JET BRITE CAR WASH Northeast Corner of IL 59 with 83rd Street NAPERVILLE, ILLINOIS

Traffic Impact Study



Prepared for:



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Engineers & Architects

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EXECUTIVE SUMMARY

Knight E/A, Inc. (Knight) was retained by Jet Brite Services, Inc. to prepare a traffic impact study for a Jet Brite Car Wash planned for the parcel in the northeast corner of the intersections of IL 59 with 83rd Street/Montgomery Road in Naperville, Illinois. The lot is bounded by IL 59 to the west, "Keep it Clean" Cleaning Services to the north, residential homes to the east, and 83rd Street to the south. The existing site is primarily forested and provides a curb cut at the southeast corner of the site off 83rd Street. The development is proposed to provide one car wash tunnel with three pay stations/queuing lanes able to accommodate at least 50 vehicles as well as provide 44 total vacuum parking spaces. Access to the car wash facility will be provided via a full access driveway off 83rd Street at the southeast corner of the lot

To understand and evaluate the traffic operations of the surrounding roadway operations, the area surrounding the signalized intersection of IL 59 with 83rd Street/Montgomery Road was included in the study area. Vehicular, pedestrian, and bicycle traffic counts were obtained for this intersection using video data collection. Vehicle trips were estimated for the car wash and distributed over the roadway network in order to determine the projected traffic operations for the area.

The existing and projected traffic operations were analyzed using the HCM's Highway Capacity software. Based on the results of the analysis and observations of the study area, the following recommendations and conclusions were determined.

- IL 59 is designated as a Strategic Regional Arterial (SRA) by the Illinois Department of Transportation (IDOT). SRA's are designed for mobility and to augment the region's expressway system. The roadway is designed to carry high volumes of traffic along the route at Level of Service (LOS) C or better.
- The existing intersection meets SRA traffic operation LOS standards for the IL 59 through movements during the weekday morning, weekday evening, and Saturday midday peak hours. In order to provide LOS C on the major route, the minor movements operate at higher delays due to the long cycle lengths and limited green time, but vehicles on the side road typically clear the intersection within a single cycle.
- Under projected conditions, signal timings for the intersection of IL 59 with 83rd Street will be modified to ensure the north-south mainline will continue to meet SRA LOS standards for the through movements. Minor movements will continue to operate with higher delays due to the long cycle length and limited green time.
- Access to the site will be adequately accommodated by the proposed full access drive via 83rd Street and the right-in/right-out access drive via IL 59. Both intersections will operate at acceptable levels of service during each peak hour. A dedicated, right turn lane will be provided for the right-in/right-out access drive to provide adequate deceleration distance.
- At the intersection of 83rd Street with the South Access Drive, 'Do Not Block Driveway' (MUTCD R10-7) signage should be provided to minimize any blockages resulting from westbound 83rd Street queuing at the signalized intersection. Projected delays and queuing for the inbound left-turn movement is minimal and will not impact operations at the IL 59 / 83rd Street intersection.
- The site will provide stacking to accommodate at least 50 vehicles on site prior to entering the car wash tunnel without impacting internal circulation or the operation of the access drive. The site's three pay stations/queuing lanes will provide adequate capacity to prevent queues from spilling out onto the adjacent roadways.

1 – INTRODUCTION

Knight E/A, Inc. was retained by Jet Brite Services, Inc. to prepare a traffic impact study for the proposed Jet Brite Car Wash to be located at in the northeast corner of the intersection of IL 59 with 83rd Street/Montgomery Road in Naperville, Illinois. This development will provide one car wash tunnel with three pay stations/queuing lanes able to accommodate at least 50 vehicles. It will also provide 44 vacuum parking spaces and four standard employee parking spaces for use before or after the car wash.

Access to the car wash will be provided via a full access driveway off 83rd Street at the southeast corner of the site and a right-in/right-out access at the northwest corner of the site from IL 59. The proposed development will occupy the currently forested lot. There is an existing curb cut located in the southeast corner of the site.

The purpose of this study is to determine the projected impacts on traffic operations and identify any necessary improvements/modifications to the roadway network or traffic control. As a part of this study, the existing roadway network surrounding the site was observed, quantified, and analyzed to determine the operation at the study intersection during the weekday morning, weekday evening and Saturday midday hourly peak traffic volumes. New trips generated based on the size and characteristics of the car wash were determined and assigned to the roadway network to evaluate future traffic conditions. This report presents and documents the existing data utilized for the analysis, summarizes the evaluation of traffic conditions on the surrounding roadway network, details the potential impact of the projected traffic on the adjacent roadway network, and identifies recommendations to mitigate operational issues.

A map of the study location is presented in **Exhibit 1.1** while **Exhibit 1.2** shows an aerial of study area and identifies the intersections included in the analysis.



Source: Google

Exhibit 1.1: Site Location Map



Source: Google

Exhibit 1.2: Aerial of Study Area

2 – EXISTING CONDITIONS

The study area and adjacent roadways were evaluated through field data collection and traffic counts. Information regarding the characteristics and operation are based on field investigation, video and in-person observations, and publicly published data. A detailed summary of the findings are as follows.

2.1 Study Area

The study area surrounds the intersection of IL 59 and 83rd Street/Montgomery Road in the City of Naperville. A number of commercial and retail spaces are located along IL 59 while 83rd Street/Montgomery Road generally provide access to residential subdivisions. The Calvary Christian School Campus is located in the northwest corner of the intersection and the Naper Aero Club Airport is located to the east of the site. This location is approximately two miles south of the Fox Valley Mall and surrounding retail/commercial uses.

2.2 Existing Roadway Characteristics

A description of the existing roadway system within the study area is explained below and is illustrated in **Exhibit 2.1**.

IL 59 is a north-south other principal arterial generally providing three through lanes in each direction separated by a landscaped median within the vicinity of the site. It is under the jurisdiction of the Illinois Department of Transportation (IDOT), which has designated it as a Strategic Regional Arterial (SRA). IL 59 is under traffic signal control at its intersection with 83rd Street where it provides exclusive left-turn and right-turn lanes in both directions. It has a posted speed limit of 45 mph. According to the 2019 data published by IDOT, it carries an Average Annual Daily Traffic (AADT) volume of 49,300 vehicles per day. IL 59 is also a designated Class II truck route (state maintained).

83rd Street/Montgomery Road is an east-west major collector generally providing one lane in each direction. The roadway name is 83rd Street to the east of IL 59 and Montgomery Road to the west of IL 59. At its signalized intersection with IL 59, it provides an exclusive left-turn lane and a combined through/right-turn lane in both directions. 2016 AADT data from IDOT shows that the roadway carries 12,200 vehicles per day west of IL 59 and 8,600 vehicles per day east of IL 59. Traffic counts conducted in 2020 show that the roadway carried 8,650 vehicles, although this was likely impacted by the COVID-19 pandemic and the resulting stay-at-home order. 83rd Street has a posted speed limit of 40 mph.

PACE provides daily bus service (route 559) along IL 59 through the study area. There is a bus stop located for each direction just south of the IL 59 and 83rd Street / Montgomery Road intersection. No shelters, benches or concrete pads exist at the stops. A PACE sign indicating the route number is posted at both bus stop locations.

There are existing sidewalks provided on the south side of 83rd Street / Montgomery Road and on the east side of IL 59 south of 83rd Street / Montgomery Road.



Exhibit 2.1 – Existing Conditions

2.3 Traffic Count Data

In order to determine existing traffic operations, vehicle, pedestrian, and bicycle traffic counts were conducted at the intersection of IL 59 with 83rd Street. This data was collected on Thursday, March 17, 2022 during the weekday morning (6:30 to 9:30 A.M.) and evening (4:00 to 7:00 P.M.) peak periods as well as on Saturday, March 19, 2022 during the midday (11:00 to 3:00 P.M.) peak period using Miovision Scout Video Data Collection Units.

The result of the traffic counts indicate that overall peak traffic conditions of the roadway network take place from 7:15 A.M. to 8:15 A.M. during the morning peak hour, 4:45 P.M. to 5:45 P.M. during the evening peak hour, and 2:00 P.M. to 3:00 P.M. during the Saturday midday peak hour. It should be noted that the pedestrian and bicycle traffic observed in the area was minimal.

The existing weekday morning, weekday evening and Saturday midday peak hour traffic volumes are illustrated in **Exhibit 2.2**.



Exhibit 2.2 – Existing Traffic Volumes

3 – PROPOSED REDEVELOPMENT AND PROJECTED CONDITIONS

This section of the report outlines the proposed redevelopment, summarizes site-specific traffic characteristics, and identifies other characteristics impacting the analysis of future conditions.

3.1 Proposed Site and Redevelopment

The proposed car wash facility is bounded by IL 59 to the west, "Keep it Clean" Cleaning Services to the north, residential homes to the east, and 83rd Street to the south. The existing site is primarily forested and provides a curb cut at the southeast corner of the site off 83rd Street.

As proposed, the site will be redeveloped to provide a Jet Brite single lane car wash tunnel that is approximately 6,370 square feet and located along the center of the site, as illustrated in **Exhibit 3.1**. Three pay stations and stacking lanes will be located along the east side of the site. Prior to or following the car wash, patrons will be able to utilize one of the 44 vacuum parking spaces located along the north and west side of the site. Four standard parking spaces will be provided for employees as well. Jet Brite Car Wash locations generally operate seven days a week from 7:00 A.M. to 9:00 P.M. with a lower number of patrons arriving during the early morning hours.

3.2 Site Access, Circulation, and Queuing

Access to the site will be provided via a single full access driveway located in the southeast corner of the site from 83rd Street, which will be located at the same position as the existing curb cut. In addition, a right-in/right-out access driveway in the northwest corner will provide access to IL 59. Both access drives will provide one inbound lane and one outbound lane under stop sign control. To minimize adverse operational impacts to northbound IL 59 through traffic, an inbound, dedicated right-turn lane will be provided to the right-in/right-out access to provide adequate deceleration distance. The taper will begin immediately north of the intersection of IL 59 with 83rd Street.

To minimize the impact of queued vehicles on the site and surrounding area, the entrance to the car wash will be provided on the north side of the tunnel, which allows for ample vehicle storage on site. Between the entrance of the tunnel and the three pay stations, approximately eight vehicles can queue without blocking the pay stations. Beyond the pay stations, a staging area will provide three stacking lanes approximately 200 feet long each. An additional 50 feet of stacking could be provided without interfering with internal access or conflicting with vehicles entering or exiting from 83rd Street. Overall, the car wash will provide stacking for approximately 50 vehicles waiting to enter the car wash tunnel.

3.3 Trip Generation, Distribution and Assignment

In order to determine the number of vehicles that will be generated by the redevelopment of the site, trip data from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition, was utilized. The number of trips is estimated according to a vehicle trip generation rate based on the land use and size of the development. To generate trips for the site, the ITE land use for Automated Car Washes (Land Use Code [LUC] 948) was utilized based on the footprint of the car wash tunnel. However, since ITE does not provide a morning peak hour trip generation rate, the number of trips for the time period are based on one-half of the evening peak period rate.



Exhibit 3.1 – Proposed Site Plan

Note that a number of the vehicle trips to and from the car wash will be from vehicles already traveling in the area, particularly via IL 59. These trips, known as pass-by trips, account for drivers attracted to the site while enroute from one destination to another. They are particularly common during the morning and evening peak periods when most drivers are commuting between home and work and can stop at an additional destination without deviating from their existing route. Vehicle-related uses like gas stations can average 60 percent or higher pass-by trip percentages. Since ITE does not provide information for a car wash, a 50 percent pass-by reduction was assumed to account for these types of trips already within the roadway network.

Table 3.1 summarizes the trip generation and pass-by traffic anticipated for the Jet Bright Car Wash facility.

	Mo (7:1	orning 5 – 8:1	Peak 5 A.M.)	Ev (4:4	vening 5 – 5:4	Peak 5 P.M.)	Sa (2:00	turday Mi P.M. – 3:	idday 00 P.M.)
Automated Car Wash (6,370 s.f.)	In	Out	Total	In	Out	Total	In	Out	Total
Driveway Trips	23	22	45	45	45	90	98	98	196
-50% Pass-By Traffic	<u>-11</u>	<u>-11</u>	<u>-22</u>	<u>-22</u>	<u>-22</u>	<u>-45</u>	<u>-49</u>	<u>-49</u>	<u>-98</u>
TOTAL NEW TRIPS	12	11	23	23	22	45	49	49	98

Table 3.1: Projected Trip Generation

The existing traffic counts and locations of the proposed access were utilized to determine the trip distribution to and from the car wash for the projected trips, which can be seen in **Exhibit 3.2**. The new trips were then assigned to the study intersections in accordance with the trip distribution, as shown in **Exhibit 3.3**, while **Exhibit 3.4** illustrates the pass-by traffic for the site. Assignment of inbound trips included a number of IL 59 southbound U-Turns to efficiently access the right-in/right-out. U-Turns are permitted at intersections along suburban SRA Routes due to the existing curbed, barrier median, which aids in access control to improve mobility while maintaining safety.

3.3 **Projected Traffic Conditions**

It appears there are no major developments currently being planned or under construction in the vicinity of the site that will significantly impact traffic operations in the study area. However, to account for the year-to-year traffic volume increases that may not be attributed to any specific development, the existing traffic volumes were increased by background traffic growth factors. This study utilized information provided by the Chicago Metropolitan Agency for Planning (CMAP) to determine the projected growth of traffic in the area. It estimates an approximate growth of 0.4 percent per year along IL 59, 0.46 percent along Montgomery Road, and 0.98 percent per year along 83rd Street. Per standard practice, projected traffic volumes are estimated for a "build plus five" design horizon year. Construction was estimated to be completed in 2023.

Overall, the Year 2028 projected volumes are a sum of the Year 2022 existing volumes increased by the background traffic growth factors, the car wash pass-by traffic, and the new car wash trips. **Exhibit 3.5** illustrates the total projected volumes.



Exhibit 3.2 – Trip Distribution



Exhibit 3.3 – New Trip Assignment



Exhibit 3.4 – Pass-By Trip Assignment



Exhibit 3.5 – Projected Volumes

4 – TRAFFIC ANALYSIS AND RECOMMENDATIONS

This section of the report summarizes the process and results of the traffic analysis for the existing and projected conditions during the weekday morning and evening and Saturday midday peak hours. It will also provide recommendations to mitigate/improve upon conditions in the future.

4.1 Analysis Procedure

Traffic volume data was analyzed with the HCS 7 traffic capacity analysis software in order to determine the quality of operation in the existing and proposed roadway networks. Operation is characterized according to the amount of control delay at each approach and quantified into a level of service (LOS). The LOS grades shown below, which are provided in the Transportation Research Board's *Highway Capacity Manual (HCM)*, quantify and categorize a driver's discomfort, frustration, fuel consumption, and travel times experienced as a result of intersection control and the resulting traffic queuing. A detailed description of each LOS rating can be found in **Table 4.1**. **Table 4.2** presents the range of control delay for each LOS rating as detailed in the *HCM*. Because signalized intersections are expected to carry a larger volume of vehicles and stopping is required during red time, note that higher delays are tolerated for the corresponding LOS ratings. Based on the *HCM* methodologies, capacity analysis results for the existing and proposed signalized intersection are summarized in **Table 4.3a**. **Table 4.4a** summarizes the capacity analysis results for the unsignalized intersections. **Table 4.3b** and **Table 4.4b** summarize the 95th percentile queue lengths.

Level of Service	Description
A	Minimal control delay; traffic operates at primarily free-flow conditions; unimpeded movement within traffic stream.
В	Minor control delay at signalized intersections; traffic operates at a fairly unimpeded level with slightly restricted movement within traffic stream.
с	Moderate control delay; movement within traffic stream more restricted than at LOS B; formation of queues contributes to lower average travel speeds.
D	Considerable control delay that may be substantially increased by small increases in flow; average travel speeds continue to decrease.
E	High control delay; average travel speed no more than 33 percent of free flow speed.
F	Extremely high control delay; extensive queuing and high volumes create exceedingly restricted traffic flow.

Table 4.1: Level of Service Descriptions¹

¹Highway Capacity Manual

Table 4.2: Level of Service Grading Criteria¹

Lovel of Service	Control Delay per Ve	ehicle (s/veh) at:
Lever of Service	Unsignalized Intersections	Signalized Intersections
A	0-10	0-10
В	> 10 - 15	> 10 - 20
С	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F ²	> 50	> 80

¹Highway Capacity Manual

^{$^{2}}All movements with a Volume to Capacity (v/c) ratio greater than 1.0 receive a rating of LOS F.</sup>$

C omparing	E	astbou	nd	W	estbour	nd		No	orthbou	nd	Sc	outhbou	und	0
Scenarios	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Overall
				Exis	ting Cor	nditions								
AM Peak Hour (7:15 A.M. – 8:15 A.M.)	D 47.0	E 56.0 D – 52.2		D 48.5	E 69.0 E – 66.6			E 72.1	B 17.8 C – 20.8	B 11.1 3	E 75.4	В 16.1 В – 19.	B 14.7 3	C 27.8
PM Peak Hour (4:45 P.M. – 5:45 P.M.)	F 83.2	F 123.9 F – 109.	 7	F 128.5 F	F 204.4 ⁻ – 188.6	 6		F 99.7	B 18.6 C – 26.2	B 13.3 1	F 92.3	C 29.2 C – 31.	B 18.7 4	D 50.1
Saturday Midday Peak Hour (2:00 P.M. – 3:00 P.M.)	D 38.9	D 41.9 D – 40.1		D 38.0	D 53.4 D – 51.7			E 59.9	C 26.6 C – 28.8	B 15.2 3	E 60.6	C 27.9 C – 28.	B 19.6 9	 C 31.4
				Proje	cted Co	nditions	5							
AM Peak Hour (7:15 A.M. – 8:15 A.M.)	D 46.9	D 52.5 D – 50.1	 1	D 46.2	E 61.9 E – 59.5			E 71.2	C 22.3 C – 24.9	B 13.3 9	E 75.3	B 18.4 C – 22.	B 16.7 1	C 30.2
PM Peak Hour (4:45 P.M. – 5:45 P.M.)	F 92.1	F 152.7 F – 131.	 6	F 137.3 F	F 216.6 ⁻ – 197.1	 1		F 101.0	C 22.0 C – 29.2	B 15.4 2	F 98.2	C 33.6 D – 36.	C 20.1 1	E 57.6
Saturday Midday Peak Hour (2:00 P.M. – 3:00 P.M.)	E 61.2	D 54.6 E – 57.3		D 38.3	D 54.2 D – 50.5			E 63.4	C 30.7 C – 32.7	B 16.6 7	E 68.6	C 25.8 C – 28.	B 18.5 4	C 34.7

Table 4.3a: Signalized Intersection Capacity Analysis Results – IL 59 with 83rd Street / Montgomery Road

0	E	astbou	Ind		W	/estbou	Ind	N	orthbou	und	Sc	outhbo	und
Scenarios	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
			E	xis	ting Co	onditio	ns						
AM Peak Hour (7:15 A.M. – 8:15 A.M.)	310'	470'			41'	334'		215'	406'	29'	111'	205'	75'
PM Peak Hour (4:45 P.M. – 5:45 P.M.)	395'	854'			136'	792'		355'	385'	37'	283'	717'	227'
Saturday Midday Peak Hour (2:00 P.M. – 3:00 P.M.)	250'	353'			32'	305'		207'	474'	19'	189'	482'	175'
			Pr	oje	ected C	onditio	ons						
AM Peak Hour (7:15 A.M. – 8:15 A.M.)	317'	476'			58'	335'		219'	494'	38'	137'	226'	87'
PM Peak Hour (4:45 P.M. – 5:45 P.M.)	426'	941'			218'	862'		369'	446'	51'	340'	797'	243'
Saturday Midday Peak Hour (2:00 P.M. – 3:00 P.M.)	170'	415'			88'	331'		219'	528'	36'	265'	464'	175'

Table 4.3b: Signalized Intersection 95th Percentile Queues – IL 59 with 83rd Street / Montgomery Road

	AM Pe (7:15 A.M.	eak Hour . – 8:15 A.M.)	PM Pe (4:45 P.M.	eak Hour - 5:45 P.M.)	Saturday Mido (2:00 P.M	lay Peak Hour - 3:00 P.M.)
	LOS	Delay	LOS	Delay	LOS	Delay
83 rd Street with S	outh Access Dr	iveway				
Southbound Approach	А	9.5	В	10.6	В	10.2
Eastbound Left Turn	A	7.8	A	8.3	A	8.0
IL 59 with Right-I	n/Right-Out Acc	ess Driveway				
Eastbound Right Turn	D	29.0	D	25.9	E	35.7

Table 4.4a: Unsignalized Intersection Capacity Analysis Results – Projected Conditions

 Table 4.4b: Unsignalized Intersection 95th Percentile Queuing – Projected Conditions

	AM Peak Hour (7:15 A.M. – 8:15 A.M.)	PM Peak Hour (4:45 P.M. – 5:45 P.M.)	Saturday Midday Peak Hour (2:00 P.M. – 3:00 P.M.)
83 rd Street with Se	outh Access Driveway*		
Southbound Approach	<25 Feet	<25 Feet	<25 Feet
Eastbound Left Turn	<25 Feet	<25 Feet	<25 Feet
IL 59 with Right-I	n/Right-Out Access		
Eastbound Right Turn	<25 Feet	<25 Feet	28'
*Located approximat	tely 175 feet east of IL 59/83 rd Eastbound	l Stop Bar.	

4.2 Discussion of Operations

The results of the capacity analysis for existing conditions in the study area show that IL 59 with 83rd Street / Montgomery Road intersection operates at Level of Service (LOS) C or D during the peak hours. Since IL 59 is designation as an SRA, the majority of the green time is dedicated to the north-south through movements. SRA routes are required to provide LOS C or better for mainline traffic. To achieve positive progression and coordination between traffic signals, the IL 59 signalized corridor provides long cycle lengths, including 120 seconds during the Saturday midday peak hour, 140 seconds during the weekday morning peak hour, and 160 seconds during the weekday evening peak hour. The long cycle lengths and limited green time for the minor movements result in LOS E or LOS F for the majority of the left-turn and eastbound/westbound through/right-turn movements due to high average vehicle delay. These conditions also can result in long queuing for the minor street movements, although the queues typically clear for all movements within one cycle.

Under projected conditions, the new trips generated by the proposed development will only account for 0.4 percent of the intersection traffic volume at IL 59 with 83rd Street/Montgomery Road during the weekday morning peak hour, 0.6 percent during the weekday evening peak hour, and 1.3 percent during the Saturday midday peak hour. The site-generated traffic along with the background growth result in increases in total traffic causing increases in delay and queuing for all movements. However, signal timing adjustments can be implemented to keep the IL 59 mainline through traffic movements at LOS C. Minor movements will generally continue to clear the intersection within one or two cycles and sustained backups are not expected throughout the peak periods. Furthermore, the increased number of U-Turns will not impact the operation of the southbound left-turn movement. Overall, the intersection is projected to operate at LOS B during the weekday morning and Saturday midday peak hours and LOS E during the weekday evening peak hour.

4.3 **Proposed Site Access, Circulation, and Queuing**

In addition, adequate stacking for the car wash will be accommodated internally to the site without impacting operations on the surrounding public roadways or conflicting with the internal circulation. Overall, at least 50 vehicles can be stored internally while waiting to enter the car wash. The site will provide two access points including a full access driveway via 83rd Street and a right-in/right-out driveway via IL 59. Both access drives will operate at acceptable levels of service with minimal queuing and delay.

Westbound queues resulting from the signal at IL 59 could potentially block inbound left-turn traffic to the south access driveway on 83rd Street. To minimize this potential, it is recommended that 'Do Not Block Driveway' (MUTCD R10-7) signage be placed at this intersection and prevent blockage of the driveway. In order to minimize any mobility impact to IL 59 northbound traffic and maintain uniformity along the roadway, a 185-ft right-turn lane with 200-ft taper will be provided immediately north of the IL 59/83rd Street intersection for the right-in/right-out access driveway. This driveway will allow a majority of the site traffic to enter and exit the development without turning at the traffic signal, particularly during peak periods when the 83rd Street approach is congested. The driveway's proximity to the signal and platooning of IL 59 will allow for additional gaps in traffic which will improve the operation of the driveway. This driveway will also be utilized by U-Turning vehicles from southbound IL 59 to help reduce the impact of inbound left turning movements along 83rd Street.

5 – CONCLUSIONS AND RECOMMENDATIONS

Based on Knight's review of the proposed Jet Brite Car Wash as well as the existing and future traffic conditions in the area, the following conclusions and recommendations are provided.

- IL 59 is designated as a Strategic Regional Arterial (SRA) by the Illinois Department of Transportation (IDOT). SRA's are designed for mobility and to augment the region's expressway system. The roadway is designed to carry high volumes of traffic along the route at Level of Service (LOS) C or better.
- The existing intersection meets SRA traffic operation LOS standards for the IL 59 through movements during the weekday morning, weekday evening, and Saturday midday peak hours. In order to provide LOS C on the major route, the minor movements operate at higher delays due to the long cycle lengths and limited green time, but vehicles on the side road typically clear the intersection within a single cycle.
- Under projected conditions, signal timings for the intersection of IL 59 with 83rd Street will be modified to ensure the north-south mainline will continue to meet SRA LOS standards for the through movements. Minor movements will continue to operate with higher delays due to the long cycle length and limited green time.
- Access to the site will be adequately accommodated by the proposed full access drive via 83rd Street and the right-in/right-out access drive via IL 59. Both intersections will operate at acceptable levels of service during each peak hour. A dedicated, right turn lane will be provided for the right-in/right-out access drive to provide adequate deceleration distance.
- At the intersection of 83rd Street with the South Access Drive, 'Do Not Block Driveway' (MUTCD R10-7) signage should be provided to minimize any blockages resulting from westbound 83rd Street queuing at the signalized intersection. Projected delays and queuing for the inbound left-turn movement is minimal and will not impact operations at the IL 59 / 83rd Street intersection.
- The site will provide stacking to accommodate at least 50 vehicles on site prior to entering the car wash tunnel without impacting internal circulation or the operation of the access drive. The site's three pay stations/queuing lanes will provide adequate capacity to prevent queues from spilling out onto the adjacent roadways.

JET BRITE CAR WASH NORTHEAST CORNER OF IL 59 WITH 83RD STREET, NAPERVILLE

Traffic Impact Study Appendix

TRAFFIC COUNT DATA

CMAP PROJECTIONS

TRAFFIC CAPACITY ANALYSIS REPORTS

PROPOSED SITE PLAN

JET BRITE CAR WASH NORTHEAST CORNER OF IL 59 WITH 83RD STREET, NAPERVILLE

Traffic Impact Study Appendix

TRAFFIC COUNT DATA

IL 59 with 83rd Street / Montgomery Road

IL 59 with 83rd Street AM



										Tot	al Volume	by Hour												
				From Wes	st				From Eas	t			F	rom Sout	h				From Nort	h		Int	Peak 15-	Int PHF
Interval:	1:00	EASTBO	UND		83rd Stree	ət	WESTBO	UND		83rd Stree	ət	NORTHB	OUND		IL 59		SOUTHB	OUND		IL 59		Vehicle	min	
Start	End	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Total		
0:00	1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
0:15	1:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
0:30	1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
0:45	1:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
1:00	2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
1:15	2:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
1:30	2:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
1:45	2:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
2:00	3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
2:15	3:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
2:30	3:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
2:45	3:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
3:00	4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
3:15	4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
3:30	4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
3:45	4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
4:00	5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
4:15	5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
4:30	5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
4:45	5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
5:00	6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
5:15	6:15	3	0	0	0	0	0	0	0	0	0	1	16	0	0	0	0	19	1	0	0	40	40	0.25
5:30	6:30	5	0	0	0	0	0	0	0	0	0		20	0	0	0	0	30	00	0	0	03	40	0.39
5.45	7:00	44 00	29	<u> 21</u> 50	0		2	19	9	0	0	20	400	<u> </u>	0	0		270	45	0	0	1 502	000	0.27
6:15	7:00	147	04	70	0	0	6	71	20	0	0	44 70	1 266	12	0	0	14	560	40	0	0	1,092	023	0.40
6:30	7.15	214	1/0	100	0	0	10	104	44 57	0	0	0/	1,200	26	0	0	28	768	74	0	0	2,420	000	0.09
6:45	7:45	214	145	109	0	0	16	104	62	0	0	103	1,703	20	0	0	20	786	84	0	0	3,402	000	0.00
7:00	8:00	246	180	120	0	0	20	143	67	0	0	113	1,072	40	0	0	30	855	04	0	0	3,000	1 084	0.91
7:15	8:15	240	208	120	0	0	20	141	67	0	0	121	1,007	57	0	0	60	860	118	0	0	3,000	1 084	0.50
7:30	8:30	209	196	134	0	0	33	145	72	0	0	139	1,074	61	0	0	72	930	122	0	0	3,892	1 084	0.90
7:45	8:45	200	200	135	0	0	44	132	79	0	0	138	1,770	59	0	0	86	973	134	0	0	3,865	1,004	0.89
8:00	9:00	194	193	144	0	0	56	137	75	0	0	151	1,539	60	0	0	91	951	138	0	0	3 729	971	0.96
8:15	9:15	188	184	140	0	0	54	148	77	0	0	141	1,598	51	0	0	77	939	136	0	0	3 733	971	0.96
8:30	9:30	216	179	136	0	0	59	135	75	Ő	0	112	1,512	44	0	0	77	863	152	0	0	3,560	948	0.94
8:45	9:45	167	130	97	0	0	41	111	54	0	0	85	1,122	32	0	0	57	643	109	0	0	2.648	948	0.70
9:00	10:00	115	83	59	0	0	24	63	36	0	0	38	752	17	0	0	33	406	74	0	0	1.700	902	0.47
9:15	10:15	59	38	29	0	0	15	24	16	0	0	11	332	10	0	0	22	204	38	0	0	798	798	0.25
9:30	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
9:45	10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
10:00	11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
10:15	11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
10:30	11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
10.45	11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00

IL 59 with 83rd Street AM



										Tot	al Volume	e by Hour												
				From We	st				From Eas	st			F	rom Sout	h				From Nort	h		Int	Peak 15-	Int PHF
Interval:	1:00	EASTBO	UND		83rd Stree	et	WESTBO	UND		83rd Stree	ət	NORTHE	OUND		IL 59		SOUTHB	OUND		IL 59		Vehicle	min	1
Start	End	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Total		1
11:00	12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
11:15	12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
11:30	12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
11.45	12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00

PEAK HOUR INFORMATION

Time Interval: 07:15 - 08:15 Int Peak 1hr Vol: 3,920

Int Peak 15min Vol: 1,084

Int PHF: 0.904

								Ex	isting Yea	r Traffic - A	AM Peak H	lour								
		From Wes	t				From Eas	t			F	From Sout	h			F	rom Nort	h		Int
EASTE	BOUND	8	3rd Stree	et	WEST	TBOUND 83rd Street					BOUND		IL 59		SOUTH	BOUND		Vehicle		
Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Total
247	208	131	0	0	27	141	67	0	0	121	1,874	57	0	0	60	869	118	0	0	3,920
2	8	5			3	4	0			6	89	0			1	91	2			211
0.8%	3.8%	3.8%			11.1%	2.8%	0.0%			5.0%	4.7%	0.0%			1.7%	10.5%	1.7%			5.4%

Total Volume HV Volume HV%

				EXI	sung rear	
		Total V	ehicles			
1.7% 118 ◀┘	10.5% 869 ↓	1.7% 60 ∟	▲_ ↓ ↓	67 141 27	0.0% 2.8% 11.1%	
0.8% 3.8% 3.8%	247 208 131		▲ 121 5.0%	1,874 4.7%	「 ► 57 0.0%	

Existing Year Traffic - AM Peak Hour



IL 59 with 83rd Street PM



										Tot	al Volume	by Hour												
		1		From Wes	t		1		From Eas	t 100	ur vorunie		F	rom Sout	h			F	rom Nort	h		Int	Peak 15-	Int PHF
Interval:	1:00	FASTBO			33rd Stree	et	WESTBO			Sard Stree	et	NORTHE			IL 59		SOUTHB			IL 59		Vehicle	min	
Start	End	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Total		
12:00	13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
12:15	13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
12:30	13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
12:45	13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
13:00	14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
13:15	14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
13:30	14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
13:45	14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
14:00	15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
14:15	15:15	38	49	53	0	0	16	59	19	0	0	43	300	21	1	0	38	358	59	0	0	1,053	1,053	0.25
14:30	15:30	87	90	110	0	0	26	104	38	0	0	80	582	30	2	0	64	888	152	0	0	2,251	1,198	0.47
14:45	15:45	126	140	160	0	0	42	150	66	0	0	128	939	39	3	0	104	1,354	225	0	0	3,473	1,222	0.71
15:00	16:00	185	185	210	0	0	61	208	92	0	0	164	1,267	56	3	0	147	1,869	293	0	0	4,737	1,264	0.94
15:15	16:15	196	186	203	0	0	62	195	106	0	0	175	1,365	44	3	0	154	2,056	319	0	0	5,061	1,377	0.92
15:30	16:30	208	207	190	0	0	82	207	116	1	0	197	1,458	46	3	1	169	1,988	295	0	0	5,163	1,377	0.94
15:45	16:45	221	219	196	0	0	89	210	111	1	0	188	1,499	51	3	1	156	2,081	291	0	0	5,312	1,377	0.96
16:00	17:00	220	227	189	0	0	97	199	113	1	0	197	1,585	51	3	1	139	2,141	303	0	0	5,461	1,413	0.97
16:15	17:15	234	230	205	0	0	100	215	98	1	0	181	1,559	54	4	1	137	2,107	301	0	0	5,421	1,413	0.96
16:30	17:30	227	226	204	0	0	88	215	91	0	0	166	1,613	57	5	0	136	2,222	298	0	0	5,543	1,422	0.97
16:45	17:45	231	232	199	0	0	83	218	98	0	0	1/8	1,637	60	4	0	143	2,211	305	0	0	5,595	1,423	0.98
17:00	18:00	230	234	206	0	0	75	235	95	0	0	1/3	1,577	55	5	0	151	2,163	295	0	0	5,489	1,423	0.96
17:15	18:15	216	211	1/1	0	0	72	215	99	0	0	186	1,580	54	3	0	156	2,185	293	0	0	5,438	1,423	0.96
17:30	18:30	218	213	180	0	0	//6	212	104	0	0	193	1,470	47	1	0	149	2,048	307	0	0	5,223	1,423	0.92
17:45	18:45	220	1/3	182	0	0	56	190	97	0	1	191	1,440	34	0	0	10	1,991	305	0	0	5,040	1,307	0.97
10.00	19.00	209	140	1/9	0		20	107	93	0	1	195	1,429	20	0	0	140	1,049	303	0	0	4,770	1,200	0.93
18.30	19.15	100	50	100	0	0	17	61	11	0	1	03	720	10	0	0	50	876	142	0	0	2 285	1,240	0.70
18:45	19.30	104	22	100	0	0	0	31	21	0	0	44	337	6	0	0	23	385	68	0	0	1 030	1,240	0.40
10:43	20:00	-40	0	-4/	0	0	0	0	0	0	0	- 44	0	0	0	0	0	0	00	0	0	1,035	1,035	0.25
10:00	20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
19:30	20:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
19:45	20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
20:00	20:40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
20:15	21:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
20:30	21:30	0	0	0	0	0	0	Ő	Ő	Ő	Ő	0	0	0	0	0	0	0	0	0	0	0	Ő	0.00
20:45	21:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
21:00	22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
21:15	22:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
21:30	22:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
21:45	22:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
22:00	23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
22:15	23:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
22:30	23:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
22:45	23:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00

IL 59 with 83rd Street PM



										Tot	tal Volume	e by Hour												
				From We	st				From Eas	st			F	From Sout	th			F	From Nort	h		Int	Peak 15-	Int PHF
Interval:	1:00	EASTBO	UND		83rd Stree	ət	WESTBO	DUND		83rd Stree	et	NORTHE	OUND		IL 59		SOUTHB	OUND		IL 59		Vehicle	min	1
Start	End	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Total		
23:00	0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
23:15	0:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
23:30	0:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
23.45	0:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00

PEAK HOUR INFORMATION

Time Interval: 16:45 - 17:45

Int Peak 1hr Vol: 5,595

Int Peak 15min Vol: 1,423

Int PHF: 0.983

								Ex	isting Yea	r Traffic - F	PM Peak H	our								
		From Wes	st				From Eas	t			F	rom Sout	h			F	From Nort	h		Int
EAST	BOUND	8	83rd Stree	t	WEST	BOUND	1	83rd Stree	ət	NORTH	IBOUND		IL 59		SOUTH	BOUND		IL 59		Vehicle
Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Total
231	232	199	0	0	83	218	98	0	0	178	1,637	60	4	0	143	2,211	305	0	0	5,595
0	1	1		-	0	1	0			3	33	0			1	27	4			71
0.0%	0.4%	0.5%		1	0.0%	0.5%	0.0%			1.7%	2.0%	0.0%			0.7%	1.2%	1.3%	-		1.3%

Total Volume HV Volume HV%

				EXIS	sting rear
		Total V	ehicles		
1.3% 305 ↓ J	1.2% 2,211	0.7% 143 ∟	↓ ↓↓	98 218 83	0.0% 0.5% 0.0%
0.0% 0.4% 0.5%	231 232 199	▲ → →	▲ 178 1.7%	1,637 2.0%	6 0 0.0%

Existing Year Traffic - PM Peak Hour





IL 59 with 83rd Street Vehicle Distribution Charts

IL 59 with 83rd Street AM

Intersection: IL 59 with 83rd Street Traffic Count Date: 3/19/2022 Count Time: AM Count (11:00am-12:00pm) North-South Street: IL 59 East-West Street: 83rd Street

SYSTEM PEAK HOUR: 11:45 - 12:45 INTERSECTION PEAK: --

SATURDAY

Weather: 40s and Mostly Cloudy Day of Week: Saturday

Intersection Allowed Movements: See Diagram

Note: Peds counted; eastbound peds are peds crossing the west leg

INDICATES PROHIBITED MOVEMENT



										Tot	al Volum	e by Hour										_		
		_		From Wes	st				From Eas	st 🛛			I	rom Sout	h				From Nort	h		Int	Peak 15-	Int PHF
Interval:	1:00	EASTBC	DUND		83rd Stree	et	WESTBO	DUND		83rd Stree	et	NORTHE	BOUND		IL 59		SOUTHE	OUND		IL 59		Vehicle	min	
Start	End	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Total		
0:00	1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
0:15	1:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
0:30	1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
0:45	1:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
1:00	2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
1:15	2:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
1:30	2:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
1:45	2:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
2:00	3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
2:15	3:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
2:30	3:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
2:45	3:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
3:00	4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
3:15	4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
3:30	4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
3:45	4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
4:00	5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
4:15	5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
4:30	5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
4:45	5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
5:00	6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
5:15	6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
5:30	6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
5:45	6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
6:00	7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
6:15	7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
6:30	7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
6:45	7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
7:00	8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
7:15	8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
7:30	8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
7:45	8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
8:00	9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0.00
8:15	9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
8:30	9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
8:45	9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
9:00	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0.00
9:15	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
9:30	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0.00
9:45	10:45	0	0						0		0	0	0	0	0	0	0	0		0		0		0.00
10:00	11:00	0	0								0	0	0	0								0		
10:15	11:15	12	3/	42			11	18	27			33	422	15			26	366	104			1,114	1,114	0.25
10:30	11:30	129	83	86			24	4/	5/		0	63	836	15			56	/05	104			2,205	1,114	0.49
10:45	11:45	191	11/	1119	0	1 0	37	93	95	0	0	99	1,286	26	0	0	84	1,103	165	0	1 0	3,415	1,210	0.71

IL 59 with 83rd Street AM

Intersection: IL 59 with 83rd Street Traffic Count Date: 3/19/2022 Count Time: AM Count (11:00am-12:00pm) North-South Street: IL 59 East-West Street: 83rd Street

SYSTEM PEAK HOUR: 11:45 - 12:45 INTERSECTION PEAK: --

SATURDAY

 Weather:
 40s and Mostly Cloudy

 Day of Week:
 Saturday

 Intersection Allowed Movements:
 See Diagram
 83

 Note:
 Peds counted; eastbound peds are peds crossing the west leg
 84

INDICATES PROHIBITED MOVEMENT



										Tot	al Volume	e by Hour												
				From Wes	st				From Eas	st			F	rom Sout	h			F	From Nort	h		Int	Peak 15-	Int PHF
Interval:	1:00	EASTBO	UND		83rd Stree	ət	WESTBC	DUND		83rd Stree	ət	NORTHB	OUND		IL 59		SOUTHB	OUND		IL 59		Vehicle	min	
Start	End	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Total		
11:00	12:00	254	155	171	0	0	52	121	136	0	0	135	1,701	40	0	0	108	1,436	226	0	0	4,535	1,210	0.94
11:15	12:15	249	155	169	0	0	50	133	139	0	0	149	1,728	41	0	0	111	1,448	233	0	0	4,605	1,210	0.95
11:30	12:30	255	147	177	0	0	44	139	140	0	0	165	1,780	46	1	0	110	1,512	236	0	0	4,751	1,237	0.96
11:45	12:45	247	155	213	0	0	40	120	129	0	0	172	1.807	43	1	0	105	1.567	239	0	0	4.837	1.296	0.93

PEAK HOUR INFORMATION

Time Interval: 11:45 - 12:45

Int Peak 1hr Vol: 4,837

Int Peak 15min Vol: 1,296

Int PHF: 0.933

								Ex	isting Year	r Traffic - A	AM Peak H	our								
		From Wes	t				From Eas	t			F	From Sout	h			F	rom Nort	h		Int
EASTE	BOUND	8	3rd Stree	et	WEST	BOUND	1	83rd Stree	et	NORTH	BOUND		IL 59		SOUTH	BOUND		IL 59		Vehicle
Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Total
247	155	213	0	0	40	120	129	0	0	172	1,807	43	1	0	105	1,567	239	0	0	4,837
0	1	1			0	0	0			0	14	0			0	21	1			38
0.0%	0.6%	0.5%			0.0%	0.0%	0.0%			0.0%	0.8%	0.0%			0.0%	1.3%	0.4%			0.8%

Total Volume HV Volume HV%

				EXIS	sting Yea	r i rat
		Total V	ehicles			
0.4% 239 ◀┘	1.3% 1,567 ↓	0.0% 105 L	↓ ↓ ↓	129 120 40	0.0% 0.0% 0.0%	
0.0% 0.6% 0.5%	247 155 213	≁l ↓ └≁	▲ 172 0.0%	↑ 1,807 0.8%	43 0.0%	

Existing Year Traffic - AM Peak Hour



IL 59 with 83rd Street PM

Intersection: IL 59 with 83rd Street Traffic Count Date: 3/19/2022 Count Time: PM Count (12:00pm-3:00pm) North-South Street: Michigan Avenue East-West Street: 83rd Street

SYSTEM PEAK HOUR: 14:00 - 15:00 INTERSECTION PEAK: --

SATURDAY

Weather: 40s and Mostly Cloudy Day of Week: Saturday

Intersection Allowed Movements: See Diagram

Note: Peds counted; eastbound peds are peds crossing the west leg

INDICATES PROHIBITED MOVEMENT



										Tot	al Volume	e by Hour												
				From Wes	st				From Eas	st			F	From Sout	th			F	From Nor	th		Int	Peak 15-	Int PHF
Interval:	1:00	EASTBO	UND		83rd Stree	ət	WESTBC	DUND		83rd Stree	ət	NORTHB	OUND	Mic	higan Ave	enue	SOUTHB	OUND	Mic	higan Ave	enue	Vehicle	min	1
Start	End	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Total		
12:00	13:00	242	158	214	0	0	37	129	124	0	0	180	1,837	43	1	0	104	1,648	254	0	0	4,970	1,296	0.96
12:15	13:15	253	163	204	0	0	34	141	122	0	0	186	1,820	41	1	0	105	1,722	249	0	0	5,040	1,296	0.97
12:30	13:30	267	162	200	0	0	34	140	119	0	0	169	1,801	36	0	0	109	1,740	264	0	0	5,041	1,296	0.97
12:45	13:45	274	151	172	0	0	30	145	108	0	0	167	1,808	36	0	0	124	1,744	268	0	0	5,027	1,282	0.98
13:00	14:00	268	147	158	0	0	27	150	96	0	0	178	1,773	28	0	0	131	1,761	251	0	0	4,968	1,282	0.97
13:15	14:15	253	141	170	0	0	27	143	92	0	0	166	1,818	27	0	0	137	1,762	252	0	0	4,988	1,282	0.97
13:30	14:30	241	146	157	0	0	29	144	97	0	0	165	1,850	28	0	0	135	1,764	245	0	0	5,001	1,282	0.98
13:45	14:45	234	151	154	0	0	27	137	108	0	0	163	1,812	30	0	0	126	1,810	241	0	0	4,993	1,274	0.98
14:00	15:00	232	152	170	0	0	29	123	117	0	0	145	1,854	32	0	0	129	1,829	244	0	0	5,056	1,274	0.99
14:15	15:15	169	116	128	0	0	23	88	93	0	0	104	1,377	26	0	0	93	1,376	189	0	0	3,782	1,274	0.74
14:30	15:30	104	74	93	0	0	14	53	60	0	0	76	898	18	0	0	62	953	126	0	0	2,531	1,274	0.50
14:45	15:45	50	38	55	0	0	11	28	33	0	0	37	452	8	0	0	33	450	62	0	0	1,257	1,257	0.25
15:00	16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
15:15	16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
15:30	16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
15:45	16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
16:00	17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
16:15	17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
16:30	17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
16:45	17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
17:00	18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
17:15	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
17:30	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
17:45	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
18:00	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
18:15	19:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
18:30	19:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
18:45	19:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
19:00	20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
19:15	20:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
19:30	20:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
19:45	20:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
20:00	21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
20:15	21:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
20:30	21:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
20:45	21:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
21:00	22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
21:15	22:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
21:30	22:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
21:45	22:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
22:00	23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
22:15	23:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
22:30	23:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
22.45	23:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00

IL 59 with 83rd Street PM

SATURDAY

Intersection: IL 59 with 83rd Street Traffic Count Date: 3/19/2022 Count Time: PM Count (12:00pm-3:00pm) North-South Street: Michigan Avenue East-West Street: 83rd Street

SYSTEM PEAK HOUR: 14:00 - 15:00 INTERSECTION PEAK: --

Weather: 40s and Mostly Cloudy Day of Week: Saturday

Intersection Allowed Movements: See Diagram

Note: Peds counted; eastbound peds are peds crossing the west leg

INDICATES PROHIBITED MOVEMENT



										Tot	al Volume	by Hour												
				From Wes	st				From Eas	t			F	From Sout	h				From Nort	h		Int	Peak 15-	Int PHF
Interval:	1:00	EASTBO	UND	8	83rd Stree	et	WESTBO	UND	1	83rd Stree	et	NORTHB	OUND	Mic	higan Ave	enue	SOUTHB	OUND	Mic	higan Ave	enue	Vehicle	min	1
Start	End	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Total		
23:00	0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
23:15	0:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
23:30	0:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
23:45	0:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00

PEAK HOUR INFORMATION

Time Interval: 14:00 - 15:00

Int Peak 1hr Vol: 5,056

Int Peak 15min Vol: 1,274

Int PHF: 0.992

- [Ex	isting Year	Traffic - F	PM Peak H	our								
- [From Wes	t				From Eas	t			F	rom Sout	h			F	From Nort	h		Int
	EASTE	BOUND	8	3rd Stree	t	WEST	BOUND		3rd Stree	et	NORTH	IBOUND	Mic	higan Ave	enue	SOUTH	BOUND	Mic	higan Ave	enue	Vehicle
- [Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Left	Thru	Right	Peds	Bikes	Total
	232	152	170	0	0	29	123	117	0	0	145	1,854	32	0	0	129	1,829	244	0	0	5,056
	1	0	2		-	0	0	1			1	15	0			0	9	1			30
- [0.4%	0.0%	1.2%		1	0.0%	0.0%	0.9%	-		0.7%	0.8%	0.0%	-		0.0%	0.5%	0.4%			0.6%

Total Volume HV Volume HV%

					sung real	
		Total V	/ehicles			
0.4% 244 ◀J	0.5% 1,829	0.0% 129 L	▲_ ↓ ↓	117 123 29	0.9% 0.0% 0.0%	
0.4% 0.0% 1.2%	232 152 170		◀┐ 145 0.7%	↑ 1,854 0.8%	↓ 32 0.0%	

Existing Year Traffic - PM Peak Hour





IL 59 with 83rd Street Vehicle Distribution Charts SATURDAY

JET BRITE CAR WASH NORTHEAST CORNER OF IL 59 WITH 83RD STREET, NAPERVILLE

Traffic Impact Study Appendix

CMAP PROJECTIONS

CMAP Letter

CMAP Year 2028 Projected Volumes


433 West Van Buren Street Suite 450 Chicago, IL 60607

> 312-454-0400 cmap.illinois.gov

April 13, 2022

Matthew Maestranzi, PE, PTOE, RSP1 Senior Traffic Engineer Knight E/A, Inc. 221 North LaSalle Street Suite 300 Chicago, IL, 60601

Subject: IL 59 @ 83rd Street IDOT, City of Naperville

Dear Mr. Maestranzi:

In response to a request made on your behalf and dated April 12, 2022, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT	Year 2050 ADT
IL 59, @ 83rd St	49,300	55,200
83rd St west of IL 59	12,200	13,900
83rd St east of IL 59	8,600	11,300

Traffic projections are developed using existing ADT data provided in the request letter and the results from the December 2021 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2050 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

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

Sincerely,

I R

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

cc: Rios (IDOT) S2022_ForecastTraffic\Naperville\du-19-22\du-19-22.docx

TRAFFIC FORECAST RECORD

Record Number:du-19-22Type of Report:ProjectionYear Sought:2050Analyst:JAROrganization requesting forecast:Knight Engineers ArchitectsContact:Matthew Maestranzi, PE, PTOE, RSPEmail or Phonemmaestranzi@knightea.comSponsor:IDOT, City of NapervilleDate request was received:April 12, 2022Date that response was emailed:April 13, 2022Facility Location:IL 59 @ 83rd StreetMunicipality:Naperville

IL 59 with 83rd Street CMAP PROJECTIONS			n=	28	Data Yr 2022	CMAP Yr 2050							
CMAP PROJECTIONS (Annual Grow	th Rate Calcula	ation)	FutVol	= ExVol(1	$(+r)^{n}$		Prorated ADT						
					Annual Growth]					
ROAD SEGMENT	EX ADT	2050 ADT	DIFF	n	r		2028 ADT						
IL 59 (north leg)	49300	55200	5900	28	0.405%		50510	1					
IL 59 (south leg)	49300	55200	5900	28	0.405%		50510	1					
83rd St (west leg)	12200	13900	1700	28	0.467%		12550	1					
83rd St (east leg)	8600	11300	2700	28	0.980%		9120]					
Average Growth Rates by Intersection	on Legs	r	Apply To Movements										
North and South		0.405%	NBT / SBT										
North and West		0.436%	EBL / SBR										
North and East		0.692%	SBL / WBR										
South and West		0.436%	NBL / EBR										
South and East		0.692%	WBL / NBR										
West and Fast		0.723%	EBT / WBT										
West and East													
Current Year: Horizon Year:	2022 2028	I	n = FutVol = ExVe	6 $pl(1+r)^n$									
Current Year: Horizon Year: Annual Growth Rate Applied (r):	2022 2028	0.723%	n = FutVol = ExVol 0.436%	6 $pl(1+r)^n$	r =	0.692%	0.723%	0.692%		r=	0.436%	0.405%	0.692%
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK	2022 2028 0.436% From West	0.723%	n = FutVol = ExVo 0.436%	$\frac{6}{pl(1+r)^n}$	r=	0.692%	0.723%	0.692%		r=	0.436% From Sou	0.405%	0.692%
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK	2022 2028 0.436% From West EASTBOUND	0.723%	n = FutVol = ExVe 0.436% 83rd Street	6 $pl(1+r)^n$	r =	0.692% From East WESTBOUN	0.723%	0.692%		r=	0.436% From Sour	0.405% th DUND	0.692%
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK	2022 2028 0.436% From West EASTBOUND Left	P 0.723%	n = FutVol = ExVo 0.436% 83rd Street Right	6 $pl(1+r)^n$	r =	0.692% From East WESTBOUN Left	0.723% ID Thru	0.692% 83rd Stree Right	t	r =	0.436% From Sour NORTHBC Left	0.405% th DUND Thru	0.692%
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK	2022 2028 0.436% From West EASTBOUND Left 247	1 0.723% Thru 208	n = <i>FutVol = ExVo</i> 0.436% 83rd Street Right 131	6 $pl(1+r)^n$	r =	0.692% From East WESTBOUN Left 27	0.723% ID Thru 141	0.692% 83rd Stree Right 67	t	r=	0.436% From Sour NORTHBC Left 121	0.405% th OUND Thru 1874	0.692% IL 59 Right 57
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK	2022 2028 0.436% From West EASTBOUND Left 247 255	1 0.723% Thru 208 220	n = <i>FutVol = ExVo</i> 0.436% 83rd Street Right 131 135	6 pl(1+r) ⁿ	r =	0.692% From East WESTBOUN Left 27	0.723% ID Thru 141	0.692% 83rd Stree Right 67	t	r=	0.436% From Sour NORTHBC Left 121 125	0.405% th DUND Thru 1874	0.692% IL 59 Right 57 60
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK Existing Year Horizon Year	2022 2028 0.436% From West EASTBOUND Left 247 255	1 0.723% Thru 208 220	n = FutVol = ExVo 0.436% 83rd Street Right 131 135	6 $bl(1+r)^n$	r =	0.692% From East WESTBOUN Left 27 30	0.723% ID Thru 141 150	0.692% 83rd Stree Right 67 70	t	r =	0.436% From Sour NORTHBC Left 121 125	0.405% th DUND Thru 1874 1920	0.692% IL 59 Right 57 60
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK Existing Year Horizon Year PM PEAK	2022 2028 0.436% From West EASTBOUND Left 247 255 From West	1 0.723% Thru 208 220	n = FutVol = ExVo 0.436% 83rd Street Right 131 135	6 bl(1+r) ⁿ	r =	0.692% From East WESTBOUN Left 27 30 From East	0.723% ID Thru 141 150	0.692% 83rd Stree Right 67 70	t.	r =	0.436% From Sour NORTHBC Left 121 125 From Sour	0.405% th DUND Thru 1874 1920 th	0.692% IL 59 Right 57 60
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK Existing Year Horizon Year PM PEAK	2022 2028 0.436% From West EASTBOUND Left 247 255 From West EASTBOUND	1 0.723% Thru 208 220	n = <i>FutVol</i> = <i>ExVo</i> 0.436% 83rd Street Right 131 135 83rd Street	6 $pl(1+r)^n$	r =	0.692% From East WESTBOUN Left 27 30 From East WESTBOUN	0.723% D Thru 141 150	0.692% 83rd Stree Right 67 70 83rd Stree	t 	r =	0.436% From Sour NORTHBC Left 121 125 From Sour NORTHBC	0.405% th DUND Thru 1874 1920 th DUND	0.692% IL 59 Right 57 60 IL 59
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK Existing Year Horizon Year PM PEAK	2022 2028 0.436% From West EASTBOUND Left EASTBOUND Left	1 0.723% Thru 208 220 Thru	n = FutVol = ExV 0.436% 83rd Street Right 131 135 83rd Street Right	6 $pl(1+r)^n$	r =	0.692% From East WESTBOUN Left 27 30 From East WESTBOUN Left	0.723% ID Thru 141 150 ID Thru	0.692% 83rd Stree Right 67 70 83rd Stree Right	t 	r =	0.436% From Sour NORTHBC Left 121 125 From Sour NORTHBC Left	0.405% th DUND Thru 1874 1920 th DUND Thru	0.692% IL 59 Right 57 60 IL 59 Right
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK Existing Year PM PEAK Existing Year	2022 2028 0.436% From West EASTBOUND Left 247 255 From West EASTBOUND Left 231	1 0.723% Thru 208 220 Thru 232	n = <i>FutVol</i> = <i>ExVo</i> 0.436% 83rd Street Right 135 83rd Street Right 199	6 $bl(1+r)^n$	r =	0.692% From East WESTBOUN Left 27 30 From East WESTBOUN Left 83	0.723% D Thru 141 150 D Thru 218	0.692% 83rd Stree Right 67 70 83rd Stree Right 98	t t	L =	0.436% From Sour NORTHBC Left 121 125 From Sour NORTHBC Left 178	0.405% th DUND Thru 1874 1920 th DUND Thru 1637	0.692% IL 59 Right 57 60 IL 59 Right 60
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK Existing Year PM PEAK Existing Year Horizon Year	2022 2028 0.436% From West EASTBOUND Left 247 255 From West EASTBOUND Left 231 240	1 0.723% Thru 208 220 Thru 232 245	n = <i>FutVol</i> = <i>ExVo</i> 0.436% 83rd Street Right 131 135 83rd Street Right 199 205	6 $bl(1+r)^n$	r =	0.692% From East WESTBOUN Left 27 30 From East WESTBOUN Left 83 90	0.723% D Thru 141 150 D Thru 218 230	0.692% 83rd Street Right 67 70 83rd Street Right 98 105	t	r=	0.436% From Sou NORTHBC Left 121 125 From Sou NORTHBC Left 178 185	0.405% th DUND Thru 1874 1920 th DUND Thru 1637 1680	0.692% IL 59 Right 57 60 IL 59 Right 60 65
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK Existing Year Horizon Year Existing Year Horizon Year	2022 2028 0.436% From West EASTBOUND Left 247 255 From West EASTBOUND Left 231 240	1 0.723% Thru 208 220 Thru 232 245	n = <i>FutVol</i> = <i>ExVo</i> 0.436% 83rd Street Right 131 135 83rd Street Right 199 205	6 <i>pl</i> (1+ <i>r</i>) ^{<i>n</i>}		0.692% From East WESTBOUN Left 27 30 From East WESTBOUN Left 83 90	0.723% D Thru 141 150 D Thru 218 230	0.692% 83rd Stree Right 67 70 83rd Stree Right 98 105	t t	r=	0.436% From Sou NORTHBC Left 121 125 From Sou NORTHBC Left 178 185	0.405% th JUND Thru 1874 1920 th JUND Thru 1637 1680	0.692% IL 59 Right 57 60 IL 59 Right 60 65
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK Existing Year Horizon Year Horizon Year Horizon Year SATURDAY MIDDAY PEAK	2022 2028 0.436% From West EASTBOUND Left 247 255 From West EASTBOUND Left 231 240 From West	1 0.723% Thru 208 220 Thru 232 245	n = FutVol = ExVd 0.436% 83rd Street Right 131 135 83rd Street Right 199 205	6		0.692% From East WESTBOUN Left 30 From East WESTBOUN Left 83 90 From East	0.723% ID Thru 141 150 ID Thru 218 230	0.692% 83rd Stree Right 67 70 83rd Stree Right 98 105	t t	r=	0.436% From Sou NORTHBC Left 121 125 From Sou NORTHBC Left 178 185 From Sou	0.405% th DUND Thru 1874 1920 th DUND Thru 1637 1680 th	0.692% IL 59 Right 57 60 IL 59 Right 60 65
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK Existing Year PM PEAK Existing Year Horizon Year Horizon Year SATURDAY MIDDAY PEAK	2022 2028 From West EASTBOUND Left 247 255 From West EASTBOUND Left 231 240 From West EASTBOUND	1 0.723% Thru 208 220 Thru 232 245	n = <i>FutVol</i> = <i>ExVo</i> 0.436% 83rd Street Right 131 135 83rd Street Right 199 205 83rd Street	6		0.692% From East WESTBOUN Left 27 30 From East WESTBOUN From East WESTBOUN	0.723% D Thru 141 150 D Thru 218 230 D	0.692% 83rd Stree Right 67 70 83rd Stree 83rd Stree 83rd Stree	t t t	r =	0.436% From Sour NORTHEC Left 121 125 From Sour NORTHEC NORTHEC NORTHEC	0.405% th JUND Thru 1874 1920 th DUND Thru 1637 1680 th DUND	0.692% IL 59 Right 57 60 IL 59 Right 60 65 IL 59
Current Year: Horizon Year: Annual Growth Rate Applied (r): AM PEAK Existing Year Horizon Year PM PEAK Existing Year Horizon Year SATURDAY MIDDAY PEAK	2022 2028 0.436% From West EASTBOUND Left 231 240 From West EASTBOUND Left EASTBOUND Left	1 0.723% Thru 208 220 Thru 232 245 Thru Thru	n = FutVol = ExV 0.436% 83rd Street Right 131 135 83rd Street Right 199 205 83rd Street Right	6 <i>ol</i> (1+ <i>r</i>) ^{<i>n</i>}	r =	0.692% From East WESTBOUN Left 27 30 From East WESTBOUN Left MESTBOUN Left	0.723% D Thru 141 150 D Thru 218 230 D D Thru D Thru	0.692% 83rd Stree Right 67 70 83rd Stree Right 98 105 83rd Stree Right	t 	r=	0.436% From Sou NORTHBC Left 121 125 From Sou NORTHBC Left 178 185 From Sou NORTHBC	0.405% th JUND Thru 1874 1920 th JUND Thru 1680 th JUND Thru JUND	0.692% IL 59 Right 57 60 IL 59 Right 60 65 IL 59 Right IL 59 Right

130

125

35

Horizon Year

240

160

175

 0.692%
 0.405%
 0.436%

 From North
 IL
 SOUTHBOUND
 IL

 Left
 Thru
 Right
 56
 869
 118

From North SOUTHBOUND IL 59

Left Thru Right 136 2211 305

145 2270 315

SOUTHBOUNDIL 59LeftThruRight1251829244

135 1875 255

895 125

60

From North

r =

35

1900

150

JET BRITE CAR WASH NORTHEAST CORNER OF IL 59 WITH 83RD STREET, NAPERVILLE

Traffic Impact Study Appendix

TRAFFIC CAPACITY ANALYSIS REPORTS

AM Existing PM Existing Saturday Midday Existing AM Projected PM Projected Saturday Midday Projected

HCS7 Signalized Intersection Input Data

		I	1031	Signa	mzec	inter	secu	лп	iput Da	แล					
General Inform	nation								Intersec	tion Info	ormatio	on		****	× L
Agency		Knight E/A, Inc.							Duration	h	0.250				*
Analyst		RAC		Analys	is Date	e Apr 12	2, 2022		Area Typ	e	Other		A		<u>▲</u> ★ <mark>}</mark> =
Jurisdiction		IDOT		Time F	Period	AM E> Hour	kisting F	Peak	PHF		0.95		* ***	w‡e 8	- - *
Urban Street		IL 59		Analys	is Yea	· 2022			Analysis	Period	1> 7:	15			,
Intersection		IL 59 / 83rd Street		File Na	ame	7767.0	01 - IL5	9-83rc	d AMEX.x	us				이 1 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	e e
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	e								1 7		
, , ,				1											
Demand Inform	nation				EB			W	В		NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), v	eh/h			247	208	131	27	14	1 67	121	1874	57	60	869	118
				10											
Signal Informa	tion				6		₽	1 2	2	2	₽ L				₩ →
Cycle, s	140.0	Reference Phase	2		5	517	∞ľ †	<u>,</u> [٣Ŕ.	- E	é.				
Offset, s	0	Reference Point	Begin	Green	7.0	0.8	66.7	4.0) 11.5	22.1			-		~
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	4.0	3.5	5 3.5	4.0		$\langle \mathbf{A} \rangle$			
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	2.0	0.0	0.0	2.0		5	6	7	
				-						-					
Traffic Informa	tion				EB			WE	3		NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), ve	h/h			247	208	131	27	141	67	121	1874	57	60	869	118
Initial Queue (G	l Queue (Q _b), veh/h					0	0	0	0	0	0	0	0	0	0
Base Saturation	e Saturation Flow Rate (s_0), veh/h					1900	1900	190	0 1900	1900	2000	1900	1900	2000	1900
Parking (Nm), m	nan/h				None			Non	e		None			None	
Heavy Vehicles	(Рнv), 9	%		1	4		11	3		5	5	0	2	11	2
Ped / Bike / RT	OR, /h			0	0	0	0	0	0	0	0	0	0	0	0
Buses (Nb), bus	es/h			0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (A7	r)			3	3	3	3	3	3	4	4	4	4	4	4
Upstream Filter	ing (<i>I</i>)			1.00	1.00	1.00	1.00	1.00	0 1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W)), ft			11.0	12.0		11.0	12.0)	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Lengt	h, ft			150	0		195	0		410	0	0	410	0	0
Grade (<i>Pg</i>), %					0			0			0			0	
Speed Limit, mi	/h			40	40	40	40	40	40	45	45	45	45	45	45
Dhace Informa	tion			EDI		EDT				NDI			SDI		CDT
Phase Informa		or Dhago Split o		EBL	· · · ·	EBI		-	28 0		-		3BL		581
Valley Change	Interval			30.0		50.0	0.0		20.0	20.0	,	02.0	20.0		4.0
Red Clearance	Interval	$(\mathbf{r}), \mathbf{s}$		3.5		4.0	3.5	_	4.0	3.5	_	4.0	3.5	<u> </u>	4.0
Ninimum Croor		(Rc), S		0.0		2.0	0.0		2.0	1.0		2.0	1.0	<u> </u>	2.0
Start Up Last T	ime (It)	, s		3		0	3	_	0	3		15	3	<u> </u>	15
Start-Op Lost I		$\frac{5}{2}$		2.0		2.0	2.0	-	2.0	2.0		2.0	2.0	+	2.0
Extension of En		Sieen (e), s		2.0		2.0	2.0		2.0	2.0		2.0	2.0	_	2.0
Passage (PT), s	5			3.0		5.0	3.0		5.0	3.0		7.0	3.0	\rightarrow	7.0 Min
Recall Mode				Οπ	_	Οπ	Un Vee		Οπ	Un		iviin Mala	Οπ	_	IVIIN Mara
	Dual Entry					res	Yes	,	res	Yes		res	Yes		res
vvaik (<i>vvalk</i>), s	Nalk (<i>Walk</i>), s					7.0			0.0			0.0		_	1.0
Pedestrian Clea				30.0			0.0			U.U			17.0		
Multimodal Inf	Iultimodal Information							WB	;		NB			SB	
85th % Speed /	5th % Speed / Rest in Walk / Corner Radius					25	0	No	25	0	No	25	0	No	25
Walkway / Cros	swalk V	Vidth / Length, ft		9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Is	sland / C	Curb		0	0	No	0	0	No	0	0	No	0	0	No
Width Outside /	Bike La	ane / Shoulder, ft		12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Sigr	Ith Outside / Bike Lane / Shoulder, ft Iestrian Signal / Occupied Parking					0.50	No		0.50	No		0.50	No		0.50

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HCS7 Signalized Intersection Results Summary

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General Inform	ation									In	torsoct	ion Inf	ormat	on		al _1 abs + 1	يد ا <u>ن</u>
	lation	Knight E/A Inc									uration	h	0 25	n		7111	*
Apolyet				Apolyc		ato /	Apr 10	> 2022				0	Othc	ur .	1		۲. 4
Analyst				Time		ale /		., 2022) o o lí		ч	e		1	- <u>→</u> *	w1 =	<u>≁</u>
Junsaiction				I Ime F	enoc	u p H	Hour	asung P	eak				0.95		**		* → *
Urban Street		IL 59		Analys	sis Ye	ar 2	2022			Ar	nalysis	Period	1> 7	:15		5 + + + ,	<u>ء</u> ً
Intersection		IL 59 / 83rd Street		File Na	ame	7	7767.0	01 - IL59	9-83r	d A	MEX.xu	JS				41471	* (*
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е										1		
Demand Inform	nation				E	В			V	٧B			NE	6		SB	
Approach Move	ement			L	Т	-	R	L		Т	R	L	T	R	L	Т	R
Demand (v), v	eh/h			247	20	8	131	27	1	41	67	121	187	4 57	60	869	118
Signal Informa	tion			[1 1	_						1	5				K
	140.0	Poforonco Phaco	2			2		₹.		, ,	42	3	∑⊒ I		tz		\rightarrow
Cycle, s	140.0	Reference Priase	2 Decrire		5		- 51ř		7	Ľ				1	2	3	4
Unsel, S	U		Беуіп	Green	7.0		0.8	66.7	4.	0	11.5	22.1		_ /			
	INO Fixed	Simult. Gap E/W	On	Yellow	3.5	_	3.5	4.0	3.	5	3.5	4.0	-11	∖ାশ		<pre></pre>	÷
Force Mode	Fixed	Simult. Gap N/S	On	Rea	1.0		1.0	2.0	0.	0	0.0	2.0		5	6	7	X 8
Timer Results				FBI		FF	BT	WB		V	WBT	NBI		NBT	SBI		SBT
Assigned Phase	<u>a</u>		_	3	-	2	3	7	-		4	5		2	1		6
Case Number	<u> </u>			11	-	4	0	11	\rightarrow		4 0	20	-	3.0	2.0		3.0
Phase Duration	e Duration, s					. ب 13	2.0	7.5	-	2	7.0 08 1	16.9	2	78.0	2.0		72.7
Change Deried	, 3 (V+D		22.4		40	0	7.5	\rightarrow	2	6.0	4.5	, –	6.0	4.5	,	60	
Max Allow Hoad		(), S		3.5	-	6	.0	3.5	-		6.0	4.5		0.0	4.5		0.0
	away (n	(α)		4.0		0. วง	.0	4.0	+	1	0.0	4.0		0.0	4.0		0.0
Queue Clearan	ce Time	$(g_s), s$		0.5		20	0.9	4.0	-	,	0.0	12.0	,	0.0	0.9		0.0
Bhase Cell Drob		(<i>g</i> e), s		1.00		4.	.0	1.00		, 1	3.3	1.00		0.0	1.00		0.0
Max Out Drahal				1.00	,	1.0	20	1.00	, ,	1	.00	1.00	, 		1.00	,	
Max Out Proba	onity			0.06		0.2	20	1.00	,	0).45	0.00	,		0.00)	
Movement Gro	oup Res	ults			EE	3			W	В			NB			SB	
Approach Move	ement			L	Т		R	L	Т		R	L	Т	R	L	Т	R
Assigned Move	ment			3	8		18	7	4		14	5	2	12	1	6	16
Adjusted Flow F	Rate (v), veh/h		260	357	7		28	21	9		127	1973	60	63	915	124
Adjusted Satura	ation Flo	w Rate (s), veh/h/	In	1795	172	1		1654	175	54		1739	1745	1610	1781	1660	1585
Queue Service	Time (g	g s), s		16.4	26.9	9		2.0	16.	8		10.0	33.3	1.7	4.9	12.4	4.5
Cycle Queue C	learance	e Time (g c), s		16.4	26.9	9		2.0	16.	8		10.0	33.3	1.7	4.9	12.4	4.5
Green Ratio (g	/C)			0.31	0.20	6		0.19	0.1	6	_	0.09	0.51	0.51	0.05	0.48	0.48
Capacity (c), v	/eh/h			338	455	5		154	27	7		152	2691	828	89	2373	755
Volume-to-Capa	acity Ra	itio(X)		0.768	0.78	34		0.185	0.79	91		0.836	0.733	0.072	0.709	0.386	0.164
Back of Queue	(Q), ft/	In (95 th percentile)	310.1	469.	.7		41.2	333	.6		215	406	29.2	111.1	205.3	74.7
Back of Queue	(Q), ve	eh/In (95 th percent	, ile)	12.3	18.	2		1.5	13.	0		8.3	15.6	1.2	4.4	7.5	2.9
Queue Storage	Ratio (RQ) (95 th percen	, tile)	2.07	0.0	0		0.21	0.0	0		0.52	0.00	0.00	0.27	0.00	0.00
Uniform Delay ((d1), s/	/veh	,	40.9	47.8	8		47.9	56.	7		60.8	15.9	11.0	65.5	15.6	14.2
Incremental De	remental Delay (<i>d</i> ₂), s/ven					3		0.6	12.	2		11.3	1.8	0.2	9.9	0.5	0.5
Initial Queue De	tial Queue Delay (d 3), s/veh)		0.0	0.0	D C		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (ontrol Delay (<i>d</i>), s/veh					0		48.5	69.	0		72.1	17.8	11.1	75.4	16.1	14.7
Level of Service	evel of Service (LOS)							D	E	T		E	В	В	Е	В	В
Approach Delay	, s/veh	/ LOS		52.2	2	Ē)	66.6	;		E	20.8	3	С	19.3	3	В
Intersection Del	lay, s/ve	h / LOS					27	.8							С		
Multimodal Re	sults				EE	3			W	В			NB			SB	
Pedestrian LOS	Score	/LOS															
Bicycle LOS Sc	ore / LC	DS															

HCS7 Signalized Intersection Intermediate Values

		11007	olgi	an	Zeu I	intera			ten	neuic		aiue	3				
General Inform	nation			_						Inters	ection	n Info	rmati	on		∫ 44 m/444 f	₽ L
	ation	Knight E/A Inc								Durat	ion h	1 1110	0 250	0		$\downarrow \downarrow \downarrow \downarrow \downarrow$	Ļ
Analyst		RAC		Δr	nalveie	Data	Δnr 12	2022		Area	Tyne		Othe	o vr	 		۲. 4
Jurisdiction					ma Dar	iod	AM Evie	ting [Dook		турс		0 05	•1	××	w↓e	
Julisaiction							Hour	ung i	Car				0.95		4		- - -
Urban Street		IL 59		Ar	nalysis	Year	2022			Analy	sis Pe	riod	1> 7:	:15		5 + + +	7
Intersection		IL 59 / 83rd Street		Fi	le Nam	e	7767.01	- IL5	9-83	rd AME	X.xus					ነፋተቀጥ	†* (*
Project Descrip	tion	7767.01 - IL 59 Jet I	Brite - N	Vap	erville												
							_				1						
Demand Inform	nation					EB			V	VB			NB	\$		SB	
Approach Move	ement				L	Т	R	L		T	R	L	Т	R	L	Т	R
Demand(<i>v</i>), v	/eh/h			2	247	208	131	27	1	41	67	121	187	4 57	60	869	118
Signal Informa	ation					L.		IJ				8					ĸ
Cycle, s	140.0	Reference Phase	2	1		~	547	۲	Ŀ		3				· 12-		
Offset, s	0	Reference Point	Beain			<u> </u>	<u> </u>	<u> </u>	r_		<u> </u>			1	2	3	4
Uncoordinated	No	Simult, Gap F/W	On	GI	reen 7	.0	0.8	66.7	4.	.0 1	1.5	22.1	-	K			_
Force Mode	Fixed	Simult, Gap N/S	On	Re	ad 1	.0	3.5 1.0	2.0	0	0 0).0	4.0 2.0	-	5	♦	7	-€ .
	Tixed		on			.0	1.0	2.0		.0 0		2.0					_
Saturation Flo	w / Dela	ay	L		Т	R	L		Г	R	L		Т	R	L	Т	R
Lane Width Adj	ustment	t Factor (<i>f</i> w)	1.0	00	1.000	1.000	1.000	1.0	000	1.000	1.00) 1.0	000	1.000	1.000	1.000	1.000
Heavy Vehicles	y Vehicles and Grade Factor (<i>f</i> _{HVg})				0.969	0.969	0.914	0.9	977	1.000	0.96	1 0.9	961	1.000	0.984	0.914	0.984
Parking Activity	ing Activity Adjustment Factor (f_p)				1.000	1.000	1.000	1.0	000	1.000	1.00) <u>1.</u>	000	1.000	1.000	1.000	1.000
Bus Blockage A	ng Activity Adjustment Factor (f_p) Blockage Adjustment Factor (f_{bb})				1.000	1.000	1.000	1.0	000	1.000	1.00) 1.C	000	1.000	1.000	1.000	1.000
Area Type Adju	stment l	Factor (fa)	1.0	00	1.000	1.000	1.000	1.0	000	1.000	1.00	0 1.0	000	1.000	1.000	1.000	1.000
Lane Utilization	Adjustr	ment Factor (fLU)	1.0	00	1.000	1.000	1.000	1.0	000	1.000	1.00) 0.9	908	1.000	1.000	0.908	1.000
Left-Turn Adjus	tment F	actor (fLT)	0.9	52	0.000		0.952	0.0	000		0.95	2 0.0	000		0.952	0.000	
Right-Turn Adju	Istment	Factor (fRT)			0.935	0.935		0.9	945	0.945		0.0	000	0.847		0.000	0.847
Left-Turn Pede	strian Ad	djustment Factor (fLpl) 1.0	00			1.000				1.00	5 🗌			1.000		
Right-Turn Ped	-Bike Ac	djustment Factor (fRp)			1.000				1.000				1.000			1.000
Work Zone Adju	ustment	Factor (fwz)	1.0	00	1.000	1.000	1.000	1.0	000	1.000	1.00	0 1.0	000	1.000	1.000	1.000	1.000
DDI Factor (for	/)		1.0	00	1.000	1.000	1.000	1.0	000	1.000	1.00) 1.0	000	1.000	1.000	1.000	1.000
Movement Satu	uration F	low Rate (s), veh/h	179	95	1056	665	1654	11	89	565	1739	9 52	236	1610	1781	4981	1585
Proportion of Ve	ehicles /	Arriving on Green (P)	0.1	4	0.26	0.26	0.03	0.	16	0.16	0.12	0.	.69	0.69	0.05	0.64	0.64
Incremental De	lay Fact	tor (<i>k</i>)	0.1	8	0.31		0.11	0.1	28		0.11	0.	.50	0.50	0.11	0.50	0.50
Signal Timing	/ Mover	ment Groups		EBL	. E	BT/R	WE	3L	W	BT/R	N	BL	N	BT/R	SBL	. :	SBT/R
Lost Time (t _L)				3.5		6.0	3.	5	6	6.0	4	.5		6.0	4.5		6.0
Green Ratio (g/	⁄C)		0).31	(0.26	0.1	9	0).16	0.	09	C).51	0.05		0.48
Permitted Satur	ration Fl	low Rate (<i>s</i> _p), veh/h/l	n 1	171		0	95	1		0	()		0	0		0
Shared Saturat	ion Flow	v Rate (<i>s</i> sh), veh/h/ln															
Permitted Effec	tive Gre	en Time (g_p), s		24.1		0.0	22.	.1	(0.0	0	.0		0.0	0.0		0.0
Permitted Servi		e (gu), s	-	5.3	_	0.0	8.	1	(0.0	0	.0		0.0	0.0		0.0
Time to First R	le Servi	ce Time (gps), s		5.3		0.0	0.4	4		0.0	0	0		0.0	0.0		0.0
	ime to First Blockage (<i>gt</i>), s				_	0.0	0.0	5		0.0	0	.0	<u> </u>	0.0	0.0	_	0.0
Queue Service	ueue Service Time Before Blockage (g_{fs}), s										-		-	0			
Protected Right	rotected Right Saturation Flow (s_R), veh/h/ln								-		-			0			0
	rotected Right Effective Green Time (<i>g</i> _R), s										-			0.0		0.0	0.0
NUITIMODAL	E.				FR			V	٨R			1	NR			SB	
Pedestrian E /	r v Edular										-		-				
Pedestrian Mar	ner / Mau	/	-						-				-				
	INCI I IVICW	,	-								-						
Bicycle Full Fu			-	-					-		-						
,							1						1				

HCS7 Signalized Intersection Results Graphical Summary

General Inform	nation								Interse	ction In	ormatio	on		-41_4= ↓ ↓	⊾ l <u>a</u>
Agency		Knight E/A, Inc.							Duratio	n, h	0.250			2+++	•
Analyst		RAC		Analys	is Date	Apr 12	2, 2022		Area T	pe	Other				4
Jurisdiction		IDOT		Time F	Period	AM Ex Hour	kisting F	Peak	PHF		0.95		**** *	w 🗍 E	* ↓ ↓ ↓ ↓
Urban Street		IL 59		Analys	is Year	2022			Analys	s Period	1> 7:	15		5 + + + /	<u>ء</u>
Intersection		IL 59 / 83rd Street		File Na	ame	7767.0	01 - IL5	9-83rc	AMEX	xus			1	* 1 * * * 1	۲ ۲
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е										
		<u>^</u>		_			1								
Demand Inform	nation				EB			W	В		NB			SB	9
Approach Move	ement			L	Т	R	L	T		L	T	R	L	Т	R
Demand (<i>v</i>), v	eh/h			247	208	131	27	14	1 6	121	1874	57	60	869	118
				1				1/							
Signal Informa	tion						24	1		я	\geq		* -		\rightarrow
Cycle, s	140.0	Reference Phase	2		5	l str	↗Î ↑	7	Ē	R	E	>		3	4
Offset, s	0	Reference Point	Begin	Green	7.0	0.8	66.7	4.0) 11	5 22.	1				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	4.0	3.5	5 3.5	4.0		$\langle 2 \rangle$	-		
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	2.0	0.0) 0.0	2.0		5	6	7	8
				-			-								
Movement Gro	oup Res	ults			EB			WE	3		NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Back of Queue	(Q), ft/	In (95 th percentile)	310.1	469.7		41.2	333.	6	215	406	29.2	111.1	205.3	74.7
Back of Queue	(Q), ve	eh/In (95 th percent	ile)	12.3	18.2		1.5	13.0)	8.3	15.6	1.2	4.4	7.5	2.9
Queue Storage	Ratio (RQ) (95 th percen	tile)	2.07	0.00		0.21	0.00)	0.52	0.00	0.00	0.27	0.00	0.00
Control Delay (d), s/ve	eh		47.0	56.0		48.5	69.0)	72.1	17.8	11.1	75.4	16.1	14.7
Level of Service	e (LOS)			D	E		D	E		E	В	В	E	В	В
Approach Delay	, s/veh	/ LOS		52.2	2	D	66.6	3	Е	20.	8	С	19.3	3	В
Intersection De	lay, s/ve	h / LOS				27	.8					(0		



--- Messages ----

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ----

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HCS[™] Streets Version 7.9.5

Generated: 4/18/2022 3:21:38 PM

HCS7 Signalized Intersection Input Data

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													1 -		
General Inform	nation	1							Intersec	tion Info	ormatio	on	_		× 1,4
Agency		Knight E/A, Inc.		1					Duration	h	0.250				*
Analyst		RAC		Analys	is Date	e Apr 12	2, 2022		Area Typ	e	Other		<u></u> 4 →		<u>∧</u> ⊁ ⊱
Jurisdiction		IDOT		Time F	Period	PM Ex Hour	kisting F	Peak	PHF		0.95		4 47 44 4	w‡e 8	÷ ↓ ↓
Urban Street		IL 59		Analys	is Year	2022			Analysis	Period	1> 7:	15			,
Intersection		IL 59 / 83rd Street		File Na	ame	7767.0	01 - IL59	9-83rc	d PMEX.x	us				ব 1 ক প 1	× (*
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	e										
				1											
Demand Inform	nation				EB			W	В		NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), v	eh/h			231	232	199	83	21	8 98	178	1637	60	143	2211	305
				1.											
Signal Informa	tion		N.				1		2	3	₽ L				-
Cycle, s	160.0	Reference Phase	2		5	Str	יי ^ו ה	~	۳Ŕ	i i i i i i i i i i i i i i i i i i i	e''				×
Offset, s	0	Reference Point	Begin	Green	15.3	3.3	77.9	4.5	5 11.5	24.0			•		~
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.0	3.5	5 3.5	4.0		く 2			
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	2.0	0.0	0.0	2.0		5	6	7	
				-			-			-					
Traffic Informa	tion				EB			WE	3		NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), ve	hand (v), veh/h Il Queue (Q_b), veh/h					199	83	218	98	178	1637	60	143	2211	305
Initial Queue (G	I Queue (Q₀), veh/h					0	0	0	0	0	0	0	0	0	0
Base Saturation	e Saturation Flow Rate (s_0), veh/h					1900	1900	190	0 1900	1900	2000	1900	1900	2000	1900
Parking (Nm), m	nan/h				None			Non	e		None			None	
Heavy Vehicles	(Рнv), 9	%		0	1		0	1		2	2	0	1	1	1
Ped / Bike / RT	OR, /h			0	0	0	0	0	0	0	0	0	0	0	0
Buses (Nb), bus	ses/h			0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (A7	r)			3	3	3	3	3	3	4	4	4	4	4	4
Upstream Filter	ing (I)			1.00	1.00	1.00	1.00	1.00	0 1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W)), ft			11.0	12.0		11.0	12.0)	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Lengt	h, ft			150	0		195	0		410	0	0	410	0	0
Grade (<i>Pg</i>), %					0			0			0			0	
Speed Limit, mi	/h			40	40	40	40	40	40	45	45	45	45	45	45
Phase Informa	tion			EBI		ERT	\//RI		W/RT	NRI		NRT	SRI		CRT
Maximum Gree	n (Grav)	or Phase Split s		23.0		45 0	8.0	-+-	30.0	25.0		82.0	25.0		82.0
Vellow Change				25.0	·	40.0	3.5	\rightarrow	4.0	20.0		4.0	25.0	<u> </u>	4.0
Red Clearance	Interval	$(P_{a}) \in$		0.0	-	2.0	0.0	-	4.0	1.0		2.0	1.0		2.0
Minimum Green		(170), 5		3		2.0	0.0	\rightarrow	2.0	3		2.0	1.0	_	15
Start-Un Lost Ti	(0,0)	, S C		2.0		2.0	2.0	-	2.0	2.0		2.0	2.0		2.0
Extension of Eff	factive (, s Green (e) s		2.0		2.0	2.0	\rightarrow	2.0	2.0	+	2.0	2.0	_	2.0
Passage (PT)		Sieen (e), s		2.0		5.0	2.0	-	5.0	2.0		2.0	2.0		2.0
Passaye (FT), s	5			5.0 Off		0.0 0ff	3.0 Off	\rightarrow	0.0 0#	5.0 Off		7.0 Min	5.0 Off	_	7.0 Min
				Voo		Voo	Voo	\rightarrow	Voo	Voo		Voo	Vee		Voo
	Dual Entry					Tes	res	-	res	res		res	fes	\rightarrow	Tes 7.0
VValk (VValk), S	Valk (<i>Walk</i>), s					7.0		_	0.0		_	0.0			17.0
	Pedestrian Clearance Time (<i>PC</i>), s					30.0			0.0			0.0			17.0
Multimodal Inf	ormatio	on			EB			WB			NB			SB	
85th % Speed /	Rest in	Walk / Corner Radi	us	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Cros	swalk V	Vidth / Length, ft		9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Is	sland / C	Curb		0	0	No	0	0	No	0	0	No	0	0	No
Width Outside /	Bike La	ane / Shoulder, ft		12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Sigr	dth Outside / Bike Lane / Shoulder, ft destrian Signal / Occupied Parking					0.50	No		0.50	No		0.50	No		0.50

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HCS7 Signalized Intersection Results Summary

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General Inform	nation								In	tersect	ion Inf	ormatio	n		**	يد لي
Agency	lation	Knight E/A Inc								uration	h	0 250)		7 † † †	
Analyst		RAC		Analys	ie Dat	ο Apr 1	2 2022			rea Tyn	<u> </u>	Other	-	 		~
lurisdiction				Time F			2, 2022	Poak		нса тур НЕ	<u> </u>	0 95		- →*	w‡e	≁ ∳
Junsaletion					enou	Hour	.xisung	Car	l''			0.95		4 4		+ + *
Urban Street		IL 59		Analys	is Yea	ar 2022			Ar	nalysis	Period	1> 7:	15		5 4 4 4 1	×
Intersection		IL 59 / 83rd Street		File Na	ame	7767	.01 - IL:	59-83	rd P	MEX.x	us			1	▲ ↑ 수 17 1	* 1*
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е									1		
Demand Inform	nation				EB			V	VB			NB	1		SB	1
Approach Move	ement			L	Т	R			Т	R	L .	Т	R	L	Т	R
Demand (v), v	eh/h			231	232	2 199	83	2	18	98	178	1637	60	143	2211	305
Signal Informa	tion			[8				ĸ
Cycle s	160.0	Reference Phase	2					Ŀ	a e		3	ゴー		t-		\rightarrow
Offset s	0	Reference Point	Begin)	<u> </u>	Υ						1	2	3	4
Uncoordinated	No	Simult Gap E/W	On	Green	15.3	3.3	77.9	4.	5	11.5	24.0)				_
Force Mode	Fixed	Simult Gap N/S	On	Red	3.5	0.0	4.0	0	.5 0	0.0	2.0	-	5	6	7	$\mathbf{+}$
	- mea		•			1010	12.0			10.0	12.0			I		_
Timer Results				EBL		EBT	W	3L	V	NBT	NBL	-	NBT	SBL	-	SBT
Assigned Phase	е			3		8	7			4	5		2	1		6
Case Number				1.1		4.0	1.	1	4	4.0	2.0		3.0	2.0		3.0
Phase Duration	i, s			23.0		45.0	8.)	3	30.0	23.1		87.2	19.8	; ,	83.9
Change Period	, (Y+ R a	c), S		3.5		6.0	3.	5	(6.0	4.5		6.0	4.5		6.0
Max Allow Head	dway(A	<i>ИАН</i>), s		4.0		6.0	4.)	(6.0	4.0		0.0	4.0		0.0
Queue Clearan	ce Time	(gs),s		19.8		41.0	6.	5	2	26.0	18.5	5		15.2	2	
Green Extensio	n Time	(g e), s		0.0		0.0	0.)	(0.0	0.1		0.0	0.2		0.0
Phase Call Pro	bability			1.00		1.00	1.0	0	1	1.00	1.00)		1.00		
Max Out Proba	bility			1.00		1.00	1.0	0	1	1.00	1.00)		0.31		
Mayamant Cr					ED			10/	D			ND	_		00	
Approach Move	oup Kes	Suits				B		VV T	D	D	1		B		<u>эр</u>	D
Approach Move	mont			2	0	19		1	-	14	L 5	2	12	1	6	16
Adjusted Flow F	Pate (v) veh/h		2/3	151	10	87	33	3	14	187	2 1723	63	151	2327	321
Adjusted Flow I	ation Flo), ven/n w Rate (s) veh/h/l	n	1810	1741		1810	178	36		1781	1788	1610	1795	1802	1598
Queue Service	Time (c	$\tau_{\rm s}$) s		17.8	39.0		4.5	24	0		16.5	29.1	21	13.2	56.8	15.4
Cvcle Queue C	learance	e Time (17.8	39.0		4.5	24	.0		16.5	29.1	2.1	13.2	56.8	15.4
Green Ratio (g	/C)		_	0.28	0.24		0.18	0.1	5		0.12	0.51	0.51	0.10	0.49	0.49
Capacity (c), y	/eh/h			266	424	1	96	26	8		208	2720	817	172	2630	777
Volume-to-Cap	acity Ra	tio(X)		0.916	1.069)	0.911	1.24	42		0.903	0.633	0.077	0.874	0.885	0.413
Back of Queue	(Q), ft/	In (95 th percentile))	394.6	854.1	1	136.3	791	.5		355.1	384.8	37	282.7	716.9	227.1
Back of Queue	(Q), ve	eh/In (95 th percenti	ile)	15.8	33.9		5.5	31.	.4		14.0	15.1	1.5	11.2	28.5	9.0
Queue Storage	Ratio (RQ) (95 th percent	tile)	2.63	0.00		0.70	0.0	0		0.87	0.00	0.00	0.69	0.00	0.00
Uniform Delay	(d1), s/	/veh		49.4	60.5	1	64.7	68.	.0		66.7	17.5	13.1	68.8	24.4	17.1
Incremental De	remental Delay (d_2), s/veh						63.8	136	6.4		33.0	1.1	0.2	23.5	4.8	1.6
Initial Queue De	ial Queue Delay (d 2), s/veh						0.0	0.0	0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (ontrol Delay (<i>d</i>), s/veh)	128.5	204	.4		99.7	18.6	13.3	92.3	29.2	18.7
Level of Service	evel of Service (LOS)						F	F			F	В	В	F	С	В
Approach Dela	pproach Delay, s/veh / LOS					F	188	.6		F	26.1		С	31.4		С
Intersection De	lay, s/ve	h / LOS				5	0.1							D		
Multimodal Re	sults				EB			W	В			NB			SB	
Pedestrian LOS	Score	/ LUS													_	
BICYCIE LOS SC	ore / LC	15														

HCS7 Signalized Intersection Intermediate Values

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General Inform	nation							_		Inter	sectio	n Info	rmati	ion		J d Jada t	₽ L
	ation	Knight E/A Inc								Durat	tion h	1 1110	0 25	0		$\neg\uparrow\uparrow\uparrow\uparrow\uparrow$	L.
Analyst		RAC		Anal	veie	Date /	Apr 12	2022		Area	Type		Othe	o vr	 		<u>₹</u>
lurisdiction				Time	Dor	iod F	DM Evie	tina F	Dook	PHE	турс		0 95	<i>.</i>	*×	w‡e	
bullbullbullbull				TITIC			Hour	ung i	Car				0.00		4		+ + +
Urban Street		IL 59		Anal	ysis `	Year 2	2022			Analy	/sis Pe	riod	1> 7	:15		5 4 4 4	2
Intersection		IL 59 / 83rd Street		File	Nam	e 7	767.01	- IL5	9-83	rd PME	X.xus					 ካ ব ↑ ቀ የሻ	1 17 (*
Project Descrip	tion	7767.01 - IL 59 Jet E	rite - N	aper∖	/ille												
-							I										
Demand Inform	nation					EB			V	VB	_	-	NE	}		SB	1
Approach Move	ement			L	_	T	R	L	-	T	R	L	Т	R	L	Т	R
Demand (<i>v</i>), v	eh/h			231		232	199	83	2	18	98	178	163	60 7	143	2211	305
Signal Informa	tion					1 1		1				5					K
	160.0	Reference Phase	2			2		K +			2			\	tz_		\rightarrow
Offset s	0	Reference Point	2 Regin			ſ	<u> </u>	1	<u>7</u>		Š.			1	2	3	4
Uncoordinated	No	Simult Gap E/W	On	Gree	en 1	5.3	3.3	77.9	4.	.5 '	11.5	24.0	-11	K J			_
Force Mode	Fixed	Simult, Gap N/S	On	Red	w 3	.5	0.0	4.0 2.0	0	.5 .0 (5.5).0	4.0 2.0	-11	5	↓	7	-€ .
			•						10.								
Saturation Flo	w / Dela	ay	L		Т	R	L	1	Г	R	L		Т	R	L	Т	R
Lane Width Adj	ustment	Factor (<i>f</i> _w)	1.00	0 1.	000	1.000	1.000	1.0	000	1.000	1.00	0 1.0	000	1.000	1.000	1.000	1.000
Heavy Vehicles	and Gr	ade Factor (fHVg)	1.00	0 0.	992	0.992	1.000	0.9	92	1.000	0.98	4 0.9	984	1.000	0.992	0.992	0.992
Parking Activity	king Activity Adjustment Factor (f_p)					1.000	1.000	1.0	000	1.000	1.00) 1.0	000	1.000	1.000	1.000	1.000
Bus Blockage A	Blockage Adjustment Factor (<i>fbb</i>)					1.000	1.000	1.0	000	1.000	1.00	0 1.0	000	1.000	1.000	1.000	1.000
Area Type Adju	stment l	Factor (fa)	1.00	0 1.	000	1.000	1.000	1.0	000	1.000	1.00	0 1.0	000	1.000	1.000	1.000	1.000
Lane Utilization	Adjustr	nent Factor (<i>f</i> LU)	1.00	0 1.	000	1.000	1.000	1.0	000	1.000	1.00) O.9	908	1.000	1.000	0.908	1.000
Left-Turn Adjus	tment F	actor (<i>f</i> ⊥⊤)	0.95	2 0.	000		0.952	0.0	000		0.95	2 0.0	000		0.952	0.000	
Right-Turn Adju	stment	Factor (fRT)		0.	923	0.923		0.9	947	0.947		0.0	000	0.847		0.000	0.847
Left-Turn Pedes	strian Ad	djustment Factor (fLpb) 1.00	0			1.000				1.00	2			1.000		
Right-Turn Ped	-Bike Ad	djustment Factor (fRpb)			1.000				1.000				1.000			1.000
Work Zone Adjı	ustment	Factor (fwz)	1.00	0 1.	000	1.000	1.000	1.0	000	1.000	1.00) 1.0	000	1.000	1.000	1.000	1.000
DDI Factor (fool	')		1.00	0 1.	000	1.000	1.000	1.0	000	1.000	1.00	0 1.0	000	1.000	1.000	1.000	1.000
Movement Satu	ration F	low Rate (<i>s</i>), veh/h	181	0 9	37	804	1810	12	32	554	178 ⁻	1 53	363	1610	1795	5406	1598
Proportion of Ve	ehicles /	Arriving on Green (P)	0.1	2 0	.24	0.24	0.03	0.	15	0.15	0.16	0.	.68	0.68	0.13	0.65	0.65
Incremental De	lay Fact	tor (<i>k</i>)	0.4	30	.50		0.43	0.	50		0.36	0.	.50	0.50	0.23	0.50	0.50
Signal Timing	/ Mover	nent Groups	E	BL	E	BT/R	WE	3L	W	BT/R	N	BL	N	BT/R	SBL	- :	SBT/R
Lost Time (t _L)			3	.5		6.0	3.	5	6	6.0	4	.5		6.0	4.5		6.0
Green Ratio (g/	(C)		0	28	(0.24	0.1	8	0).15	0.	12	(0.51	0.10)	0.49
Permitted Satur	ation Fl	ow Rate (<i>s</i> _p), veh/h/lr	n 1()64		0	95	2		0)		0	0		0
Shared Saturat	ion Flow	v Rate (<i>s</i> sh), veh/h/ln															
Permitted Effec	tive Gre	en Time (<i>g</i> ₂), s	2	5.0		0.0	24.	0	(0.0	0	.0		0.0	0.0		0.0
Permitted Servi	ce Time	e (g _u), s	0	.0		0.0	0.0)	(0.0	0	.0		0.0	0.0		0.0
Permitted Queu	Permitted Queue Service Time (g_{ps}), s						0.0)					<u> </u>				
Time to First Blo	ime to First Blockage (<i>g</i> _f), s					0.0	0.0)	(0.0	0	.0		0.0	0.0		0.0
Queue Service	ueue Service Time Before Blockage (<i>g</i> _{fs}), s													-			-
Protected Right	rotected Right Saturation Flow (<i>s</i> _R), veh/h/ln													0			0
Protected Right	rotected Right Effective Green Time (<i>g</i> _R), s											_		0.0			0.0
Multimodal	ultimodal							V	VB			١	١B			SB	
Pedestrian <i>F</i> _w /	Fv		-				<u> </u>										
Pedestrian <i>F</i> s /	Fdelay		-														
Pedestrian Mcor	ner / M cw	/	-				<u> </u>										
Bicycle <i>c_b</i> / <i>d_b</i>															_		
Bicycle Fw / Fv																	

HCS7 Signalized Intersection Results Graphical Summary

			,								-	,			
General Inform	nation								Intersec	tion Inf	ormatic			╺╡ _┛ ┙╸↓╷	د لړ
	nation	Knight E/A Inc							Duration	h	0 250	<i>/</i> //		$\uparrow \uparrow \uparrow \uparrow$	×
Apolyet				Apolyc	ic Data	Apr 12	2022			, 11	Othor		 		۲. 4
Analyst				Time			, 2022 ioting Γ		леа тур					N w‡r	
Jurisdiction				Time F	riod	Hour		′еак	PHF		0.95				v - 4 * *
Urban Street		IL 59		Analys	is Year	2022			Analysis	Period	1> 7:1	15		5 1 1 1	·
Intersection		IL 59 / 83rd Street		File Na	ame	7767.0)1 - IL5	9-83rc	PMEX.x	us			_ 7	1414Y	* (*
Project Descrip	otion	7767.01 - IL 59 Jet	Brite - N	Vapervill	е										
Demand Infor	mation				EB			W	B		NB			SB	
Approach Move	ement				Т	R		Т	R		Т	R	1 1	Т	R
Demand (v) .	/eh/h			231	232	199	83	21	8 98	178	1637	60	143	2211	305
Signal Informa	ation						11				2				<u>A</u>
Cycle, s	160.0	Reference Phase	2		8	512	, P 🔒	<u>,</u>	<pre></pre>	- ₩	è	N	- <u>Y</u> -		×.
Offset, s	0	Reference Point	Begin	Green	15.3	33	77 9	4 5		24 (1	2	3	4
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.0	3.5	5 3.5	4.0			-		Ζ
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	2.0	0.0	0.0	2.0		5	6	7	
Movement Gro	oup Res	ults			EB			WB	}		NB	9		SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Back of Queue	(Q), ft/	In (95 th percentile)	394.6	854.1		136.3	791.	5	355.1	384.8	37	282.7	716.9	227.1
Back of Queue	(Q), ve	eh/In (95 th percent	ile)	15.8	33.9		5.5	31.4	L .	14.0	15.1	1.5	11.2	28.5	9.0
Queue Storage	e Ratio (RQ) (95 th percen	tile)	2.63	0.00		0.70	0.00)	0.87	0.00	0.00	0.69	0.00	0.00
Control Delay ((d), s/ve	eh		83.2	123.9		128.5	204.4	4	99.7	18.6	13.3	92.3	29.2	18.7
Level of Servic	e (LOS)			F	F		F	F		F	В	В	F	С	В
Approach Dela	y, s/veh	/LOS		109.	7	F	188.	6	F	26.1	1	С	31.4	1	С
Intersection De	elay, s/ve	h / LOS				50	.1						D		
					9 18	28.5	11.2					-			
		33.9	15.8		83.2 123.9 99	0.7 18.6	204.4 128.5 13.3 1.5		— 5.5		31.4	_			

LOS F

--- Messages ----

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

--- Comments ----

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HCS[™] Streets Version 7.9.5

Generated: 4/18/2022 3:26:05 PM

HCS7 Signalized Intersection Input Data

		1007	Signa			36011	<i>л</i> і п	iput De	ala					
							ľ							
General Information	1							Intersec	tion Infe	ormatio	on			24 l <u>a</u>
Agency	Knight E/A, Inc.							Duration	h	0.250		_*		*
Analyst	RAC		Analys	is Date	e Apr 12	2, 2022		Area Typ	е	Other				≜ ≻
Jurisdiction	IDOT		Time F	Period	SAT E Peak	xisting Hour		PHF		0.95		4 44	w ‡ E 8	↓ ↓ ↓
Urban Street	IL 59		Analys	is Yea	r 2022		Î	Analysis	Period	1> 7:	15		* * * * .	×
Intersection	IL 59 / 83rd Street		File Na	ame	7767.0	01 - IL59	9-83rc	SATEX.	xus			1	 	۲
Project Description	7767.01 - IL 59 Jet	Brite - N	lapervill	е								1		
Demand Information	n			FR			\٨/	B		NB			SB	
Approach Movement			1			1 .	VV Т	· D	1 1		B	1 .	<u>зв</u>	D
			L 222	152	170	20	12	2 117	145	105/	22	120	1920	N
Demand (V), Ven/h			232	152	170	29	12	.5 117	145	1004	32	129	1029	244
Signal Information				L		IJ				5				ĸ
Cycle, s 120.	0 Reference Phase	2	1		5.4		. P	∠B		ē 🔨		1 -	╱	
Offset, s 0	Reference Point	Beain						_			1	2	3	4
Uncoordinated No	Simult, Gap E/W	On	Green	11.1	1.2	50.1	3.6	5 25	22.8					
Force Mode Fixe	d Simult Gap N/S	On	Red	1.0	0.0	2.0	0.0	$\frac{5}{00}$	2.0	-	┓╴	6	7	$\mathbf{\bullet}$.
			Ttou	1.0	0.0	2.0	0.0	0.0	2.0					-
Traffic Information				EB			WE	3		NB			SB	
Approach Movement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (<i>v</i>), veh/h			232	152	170	29	123	117	145	1854	32	129	1829	244
Initial Queue (Qb), ve	h/h		0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow	v Rate (<i>s</i> ₀), veh/h		1900	1900	1900	1900	1900	0 1900	1900	2000	1900	1900	2000	1900
Parking (Nm), man/h				None			Non	e		None			None	
Heavy Vehicles (PHV)), %		1	0		0	0		1	1	0	0	1	1
Ped / Bike / RTOR, /ł	<u>י</u> ז		0	0	0	0	0	0	0	0	0	0	0	0
Buses (Nb), buses/h			0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)			3	3	3	3	3	3	4	4	4	4	4	4
Upstream Filtering (/))		1.00	1.00	1.00	1.00	1.00) 1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (<i>W</i>), ft			11.0	12.0		11.0	12.0)	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft			150	0		195	0		410	0	0	410	0	0
Grade (Pg), %				0			0			0			0	
Speed Limit, mi/h			40	40	40	40	40	40	45	45	45	45	45	45
												10		
Phase Information			EBL	· -	EBT	WBL	-	WBT	NBL	· -	NBT	SBL	_	SBT
Maximum Green (Gm	hax) or Phase Split, s		20.0		45.0	15.0)	40.0	20.0		40.0	20.0		40.0
Yellow Change Interv	/al (Y), s		3.5		4.0	3.5		4.0	3.5		4.0	3.5		4.0
Red Clearance Interv	/al (<i>R</i> c), s		0.0		2.0	0.0	\rightarrow	2.0	1.0		2.0	1.0		2.0
Minimum Green (Gm	nin), S		3		8	3		8	3		15	3		15
Start-Up Lost Time (<i>lt</i>), s		2.0		2.0	2.0	_	2.0	2.0		2.0	2.0		2.0
Extension of Effective	e Green (e), s		2.0		2.0	2.0	_	2.0	2.0		2.0	2.0		2.0
Passage (<i>PT</i>), s			3.0		5.0	3.0	\rightarrow	5.0	3.0		7.0	3.0		7.0
Recall Mode			Off		Off	Off		Off	Off		Min	Off		Min
Dual Entry		Yes		Yes	Yes		Yes	Yes		Yes	Yes		Yes	
Walk (<i>Walk</i>), s				7.0			0.0			0.0			7.0	
Pedestrian Clearance				36.0			0.0			0.0			17.0	
Multimodal Informa	_		FR			\//B			NB	_		SB	_	
85th % Speed / Rest	Iultimodal Information 5th % Speed / Rest in Walk / Corner Radius					0	No	25	0	No	25	0	No	25
Walkway / Crosswalk	Width / Length ft		9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island	/ Curb	_	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike	Lane / Shoulder. ft		12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / C	Coupied Parking		No		0.50	No	T	0.50	No		0.50	No		0.50

HCS7 Signalized Intersection Results Summary

			U									-	,				
General Inform	nation									Int	tersect	ion Infe	ormat	ion	2	4244	<u>د لي</u>
Agency		Knight E/A, Inc.								Du	uration,	h	0.25	0		7 † † † I	· [
Analyst		RAC		Analys	is Da	te A	pr 12	2, 2022		Ar	ea Typ	е	Othe	er	4		<i>د</i> ۵
Jurisdiction		IDOT		Time P	eriod	S.	AT E	xisting Hour		PH	HF		0.95		4 mm 4 4 L	w ^N 8	
Urban Street		IL 59		Analys	is Yea	ar 20	022	loui		An	nalysis	Period	1> 7	:15		5 1 1 1	•
Intersection		IL 59 / 83rd Street		File Na	me	77	767.0)1 - IL59	9-831	rd S	ATEX.»	(us			ľ	41471	• (*
Project Descript	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е												
Demand Inform	nation				EB	3			V	VB	_		NE	3		SB	
Approach Move	ment			L	Т		R	L		Т	R	L	Т	R	L	Т	R
Demand (v), v	eh/h			232	152	2	170	29	1	23	117	145	185	4 32	129	1829	244
					1			- II	ľ		1			-			
Signal Informa	tion		-		5	3		4		a		.3		l	* -		$\overline{\mathbf{A}}$
Cycle, s	120.0	Reference Phase	2		5		517	n ti	7	Ľ	R	Ē.	e	1	2	3	4
Offset, s	0	Reference Point	Begin	Green	11.1	1	1.2	50.1	3.	6	7.7	22.8	3				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0	0.0	4.0	3.	5	3.5	4.0		<u>ና</u> 4			\mathbf{A}
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0	0.0	2.0	0.	0	0.0	2.0		5	6	7	Y 8
Timer Results				FBI		FB	т	WB		V	VBT	NBI		NBT	SBI		SBT
Assigned Phase	3		_	3	+	8	· ·	7	-	-	4	5		2	1		6
Case Number	-			1.1	+	4.0)	1.1	-	4	4.0	2.0	+	3.0	2.0		3.0
Phase Duration	. S		_	18.3		40.0	0	7.1		2	8.8	16.8	;	57.3	15.6	; ;	56.1
Change Period.	(Y+R	c). S		3.5	+	6.0)	3.5	-	6	6.0	4.5	-	6.0	4.5		6.0
Max Allow Head	dway (A	/////////////////////////////////////		4.0		6.1	1	4.0		e	6.1	4.0		0.0	4.0		0.0
Queue Clearan	ce Time	(gs), s		14.7		22.9	9	3.6	\neg	1	8.4	11.9			10.8	;	
Green Extensio	n Time	(ge), s		0.1		5.0)	0.0		4	4.4	0.4		0.0	0.3		0.0
Phase Call Prob	oability	<u> </u>		1.00		1.0	0	1.00)	1	.00	1.00)		1.00)	
Max Out Probal	bility			1.00		0.0	6	0.00)	0	.16	0.00)		0.00)	
				_				_									
Movement Gro	up Res	ults			EB		_		W	B	_		NB			SB	-
Approach Move	ement			L	1		R	L	1	+	R	L	I	R	L	I	R
Assigned Move)		3	8		18	7	4	2	14	5	Z	12	1	0	10
Adjusted Flow F	tion Ele), ven/n	n	244	172	5	_	31	25	3		1705	1952	1610	130	1925	207
			11	1795	20.0	2	_	1610	16	+/ /	_	0.0	36.0		8.8	36.1	10.0
	learance	g s), s e Time (a_c) s		12.7	20.8	2		1.0	16	4	_	9.9	36.0	1.1	8.8	36.1	10.9
Green Ratio (a	/C	5 mile (g t), 5	_	0.33	0.28	γ <u></u>	_	0.22	0.1	. . 9	_	0.10	0.43	0.43	0.09	0.42	0.42
Capacity (c) , y	eh/h			342	492	-		213	33	2		184	2309	688	167	2255	666
Volume-to-Capa	acity Ra	tio(X)	_	0.714	0.68	9		0.143	0.76	60		0.829	0.845	5 0.049	0.811	0.854	0.385
Back of Queue	(Q), ft/	In (95 th percentile))	249.9	352.	8		32.4	305	5.4		207.2	473.9	9 19.1	188.6	482.3	174.5
Back of Queue	(Q), ve	eh/In (95 th percenti	ile)	9.9	14.1			1.3	12.	.2		8.2	18.8	0.8	7.5	19.1	6.9
Queue Storage	Ratio (RQ) (95 th percent	tile)	1.67	0.00)		0.17	0.0	0		0.51	0.00	0.00	0.46	0.00	0.00
Uniform Delay (d 1), s/	/veh		32.9	38.3	3		37.7	46.	.0		50.8	22.5	15.0	51.6	23.5	17.9
Incremental Del	lay (<i>d</i> 2), s/veh		5.9	3.7			0.3	7.4	4		9.1	4.0	0.1	9.0	4.4	1.7
Initial Queue De	eue Delay (d 3), s/veh				0.0			0.0	0.0	0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (ntrol Delay (d), s/veh)		38.0	53.	.4		59.9	26.6	15.2	60.6	27.9	19.6
Level of Service	evel of Service (LOS)				D			D	D			E	С	В	E	С	В
Approach Delay	/, s/veh	/LOS		40.7		D		51.7	'		D	28.8	6	С	28.9		С
Intersection Del	ay, s/ve	h / LOS					31	.4							С		
Multimodal Re	sults				EB				W	В			NB			SB	
Pedestrian LOS	Score	/LOS			T												
Bicycle LOS Sc	ore / LC)S							\neg								

HCS7 Signalized Intersection Intermediate Values

			e.g.	an									-				
General Inform	nation									Inter	sectio	n Info	rmati	ion		∫ 4 <u>1</u> 440 ↓	₽ L
Agency	lation	Knight E/A Inc								Durat	tion h		0.25	0		_1 † † †	Ļ
Apolyet		RAC		٨	nalveie	Data	Apr 12	2022		Area	Type		Othe	o vr	<u>ار</u>		たよ
Jurisdiction					na Dor	iod	90 12, 2	sting		DHE	туре		0.05	71	××	w‡e	↓
Junsaiction					ille Fei		Peak Ho	our					0.95				4 1 1
Urban Street		IL 59		Ar	nalysis	Year	2022			Analy	/sis Pe	riod	1> 7	:15		5 1 1 1	<u>م</u>
Intersection		IL 59 / 83rd Street		Fi	le Nam	e	7767.01	- IL5	9-83	rd SATI	EX.xus	5			_ 1	ነላተቀጥ	<u>۲</u>
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - I	Nap	erville												
-	_						I								-		
Demand Inform	nation			⊢		EB			V	VB			NE	3		SB	
Approach Move	ement			⊢	L	Т	R	L	_	Т	R	L	Т	R	L	Т	R
Demand (<i>v</i>), v	eh/h			2	232	152	170	29	1	23 ′	117	145	185	4 32	129	1829	244
Signal Informa	tion											5					ĸ
	120.0	Reference Phase	2			2		K +			2				tz_		\rightarrow
Offset s	0	Reference Point	Regin	L		5	<u> </u>	<u> </u>	<u>r</u> L		<u> </u>			1	2	3	4
Uncoordinated	No	Simult Can E/W	On	G	reen 1	1.1	1.2	50.1	3.	.6 7	7.7	22.8	-	R A			_
Earoo Modo	Fixed	Simult. Cap L/W	On	Ye	ellow 3	0.5	0.0	4.0	3.	.5 3	3.5	4.0	-11	<u>`</u>] ['	↓		-€.
Force Mode	Fixed	Simult. Gap N/S	On		eu I	.0	0.0	2.0	0	.0 [(J.U	2.0		Ð	6	1	× °
Saturation Flo	w / Dela	ay	L	-	т	R	L	т	r	R	L	· ·	тΙ	R	L	Т	R
Lane Width Adj	ustment	Factor (fw)	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.0	000	1.000	1.000	1.000	1.000
Heavy Vehicles	and Gr	ade Factor (fHVg)	0.9	92	1.000	0.992	1.000	1.0	00	0.992	0.99	2 0.9	992	1.000	1.000	0.992	0.992
Parking Activity	Adiustn	nent Factor (f_p)	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.0	000	1.000	1.000	1.000	1.000
Bus Blockage A	Blockage Adjustment Factor (<i>fbb</i>)					1.000	1.000	1.0	00	1.000	1.00	0 1.0	000	1.000	1.000	1.000	1.000
Area Type Adiu	Blockage Adjustment Factor (f _{bb}) Type Adjustment Factor (f _a)					1 000	1 000	1.0	00	1 000	1 00	0 1 (000	1 000	1 000	1 000	1 000
Lane Utilization	a Type Adjustment Factor (f_a)					1 000	1 000	1.0	00	1 000	1 00	0 0 9	908	1 000	1 000	0.908	1 000
Left-Turn Adjust	tment F	actor (f_{LT})	0.9	52	0.000	1.000	0.952	0.0	00		0.95	2 0.0	000	1.000	0.952	0.000	1.000
Right-Turn Adju	stment	Factor (frt)			0.913	0.913		0.9	19	0.919		0.0	000	0.847		0.000	0.847
Left-Turn Pedes	strian Ad	djustment Factor (fLp	b) 1.0	00			1.000				1.00	0			1.000		
Right-Turn Ped	-Bike Ad	justment Factor (fRp	b)			1.000				1.000				1.000			1.000
Work Zone Adju	ustment	Factor (fwz)	, 1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.0	000	1.000	1.000	1.000	1.000
DDI Factor (foor	')	. ,	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.0	000	1.000	1.000	1.000	1.000
Movement Satu	, Iration F	low Rate (s), veh/h	17	95	819	916	1810	89	95	852	179	5 54	106	1610	1810	5406	1598
Proportion of Ve	ehicles /	Arriving on Green (P) 0.1	12	0.28	0.28	0.03	0.1	19	0.19	0.14	ι O.	.57	0.57	0.12	0.56	0.56
Incremental De	lay Fact	or (<i>k</i>)	0.2	24	0.23		0.11	0.2	23		0.11	0.	.50	0.50	0.11	0.50	0.50
									1				1				
Signal Timing	/ Mover	ment Groups		EBL	. E	BT/R	WE	3L	W	'BT/R	N	BL	N	BT/R	SBL		SBT/R
Lost Time (t _L)				3.5		6.0	3.5	5		6.0	4	.5		6.0	4.5		6.0
Green Ratio (g/	(C)		().33		0.28	0.2	2	C).19	0.	10	0).43	0.09		0.42
Permitted Satur	ation Fl	ow Rate (<i>s</i> _p), veh/h/l	n í	136	5	0	105	58		0		0		0	0		0
Shared Saturati	ion Flow	/ Rate (<i>s</i> sh), veh/h/ln															
Permitted Effec	tive Gre	en Time (<i>g</i> ₂), s		24.8		0.0	22.	8		0.0	0	.0		0.0	0.0		0.0
Permitted Servi	ce Time	e (g _u), s		6.4		0.0	11.	1	(0.0	0	.0		0.0	0.0		0.0
Permitted Queu	Permitted Queue Service Time (g_{ps}), s					0.0	0.3	3			<u> </u>	-				_	
Time to First Blo	ime to First Blockage (<i>gt</i>), s					0.0	0.0)		0.0	0	.0		0.0	0.0	_	0.0
Queue Service	ueue Service Time Before Blockage (g_{fs}), s																
Protected Right	rotected Right Saturation Flow (s_R), veh/h/ln rotected Right Effective Green Time (a_R) s													0			0
Protected Right	Protected Right Effective Green Time (<i>g</i> _{<i>R</i>}), s											_		0.0			0.0
Multimodal	Aultimodal				EB			V	VB			١	١B			SB	
Pedestrian F _w /	edestrian F_w/F_v																
Pedestrian Fs /	edestrian Fs / F _{delay}																
Pedestrian Mcor	lestrian Fs / Fdelay estrian Mcorner / Mcw																
Bicycle cb / db																	
Bicycle Fw / Fv							1										

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HCS7 Signalized Intersection Results Graphical Summary

General Inform	nation								Interse	ction Inf	ormatic	on	الير	4444	≜ l _a
Agency		Knight E/A, Inc.							Duration	ı, h	0.250			~ + + + ·	* [
Analyst		RAC		Analys	is Date	Apr 12	2, 2022		Area Ty	ре	Other		<u></u> 4 →		4
Jurisdiction		IDOT		Time P	Period	SAT E Peak I	xisting Hour		PHF		0.95		4 7 4 7	w‡e s	↓ ↓ ↓ ↓ ↓ ↓
Urban Street		IL 59		Analys	is Year	2022			Analysis	Period	1> 7:1	5		K & & & 	• _
Intersection		IL 59 / 83rd Street		File Na	ame	7767.0)1 - IL5	9-83rc	SATEX	.xus			1	A↑ 4+ Y↑	• (*
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е								1		
				-						-1-					
Demand Inform	nation				EB			W	В		NB			SB	
Approach Move	ement			L	Т	R	L	Т	- R	L	T	R	L	Т	R
Demand (<i>v</i>), v	eh/h			232	152	170	29	12	23 117	145	1854	32	129	1829	244
1				10e	1										
Signal Informa	ition								2	3	≦ L				ð-
Cycle, s	120.0	Reference Phase	2	-	5	L Stá	יי 1	۳Ľ.	Ŕ	- R	e		 -		4
Offset, s	0	Reference Point	Begin	Green	11.1	1.2	50.1	3.6	5 7.7	22.8	3		-		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.0	3.5	5 3.5	4.0		< 14			
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	2.0	0.0	0.0	2.0		5	6	7	Y 8
Movement Gro	oup Res	ults			EB			WE	3		NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Back of Queue	(Q), ft/	In (95 th percentile)	249.9	352.8		32.4	305.	4	207.2	473.9	19.1	188.6	482.3	174.5
Back of Queue	(Q), ve	eh/In (95 th percent	ile)	9.9	14.1		1.3	12.2	2	8.2	18.8	0.8	7.5	19.1	6.9
Queue Storage	Ratio (RQ) (95 th percen	tile)	1.67	0.00		0.17	0.00)	0.51	0.00	0.00	0.46	0.00	0.00
Control Delay (d), s/ve	eh		38.9	41.9		38.0	53.4	1	59.9	26.6	15.2	60.6	27.9	19.6
Level of Service	e (LOS)			D	D		D	D		E	С	В	E	С	В
Approach Delay		40.7		D	51.7	7	D	28.8	3	С	28.9		С		
Intersection De	lay, s/ve	h / LOS				31	.4					(2		
				-											



--- Messages ----

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ----

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HCS[™] Streets Version 7.9.5

Generated: 4/18/2022 3:27:34 PM

HCS7 Signalized Intersection Input Data

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													1 1		
General Inform	nation	1							Intersec	tion Info	ormatio	on	- 6		
Agency		Knight E/A, Inc.		1					Duration	h	0.250				* K_
Analyst		RAC		Analys	is Dat	e Apr 12	2, 2022		Area Typ	е	Other		A		<u>≜</u> ∡ ⊁
Jurisdiction		IDOT		Time F	Period	AM Pı Peak	ojected Hour		PHF		0.95		4 1 4	₩ E 8	+ + *
Urban Street		IL 59		Analys	is Yea	r 2028			Analysis	Period	1> 7:	15			× _
Intersection		IL 59 / 83rd Street		File Na	ame	7767.	01 - IL5	9-83rc	d AMP.xus	;			1 5	414Y1	۲ (*
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е								1 7		
, ,															
Demand Inform	nation				EB			W	В		NB			SB	
Approach Move	ement			L	Т	R	L	T	R	L	Т	R	L	Т	R
Demand (v), v	eh/h			255	221	135	39	15	2 70	125	1920) 65	74	890	125
				1/r			1 11	T.							
Signal Informa	tion				6		1	12		3	SH (* -		Ð-
Cycle, s	140.0	Reference Phase	2		5	50	ר "כ	7	Æ.	Ř	e l	>		3	4
Offset, s	0	Reference Point	Begin	Green	8.2	4.5	63.5	4.8	3 10.5	25.0)				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.0	3.5	5 3.5	4.0		く 4			
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	2.0	0.0	0.0	2.0		5	6	7	
			_	_			1			_					
Traffic Informa	tion				EB	1		WE	3		NB			SB	
Approach Move	ement			L	Т	R	L	T	R	L	Т	R	L	Т	R
Demand (<i>v</i>), ve	h/h			255	221	135	39	152	70	125	1920	65	74	890	125
Initial Queue (C	al Queue (Q_b), veh/h e Saturation Flow Rate (s_0), veh/h					0	0	0	0	0	0	0	0	0	0
Base Saturation	n Flow F	Rate (<i>s</i> ₀), veh/h		1900	1900	1900	1900	190	0 1900	1900	2000	1900	1900	2000	1900
Parking (Nm), m	king (<i>N</i> _m), man/h							Non	e		None			None	
Heavy Vehicles	(<i>Рн</i> v), 9	%		1	4		11	3		5	5	0	2	11	2
Ped / Bike / RT	OR, /h			0	0	0	0	0	0	0	0	0	0	0	0
Buses (Nb), bus	ses/h			0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (A	T)			3	3	3	3	3	3	4	4	4	4	4	4
Upstream Filter	ing (I)			1.00	1.00	1.00	1.00	1.00	0 1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft			11.0	12.0		11.0	12.0)	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Lengt	h, ft			150	0		195	0		410	0	0	410	0	0
Grade (<i>Pg</i>), %					0			0			0			0	
Speed Limit, mi	i/h			40	40	40	40	40	40	45	45	45	45	45	45
Phase Informa	ition			EBL		EBT	WBI	-	WBT	NBL	-	NBT	SBL		SBT
Maximum Gree	n (Gmax) or Phase Split, s		25.0)	60.0	15.0)	50.0	20.0)	45.0	20.0	, ,	45.0
Yellow Change	Interval	(Y), s		3.5		4.0	3.5		4.0	3.5		4.0	3.5		4.0
Red Clearance	Interval	(<i>Rc</i>), s		0.0		2.0	0.0		2.0	1.0		2.0	1.0		2.0
Minimum Greer	ר (<i>Gmin</i>)	, S		3		8	3		8	3		15	3		15
Start-Up Lost T	ime (<i>lt</i>)	, S		2.0		2.0	2.0		2.0	2.0		2.0	2.0		2.0
Extension of Ef	fective (Green (<i>e</i>), s		2.0		2.0	2.0		2.0	2.0		2.0	2.0		2.0
Passage (<i>PT</i>),	s			3.0		5.0	3.0		5.0	3.0		7.0	3.0		7.0
Recall Mode	Passage (<i>PT</i>), s Recall Mode					Off	Off	-	Off	Off		Min	Off		Min
Dual Entry	Cecall Mode Dual Entry					Yes	Yes		Yes	Yes		Yes	Yes		Yes
Walk (<i>Walk</i>), s	Val Entry Valk (<i>Walk</i>), s					7.0		\rightarrow	0.0			0.0			7.0
Pedestrian Clea	edestrian Clearance Time (<i>PC</i>), s					36.0			0.0			0.0			17.0
									-			-			-
Multimodal Inf	Itimodal Information				EB			WB			NB			SB	
85th % Speed /	% Speed / Rest in Walk / Corner Radius			0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Cros	/ Crosswalk Width / Length, ft			9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Is	et Width / Island / Curb			0	0	No	0	0	No	0	0	No	0	0	No
Width Outside /	th Outside / Bike Lane / Shoulder, ft				5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Sigr	tside / Bike Lane / Shoulder, ft n Signal / Occupied Parking					0.50	No		0.50	No		0.50	No		0.50

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HCS7 Signalized Intersection Results Summary

												,				
General Inform	nation								In	tersect	ion Infe	ormati	on	k	4444	<u>م لي</u>
Agency	lution	Knight F/A, Inc.							Di	uration	h	0.250)		ו∔ ∔ ↓ I	*
Analyst		RAC		Analys	is Da	te Apr 1	2 2022		Ar	rea Tvo	μ	Othe	r	 		<u>ار</u> لا
				Time F	Period		roiected		P	HE	0	0.95		- → \$	w↓e	<u>≁</u> ∳
Gunsalotion					chou	Peak	Hour		l			0.00		*		→ ¥ *
Urban Street		IL 59		Analys	is Yea	ar 2028			Ar	nalysis	Period	1> 7:	15		5 + + + ,	<u>اع</u> •
Intersection		IL 59 / 83rd Street		File Na	ame	7767.	01 - IL5	9-83r	d A	MP.xus				1	ব ↑ ক প 1	* (*
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е											
				1												
Demand Inform	nation				EB			N	VB			NB			SB	
Approach Move	ement			L	Т	R	L		Т	R	L	Т	R	L	Т	R
Demand (v), v	eh/h			255	22	1 135	39	1:	52	70	125	1920	0 65	74	890	125
Signal Informa	tion				ΙI							8				ĸ
Cvcle, s	140.0	Reference Phase	2				_ **		1 e			E L		t/_	∠	
Offset, s	0	Reference Point	Begin		<u> </u>	<u> </u>		<u> </u>					1	2	3	4
Uncoordinated	No	Simult, Gap E/W	On	Green	8.2	4.5	63.5	4.	8	10.5	25.0	<u> </u>				
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	2.0	0.	0	0.0	2.0	-	5	6	7	÷
					1	1010	1-10	1.1	-	10.0					1	_
Timer Results				EBL	-	EBT	WB	L	V	NBT	NBL	-	NBT	SBI	-	SBT
Assigned Phase	e			3		8	7			4	5		2	1		6
Case Number				1.1		4.0	1.1		4	4.0	2.0		3.0	2.0		3.0
Phase Duration	e Duration, s					45.0	8.3		3	31.0	17.2		74.0	12.7	· ·	69.5
Change Period,	nge Period, (Y+ R_c), s					6.0	3.5		(6.0	4.5		6.0	4.5		6.0
Max Allow Head	ange Period,(Y+R c), s x Allow Headway(MAH), s					6.0	4.0		(6.0	4.0		0.0	4.0		0.0
Queue Clearan	ce Time	e (g s), s		18.6	;	30.1	4.8		1	19.7	12.4			8.0		
Green Extensio	n Time	(g _e), s		0.3		5.5	0.0		į	5.3	0.4		0.0	0.2		0.0
Phase Call Prol	bability			1.00)	1.00	1.00)	1	1.00	1.00			1.00)	
Max Out Proba	bility			1.00		0.02	0.03	3	0).04	0.00			0.00)	
Movement Gro	oup Res	sults			EB			WI	B			NB	1		SB	
Approach Move	ement			L	Т	R	L	Т		R	L	Т	R	L	Т	R
Assigned Move	ment			3	8	18	7	4		14	5	2	12	1	6	16
Adjusted Flow F	Rate (v), veh/h		268	375	-	41	234	4		132	2021	68	78	937	132
Adjusted Satura	ation Flo	w Rate (s), veh/h/l	In	1795	1723	3	1654	175	o6		1739	1745	1610	1781	1660	1585
Queue Service	Time (g	g s), S		16.6	28.1		2.8	17.	./		10.4	39.3	2.2	6.0	13.9	5.2
Cycle Queue C	learance	e Time (<i>g c</i>), s		16.6	28.1		2.8	17.	./		10.4	39.3	2.2	6.0	13.9	5.2
Green Ratio (g	/C)			0.33	0.28	•	0.21	0.1	8		0.09	0.49	0.49	0.06	0.45	0.45
Capacity (c), v	en/n	tic (V)		353	479	2	168	31	3		158	2542	782	105	2259	719
Pook of Quoup		llio (X) /In (QE th paraantila)	\	217.2	0.70	2	0.245 57.9	225	+0		0.000	0.795	0.000	127 4	0.415	0.103
Back of Queue	$(\mathbf{Q}), \mathbf{W}$	an (95 in percentile)) ile)	12.6	18 5	2	21	13	1		219.3	494.4 10.0	37.9	5.4	220.1 8.3	00.9 3.4
	Ratio (PO(0.5 th percent)	tilo)	2 11	0.0	<u> </u>	2.1	13.			0.4	0.00	0.00	0.34	0.0	0.00
Uniform Dolay			uie)	2.11	46.6		45.4	54	5		0.33 60 5	10.6	12.1	65.5	17.0	16.1
Incremental De	Jniform Delay (<i>d</i> 1), s/veh					<u> </u>	43.4	7 2	2		10.7	2.7	0.2	00.0	0.6	0.1
Initial Queue De		7.0	0.0		0.7	0.0	2		0.0	2.7	0.2	9.9	0.0	0.0		
Control Delay (Control Delay (<i>d</i> 3), s/veh						46.2	61	a		71.2	22.3	13.3	75.3	18.4	16.7
Level of Service		511		-+0.9	J2.J		40.2 D	F	.9		F	22.3 C	13.3 B	73.3 E	B	10.7 B
Approach Delay	Approach Delay, s/veh / LOS						50 4			F	24.0		C	22.1		C
Intersection Dela	_	- 50.1		3	1.2			-	24.3			C 22.		-		
														-		
Multimodal Re	ultimodal Results				EB			W	В			NB			SB	
Pedestrian LOS	Score	/LOS														
Bicycle LOS Sc	ore / LC)S														

HCS7 Signalized Intersection Intermediate Values

			e.g.										-				
General Inform	ation									Intor	soctio	n Info	rmat	ion		Jalatata ↓	J≊ l <u>a</u>
	lation	Knight E/A Inc								Durat	tion h		0.25	0		$\neg\uparrow\uparrow\uparrow\uparrow\uparrow$	Γ.
Apolyot				۸.		Data	Apr 10	2022		Aroo			0.25 Othe		_* 		۲. ۲.
Analyst					naiysis ma Dar	Date /		2022	1		туре			51		w↓ F	æ <mark>}</mark>
Jurisaiction		וטטו			me Per	ioa i	Peak Ho	our		PHF			0.95		***		4 1 ×
Urban Street		IL 59		A	nalysis	Year	2028			Analy	vsis Pe	eriod	1> 7	:15		5 + + +	× _
Intersection		IL 59 / 83rd Street		Fi	le Nam	e	7767.01	- IL5	9-83	rd AMP	xus					ነ ተ ተ ቀ የሻ	۱ ۴ (*
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - I	Nap	erville												
							1										
Demand Inform	nation					EB			V	VB			NE	3		SB	
Approach Move	ement				L	Т	R	L		Т	R	L	Т	R	L	Т	R
Demand (<i>v</i>), v	eh/h			2	255	221	135	39	1	52	70	125	192	20 65	74	890	125
				1	1				T	1						1	
Signal Informa	tion			4		5		5 †	Ŀ	aL	2	3		L	† ,	~	-
Cycle, s	140.0	Reference Phase	2			5	- 512	' ↑	۳E	۴F	3	Ë.		1	2	3	4
Offset, s	0	Reference Point	Begin	G	reen 8	.2	4.5	63.5	4.	.8 ′	10.5	25.0					
Uncoordinated	No	Simult. Gap E/W	On	Ye	ellow 3	.5	0.0	4.0	3.	.5 3	3.5	4.0		<u>~</u> <	1		
Force Mode	Fixed	Simult. Gap N/S	On	R	ed 1	.0	0.0	2.0	0.	.0 (0.0	2.0	_	5	6	7	Y 8
	(_			1.	1 7	-			_	T I	P		-	
Saturation Flo	w / Dela	iy		-	1	R	L		00	R		0 1	1	R	L	1	R
Lane Width Adj	ustment		1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Heavy Vehicles	and Gr	ade Factor (<i>fHVg</i>)	0.9	92	0.969	0.969	0.914	0.9	0//	1.000	0.96	1 0.9	961	1.000	0.984	0.914	0.984
Parking Activity	ing Activity Adjustment Factor (f_p) Blockage Adjustment Factor (f_{bb})					1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Bus Blockage A	Blockage Adjustment Factor (fbb)					1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Area Type Adju	a Type Adjustment Factor (fa)					1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Lane Utilization	Adjustn	nent Factor (fLU)	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 0.9	908	1.000	1.000	0.908	1.000
Left-Turn Adjust	tment Fa	actor (<i>f</i> ⊥⊤)	0.9	52	0.000		0.952	0.0	00		0.95	2 0.	000		0.952	0.000	
Right-Turn Adju	stment	Factor (frt)			0.936	0.936		0.9	46	0.946		0.0	000	0.847		0.000	0.847
Left-Turn Pedes	strian Ac	djustment Factor (fLp.	b) 1.0	00			1.000	_	_		1.00	0			1.000		
Right-Turn Ped	-Bike Ac	ljustment Factor (<i>f_{Rp}</i>	b)			1.000				1.000				1.000			1.000
Work Zone Adju	ustment	Factor (<i>f</i> _{wz})	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
DDI Factor (foor	()		1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Movement Satu	iration F	low Rate (<i>s</i>), veh/h	17	95	1070	653	1654	12	02	554	173	9 52	236	1610	1781	4981	1585
Proportion of Ve	ehicles A	Arriving on Green (P) 0.′	13	0.28	0.28	0.03	0.1	18	0.18	0.12	2 0.	.65	0.65	0.05	0.60	0.60
Incremental De	lay Fact	or (<i>k</i>)	0.2	26	0.23	<u> </u>	0.11	0.2	23		0.1	1 0	.50	0.50	0.11	0.50	0.50
Signal Timing	/ Mover	ment Groups		FBI	E	BT/R	WF	31	W	'BT/R	N	IBI	N	IBT/R	SBI		SBT/R
Lost Time (t_l)				3.5		6.0	3.5	5		6.0	4	.5		6.0	4.5		6.0
Green Ratio (a)	(C)			133		0.28	0.2	·1	0) 18	0	09		0.0 1 4 9	0.06		0.45
Permitted Satur	ation FI	ow Rate (s ₂) veh/h/l	n 1	1156	5	0	93	6		0	0.	0		0	0.00		0
Shared Saturati	ion Flow	Rate (<i>Ssh</i>), veh/h/ln		1100	, 	0				0		0		0	0		0
Permitted Effec	tive Gre	en Time (g_p), s		27.0		0.0	25.	0	(0.0	C	0.0		0.0	0.0		0.0
Permitted Servi	ce Time	e (gu), s		7.3		0.0	8.9	9	(0.0	C	0.0		0.0	0.0		0.0
Permitted Queu	ermitted Service Time (g_u), s ermitted Queue Service Time (g_{ps}), s						0.	7									
Time to First Blo	ime to First Blockage (<i>gi</i>), s					0.0	0.0	C	(0.0	C	0.0		0.0	0.0		0.0
Queue Service	ueue Service Time Before Blockage (<i>g</i> _{fs}), s																
Protected Right	rotected Right Saturation Flow (s_R) , veh/h/ln													0			0
Protected Right	rotected Right Effective Green Time (g_R), s													0.0			0.0
Multimodal	lultimodal				EB			V	VB			1	NB			SB	
Pedestrian Fw/	Pedestrian <i>F_w / F_v</i>																
Pedestrian Fs /	edestrian Fs / F _{delay}																
Pedestrian Mcor	lestrian Fs / Fdelay lestrian Mcorner / Mcw																
Bicycle cb / db																	
Bicycle Fw / Fv																	

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HCS7 Signalized Intersection Results Graphical Summary

General Inform	ation								Intersect	ion Inf	ormatio	on	4	4 24 44 4 4	a la
Agency		Knight E/A, Inc.							Duration,	h	0.250			5+++	*
Analyst		RAC		Analys	is Date	Apr 12	, 2022		Area Typ	е	Other		<u></u> ≉		A 5-
Jurisdiction		IDOT		Time P	eriod	AM Pr Peak I	ojected Hour		PHF		0.95		**** *	w 🗍 E	+ + + *
Urban Street		IL 59		Analys	is Year	2028			Analysis	Period	1> 7:1	5		5 + + + ;	•
Intersection		IL 59 / 83rd Street		File Na	ime	7767.0)1 - IL59	9-83rd	AMP.xus				1	4 1 4 1 1	• f*
Project Descript	ion	7767.01 - IL 59 Jet	Brite - N	lapervill	е]		
													1		
Demand Inform	nation				EB			W	B		NB			SB	
Approach Move	ment			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), ve	eh/h			255	221	135	39	15	2 70	125	1920	65	74	890	125
-				10				- 11							
Signal Information	tion		N				1	1	2	2	S I			_	ð-
Cycle, s	140.0	Reference Phase	2		5	512	" 🕇	۳Ľ.	٣Ŕ	R	e				4
Offset, s	0	Reference Point	Begin	Green	8.2	4.5	63.5	4.8	10.5	25.0)		-		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.0	3.5	3.5	4.0	K		-		
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	2.0	0.0	0.0	2.0		5	6	7	8
Movement Gro	up Res	ults			EB			WB			NB			SB	
Approach Move	ment			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Back of Queue	(Q), ft/	In (95 th percentile)	317.2	476.2		57.8	335.3	3	219.3	494.4	37.9	137.4	226.1	86.9
Back of Queue	(Q), ve	eh/In (95 th percent	ile)	12.6	18.5		2.1	13.1		8.4	19.0	1.5	5.4	8.3	3.4
Queue Storage	Ratio (RQ) (95 th percen	tile)	2.11	0.00		0.30	0.00)	0.53	0.00	0.00	0.34	0.00	0.00
Control Delay (Control Delay (<i>d</i>), s/veh						46.2	61.9)	71.2	22.3	13.3	75.3	18.4	16.7
Level of Service		D	D		D	E		E	С	В	E	В	В		
Approach Delay	Approach Delay, s/veh / LOS					D	59.5	5	E	24.9)	С	22.1		С
Intersection Del	ay, s/ve	h / LOS				30	.2					(0		



--- Messages ----

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ----

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HCS[™] Streets Version 7.9.5

Generated: 4/18/2022 3:25:10 PM

HCS7 Signalized Intersection Input Data

			1037	Signa	inzeu	inner	Secu	лп	iput Da	lla					
General Inform	nation	1						$ \rightarrow$	Intersect	ion Infe	ormatio	on			
Agency		Knight E/A, Inc.							Duration,	h	0.250				
Analyst		RAC		Analys	is Date	e Apr 12	2, 2022		Area Typ	e	Other		×		<u>▲</u> <u>↓</u> }-
Jurisdiction		IDOT		Time F	Period	PM Pr Peak	ojected Hour		PHF		0.95		4 44	W } E 8	↓ ↓
Urban Street		IL 59		Analys	is Year	2028			Analysis	Period	1> 7:	15		5+++	
Intersection		IL 59 / 83rd Street		File Na	ame	7767.0	01 - IL59	9-83rc	PMP.xus	;			1	* 1 * * * 1	* (*
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е	- 10									
Demand Inform	nation				FB			W	B		NB			SB	
Approach Move	ment			1	Т	R	1 1	Тт	R		Т	R	1 1	Т	R
Demand (x) y	eh/h			241	247	205	110	23	2 106	185	1680	74	172	2259	315
	CH/H			271	271	200	TIU	20	2 100	100	1000		112	2200	010
Signal Informa	tion				5		11				5			_	A
Cycle, s	160.0	Reference Phase	2		2	542	7 i 🔶	,⊢^	Image: Second secon	E	2.		P-4		
Offset, s	0	Reference Point	Begin	Green	18.0	13	76.2	6.5	95	25.0		1	2	3	4
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.0	3.5	3.5	4.0					~
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	2.0	0.0	0.0	2.0		5	6	7	
		A													
Traffic Informa	tion				EB			WB			NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (<i>v</i>), ve	h/h			241	247	205	110	232	106	185	1680	74	172	2259	315
Initial Queue (C	al Queue (Q _b), veh/h e Saturation Flow Rate (s _o), veh/h					0	0	0	0	0	0	0	0	0	0
Base Saturation	e Saturation Flow Rate (s _o), veh/h					1900	1900	1900) 1900	1900	2000	1900	1900	2000	1900
Parking (Nm), m	se Saturation Flow Rate (So), ven/n							None	e		None			None	
Heavy Vehicles	(<i>Рн</i> v), 9	%		0	1		0	1		2	2	0	1	1	1
Ped / Bike / RT	OR, /h			0	0	0	0	0	0	0	0	0	0	0	0
Buses (Nb), bus	ses/h			0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (A	Γ)			3	3	3	3	3	3	4	4	4	4	4	4
Upstream Filter	ing (I)			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft			11.0	12.0		11.0	12.0)	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Lengt	h, ft			150	0		195	0		410	0	0	410	0	0
Grade (<i>Pg</i>), %					0			0			0			0	
Speed Limit, mi	i/h			40	40	40	40	40	40	45	45	45	45	45	45
	41 o 10			EDI		EDT				NDI			CDI		CDT
Phase Informa	ntion) or Dhago Split o		EBL				-	21.0		·		3BL		5BT
Vollow Change				25.0		44.0	3.5	,	4.0	25.0		4.0	25.0	-	4.0
Red Clearance	Interval	(P_{α}) s		0.0		2.0	0.0	-	1 .0	1.0		2.0	1.0		2.0
Minimum Green		s		3		8	3	-	8	3		15	3	_	15
Start-Un Lost T	(0,0) ime (<i>It</i>)	, <u>5</u>		2.0		2.0	2.0		2.0	20		2.0	2.0		2.0
Extension of Ef	fective (Green (e) s		2.0		2.0	2.0		2.0	2.0		2.0	2.0		2.0
Passage (PT)	s			3.0		5.0	3.0		5.0	3.0		7.0	3.0		7.0
Recall Mode				Off		Off	Off		Off	Off		Min	Off		Min
Dual Entry		Yes		Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Walk (<i>Walk</i>), s				7.0			0.0			0.0	<u> </u>		7.0		
Pedestrian Clea	Pedestrian Clearance Time (<i>PC</i>), s					36.0			0.0			0.0			17.0
Multimodal Inf					EB			WB			NB			SB	
85th % Speed /	h % Speed / Rest in Walk / Corner Radius			0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Cros	vay / Crosswalk Width / Length, ft			9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Is	et Width / Island / Curb			0	0	No	0	0	No	0	0	No	0	0	No
Width Outside /	dth Outside / Bike Lane / Shoulder, ft					2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Sigr	nal / Oco	cupied Parking		No		0.50	No		0.50	No		0.50	No		0.50

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HCS7 Signalized Intersection Results Summary

													,				
General Inform	nation									In	itersect	ion Infe	ormati	on	k	****	<u>ه لي</u>
Agency	lation	Knight E/A Inc									Juration	h	0 250)		7 † † †	•
Analyst		RAC		Analys	ie Da	ato	Apr 12	2022			rea Typ	<u> </u>	Othe	, r	 		~
lurisdiction				Time F		4	DM Dr				н	<u> </u>	0 95		- <mark>→</mark> *	w∔e	
Junsaletion					CHOC	1	Peak I	Hour		l'			0.35		*		→ *
Urban Street		IL 59		Analys	is Ye	ar	2028			A	nalysis	Period	1> 7:	15		5 + + + 1	
Intersection		IL 59 / 83rd Street		File Na	ame		7767.0	01 - IL59	9-83	rd F	PMP.xus				ň	↑ ↑ ↓ ↑↑	• ۲ ^۰
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е												
												1					
Demand Inform	nation				EE	B			V	VВ			NB			SB	
Approach Move	ement			L	T		R	L	+	T	R	L	T	R	L	T	R
Demand (v), v	eh/h			241	24	.7	205	110	2	232	106	185	168) 74	172	2259	315
Signal Informa	tion				[IJ					8				ĸ
Cvcle, s	160.0	Reference Phase	2			2	R .4.3		_ŀ	а 1			F .		t-		
Offset, s	0	Reference Point	Begin	_						_				1	2	3	4
Uncoordinated	No	Simult, Gap E/W	On	Green	18.0	0	1.3	16.2	6	.5	9.5	25.0					л
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0		0.0	2.0	0	.0	0.0	2.0	-	5	6	7	€.
									1	-				• •		I	
Timer Results				EBL	-	E	BT	WB	L	١	WBT	NBL		NBT	SBL	-	SBT
Assigned Phase	е			3			8	7			4	5		2	1		6
Case Number				1.1		4	l.0	1.1			4.0	2.0		3.0	2.0		3.0
Phase Duration	i, s		23.0)	44	4.0	10.0)	3	31.0	23.8	;	83.5	22.5	; ;	32.2	
Change Period	ge Period, ($Y+Rc$), s					6	6.0	3.5			6.0	4.5		6.0	4.5		6.0
Max Allow Head	nge Period, (Y+ <i>R c</i>), s Allow Headway (<i>MAH</i>), s					6	6.0	4.0			6.0	4.0		0.0	4.0		0.0
Queue Clearan	ce Time	(gs),s		20.5	;	4	0.0	8.5		2	27.0	19.2	2		17.8	;	
Green Extensio	n Time	(g _e), s		0.0		0	0.0	0.0			0.0	0.1		0.0	0.1		0.0
Phase Call Pro	bability			1.00)	1.	.00	1.00)		1.00	1.00			1.00		
Max Out Proba	bility			1.00)	1.	.00	1.00)		1.00	1.00			1.00)	
Movement Gra		ulte			EB	2			۱۸/	/D			NR			SB	
Approach Move	mont			1		> 	D		VV T	-	D	1		D		Т	D
Approach Move	ment			2	1 8	+	18	7			14	5	2	12	1	6	16
Adjusted Flow F	Rate (v) veh/h		254	476	3	10	116	35	6	14	105	1768	78	181	2378	332
Adjusted Flow I	ation Flo), ven/n w Rate (s) veh/h/l	In	1810	174	3	_	1810	17	84		1781	1788	1610	1795	1802	1598
Queue Service	Time (a	T_{s}) s		18.5	38 (0	_	6.5	25	0		17.2	33.3	2.9	15.8	62.1	16.7
Cycle Queue C	learance	e Time (a_c), s		18.5	38.0	0		6.5	25	.0		17.2	33.3	2.9	15.8	62.1	16.7
Green Ratio (g	/C)	······ (3·), ·	_	0.29	0.24	4		0.20	0.1	16		0.12	0.48	0.48	0.11	0.48	0.48
Capacity (c), v	/eh/h			266	414	1		119	27	'9		214	2598	780	202	2576	761
Volume-to-Cap	acity Ra	tio(X)		0.955	1.14	9		0.977	1.2	76		0.908	0.681	0.100	0.897	0.923	0.436
Back of Queue	(Q), ft/	In (95 th percentile))	425.9	972.	.8		178.6	862	2.2		369.3	445.6	50.6	339.5	796.5	242.7
Back of Queue	(Q), ve	eh/In (95 th percent	ile)	17.0	38.6	6		7.1	34	.2		14.5	17.5	2.0	13.5	31.6	9.6
Queue Storage	Ratio (RQ) (95 th percen	tile)	2.84	0.00	0		0.92	0.0	00		0.90	0.00	0.00	0.83	0.00	0.00
Uniform Delay	(d1), s/	/veh		49.1	61.0	0		62.1	67	.5		66.3	20.5	15.1	67.1	26.6	18.3
Incremental De	ncremental Delay (d 2), s/veh					7		75.2	149	9.1		34.7	1.5	0.3	31.1	7.0	1.8
Initial Queue De	nitial Queue Delay (<i>d</i> ₃), s/veh)		0.0	0.	0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (Control Delay (d), s/veh					.7		137.3	216	6.6		101.0	22.0	15.4	98.2	33.6	20.1
Level of Service	Level of Service (LOS)							F	F	:		F	С	В	F	С	С
Approach Dela		131.	6		F	197.	1		F	29.2		С	36.1		D		
Intersection Delay, s/veh / LOS							57	.6							E		
Nultimodel Deculto																	
Multimodal Re	timodal Results					5			W	'B			NB			SB	
Pedestrian LOS	Score																
BICYCIE LOS SC	ore / LC	13															

HCS7 Signalized Intersection Intermediate Values

			e.g.	an					terr	moun			-				
General Inform	nation									Inter	sectio	n Info	rmat	ion		J nd myster ↓	₽ L
Agency	lation	Knight E/A Inc								Durat	tion h		0 25	0		$\neg\uparrow\uparrow\uparrow\uparrow\uparrow$	Ļ
Apolyet					nalveie	Data	Apr 12 '	2022		Area	Type		Othe	or	<u>د</u>		۲. 4
Jurisdiction					na Dor	iod	DM Droi		1	DHE	туре		0.05	-	××	N w‡e	
Junsaiction					ille Fei		Peak Ho	our					0.95				4 1 1
Urban Street		IL 59		A	nalysis	Year	2028			Analy	/sis Pe	eriod	1> 7	:15		5 1 1 1	<u>م</u>
Intersection		IL 59 / 83rd Street		Fi	le Nam	e	7767.01	- IL5	9-83	rd PMF	.xus				_ 1	ነፋተቀጥ	<u>۲</u>
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - I	Nap	erville												
-	_						_								-		
Demand Inform	nation			⊢		EB			V	VB			NE	3		SB	
Approach Move	ement			⊢	L	Т	R	L		Т	R	L	Т	R	L	Т	R
Demand (<i>v</i>), v	eh/h			2	241	247	205	110	2	32 ^	106	185	168	80 74	172	2259	315
Signal Informa	tion											5	2				ĸ
	160.0	Reference Phase	2			2		K +			2	23		\	tz_		\rightarrow
Offset s	0	Reference Point	Regin	╘		5	<u> </u>	<u> </u>	<u>r</u> L		<u> </u>			1	2	3	4
Uncoordinated	No	Simult Gap E/W	On	G	reen 1	8.0	1.3	76.2	6.	.5 9	9.5	25.0	-11	R A			_
	Tixed	Simult Cap N/S	01	Ye	ellow 3	0.5	0.0	4.0	3.	.5 3	3.5	4.0	-11	<u>`</u>]'	↓ (× _	- € .
Force Mode	Fixed	Simult. Gap N/S	On	K	eu I	.0	0.0	2.0	0.	.0 [(J.U	2.0		5	6	1	X °
Saturation Flo	w / Dela	ay	L	-	т	R	L	т	-	R	L		Т	R	L	Т	R
Lane Width Adj	ustment	Factor (fw)	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Heavy Vehicles	and Gr	ade Factor (fHVg)	1.0	00	0.992	0.992	1.000	0.9	92	1.000	0.98	34 0.	984	1.000	0.992	0.992	0.992
Parking Activity	Adiustn	nent Factor (f_p)	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Bus Blockage A	diustme	ent Factor (fbb)	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Area Type Adiu	Blockage Adjustment Factor (f _{bb}) a Type Adjustment Factor (f _a)					1 000	1 000	1.0	00	1 000	1 00	0 1	000	1 000	1 000	1 000	1 000
Lane Utilization	a Type Adjustment Factor (f_a)					1 000	1 000	1.0	00	1 000	1.00		908	1 000	1 000	0.908	1 000
Left-Turn Adjust	tment F	actor (fLT)	0.9	52	0.000	1.000	0.952	0.0	00	1.000	0.95	52 0.	000	1.000	0.952	0.000	1.000
Right-Turn Adju	stment	Factor (fRT)			0.925	0.925		0.9	47	0.947		0.	000	0.847		0.000	0.847
Left-Turn Pedes	strian Ad	djustment Factor (fLp	b) 1.0	00			1.000				1.00	0			1.000		
Right-Turn Ped	-Bike Ad	justment Factor (fRp	b)			1.000				1.000				1.000			1.000
Work Zone Adju	ustment	Factor (fwz)	, 1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
DDI Factor (foor	')		1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Movement Satu	, Iration F	low Rate (s), veh/h	18	10	952	790	1810	12	25	560	178	1 5	363	1610	1795	5406	1598
Proportion of Ve	ehicles /	Arriving on Green (P) 0.1	12	0.24	0.24	0.04	0.1	16	0.16	0.1	6 0	.65	0.65	0.15	0.64	0.64
Incremental De	lay Fact	tor (<i>k</i>)	0.4	17	0.50		0.48	0.5	50		0.3	8 0	.50	0.50	0.33	0.50	0.50
Signal Timing	/ Mover	nent Groups		EBL	. E	BT/R	WE	3L	W	BT/R	N	IBL	N	IBT/R	SBL	. (SBT/R
Lost Time (t _L)				3.5		6.0	3.5	5	6	6.0	4	1.5		6.0	4.5		6.0
Green Ratio (g/	(C)		().29		0.24	0.2	0	0).16	0	.12		0.48	0.11		0.48
Permitted Satur	ation Fl	ow Rate (<i>s</i> _p), veh/h/l	n 1	042	2	0	93	3		0		0		0	0		0
Shared Saturati	ion Flow	v Rate (<i>s</i> sh), veh/h/ln															
Permitted Effec	tive Gre	en Time (<i>g</i> _p), s	:	27.0		0.0	25.	0	(0.0	(0.0		0.0	0.0		0.0
Permitted Servi	ce Time	e (g _u), s		0.0		0.0	0.0	כ	(0.0	(0.0		0.0	0.0		0.0
Permitted Queu	Permitted Queue Service Time (g_{ps}), s					0.0	0.0				<u> </u>						
Time to First Blo	ime to First Blockage (<i>gt</i>), s					0.0	0.0)	(0.0	(0.0	_	0.0	0.0		0.0
Queue Service	Queue Service Time Before Blockage (g_{fs}), s										<u> </u>						
Protected Right	Protected Right Saturation Flow (<i>s</i> _R), veh/h/ln Protected Right Effective Green Time (<i>g</i> _R) s													0			0
Protected Right	Protected Right Effective Green Time (<i>g</i> _{<i>R</i>}), s													0.0			0.0
Multimodal	Aultimodal				EB			V	VB				NB			SB	
Pedestrian <i>F_w</i> /	edestrian F_w / F_v																
Pedestrian Fs /	edestrian Fs / F _{delay}																
Pedestrian Mcor	lestrian <i>M</i> corner / <i>M</i> cw																
Bicycle cb / db																	
Bicycle Fw / Fv							1				1						

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HCS7 Signalized Intersection Results Graphical Summary

General Inform	nation								Intersec	tion Inf	ormatic	on	لير	****	≤ L <u>s</u>
Agency		Knight E/A, Inc.							Duration	, h	0.250			~ + + + '	*k
Analyst		RAC		Analys	is Date	Apr 12	2, 2022		Area Typ	е	Other		<u></u> 4 →		الم م الح الح
Jurisdiction		IDOT		Time F	Period	PM Pr	ojected		PHF		0.95			₩ 1 E 8	
				A		Peak	TOUI		A	Devie	4. 7.4	1.5			국 고
Urban Street		IL 59		Analys	is year	2028			Analysis	Period	1> 7:1	15		<u>n 1 1 1 (</u>	
Intersection		IL 59 / 83rd Street		File Na	ame	//6/.0)1 - IL5	9-83rc	a PMP.xu	3				*1 ******	₹ [₹]
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е										
P					ED		1	14/	D		NID		1	0.0	
Demand Inform	nation				EB			VV	В	<u> </u>	NB		<u> </u>	SB	
Approach Move	ement				Т	R		Т	R		Т	R		L T	R
Demand (<i>v</i>), v	eh/h			241	247	205	110	23	2 106	185	1680	74	172	2259	315
				Ir	1		6 11	_		_					1
Signal Informa	tion		1				₽ 1			3	≦ l		* -		-
Cycle, s	160.0	Reference Phase	2		5	517	יי ^ר ה	7	Ŕ	R	E.				×
Offset, s	0	Reference Point	Begin	Green	18.0	1.3	76.2	6.5	<u> </u>	25.0)		-		~
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.0	3.5	5 3.5	4.0		< 🛛			~
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	2.0	0.0	0.0	2.0		5	6	7	
Movement Gro	oup Res	ults			EB			WB	}		NB			SB	
Approach Move	ment			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Back of Queue	(Q), ft/	In (95 th percentile)	425.9	972.8		178.6	862.	2	369.3	445.6	50.6	339.5	796.5	242.7
Back of Queue	(Q), ve	eh/In (95 th percent	ile)	17.0	38.6		7.1	34.2	2	14.5	17.5	2.0	13.5	31.6	9.6
Queue Storage	Ratio (RQ) (95 th percen	tile)	2.84	0.00		0.92	0.00)	0.90	0.00	0.00	0.83	0.00	0.00
Control Delay (d), s/ve	eh		92.1	152.7		137.3	216.	6	101.0	22.0	15.4	98.2	33.6	20.1
Level of Service	e (LOS)			F	F		F	F		F	С	В	F	С	С
Approach Delay		131.6	6	F	197.	1	F	29.2	2	С	36.1		D		
Intersection Del	ay, s/ve	h / LOS				57	.6					l	Ξ		



--- Messages ----

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

--- Comments ----

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HCS[™] Streets Version 7.9.5

Generated: 4/18/2022 3:26:49 PM

HCS7 Signalized Intersection Input Data

Intersection Intormation Intersection Intormation Intersection Intormation Intersection Intormation Intersection Intormation Operation intormation IDV and state intersection Intersection Intormation Intersection Intormation Cycle Description T/FG/O1 - IL S9 Jet Bitte Name 7/FG/O1 - IL S9 Jet Bitte Name TOTO T Intersection Intormation Participation T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L L <th col<="" th=""><th></th><th></th><th></th><th>1037</th><th>Signa</th><th>inzeu</th><th>mer</th><th>Secu</th><th>11 11</th><th>iput De</th><th>แล</th><th></th><th></th><th></th><th></th><th></th></th>	<th></th> <th></th> <th></th> <th>1037</th> <th>Signa</th> <th>inzeu</th> <th>mer</th> <th>Secu</th> <th>11 11</th> <th>iput De</th> <th>แล</th> <th></th> <th></th> <th></th> <th></th> <th></th>				1037	Signa	inzeu	mer	Secu	11 11	iput De	แล					
Intersection Information Intersection Information Intersection Information Analysit RAC Analysis Date Apr 12, 202 Area Type Other Other <thother< th=""> Other Oth</thother<>									ľ								
Agency Knight E/s, Inc. Duration, h 0.250 Other Jurisdiction IDOT Time Parid Apr 12, 2022 Area Type Other Other Jurisdiction IDOT Time Parid SAT Projected PHF 0.65 Other Urban Street IL 59 Analysis Period 12-7.15 Intersection IL 176.7.01 - IL 59 Jet Bith - Napevaile Demand Information T767.01 - IL 59 Jet Bith - Napevaile EB WB NB S Intersection Signal Information L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R R	General Inform	nation	1							Intersec	tion Info	ormatio	on			× L <u>x</u>	
Analysit RAC Analysis bate Apr 12, 2022 Area Type Other Juriadiction IDOT Time Period SAP Trojected Peak Hour PHF 0.85 0.95 Urban Street IL 59 Analysis Year 2028 Analysis Year 0.85 Analysis Year No 19.715 No No <td>Agency</td> <td></td> <td>Knight E/A, Inc.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Duration</td> <td>h</td> <td>0.250</td> <td></td> <td>_*</td> <td></td> <td>* *_</td>	Agency		Knight E/A, Inc.							Duration	h	0.250		_*		* *_	
Jurisdiction IDOT Time Period SAT Projected Perak Hour PHF 0.95 Image Park Hour 0.95 Uhan Street IL 59 Analysis Year 2028 Analysis Period 17.15 Image Park Hour 1767.01 - IL 59-83rd SATP Image Park Hour Image Park Hour	Analyst		RAC		Analys	is Date	e Apr 12	2, 2022		Area Typ	е	Other				<u>∧</u> <u>∧</u> ≻	
Utans street L59 / 83rd Street File Name 2028 Analysis Period 1>7.15 The street interestion Intersection T767.01 - IL59 / 83rd Street File Name 7767.01 - IL59.83rd SATPLus T R L L T	Jurisdiction		IDOT		Time F	Period	SAT P Peak	rojecteo Hour	t l	PHF		0.95		* * *	w‡e 8	- - *	
Intersection IE 9/ 83rd Street File Name 7767.01 - IL 59.83rd SATP.xus Image Sate Sate Sate Sate Sate Sate Sate Sat	Urban Street		IL 59		Analys	is Year	2028		Î	Analysis	Period	1> 7:	15			× _	
Project Description 7767.01 - IL 59 Jet Britle - Naperville NB NB SB Approach Movement L T R L T <td< td=""><td>Intersection</td><td></td><td>IL 59 / 83rd Street</td><td></td><td>File Na</td><td>ame</td><td>7767.0</td><td>01 - IL59</td><td>9-83rc</td><td>d SATP.xu</td><td>s</td><td></td><td></td><td>1 5</td><td>414Y1</td><td>* (*</td></td<>	Intersection		IL 59 / 83rd Street		File Na	ame	7767.0	01 - IL59	9-83rc	d SATP.xu	s			1 5	414Y1	* (*	
Demand information L T R	Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е								1 7			
Demand Information L T R R R L T R L T R L T R R R R L T R R R R R R	, ,																
Approach Movement L T R	Demand Inform	nation				EB			W	В		NB			SB		
Demand (v), veh/h 241 163 175 79 134 120 1898 57 183 1851 255 Signal Information Cycle, s 120.0 Reference Phaine Begin Green 12.5 2.2 49.6 6.4 1.6 24.3 Reference	Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R	
Signal Information Cycle, s 120.0 Reference Point Bigin Image: Cycle, s 120.0 Reference Point Bigin Image: Cycle, s 12.5 2.2 49.6 6.4 1.8 24.3 Image: Cycle, s 1.0 Image: Cycle, s 1.0 0.0 1.0 0.0 2.0 0.0 0.0 2.0 0.0 0.0 2.0 0.0 0.0 2.0 0.0 0.0 2.0 0.0 0.0 2.0 0.0 0.0 2.0 0.0 0.0 0.0 2.0 0.0	Demand (v), v	eh/h			241	163	175	79	13	4 127	150	1898	57	183	1851	255	
Signal information Cycle, s 120.0 Reference Phase 2 Cycle, s 120.0 Reference Phase 2 Cycle, s 120.0 Reference Phase 2 Cycle, s 100 20.0 40.6 3.5 3.5 4.0 </td <td></td> <td></td> <td></td> <td></td> <td>le.</td> <td></td>					le.												
Cycle, s 120.0 Reference Phase 2 6 6 6 4 1.6 2.4.3 7 7 8 7 7 8 7 7 8 7	Signal Informa	tion				5	215	1		2	я	\leq				ð-	
Offset O Reference Point Begin Green 12.5 2.2 49.6 6.4 Task Zava A B <th< td=""><td>Cycle, s</td><td>120.0</td><td>Reference Phase</td><td>2</td><td></td><td>5</td><td>1</td><td>1 🕇</td><td>•[</td><td>٣Ŕ</td><td>- E</td><td>e</td><td></td><td></td><td></td><td>4</td></th<>	Cycle, s	120.0	Reference Phase	2		5	1	1 🕇	• [٣Ŕ	- E	e				4	
Uncoordinated No Simult. Gap E/V On Yellow 3.5 0.0 4.0 3.5 3.5 4.0 3.5 3.5 4.0 3.5 3.5 4.0 3.5 3.5 4.0 3.5 3.5 4.0 3.5 3.5 4.0 3.5 3.5 4.0 3.5 3.5 4.0 3.5 3.5 3.5 3.5 3.5	Offset, s	0	Reference Point	Begin	Green	12.5	2.2	49.6	6.4	1.6	24.3	3		-		~	
Force Mode Fixed Simult. Gap N/S On Red 1.0 0.0 2.0 0.0 0.0 2.0 s Demand (V), veh/hClo	Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.0	3.5	5 3.5	4.0		く 2				
Traffic Information EB WB NB SB SB Approach Movement L T R L R R L R R L T R L T R L	Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	2.0	0.0	0.0	2.0		5	6	7		
Traffic Information L T R L R L R L R L R L R L R					-												
Approach Movement L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R Demand (v), veh/h 201 170 134 170 79 134 170 79 134 170 0	Traffic Informa	tion				EB			WE	3		NB			SB		
Demand (v), veh/n 241 163 175 79 134 127 150 1898 57 183 1851 255 Initial Queue (Qe), veh/n 0	Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R	
Initial Queue (Qe), veh/h 0	Demand (v), ve	h/h			241	163	175	79	134	127	150	1898	57	183	1851	255	
Base Saturation Flow Rate (so), veh/h 1900 100	Initial Queue (C	al Queue (Q _b), veh/h e Saturation Flow Rate (s _o), veh/h					0	0	0	0	0	0	0	0	0	0	
Parking (M_m), man/h Nome Nome <t< td=""><td>Base Saturation</td><td colspan="5">e Saturation Flow Rate (s₀), veh/h</td><td>1900</td><td>1900</td><td>1900</td><td>0 1900</td><td>1900</td><td>2000</td><td>1900</td><td>1900</td><td>2000</td><td>1900</td></t<>	Base Saturation	e Saturation Flow Rate (s ₀), veh/h					1900	1900	1900	0 1900	1900	2000	1900	1900	2000	1900	
Heavy Vehicles (P_{FV}), % 1 0 0 0 0 0 1 1 0 0 0 0 Ped / Bike / RTOR, /h 0	Parking (Nm), m	ie Saturation Flow Rate (S₀), ven/n king (Nm), man/h							Non	e		None			None		
Ped / Bike / RTOR, /h 0 1.00 <t< td=""><td>Heavy Vehicles</td><td>(<i>Рн</i>v), 9</td><td>%</td><td></td><td>1</td><td>0</td><td></td><td>0</td><td>0</td><td></td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td></t<>	Heavy Vehicles	(<i>Рн</i> v), 9	%		1	0		0	0		1	1	0	0	1	1	
Buses (Nb), buses/h 0 1.00	Ped / Bike / RT	OR, /h			0	0	0	0	0	0	0	0	0	0	0	0	
Arrival Type (AT) 3 3 3 3 3 3 3 3 4 4 4 4 4 4 Upstream Filtering (/) 1.00 </td <td>Buses (Nb), bus</td> <td>ses/h</td> <td></td> <td></td> <td>0</td>	Buses (Nb), bus	ses/h			0	0	0	0	0	0	0	0	0	0	0	0	
Upstream Filtering (/) 1.00	Arrival Type (A	Γ)			3	3	3	3	3	3	4	4	4	4	4	4	
Lane Width (W), ft 11.0 12.0 11.0 12.0	Upstream Filter	ing (I)			1.00	1.00	1.00	1.00	1.00	0 1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turn Bay Length, ft 150 0 195 0 410 0 0 410 0 0 0 Grade (Pg), % 0<	Lane Width (W), ft			11.0	12.0		11.0	12.0)	12.0	12.0	12.0	12.0	12.0	12.0	
Grade (Pg), % 0 <	Turn Bay Lengt	h, ft			150	0		195	0		410	0	0	410	0	0	
Speed Limit, mi/h 40 40 40 40 40 40 40 40 40 40 40 45	Grade (<i>Pg</i>), %					0			0			0			0		
Phase Information EBL EBT WBL WBT NBL NBT SBL SBT Maximum Green (Gmax) or Phase Split, s 15.0 39.0 15.0 39.0 15.0 51.0 15.0 51.0 35.5 4.0 3.5 4.0 3.5 4.0 3.5 4.0 3.5 4.0 3.5 4.0 3.5 51.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 7.0 2.0 2.0 2.0 2.0 2.0 2.0	Speed Limit, mi	i/h			40	40	40	40	40	40	45	45	45	45	45	45	
Phase information EBL EBL EBL WBL WBL NBL NBL NBL SBL	Dhasa lafamu	41			EDI		EDT				NDI					ODT	
Maximum Green (Gmax) of Phase Split, s 15.0 39.0 15.0 39.0 15.0 51.0 50.0 51.0 50.0 50.0 5	Phase Informa	ition) an Dhasa Qulit a		EBL		EBI	VVBL		VVB I		-		SBL		581	
Yellow Change Interval (Y), s 3.5 4.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 3.0 7.0 3.0	Maximum Gree	n (Gmax) or Phase Split, s		15.0		39.0	15.0	,	39.0	15.0)	51.0	15.0		51.0	
Red Clearance Interval (<i>Rc</i>), s 0.0 2.0 0.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 2.0 Minimum Green (<i>Gmin</i>), s 3 8 3 8 3 15 3 15 Start-Up Lost Time (<i>It</i>), s 2.0 3.0 7.0 3.0 7.0 3.0 7.0 0.0 0.0	Yellow Change	Interval	(Υ), S		3.5	_	4.0	3.5	_	4.0	3.5	_	4.0	3.5	\rightarrow	4.0	
Minimum Green (Gmin), s 3 3 8 3 8 3 15 3 15 Start-Up Lost Time (It), s 2.0	Red Clearance	Interval	(<i>R</i> c), s		0.0	\rightarrow	2.0	0.0	\rightarrow	2.0	1.0		2.0	1.0	\rightarrow	2.0	
Start-Up Lost Time (<i>It</i>), s 2.0 3.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Minimum Greer	ר (<i>Gmin</i>)	, S		3		8	3	\rightarrow	8	3		15	3	\rightarrow	15	
Extension of Effective Green (e), s 2.0 7.0 3.0 7.0 7.0 9.0 9.0 9.0 0.0 7.0 7.0 7.0 7.0 7.0 9.0 9.0 0.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0	Start-Up Lost I	ime (<i>It</i>)	, S		2.0	\rightarrow	2.0	2.0	_	2.0	2.0		2.0	2.0	\rightarrow	2.0	
Passage (PT), s 3.0 5.0 3.0 5.0 3.0 7.0 3.0 7.0 Recall Mode Off Off Off Off Off Off Off Min Off Min Dual Entry Yes	Extension of Ef	fective (Green (<i>e</i>), s		2.0	\rightarrow	2.0	2.0	\rightarrow	2.0	2.0		2.0	2.0		2.0	
Recall Mode Off Off Off Off Off Off Off Min Off Min Off Min Dual Entry Yes Yes<	Passage (PT),	s			3.0		5.0	3.0	\rightarrow	5.0	3.0		7.0	3.0		7.0	
Dual Entry Yes Walk (Walk), s 0.0 7.0 0.0 0.0 7.0 7.0 Pedestrian Clearance Time (PC), s 36.0 0.0 0.0 17.0 Multimodal Information EB WB NB SB 85th % Speed / Rest in Walk / Corner Radius 0 No 25 0 No 25 0 No 25	Recall Mode		Off		Off	Off		Off	Off		Min	Off		Min			
Walk (Walk), s 7.0 0.0 0.0 7.0 Pedestrian Clearance Time (PC), s 36.0 0.0 0.0 0.0 17.0 Multimodal Information EB WB NB SB 85th % Speed / Rest in Walk / Corner Radius 0 No 25	Dual Entry		Yes		Yes	Yes	_	Yes	Yes		Yes	Yes		Yes			
Pedestrian Clearance Time (PC), s 36.0 0.0 0.0 17.0 Multimodal Information EB WB NB SB 85th % Speed / Rest in Walk / Corner Radius 0 No 25	Walk (<i>Walk</i>), s	Valk (<i>Walk</i>), s					7.0			0.0			0.0			7.0	
Multimodal Information EB WB NB SB 85th % Speed / Rest in Walk / Corner Radius 0 No 25	Pedestrian Clea	edestrian Clearance Time (<i>PC</i>), s					36.0			0.0			0.0			17.0	
85th % Speed / Rest in Walk / Corner Radius 0 No 25	Multimodal Inf	ultimodal Information				EB			WB			NB			SB		
	85th % Speed /	h % Speed / Rest in Walk / Corner Radius			0	No	25	0	No	25	0	No	25	0	No	25	
Walkway / Crosswalk Width / Length, ft 9.0 12 0 9.0 12 0 9.0 12 0 9.0 12 0	Walkway / Cros	% Speed / Rest in Walk / Corner Radius			9.0	12	0	90	12	0	9.0	12	0	9.0	12	0	
Street Width / Island / Curb 0 0 No 0 0 No	Street Width / I	t Width / Island / Curb			0	0	No	0	0	No	0	0	No	0	0	No	
Width Outside / Bike Lane / Shoulder, ft 12 5.0 2.0 12 5.0 2.	Width Outside /	eet Width / Island / Curb Ith Outside / Bike Lane / Shoulder. ft				5.0	2.0	12	50	2.0	12	5.0	2.0	12	5.0	2.0	
Pedestrian Signal / Occupied Parking No 0.50 No 0.50 No 0.50 No 0.50	Pedestrian Sign	n Outside / Bike Lane / Shoulder, ft estrian Signal / Occupied Parking					0.50	No		0.50	No		0.50	No		0.50	

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HCS7 Signalized Intersection Results Summary

					•							,				
General Inform	nation								In	tersect	ion Infe	ormati	on		4.4.4.	× l <u>.</u>
Agency	lation	Knight F/A, Inc.							Di	uration	h	0.250)		$\neg\uparrow\uparrow\uparrow\uparrow\uparrow$	×
Analyst		RAC		Analys	is Dat	e Apr 1	2 2022		Ar	rea Tvo		Othe	r	_1 _2		بر 4
Jurisdiction				Time F	Period	SAT F	-, <u>-o</u> Proiecter	4	P	HF		0.95			w∔e	* *
					onou	Peak	Hour		I			0.00		*		→ ¥ *
Urban Street		IL 59		Analys	is Yea	r 2028			Ar	nalysis	Period	1> 7:	15		5 + + + .	⊒×
Intersection		IL 59 / 83rd Street		File Na	ame	7767.	01 - IL5	9-83r	rd S	SATP.xu	s			1	▲ ↑ ☆ ☆ 1	× (*
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е											
							_									
Demand Inform	nation				EB		<u> </u>	N	VB			NB			SB	
Approach Move	ement			L	T	R	L		T	R	L	T	R	L	T	R
Demand (v), v	eh/h			241	163	1/5	79	1	34	127	150	189	3 57	183	1851	255
Signal Informa	tion				I L	JIU	IJ					8				ĸ
Cycle, s	120.0	Reference Phase	2			242	*	_ - ²	a e	d₽ -		E .		1 -	∠	
Offset, s	0	Reference Point	Begin						-				1	2	3	4
Uncoordinated	No	Simult. Gap E/W	On	Green	12.5	2.2	49.6	0. 3	4	35	24.3	<u>,</u>				
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	2.0	0.	0	0.0	2.0		5	6	7	
			л	17	А											
Timer Results				EBL	-	EBT	WB	L	V	NBT	NBL	-	NBT	SBI	-	SBT
Assigned Phase	е			3		8	7			4	5		2	1		6
Case Number				1.1		4.0	1.1		4	4.0	2.0		3.0	2.0		3.0
Phase Duration	i, s			15.0		35.4	9.9		3	30.3	17.0)	55.6	19.2	<u>)</u>	57.7
Change Period,	, (Y+ R a	c), S		3.5		6.0	3.5		(6.0	4.5		6.0	4.5		6.0
Max Allow Head	dway(A	<i>MAH</i>), s		4.0		6.1	4.0		(6.1	4.0		0.0	4.0		0.0
Queue Clearan	ce Time	e (g s), s		13.5		25.3	6.3		1	19.9	12.3	;		14.5	5	
Green Extensio	n Time	(g _e), s		0.0		4.0	0.1			4.1	0.2		0.0	0.2		0.0
Phase Call Prol	bability			1.00		1.00	1.00)	1	1.00	1.00			1.00)	
Max Out Proba	bility			1.00		0.37	0.28	3	0).35	0.08	;		0.53	}	
May amont Cre					ED			10/1	Р			ND	_		CD.	_
Movement Gro	oup Res	SUITS				B			в	Р	1		B	_	5B T	P
Approach Move	ment				0	<u></u> К			\rightarrow	К 14	L E	1	К 10		- I	<u>к</u>
Adjusted Flow	Pato (v) yoh/h		3 254	256	10	1	27	5	14	159	2 1009	60	103	1049	269
Adjusted Flow P	tion Flo), ven/n w Rate (s) veh/h/l	In	1705	1738		1810	17/	17		1705	1802	1610	1810	1802	1508
	Time (d	π_{s}) s		11.5	23.3		43	17	9 9	_	10.3	30.3	21	12.5	35.4	11 1
Cycle Queue C	learance	e Time (a c), s		11.5	23.3		4.3	17.	9		10.3	39.3	2.1	12.5	35.4	11.1
Green Ratio (g	/C)	, s		0.31	0.24	-	0.26	0.2	20		0.10	0.41	0.41	0.12	0.43	0.43
Capacity (c), y	/eh/h			291	425	1	191	35	3		187	2232	665	222	2330	689
Volume-to-Cap	acity Ra	itio(X)		0.871	0.836	5	0.435	0.77	78		0.843	0.895	0.090	0.870	0.836	0.390
Back of Queue	(Q), ft/	/In (95 th percentile))	170.3	415.3	3	87.9	330	0.6		219	528.3	36.2	264.9	463.6	174.8
Back of Queue	(Q), ve	eh/In (95 th percent	ile)	6.8	16.6	1	3.5	13.	.2		8.7	21.0	1.4	10.6	18.4	6.9
Queue Storage	Ratio (RQ) (95 th percen	tile)	1.14	0.00		0.45	0.0	0		0.53	0.00	0.00	0.65	0.00	0.00
Uniform Delay ((d1), s/	/veh		37.5	43.0		36.7	45.	.3		50.7	24.7	16.3	49.3	22.1	16.9
Incremental De	ncremental Delay (<i>d</i> ²), s/veh						1.6	8.9	9		12.7	6.1	0.3	19.3	3.8	1.7
Initial Queue De	nitial Queue Delay (d ₃), s/veh						0.0	0.0	0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/ve	eh		61.2	54.6		38.3	54.	.2		63.4	30.7	16.6	68.6	25.8	18.5
Level of Service	e (LOS)			E	D		D	D			Е	С	В	E	С	В
Approach Delay		57.3		Е	50.5	5		D	32.7	7	С	28.4		С		
Intersection De	Intersection Delay, s/veh / LOS					34	4.7							С		
Multimodal Re	timodal Results							W	В			NB			SB	
Pedestrian LOS	Score	/ LOS			_											
BICYCIE LOS SC	ore / LC	15														
HCS7 Signalized Intersection Intermediate Values

		11007	orgn	an	Zeu I	ntera			ten	meand		aiue	3				
General Inform	ation									Intor	enctio	n Info	rmati	ion		∫ ¤} "Y*#> ↑	له لړ
	ation	Knight E/A Inc								Durat	ion h		0 250	0		$\downarrow \downarrow \downarrow \downarrow \downarrow$	Ļ
Apolyet				٨		Data	Apr 12	2022		Aroa			Otho	u r	_7 _2		۲. 4
Analyst					nalysis ma Dar			iooto	4		туре			1	≯*	w↑e	* *
							Peak Ho	pur	u				0.95				1 1 1 1
Urban Street		IL 59		Ar	nalysis	Year	2028			Analy	sis Pe	riod	1> 7:	:15		5 1 1 1	7
Intersection		IL 59 / 83rd Street		Fi	le Nam	e	7767.01	- IL5	9-83	rd SAT	P.xus				_ 1	ነላተቀጥ	17
Project Descrip	tion	7767.01 - IL 59 Jet I	Brite - N	Vap	erville												
-							_				-				_	0.5	
Demand Inform	nation			⊢		EB	_		V	/VB	_		NB	5	<u> </u>	SB	
Approach Move	ement				L		R		+		R	L		R	L		R
Demand (v), v	/eh/h			2	241	163	1/5	79	1	134 1	27	150	189	8 5/	183	1851	255
Signal Informa	ation					U		Л				5					<u> </u>
Cycle, s	120.0	Reference Phase	2	1		2	2.4.3	- · .	٦Ľ		3	ing i			· 12-	<u> </u>	
Offset, s	0	Reference Point	Begin				0.0	40.0	<u> </u>		<u> </u>		_	1	2	3	4
Uncoordinated	No	Simult. Gap E/W	On		reen 1	2.5 5	2.2	49.6	2	5 3	.0	24.3	-11	⊼ ∠			
Force Mode	Fixed	Simult. Gap N/S	On	Re	ed 1	.0	0.0	2.0	0	.0 0).0	2.0	-	5	•	7	$ \mathbf{A} $
		· · ·															
Saturation Flo	w / Dela	ay	L		Т	R	L	۲ <u> </u>		R	L		Т	R	L	Т	R
Lane Width Adj	ustment	Factor (<i>f</i> w)	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Heavy Vehicles	and Gr	ade Factor (fHVg)	0.9	92	1.000	0.992	1.000	1.0	00	0.992	0.99	2 0.	992	1.000	1.000	0.992	0.992
Parking Activity	Adjustn	nent Factor (<i>f</i> _p)	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Bus Blockage A	Adjustme	ent Factor (fbb)	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Area Type Adju	stment l	Factor (<i>f</i> a)	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Lane Utilization	Adjustr	nent Factor (fLU)	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 0.9	908	1.000	1.000	0.908	1.000
Left-Turn Adjus	tment F	actor (<i>f</i> LT)	0.9	52	0.000		0.952	0.0	00		0.95	2 0.	000		0.952	0.000	
Right-Turn Adju	Istment	Factor (f _{RT})			0.915	0.915		0.9	19	0.919		0.	000	0.847		0.000	0.847
Left-Turn Pedes	strian Ao	djustment Factor (fLpl) 1.0	00			1.000				1.00	0	Ť		1.000		
Right-Turn Ped	-Bike Ad	djustment Factor (fRp.)			1.000				1.000				1.000			1.000
Work Zone Adjı	ustment	Factor (fwz)	1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
DDI Factor (for	ı)		1.0	00	1.000	1.000	1.000	1.0	00	1.000	1.00	0 1.	000	1.000	1.000	1.000	1.000
Movement Satu	uration F	low Rate (<i>s</i>), veh/h	179	95	838	900	1810	89	97	850	179	5 54	406	1610	1810	5406	1598
Proportion of Ve	ehicles /	Arriving on Green (P	0.1	0	0.24	0.24	0.05	0.2	20	0.20	0.14	4 0.	.55	0.55	0.16	0.57	0.57
Incremental De	lay Fact	tor (<i>k</i>)	0.4	10	0.31		0.11	0.2	27		0.15	5 0	.50	0.50	0.24	0.50	0.50
			_													_	
Signal Timing	/ Mover	nent Groups		EBL	. <u> </u>	BT/R	WE	3L	W	/BT/R	N	IBL	N	BT/R	SBL		SBT/R
Lost Time (<i>t</i> _L)			_	3.5		6.0	3.	5		6.0	4	.5	-	6.0	4.5		6.0
Green Ratio (g/	/C)		().31		0.24	0.2	6	0	0.20	0.	.10	C	0.41	0.12		0.43
Permitted Satur	ration Fl	ow Rate (s_p) , veh/h/l	n 1	113		0	104	2		0		0		0	0		0
Shared Saturat	ion Flow	V Rate (<i>Ssh</i>), veh/h/ln			_	0.0	- 24	2		0.0		0	-	0.0	0.0	_	0.0
Permitted Ellec	ice Time	een Time (g_p) , s		20.3 6 /		0.0	24.	3 1		0.0		0		0.0	0.0		0.0
Permitted Oue	ice nine 19 Servi	; (yu), s ce Time (a _{nc}) s	-	0.4 6.4		0.0	4.	2		0.0		0.0	<u> </u>	0.0	0.0		0.0
Time to First Bl	ockade	(ar) s	-	0.0		0.0	0.0	ן ר		0.0	0	0		0.0	0.0		0.0
Queue Service	Time Br	efore Blockage (atc)	e .	0.0		0.0	0.	5		0.0				0.0	0.0		0.0
Protected Right	t Saturat	tion Flow (s_P) veh/h/	- In										-	0			0
Protected Right	t Effectiv	e Green Time (a_{P})												0.0			0.0
Multimodel			-		EP			١٨	/P			N		0.0		CP	0.0
Pedestrian F/	Ev							V	v D							30	
Pedestrian F. /	Edelou		-														
Pedestrian M	mor / Ma	,		_									-				
	INCI I IVICW	·	-										-				
			-	_									-				
Dicycle FW/ FV							1						1				

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HCS7 Signalized Intersection Results Graphical Summary

General Inform	nation								Intersec	tion Inf	ormatio	on	<u></u>	****	⊾ l <u>a</u>
Agency		Knight E/A, Inc.							Duration	, h	0.250			2+++5	*
Analyst		RAC		Analys	sis Date	Apr 12	2, 2022		Area Typ	e	Other		<u></u>		1 A J
Jurisdiction		IDOT		Time F	Period	SAT P Peak I	rojecteo Hour	ł	PHF		0.95		4 44 4 1	w ‡e 8	* ↓ ↓ ↓ ↓
Urban Street		IL 59		Analys	sis Year	2028			Analysis	Period	1> 7:1	15		5+++	-
Intersection		IL 59 / 83rd Street		File Na	ame	7767.0	01 - IL59	9-83r	d SATP.xu	IS				4 1 4 M 1	· /*
Project Descrip	tion	7767.01 - IL 59 Jet	Brite - N	lapervill	е	-0							1		
							- i			- I					
Demand Inform	nation				EB	1		W	′B		NB			SB	
Approach Move	ement			L	Т	R			r R	L	Т	R	L	Т	R
Demand (<i>v</i>), v	eh/h			241	163	175	79	13	34 127	150	1898	57	183	1851	255
				1	1 1	b 111	b II	1/		_					
Signal Informa	tion					245	121	La			¦∐ [†	x	\rightarrow
Cycle, s	120.0	Reference Phase	2		5	ľ	Î î	7	ľ B.	\mathbb{R}	E I	1	2	3	4
Offset, s	0	Reference Point	Begin	Green	12.5	2.2	49.6	6.4	4 1.6	24.3	3				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.0	3.5	5 3.5	4.0		$\langle 2 \rangle$			
Force Mode	Fixed Simult. Gap N/S O			Red	1.0	0.0	2.0	0.0	0.0	2.0		5	6	7	Y 8
							_			_					
Movement Gro	ment Group Results				EB			WE	3		NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Back of Queue	(Q), ft	/In (95 th percentile)	170.3	415.3		87.9	330.	.6	219	528.3	36.2	264.9	463.6	174.8
Back of Queue	(Q), Ve	eh/In (95 th percent	ile)	6.8	16.6		3.5	13.	2	8.7	21.0	1.4	10.6	18.4	6.9
Queue Storage	Ratio (RQ) (95 th percen	tile)	1.14	0.00		0.45	0.0	D	0.53	0.00	0.00	0.65	0.00	0.00
Control Delay (d), s/ve	eh		61.2	54.6		38.3	54.2	2	63.4	30.7	16.6	68.6	25.8	18.5
Level of Service	e (LOS)			E	D		D	D		E	С	В	E	С	В
Approach Delay	, s/veh	/LOS		57.3	3	E	50.5	5	D	32.	7	С	28.4	+	С
Intersection Del	lay, s/ve	eh / LOS				34	.7					1	С		
						18.4									



--- Messages ----

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ----

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HCS[™] Streets Version 7.9.5

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	HCS7 T								Rep	ort						
General Information							Site	Inform	natio	n						_
Analyst	RAC						Inters	section			83rd	Street/Se	outh Acc	cess		
Agency/Co.	Knigh	nt E/A, In	IC.				Juriso	liction			IDOT					
Date Performed	4/13/	2022					East/	West Str	eet		83rd	Street				
Analysis Year	2028						North	n/South	Street		South	h Access				
Time Analyzed	AM P	rojected					Peak	Hour Fa	ctor		0.95					
Intersection Orientation	East-	West					Analy	sis Time	Period	(hrs)	0.25					
Project Description	7767,	.01 - Jet	Brite Ca	⁻ Wash -	Napervi	lle										
Lanes																
				J 4 4 X 4 1 V 	T 14 Maj	or Street: Ea	↑↑↑ ast-West	154 4 7 1 7 1								
Vehicle Volumes and Adj	ustme	nts														
Approach		Eastb	ound			Westbound				North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT					Т	TR							LR	
Volume (veh/h)		12	338	338			250	1						1		11
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)															0	
Right Turn Channelized																
Median Type Storage				Undi	vided											
Critical and Follow-up He	eadwa	ys														
Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)	4.10											6.80		6.90		
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)	2.20										3.50		3.30			
Delay, Queue Length, an	d Leve	l of S	ervice	•												
Flow Rate, v (veh/h)	Τ	13													13	
Capacity, c (veh/h)		1312													816	
v/c Ratio		0.01													0.02	
95% Queue Length, Q ₉₅ (veh)		0.0													0.0	
Control Delay (s/veh)		7.8													9.5	
Level of Service (LOS)		A													A	
Approach Delay (s/veh)		0.4												9	.5	
Approach LOS		0.4													A	

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		Н	ICS7	Two	-Way	v Sto	p-Co	ntrol	Rep	ort						
General Information							Site	Infor	natio	n						_
Analyst	RAC						Inter	section			83rd	Street/So	outh Acc	ess		
Agency/Co.	Knigł	nt E/A, In	IC.				Juriso	liction			IDOT					
Date Performed	4/13/	2022					East/	West Str	eet		83rd	Street				
Analysis Year	2028						Nort	n/South	Street		South	n Access				
Time Analyzed	PM P	rojected					Peak	Hour Fa	ctor		0.95					
Intersection Orientation	East-	West					Analy	vsis Time	Period	(hrs)	0.25					
Project Description	7767,	.01 - Jet	Brite Ca	⁻ Wash -	Napervi	lle					1					
Lanes																
				2 4 4 7 4 P 7	T 14 Maj	or Street: Ea	t t ast-West	1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4								
Vehicle Volumes and Adj	ustme	nts														
Approach		Eastb	bound			West	bound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT					Т	TR							LR	
Volume (veh/h)		23	452	452			425	2						2		23
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)														(0	
Right Turn Channelized																
Median Type Storage				Undi	vided											
Critical and Follow-up He	eadwa	ys														
Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)	4.10											6.80		6.90		
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)	2.2										3.50		3.30			
Delay, Queue Length, and	d Leve	l of S	ervice)												
Flow Rate, v (veh/h)		24													26	
Capacity, c (veh/h)		1122													668	
v/c Ratio		0.02													0.04	
95% Queue Length, Q ₉₅ (veh)		0.1													0.1	
Control Delay (s/veh)		8.3													10.6	
Level of Service (LOS)		A													В	
Approach Delay (s/veh)		C).6											1().6	
Approach LOS		υ.υ												В		

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	HCS7 Two								Rep	ort						
General Information							Site	Inforr	natio	n						
Analyst	RAC						Inters	ection			83rd	Street/So	outh Acc	ess		
Agency/Co.	Knigh	nt E/A, In	с.				Jurisc	liction			IDOT					
Date Performed	4/13/	/2022					East/	West Str	eet		83rd	Street				
Analysis Year	2028						North	n/South :	Street		South	n Access				
Time Analyzed	Sat N	1idday Pl	M				Peak	Hour Fac	ctor		0.95					
Intersection Orientation	East-	West					Analy	sis Time	Period	(hrs)	0.25					
Project Description	7767,	,01 - Jet	Brite Car	⁻ Wash -	Napervi	lle										
Lanes																
				J d ↓ Å Å Å \	ר היי Maj	۲۰۰۰ The second secon	t tr 7 ast-West									
Vehicle Volumes and Adj	ustme	nts														
Approach		Eastb	ound		Westbound					North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT		1 0 0 0			Т	TR							LR	
Volume (veh/h)		52	325	325			290	5						5		50
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)															0	
Right Turn Channelized																
Median Type Storage				Undi	vided											
Critical and Follow-up He	eadwa	ys														
Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)	4.10											6.80		6.90		
Base Follow-Up Headway (sec)	2.2											3.5		3.3		
Follow-Up Headway (sec)	2.20											3.50		3.30		
Delay, Queue Length, and	d Level of Service															
Flow Rate, v (veh/h)		55													58	
Capacity, c (veh/h)		1261													756	
v/c Ratio		0.04													0.08	
95% Queue Length, Q ₉₅ (veh)		0.1													0.2	
Control Delay (s/veh)		8.0													10.2	
Level of Service (LOS)		A													В	
Approach Delay (s/veh)		1	.5											1(0.2	
Approach LOS							_	_				_			B	_

	HCS7 Two-Way Stop	o-Control Report								
General Information		Site Information								
Analyst	RAC	Intersection	IL 59 / RIRO							
Agency/Co.	Knight E/A, Inc.	Jurisdiction	IDOT							
Date Performed	4/13/2022	East/West Street	RIRO							
Analysis Year	2028	North/South Street	IL 59							
Time Analyzed	AM Projected	Peak Hour Factor	0.95							
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25							
Project Description 7767.01 - Jet Brite Car Wash - Naperville										
Lanes										



Vehicle Volumes and Adju	cle Volumes and Adjustments															
Approach		Eastb	ound			West	bound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	3	1	0	0	3	0
Configuration								R			Т	R			Т	
Volume (veh/h)								10			2235	10			1089	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized						Y	es			Ν	lo					
Median Type Storage				Undi	vided											
Critical and Follow-up He	Critical and Follow-up Headways Base Critical Headway (sec)															
Base Critical Headway (sec)								7.1								
Critical Headway (sec)								7.10								
Base Follow-Up Headway (sec)								3.9								
Follow-Up Headway (sec)								3.90								
Delay, Queue Length, and	Leve	l of Se	ervice	l .												
Flow Rate, v (veh/h)								11								
Capacity, c (veh/h)								160								
v/c Ratio								0.07								
95% Queue Length, Q ₉₅ (veh)								0.2								
Control Delay (s/veh)								29.0								
Level of Service (LOS)								D								
Approach Delay (s/veh)						29	9.0									
Approach LOS							D									

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	HCS7 Two-Way Stop	p-Control Report								
General Information		Site Information								
Analyst	RAC	Intersection	IL 59 / RIRO							
Agency/Co.	Knight E/A, Inc.	Jurisdiction	IDOT							
Date Performed	4/13/2022	East/West Street	RIRO							
Analysis Year	2028	North/South Street	IL 59							
Time Analyzed	PM Projected	Peak Hour Factor	0.95							
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25							
Project Description 7767.01 - Jet Brite Car Wash - Naperville										
Lanes										



Vehicle Volumes and Adju	ıstme	nts														
Approach		Eastb	ound			West	bound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	3	1	0	0	3	0
Configuration								R			Т	R			Т	
Volume (veh/h)								20			2007	20			2746	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized						Y	es			Ν	lo					
Median Type Storage				Undi	vided											
Critical and Follow-up He	Critical and Follow-up Headways Base Critical Headway (sec)															
Base Critical Headway (sec)								7.1								
Critical Headway (sec)								7.10								
Base Follow-Up Headway (sec)								3.9								
Follow-Up Headway (sec)								3.90								
Delay, Queue Length, and	l Leve	l of Se	ervice	I												
Flow Rate, v (veh/h)								21								
Capacity, c (veh/h)								193								
v/c Ratio								0.11								
95% Queue Length, Q ₉₅ (veh)								0.4								
Control Delay (s/veh)								25.9								
Level of Service (LOS)								D								
Approach Delay (s/veh)						25	5.9									
Approach LOS						[D									

	HCS7 Two-Way Stop	o-Control Report	
General Information		Site Information	
Analyst	RAC	Intersection	IL 59 / RIRO
Agency/Co.	Knight E/A, Inc.	Jurisdiction	IDOT
Date Performed	4/13/2022	East/West Street	RIRO
Analysis Year	2028	North/South Street	IL 59
Time Analyzed	Sat Midday Projected	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	7767.01 - Jet Brite Car Wash - Naperville		
Lanes			



Vehicle Volumes and Adju	ıstme	nts														
Approach		Eastb	ound			West	oound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	3	1	0	0	3	0
Configuration								R			Т	R			Т	
Volume (veh/h)								43			2225	41			2289	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized						Y	es			Ν	10					
Median Type Storage				Undi	vided											
Critical and Follow-up Headways																
Base Critical Headway (sec)							7.1									
Critical Headway (sec)								7.10								
Base Follow-Up Headway (sec)								3.9								
Follow-Up Headway (sec)								3.90								
Delay, Queue Length, and	l Leve	l of Se	ervice	l .												
Flow Rate, v (veh/h)								45								
Capacity, c (veh/h)								162								
v/c Ratio								0.28								
95% Queue Length, Q ₉₅ (veh)								1.1								
Control Delay (s/veh)								35.7								
Level of Service (LOS)								E								
Approach Delay (s/veh)						35	5.7									
Approach LOS							E									

JET BRITE CAR WASH NORTHEAST CORNER OF IL 59 WITH 83RD STREET, NAPERVILLE

Traffic Impact Study Appendix

PROPOSED SITE PLAN



LOCATION MAP

SITE D	ΑΤΑ
EXISTING ZONING:	RESIDENTIAL
PROPOSED ZONING:	B2 (PUD)
TOTAL LOT AREA:	99,970 S.F. (2.295 AC)
OPEN SPACE AREA:	21,367 S.F. (0.490 AC)
OPEN SPACE AREA PERCENT:	21.35%
EXISTING IMPERVIOUS AREA:	~0 S.F.
PROPOSED IMPERVIOUS AREA:	64,686 S.F.
REQUIRED STORMWATER DETENTION:	43,996 CF (1.01 AC-FT)
PROVIDED STORMWATER DETENTION:	44,000 CF (1.01 AC-FT)
BUILDING AREA:	6,370 S.F.
ACCESSORY STRUCTURE AREA:	459 S.F.
FAR ALLOWABLE:	0.325
FAR PROPOSED:	0.068
REQUIRED PARKING:	29 (4.5 SPACES/ 1000 GROSS
PROPOSED PARKING:	43 SPACES (TOTAL INCLUDIN
	ACCESSIBLE PARKING)
REQUIRED STACKING:	10 ENTERING WASH
	2 EXITING WASH
PROPOSED STACKING:	42
BICYCLE PARKING PROVIDED:	5 SPACES



DATE REVISIONS 12/14/22 REVISED PER CITY REVIEW 12/5/22 REVISED PER CITY REVIEW 1/11/23 1/13/23 CHECKED APPROVED DATE SUED FOR ENTITLEMENT