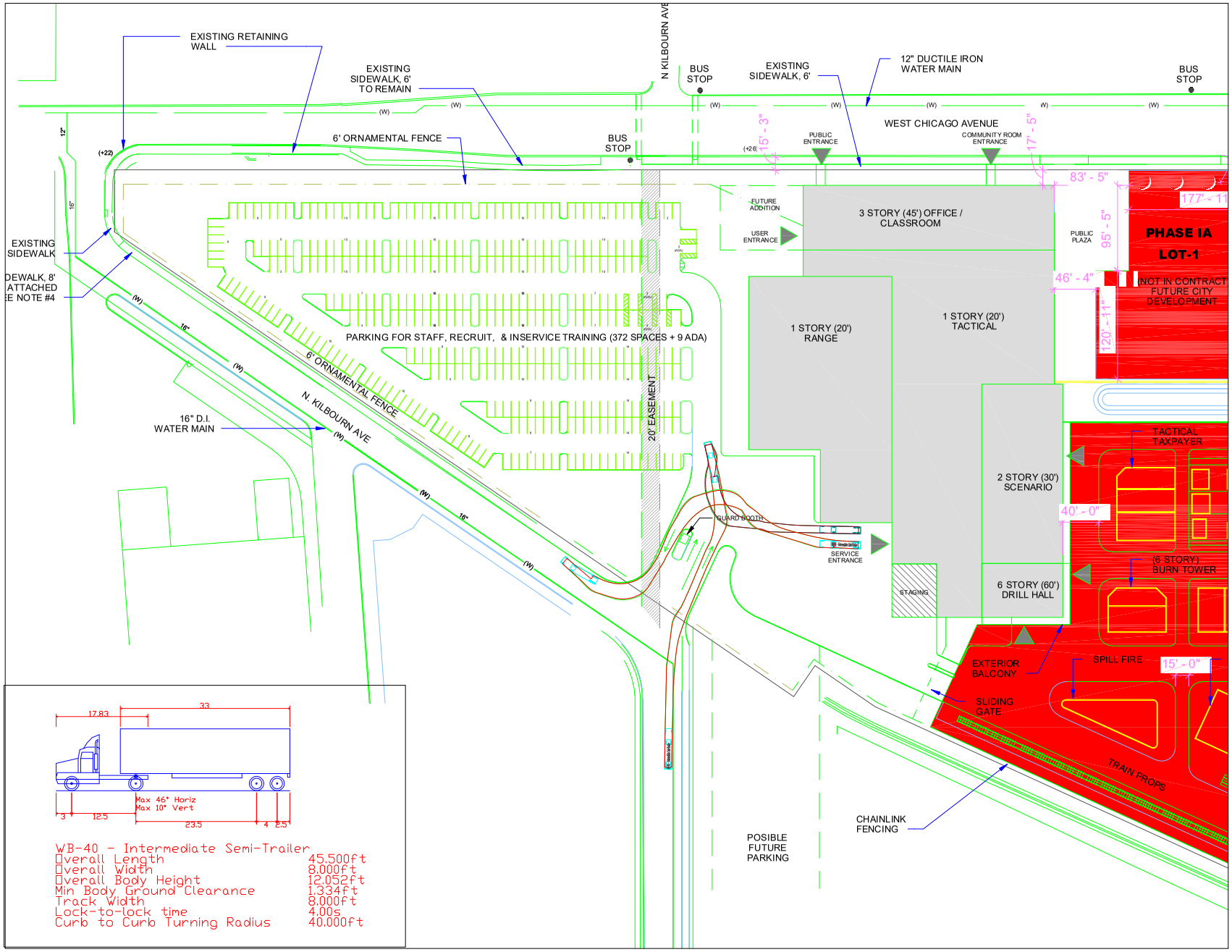
	#	%	Factor
RAIL TRAFFIC PER DAY =			
HIGH OCCUPANCY BUSSES PER HOUR =			
TRUCKS PER HOUR =			

OVERALL ADJUSTMENT FACTOR =

Appendix

Appendix F
Turning Movement Diagrams (AutoTurn)

Appendix F AutoTurn (Turning Movement Diagrams)



Appendix G
Growth Factor from Chicago Metropolitan Agency for Planning (CMAP)

TRAFFIC FORECAST RECORD

Record Number: ck-24-20

Type of Report: Projection

Year Sought: 2050

Analyst: JAR

Organization requesting forecast: AECOM

Contact: Jenna Brose, P.E., PTOE

Phone number: (312) 373-6781

Sponsor: CDOT

Date request was received: March 4, 2020

Date that response was mailed or faxed: March 5, 2020

Facility Location: Joint Public Safety Training Campus - Chicago Avenue

Municipality: City of Chicago

Chicago Metropolitan Agency for Planning

233 South Wacker Drive
Suite 800
Chicago, Illinois 60606

312 454 0400
www.cmap.illinois.gov

March 5, 2020

Jenna Brose, P.E., PTOE
Project Manager, Transportation
AECOM
303 E. Wacker Drive
Suite 1400
Chicago, IL 60601

Subject: Joint Public Safety Training Campus - Chicago Avenue
CDOT

Dear Ms. Brose:

In response to a request made on your behalf and dated March 4, 2020, we have developed year 2050 average daily traffic (ADT) projections for the subject location. These are in a table on the following page.

Traffic projections are developed using existing ADT data provided in the request letter and the results from the October 2019 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.

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

Sincerely,

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

cc: Neuert (City of Chicago Department of Assets, Information & Services)
2020_TrafficForecast\Chicago\ck-24-20\ck-24-20.docx

Table:
Existing and Year 2050 projected ADT, Streets near Joint Public Safety Training Campus – Chicago Avenue

			Existing ADT		Traffic Projections	
Intersection	**Street**	**Leg**	**Year**	**VPD**	**Year**	**VPD**
Chicago & Kolin	Chicago	West	2018	17800	2050	20,600
Chicago & Kolin	Chicago	East	2018	17800	2050	20,600
Chicago & Kolin	Kolin	North	N/A		2050	*1.157*
Chicago & Kostner	Chicago	West	2018	17800	2050	20,600
Chicago & Kostner	Chicago	East	2018	17800	2050	20,600
Chicago & Kostner	Kostner	North	2018	7250	2050	8,400
Chicago & Kostner	Kostner	South	N/A		2050	*1.157*
Chicago & Kilbourn	Chicago	West	2018	17800	2050	20,600
Chicago & Kilbourn	Chicago	East	2018	17800	2050	20,600
Chicago & Kilbourn	Kilbourn	North	N/A		2050	*1.157*
Chicago & Kilbourn	Chicago	West	2018	17800	2050	21,800
Chicago & Kilbourn	Chicago	East	2018	17800	2050	21,100
Chicago & Kilbourn	Kilbourn	South	2018	6350	2050	7,800
Kilbourn & Ohio	Kilbourn	North	2018	6350	2050	7,800
Kilbourn & Ohio	Kilbourn	South	2018	6350	2050	7,800
Kilbourn & Ohio	Ohio	East	N/A		2050	*1.228*
Kilbourn & Lake	Kilbourn	North	2018	5400	2050	6,600
Kilbourn & Lake	Kilbourn	South	N/A		2050	*1.122*
Kilbourn & Lake	Lake	East	2018	13100	2050	14,700
Kilbourn & Lake	Lake	West	2018	13100	2050	14,700

Note: where no existing ADT has been listed, a growth factor to Year 2050 has been provided

Prepared and Finalized by CMAP March 5, 2020

2018	2050	2018-2050	Annual Growth Rate	2020-2022
17800	20600	1.157	0.46%	1.01
7250	8400	1.159	0.46%	1.01
17800	21800	1.225	0.64%	1.01
17800	21100	1.185	0.53%	1.01
6350	7800	1.228	0.64%	1.01
5400	6600	1.222	0.63%	1.01
13100	14700	1.122	0.36%	1.01

			Existing ADT		Traffic Projections	
Intersection	**Street**	**Leg**	**Year**	**VPD**	**Year**	**VPD**
Chicago & Kolin	Chicago	West	2018	17800	2050	20,600
Chicago & Kolin	Chicago	East	2018	17800	2050	20,600
Chicago & Kolin	Kolin	North	N/A		2050	*1.157*
Chicago & Kostner	Chicago	West	2018	17800	2050	20,600
Chicago & Kostner	Chicago	East	2018	17800	2050	20,600
Chicago & Kostner	Kostner	North	2018	7250	2050	8,400
Chicago & Kostner	Kostner	South	N/A		2050	*1.157*
Chicago & Kilbourn	Chicago	West	2018	17800	2050	20,600
Chicago & Kilbourn	Chicago	East	2018	17800	2050	20,600
Chicago & Kilbourn	Kilbourn	North	N/A		2050	*1.157*
Chicago & Kilbourn	Chicago	West	2018	17800	2050	21,800
Chicago & Kilbourn	Chicago	East	2018	17800	2050	21,100
Chicago & Kilbourn	Kilbourn	South	2018	6350	2050	7,800
Kilbourn & Ohio	Kilbourn	North	2018	6350	2050	7,800
Kilbourn & Ohio	Kilbourn	South	2018	6350	2050	7,800
Kilbourn & Ohio	Ohio	East	N/A		2050	*1.228*
Kilbourn & Lake	Kilbourn	North	2018	5400	2050	6,600
Kilbourn & Lake	Kilbourn	South	N/A		2050	*1.122*
Kilbourn & Lake	Lake	East	2018	13100	2050	14,700
Kilbourn & Lake	Lake	West	2018	13100	2050	14,700

Note: where no existing ADT has been listed, a growth factor to Year 2050 has been provided