Memorandum

ERIKSSON

- TO: Mr. Wilhelm Kreuzer TRG Acquisitions, LLC
- FROM: Stephen B. Corcoran, P.E., PTOE Director of Traffic Engineering
- **DATE:** October 31, 2018
- RE: Culver's and Circle K Traffic Study Naperville, Illinois

This memorandum summarizes a traffic study conducted for a Culver's restaurant and a Circle K gas station with a convenience store/car wash in Naperville, Illinois. The site is located between Naper Boulevard and Naperville-Warrenville Road north of the former Fair Oaks car dealership and south of the Bueno Beef restaurant. Culver's will have a 4,459 square foot restaurant with a drive-thru window. The Circle K gas station will have 20 fueling positions, a 4,435 square foot convenience store, and a car wash. Access to the development will be provided by one access drive on Naper Boulevard and one drive on Naperville-Warrenville Road. The purpose of the study was to observe the existing traffic patterns in the area of the site, estimate the traffic generated by the changes in the site plan, and then identify strategies to eliminate any traffic issues.

EXISTING CONDITIONS

Site Location and Area Land-Use

The subject site was formerly occupied by the Great Lake Credit Union and its building will be demolished as part of the plan. Retail shopping centers are located east and west of the site and a Bueno Beef fast food restaurant is located to the north. The vacant Fair Oaks car dealership is located to the south. **Figure 1** illustrates the site and the surrounding land-uses and roads. (Note: all figures are located at the end of the report).

Roadway Characteristics

The subject property benefits from two existing full access points on the following roadways:

Naperville-Warrenville Road (DuPage Route 23) is a north-south Major Collector extending south from Naper Boulevard to Old Plank Road. Along the site frontage, it has two through lanes in each direction with no median. An existing full access drive serves the site from Naperville-Warrenville Road. It is under the jurisdiction of the City of Naperville with a 40 mph posted speed limit.

Naper Boulevard (**DuPage Route 23**) is a north-south Other Principal Arterial with two travel lanes in each direction. At its signalized intersection with Tower Plaza (the retail center to the east) and the subject property, it has a shared thru/right-turn lane, a thru lane, and a separate left-turn lane on the north approach and a separate right-turn lane, two thru lanes, and a separate left-turn lane on the south approach. The current signalized access to the site for the closed credit union is temporarily blocked. It is under the jurisdiction of DuPage Division of Transportation and has a 40 mph posted speed limit.

Existing Traffic Volumes

Weekday morning (7:00 to 9:00 AM), midday (11:30 AM-1:30 PM) and afternoon (4:00 to 6:00 PM) traffic counts were conducted at the Naper Boulevard at the Tower Crossing access (traffic signal) and at Naperville-Warrenville Road at the Ogden Mall and Minuteman Plaza service drives. These counts showed the peak-hours of traffic occurring from 7:00 to 8:00 AM, 12:00 to 1:00 PM, and 4:30 to 5:30 PM on a weekday. Naper Boulevard carries a high volume of two-way traffic with 1,800 to 2,700 vehicles per hour (vph). Naperville-Warrenville Road next to the site carries 800 and 1,200 vph during the peak hours.

There was minimal traffic using the Minuteman Plaza driveway. The existing traffic volumes are shown in **Figure 2** and included in the **Appendix**.

SITE TRAFFIC CHARACTERISTICS

Trip Generation

The additional traffic generated by the development was estimated from data in the Institute of Transportation Engineer's <u>Trip Generation</u> 10th Ed. manual which contains trip generation surveys of fast food restaurants and gas stations with convenience stores/car washes. The resulting site traffic volumes are shown in **Table 1**. The ITE <u>Trip Generation</u> 10th Ed. manual also notes than many of the trips to a gas station and restaurant are drawn from vehicles traveling past the site today. These pass-by trips are existing vehicles that would stop and then continue on with their original trip to work or home which minimizes any increase the overall traffic on the road system.

Use	Size	Мо	orning F	'eak	Mi	dday P	eak	Evening Peak			
		In	Out	Total	In	Out	Total	In	Out	Total	
Culver's ⁽¹⁾ Restaurant	4,459 sq. ft.	-	-	-	110	110	220	70	70	140	
Circle K ⁽²⁾ Gas Station With C-Store and Car Wash	20 fueling positions	280	280	560	210	210	420	230	230	460	
	Total Trips	280	280	560	320	320	640	300	300	600	

Table 1 Site Traffic Volumes

(1) ITE Land Use Code 934 – Fat Food with Drive Thru

(2) ITE Land Use Code 960 – Super Convenience Market/Gas Station

Trip Distribution

The trip distribution for any gas station is based on a combination of the existing traffic volumes going by the site and the road network. The existing traffic flows heavily influenced the distribution of site traffic. The trip distribution for the site is shown on **Table 2** and **Figure 3**.

Table 2 Directional Distribution

Approach Route	Percentage
From the North on Naper Boulevard	30%
From the South on Naper Boulevard	25%
From the East from Tower Plaza	5%
From the North on Naperville-Warrenville Road	20%
From the South on Naperville-Warrenville Road	20%
Total	100%

Culver's Restaurant and Circle K Gas Station Traffic Study Page 3

Trip Assignment

The future vehicular trips generated by the development were distributed to the area roadways based on the directional distribution analysis and the proposed site plan. **Figure 4** displays the trip assignment for the Culver's restaurant system. **Figure 5** shows the new site volumes for the Circle K gas station.

Projected Traffic Volumes

Total traffic volumes are a combination of the existing traffic volumes, projected non-site growth in those volumes, and the site traffic. Construction and opening of the restaurant and gas station is planned to be completed in 2019. The total traffic volumes are estimated for a period five years after the projected opening which is the Year 2024. Data provided by the Chicago Metropolitan Agency for Planning shows a growth rate on both roads of 0.4% per year. A copy of the CMAP letter is included in the **Appendix**. This growth rate was applied to the existing traffic volumes to obtain the base 2024 volumes without the development (see **Figure 6**). The volumes from Figure 6 were combined with the site traffic volumes (Figures 4 and 5) to generate the Year 2024 total traffic volumes with the development which are shown on **Figure 7**.

ANALYSES

Future Traffic Conditions

In order to determine the operation of study area intersections and access drives, intersection capacity analyses were conducted with the proposed and nearby developments included. An intersection's ability to accommodate traffic flow is based on the average control delay experienced by vehicles passing through the intersection. The intersection and individual traffic movements are assigned a level of service (LOS), ranging from A to F based on the control delay created by a traffic signal or stop sign. Control delay consists of the initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. LOS A has the best traffic flow and least delay. LOS E represents saturated or at capacity conditions. LOS F experiences oversaturated conditions and extensive delays. The <u>Highway Capacity</u> <u>Manual</u> definitions for levels of service and the corresponding control delay for both signalized and unsignalized intersections are shown in **Table 3**.

Level of	Description	Control Delay (seconds/vehicle)							
Service		Signals	Stop Signs						
А	Minimal delay and few stops	<10	<10						
В	Low delay with more stops	>10-20	>10-15						
С	Light congestion	>20-35	>15-25						
D	Congestion is more noticeable with longer delays	>35-55	>25-35						
ш	High delays and number of stops	>55-80	>35-50						
F	Unacceptable delays and over capacity	>80	>50						

 Table 3

 Level of Service Criteria for Intersections

The existing and total traffic volumes were applied to the proposed access system and capacity analyses were completed to determine the existing and future operating conditions with the gas station and restaurant. **Table 4** summarizes the results of those analyses.

Western Internal Drives on East-West Circulation Road

The western drives to the Circle K (north) and the Culvers (south) are located 80 feet east of Naperville-Wheaton Road. Both drives are two-way and 31 feet wide for Circle K and 26 feet wide for Culver's. Outbound traffic is controlled by a stop sign with good levels of service (A or B) during the peak-hours of operation.

Eastern Internal Drives on East-West Access Road

The eastern drives to the Circle K (north) and the Culver's (south) are located 80 feet west of Naper Boulevard. The Circle K driveway is 31 feet wide and two-way. The Culver's drive is 26 feet wide and only permits outbound movements. This will prevent vehicles from the east from stopping to make left-turn into this drive and potentially blocking inbound vehicle from Naper Boulevard. Do Not Enter signs should be added at the Culver's driveway. Outbound traffic is controlled by a stop sign with good levels of service (A or B) during the peak-hours of operation. If traffic queues from Naper Boulevard back up near this entrance, exiting traffic has the option of using the west driveways.

		Mornin	g Peak	Midday	y Peak	Evening Peak		
Intersection	Movement	Existing (2018)	Future (2024)	Existing (2018)	Future (2024)	Existing (2018)	Future (2025)	
Naper Boulevard at Tower Crossing/ Site Access (Traffic Signal)	All	A – 3.5	A – 8.7	B – 11.0	B - 16.5	A – 3.6	B - 10.9	
Naperville-Wheaton	EB Approach	B - 13.6	C – 20.7	C - 16.2	D – 28.4	C -15.5	C – 20.5	
Road at Ogden Plaza	WB Approach		D – 29.0		E – 36.6		C – 22.3	
	NB Left	A - 8.0	A – 8.0	A - 9.1	A – 9.1	A - 9.0	A 9.0	
(Stop Controlled)	SB Left		A – 9.5		A – 9.1		A-8.6	
East Drives on	EB Left		A – 7.7		A – 7.7		A – 7.7	
East-West Circulation Road	NB Approach		A – 9.6		B – 10.4		B – 10.3	
(Stop Controlled)	SB Approach		B – 11.3		B – 10.9		B – 11.1	
	EB Left		A – 7.5		A – 7.5		A – 7.5	
West Drives on East-West Circulation	WB Left		A – 7.3		A – 7.5		A – 7.4	
Road (Stop Controlled)	NB Approach		B – 10.5		B – 11.3		B – 10.6	
	SB Approach		B – 11.0		B – 11.7		B – 11.5	

 Table 4

 Intersection Level of Service and Delay (seconds)

Ogden Plaza/ Site Access on Naperville-Wheaton Road

A full access driveway is proposed on Naperville-Wheaton Road opposite the Ogden Plaza service drive. It will be 27 feet wide with a 25 foot turning radius. There will be one inbound lane and one outbound lane under stop sign control.

The capacity analyses show the left-turn movements working well at levels-of-service A. The outbound traffic will work at a level-of-service C, D, and E which is not unusual for unsignalized driveways on arterial roadways during rush hour. The expected volume is low and the outbound queue would be two or three vehicles. There would be no impact on Naperville-Wheaton Road traffic conditions. No additional recommendations are required.

Tower Crossing/ Site Access on Naper Boulevard

Naper Boulevard is heavily travelled during the peak-hours. Traffic from the existing Tower Crossing shopping center and the proposed site are relatively low. Overall, the most of the green time at the traffic signal is dedicated to moving Naper Boulevard traffic and is operating with minimal delays. No additional improvements are required.

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Automobile Laundry Stacking

A tunnel automobile laundry is located on the west side of the site running in a northbound direction. Cars pull into the south side of the wash, enter a wash code, have their car pulled thru and washed, and then exit on the north side. Queuing is provided at the car wash accommodating 12 vehicles and will not adversely impact the circulation around the gas station. Studies of car washes at a gas station indicate that the typical maximum queue is six vehicles not including the vehicles in the car wash building. EEA's experience at other gas stations with car washes supports the study's findings. Ten vehicle stacking is required by the zoning code.

Fuel Tanker Routing

The fuel tanks are located south of the fuel pump canopy. A tanker can pull into the site from Naperville-Wheaton Road up to the tanks. After fueling, it would exit eastbound to the Naper Boulevard. **Figure 8** shows the fuel tanker travel path.

CONCLUSIONS

The preceding traffic analysis analyzed the proposed Culver's restaurant and a Circle K gas station with a convenience store/car wash and developed the following conclusions:

- The development will not adversely impact the level-of-service of study area intersections.
- Two proposed driveways will adequately serve the site.
 - Naperville-Wheaton Road full access driveway under stop sign control
 - Naper Boulevard full access driveway under traffic signal control
 - Both of these driveways are existed previously for the credit union
- The majority of the gas station traffic will come from existing traffic volumes driving by the site, stopping, and then continuing on with their journey.
- Stacking for the car wash exceeds the zoning requirement of 10 spaces and will not interfere with on-site traffic flow.





ERIKSSON ENGINEERING ASSOCIATES, LTD.

Site Location & Area Roadways

Figure 1

















APPENDIX

- Existing Traffic Counts
- CMAP Letter
- Fuel Truck Turning Template
- Intersection Capacity Analyses



Naperville, Illinois Naperville-Wheaton Road Naperville-Wheaton Road Ogden Mall Southbound Northbound Eastbound Peak Right Left Right Left Minute Hour Begin Right Left Minute Through Totals Time Turn Through Turn Turn Through Turn Turn Turn Totals Factor Thursday October 4, 2018 7:00 AM 0.78 7:15 AM 0.83 7:30 AM 0.85 7:45 AM 0.82 8:00 AM 0.92 8:15 AM 8:30 AM 8:45 AM Total 7:30-8:30 AM Thursday October 4, 2018 11:30 AM 0.89 11:45 AM 0.93 0.95 Noon 12:15 PM 0.92 12:30 PM 0.92 12:45 PM 1:00 PM 1:15 PM Total Noon-1:00 PM Thursday October 4, 2018 4:00 PM 0.83 4:15 PM 0.93 0.90 4:30 PM 4:45 PM 0.88 5:00 PM 0.86 5:15 PM 5:30 PM 5:45 PM Total 4:30-5:30 PM

Naperville-Wheaton Road and Ogden Mall Service Drive



Naper Boulevard and Tower Crossing Access

				Naperville, Illinois Tower Crossing Westbound Naper Boulevard Northbound 15 60 Right Left Right Left Minute Minute Turn Through Turn Turn Through Turn Totals 4 13 41 415 604 2384 7 15 33 427 620 2369 12 12 30 376 581 2303 13 13 33 358 579 2362 5 16 36 387 589 2356 13 10 34 362 554 16 79 0 115 298 3093 0 2384 79 0 115 298 3093 0 2384 79 0 115 298 3093 0 2384 79 0 115 298 3093 0 2384 <th></th>								
	N	aper Boulevar	d	T	ower Crossin	g	No	aper Bouleva	rd			
		Southbound			Westbound			Northbound		15	60	Peak
Begin	Right		Left	Right		Left	Right		Left	Minute	Minute	Hour
Time	Turn	Through	Turn	Turn	Through	Turn	Turn	Through	Turn	Totals	Totals	Factor
	Wednesday	September 26	, 2018									
7:00 AM		111	20	4		13	41	415		604	2384	0.96
7:15 AM		124	14	7		15	33	427		620	2369	0.96
7:30 AM		133	18	12		12	30	376		581	2303	0.98
7:45 AM		148	14	13		13	33	358		579	2362	0.92
8:00 AM		131	14	5		16	36	387		589	2356	0.92
8:15 AM		119	16	13		10	34	362		554		
8:30 AM		135	17	18		17	43	410		640		
8:45 AM		111	30	7		19	48	358		573		
Total	0	1012	143	79	0	115	298	3093	0			
7:00-8:00 AM	0	516	66	36	0	53	137	1576	0	2384		
	Wednesday	September 26	, 2018									
11:30 AM		154	53	35		40	60	200		542	2116	0.96
11:45 AM		141	50	29		39	42	171		472	2088	0.95
Noon		181	51	36		42	63	178		551	2124	0.96
12:15 PM		154	42	37		58	56	204		551	2122	0.96
12:30 PM		174	34	26		35	42	203		514	2021	0.92
12:45 PM		164	46	27		46	46	179		508		
1:00 PM		196	53	31		36	42	191		549		
1:15 PM		171	22	17		31	32	177		450		
Total	0	1335	351	238	0	327	383	1503	0			
Noon-1:00 PM	0	673	173	126	0	181	207	764	0	2124		
	Wednesday	September 26	, 2018									
4:00 PM		381	10	13		27	29	230		690	2704	0.96
4:15 PM		344	18	8		25	18	225		638	2697	0.96
4:30 PM		396	13	9		25	26	236		705	2766	0.98
4:45 PM		389	11	5		26	13	227		671	2723	0.96
5:00 PM		405	10	7		16	31	214		683	2752	0.97
5:15 PM		404	9	6		18	30	240		707		
5:30 PM		361	19	11		39	23	209		662		
5:45 PM		393	21	8		21	29	228		700		
Total	0	3073	111	67	0	197	199	1809	0			
4:30-5:30 PM	0	1594	43	27	0	85	100	917	0	2766		



233 South Wacker Drive Suite 800 Chicago, Illinois 60606

312 454 0400 www.cmap.illinois.gov September 17, 2018

Stephen B. Corcoran, PE, PTOE Director of Traffic Engineering Eriksson Engineering Associates, Ltd. 145 Commerce Drive Grayslake, IL 60030

Subject: Naper Boulevard @ Ridgeland Avenue IDOT

Dear Mr. Corcoran:

In response to a request made on your behalf and dated September 14, 2018, we have developed year 2040 average daily traffic (ADT) projections for the subject location.

	Current	
ROAD SEGMENT	Volumes (2016)	Year 2040 ADT
Naperville Rd (North Leg)	50,330	55,600
Naper Blvd (South Leg)	33,100	36,600
Nprvl-Wheaton Rd (West Leg)	17,180	19,000
Ridgeland Ave (East Leg)	3,560	3,930

Traffic projections are developed using existing ADT data provided in the request letter and the results from the March 2018 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2040 socioeconomic projections and assumes the implementation of the GO TO 2040 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

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

Sincerely,

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

cc: Quigley (IDOT) S:\AdminGroups\ResearchAnalysis\2018cy_TrafficForecasts\Naperville\du-43-18\du-43-18.docx

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Approach Movement			L	Т	R	L	Т		R	L	Т	R	L	Т	R
Assigned Movement						3			18		2	12	1	6	
Adjusted Flow Rate (v), veh/h					55			38		1642	143	69	538	
Adjusted Saturation Flo	ow Rate (s), veh/h/l	n				1767		1	572		1766	1572	1767	1766	
Queue Service Time (g s), S					4.6			3.5		0.0	2.6	0.9	0.0	
Cycle Queue Clearance	e Time (<i>g c</i>), s					4.6		3	3.5		0.0	2.6	0.9	0.0	
Green Ratio (g/C)						0.04		0	0.04		0.83	0.83	0.86	0.87	
Capacity (c), veh/h						77			69		2923	1301	332	3084	
Volume-to-Capacity Ra	tio(X)					0.714		0.	.545		0.562	0.110	0.207	0.174	
Back of Queue (Q), ft/	In (95 th percentile)					100.9		6	67.2		14.7	32.1	9.3	2.4	
Back of Queue (Q), ve	eh/In (95 th percenti	le) ila)				3.9		2	2.6		0.6	1.3	0.4	0.1	
Queue Storage Ratio (RQ) (95 th percent	ile)				1.01		0).34 70.2		0.00	0.32	0.05	0.00	
Uniform Delay (d 1), s	/ven					70.8		1	0.3		0.0	2.5	1.6	0.0	
Incremental Delay (d 2), s/ven					4.5			2.5		0.8	0.2	0.1	0.1	
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Phase Duration	n, S								20.8	_			89.7	9.5		99.2
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Max Allow Head	dway(/	MAH), s							3.2	_			0.0	3.1		0.0
Queue Clearance Time (g_s), s									14.6	_				5.3		
Green Extensio	on Time	(ge),s							0.2	_			0.0	0.2		0.0
Phase Call Pro	bability								1.00					1.00)	
Max Out Proba	bility								0.85					0.00)	
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Approach Move	ement			L	<u> </u>	R	L		R		L		R	L		R
Assigned Move	ment	· · · ·					3		18			2	12	1	6	
Adjusted Flow I	Rate (v), veh/h					189		131	1		796	216	180	701	
Adjusted Satura	ation Flo	w Rate (s), veh/h/l	n				1767		157	2		1766	1572	1767	1766	
Queue Service	Time (g	g s), S					12.6		9.6	5		2.9	5.9	3.3	0.0	
Cycle Queue C	learance	e Time (<i>g c</i>), s					12.6		9.6	5		2.9	5.9	3.3	0.0	
Green Ratio (g	ŋ/C)					<u> </u>	0.12		0.12	2		0.69	0.69	0.76	0.77	
Capacity (c), v	/eh/h						218		194	4		2449	1090	594	2729	
Volume-to-Cap	acity Ra	tio (X)					0.865		0.67	77		0.325	0.198	0.303	0.257	
Back of Queue	(Q), ft/	In (95 th percentile)					278.6		180	.9		39.8	87.4	46.9	4	
Back of Queue	(Q), ve	eh/In (95 th percenti	le)				10.9		7.1			1.6	3.4	1.8	0.2	
Queue Storage	Ratio (RQ) (95 th percent	ile)				2.79		0.9	0		0.00	0.87	0.25	0.00	
Uniform Delay	(d 1), s/	/veh					51.6		50.	3		1.5	6.5	4.1	0.0	
Incremental De	lay (<i>d</i> 2), s/veh					18.9		3.5	5		0.4	0.4	0.1	0.2	
Initial Queue De	elay (<i>d</i>	з), s/veh					0.0		0.0)		0.0	0.0	0.0	0.0	
Control Delay (d), s/veh							70.5		53.	8		1.9	7.0	4.2	0.2	
Level of Service (LOS)							E		D			Α	Α	Α	А	
Approach Dela	Approach Delay, s/veh / LOS			0.0			63.6		Е		2.9		А	1.0		А
Intersection De	Intersection Delay, s/veh / LOS					1	.0							В		
Multime del D														0.0		
Nutrimodal Re	Iltimodal Results				EB			VV	D			NB			SB	
Pedestrian LOS	S Score	/ LUS								_						
BICYCLE LOS SC	core / LC	5														

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		псэ	/ Sig		um	101300		631	uns S	Jun	mar	y			_																					
									1					1 -																						
General Inform	nation	1							Inters	sect	ion Info	ormatio	on	_		× (<u>.</u>																				
Agency		EEA							Durati	ion,	h	0.25				×																				
Analyst		SBC		Analys	is Dat	e 10/16	/2018		Area -	Туре	9	Other				* *																				
Jurisdiction		Naperville		Time P	eriod	PM P	eak		PHF			0.98		*		_ _ ↓																				
Urban Street		Naper Boulevard		Analys	is Yea	ar 2018			Analy	vsis I	Period	1> 7:0	00	7		¥ /																				
Intersection		Tower Crossing		File Na	me	Nape	⁻ 2018 P	M.xu	ls						ttr																					
Project Descrip	tion	Existing Conditions												ľ	41471	* (*																				
	_						1				1																									
Demand Inform	nation				EB		<u> </u>	V	VB		<u> </u>	NB		<u> </u>	SB																					
Approach Move	ement			L	Т	R	L		T	R		Т	R	L	T	R																				
Demand (v), veh/h						85		2	27		917	100	43	1594																						
Signal Informa	tion			lí			5																													
	150.0	Boforonao Bhasa	2	Ē	1 12	- - + ¥		コ				ļ		12																						
Offect o	150.0	Reference Pridse	Z End			1	7						1	2	3	4																				
Unseerdingtod	U No		Enu	Green	2.5	121.7	′ 9.3	0.	0 0	0.0	0.0					<u>~</u>																				
Earoo Mada	Fixed	Simult Cop N/S	On	Yellow	3.0	4.5	4.5	0.	0 0).0	0.0	_	_		-	✓ _																				
Force wode	Fixed	Simult. Gap N/S	On	Reu	1.0	2.0	1.5	0.	0 0).0	0.0		5	0		°																				
Timor Posults			_	EBI		EDT	\//P		\//DT	r I	NDI		NRT	CDI		CRT																				
Accident Accident				EDL	·	EDI			0		INDL	-	2		·	6																				
Assigned Phase	U			<u> </u>			<u> </u>		0.0				2	10	\rightarrow	0																				
Case Number				<u> </u>			<u> </u>		9.0				1.3	1.0		4.0																				
Change Duration							<u> </u>	-	15.3				20.2	0.5	<u> </u>	34.7																				
Change Period	(Y+R)	c), S					<u> </u>		0.0			_	0.0	4.0	\rightarrow	0.0																				
Max Allow Headway (MAH), s							<u> </u>	_	3.2				0.0	3.1	\rightarrow	0.0																				
Queue Clearance Time (g s), s							<u> </u>		9.3			_	0.0	2.6		0.0																				
Green Extensio	hobility	(ge), s					<u> </u>	_	0.1			_	0.0	0.0		0.0																				
Phase Call Pro								_	0.99			_		0.84	<u></u>																					
Max Out Proba	DIIIty								0.04					0.00	,																					
Movement Gro	oup Res	sults	_		EB			W	B			NB			SB																					
Approach Move	ement			1	 T	R	1	Т		2	1	Т	R		T	R																				
Assigned Move	ment			_	· ·		3	<u> </u>	18	8	_	2	12	1	6																					
Adjusted Flow F	Rate (v), veh/h	_			-	87		28	8		936	102	44	1627																					
Adjusted Satura	ation Flo	w Rate (s) veh/h/l	n				1767		157	72		1766	1572	1767	1766																					
Queue Service	Time (a	7 s). S				1	7.3		2.	5		0.0	2.0	0.6	0.0																					
Cycle Queue C	learance	e Time (a_c) s					7.3		2!	5		0.0	2.0	0.6	0.0																					
Green Ratio (o	V(C)	o milo (g o), o				1	0.06		0.0	0 16		0.81	0.81	0.84	0.85																					
Capacity (c)	/eh/h																										109		97	7		2867	1276	559	3020	
Volume-to-Cap	acity Ra	tio (X)				1	0 795		0.28	84		0.326	0.080	0.078	0.539																					
Back of Queue	(Q) ft/	(In (95 th percentile)					158		47	2		5.6	25.6	7.3	13.4																					
Back of Queue	(Q), ve	eh/ln (95 th percenti	le)			1	6.2		1.8	8		0.2	1.0	0.3	0.5																					
Queue Storage	Ratio (RQ) (95 th percent	ile)			1	1.58		0.2	24		0.00	0.26	0.04	0.00																					
Uniform Delay	(d1), s	/veh	,			1	69.4		67.	.2		0.0	2.9	1.9	0.0																					
Incremental De	lay (d 2), s/veh					4.9		0.0	6		0.3	0.1	0.0	0.7																					
Initial Queue De	elay (d	з), s/veh				1	0.0		0.0	0		0.0	0.0	0.0	0.0																					
Control Delay (Control Delay (d), s/veh						74.3		67.	.8		0.3	3.0	2.0	0.7																					
Level of Service	Level of Service (LOS)						E		E			А	Α	Α	Α																					
Approach Delay	, s/veh	/ LOS		0.0		R.	72.7	-	E		0.6		A	0.7		А																				
Intersection De	lay, s/ve	h / LOS				3	.6							A																						
Multimodal Re	Multimodal Results				EB			W	В			NB			SB																					
Pedestrian LOS	S Score	/ LOS																																		
Bicycle LOS Sc	ore / LC	DS																																		

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HCS7 Two-Way Stop-Control Report													
General Information		Site Information											
Analyst	SBC	Intersection	N-W Rd/Ogden										
Agency/Co.	EEA	Jurisdiction	Naperville										
Date Performed	10/16/2018	East/West Street	Ogden Mall										
Analysis Year	2018	North/South Street	N-W Road										
Time Analyzed	AM Peak	Peak Hour Factor	0.85										
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25										
Project Description	Future												
Lanes													



Approach		Eastb	ound			West	ound			North	bound		Southbound			
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	1	0		0	0	0	0	0	2	0	0	0	2	0
Configuration			LR							LT	Т				Т	TR
Volume (veh/h)		8		2						4	555				286	1
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		()													
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up He																
Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.86		6.96						4.16						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						
Delay, Queue Length, and	l Leve	l of Se	ervice													
Flow Rate, v (veh/h)			12							5						
Capacity, c (veh/h)			432							1211						
v/c Ratio			0.03							0.00						
95% Queue Length, Q ₉₅ (veh)			0.1							0.0						
Control Delay (s/veh)			13.6							8.0						
Level of Service (LOS)			В							А						
Approach Delay (s/veh)	13.6							0.1								
Approach LOS		E	3							I	3		В			

	HCS7 Two-Way Stop	o-Control Report	
General Information		Site Information	
Analyst	SBC	Intersection	N-W Rd/Ogden
Agency/Co.	EEA	Jurisdiction	Naperville
Date Performed	10/16/2018	East/West Street	Ogden Mall
Analysis Year	2018	North/South Street	N-W Road
Time Analyzed	Midday	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Future		
Lanes			



Approach		Eastb	ound			Westb	ound			North	oound		Southbound				
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	1	0		0	0	0	0	0	2	0	0	0	2	0	
Configuration			LR							LT	Т				Т	TR	
Volume (veh/h)		11		10						8	524				658	4	
Percent Heavy Vehicles (%)		3		3						3							
Proportion Time Blocked																	
Percent Grade (%)		()														
Right Turn Channelized																	
Median Type Storage		Undivided															
Critical and Follow-up He	adwa	ys															
Base Critical Headway (sec)		7.5		6.9						4.1							
Critical Headway (sec)		6.86		6.96						4.16							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.53		3.33						2.23							
Delay, Queue Length, and	Leve	l of Se	ervice														
Flow Rate, v (veh/h)			22							8							
Capacity, c (veh/h)			343							888							
v/c Ratio			0.06							0.01							
95% Queue Length, Q ₉₅ (veh)			0.2							0.0							
Control Delay (s/veh)			16.2							9.1							
Level of Service (LOS)			С							А							
Approach Delay (s/veh)		16	5.2						0.2								
Approach LOS		(2							В				В			

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	HCS7 Two-Way Stop	o-Control Report	
General Information		Site Information	
Analyst	SBC	Intersection	N-W Rd/Ogden
Agency/Co.	EEA	Jurisdiction	Naperville
Date Performed	10/16/2018	East/West Street	Ogden Mall
Analysis Year	2018	North/South Street	N-W Road
Time Analyzed	PM Peak	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Future		
Lanes			



Approach		Eastb	ound			West	oound			North	bound		Southbound				
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	1	0		0	0	0	0	0	2	0	0	0	2	0	
Configuration			LR							LT	Т				Т	TR	
Volume (veh/h)		9		7						8	397				608	6	
Percent Heavy Vehicles (%)		3		3						3							
Proportion Time Blocked																	
Percent Grade (%)		()														
Right Turn Channelized																	
Median Type Storage	Undivided																
Critical and Follow-up He	adwa	ys															
Base Critical Headway (sec)		7.5		6.9						4.1							
Critical Headway (sec)		6.86		6.96						4.16							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.53		3.33						2.23							
Delay, Queue Length, and	l Leve	l of Se	ervice														
Flow Rate, v (veh/h)			18							9							
Capacity, c (veh/h)			360							900							
v/c Ratio			0.05							0.01							
95% Queue Length, Q ₉₅ (veh)			0.2							0.0							
Control Delay (s/veh)			15.5							9.0							
Level of Service (LOS)			С							А							
Approach Delay (s/veh)		15	5.5						0.2								
Approach LOS		(2							l	3				3		

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	HCS7 Two-Way Stop	p-Control Report	
General Information		Site Information	
Analyst	SBC	Intersection	Internal/East Drives
Agency/Co.	EEA	Jurisdiction	Naperville
Date Performed	10/25/2018	East/West Street	Internal Collector
Analysis Year	2024	North/South Street	West Drives
Time Analyzed	АМ	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Future		
Lanes			
		₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩	

j																		
Approach		Eastb	ound			West	bound			North	bound		Southbound					
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	1	0		0	1	0		0	1	0		
Configuration			LTR				LTR				LTR				LTR			
Volume (veh/h)		82	30	1		1	30	50		1	1	1		84	1	82		
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3		
Proportion Time Blocked																		
Percent Grade (%)										()		0					
Right Turn Channelized																		
Median Type Storage		Undivided																
Critical and Follow-up He	adwa	dways																
Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2		
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23		
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3		
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33		
Delay, Queue Length, and	l Leve	l of Se	ervice															
Flow Rate, v (veh/h)		89				1					3				182			
Capacity, c (veh/h)		1503				1571					662				780			
v/c Ratio		0.06				0.00					0.00				0.23			
95% Queue Length, Q₅₅ (veh)		0.2				0.0					0.0				0.9			
Control Delay (s/veh)		7.5		0.5		7.3		0.0			10.5				11.0			
Level of Service (LOS)		А		А		А		А			В				В			
Approach Delay (s/veh)		5	.6			0	.1			10).5		11.0					
Approach LOS										E	3		В					

		o Control Bonort	
General Information		Site Information	
Analyst	SBC	Intersection	Internal/East Drives
Agency/Co.	EEA	Jurisdiction	Naperville
Date Performed	10/23/2018	East/West Street	Internal Collector
Analysis Year	2024	North/South Street	West Drives
Time Analyzed	Midday	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Future		
Lanes			
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Approach	Easthound Wasthound									North	aound		Southbound					
Approach		Eastb	ouna			west	ouna			North	oouna			South	Jouna			
Movement	U	L	T	R	U	L	Т	R	U	L	T	R	U	L	Т	R		
Priority	10	1	2	3	4U	4	5	6		7	8	9		10	11	12		
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0		
Configuration			LTR				LTR				LTR				LTR			
Volume (veh/h)		59	25	44		66	25	38		34	1	33		63	1	59		
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3		
Proportion Time Blocked																		
Percent Grade (%)									()		0						
Right Turn Channelized																		
Median Type Storage		Undivided																
Critical and Follow-up He	adwa	dways																
Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2		
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23		
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3		
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33		
Delay, Queue Length, and	l Leve	l of Se	ervice															
Flow Rate, v (veh/h)		64				72					74				134			
Capacity, c (veh/h)		1526				1518					648				669			
v/c Ratio		0.04				0.05					0.11				0.20			
95% Queue Length, Q ₉₅ (veh)		0.1				0.1					0.4				0.7			
Control Delay (s/veh)		7.5		0.3		7.5		0.4			11.3				11.7			
Level of Service (LOS)		А		А		А		А			В				В			
Approach Delay (s/veh)		3	.6			4.	.0			11	3		11.7					
Approach LOS										E	3				3			

	HCS7 Two-Way Sto	p-Control Report	
General Information		Site Information	
Analyst	SBC	Intersection	Internal/East Drives
Agency/Co.	EEA	Jurisdiction	Naperville
Date Performed	10/23/2018	East/West Street	Internal Collector
Analysis Year	2024	North/South Street	West Drives
Time Analyzed	PM	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Future		
Lanes			
	A A A A A A A A A A A A A A A A A A A		

Approach		Eastb	ound			West	oound			North	oound		Southbound				
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	1	0		0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		64	28	28		42	38	40		18	1	21		69	1	64	
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3	
Proportion Time Blocked																	
Percent Grade (%)										()			()		
Right Turn Channelized																	
Median Type Storage	Undivided																
Critical and Follow-up He	adway	ys															
Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2	
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23	
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3	
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33	
Delay, Queue Length, and	Leve	l of Se	ervice														
Flow Rate, v (veh/h)		70				46					43				146		
Capacity, c (veh/h)		1505				1536					690				702		
v/c Ratio		0.05				0.03					0.06				0.21		
95% Queue Length, Q ₉₅ (veh)		0.1				0.1					0.2				0.8		
Control Delay (s/veh)		7.5		0.4		7.4		0.2			10.6				11.5		
Level of Service (LOS)		А		А		А		А			В				В		
Approach Delay (s/veh)		4.	.2	2.7					10.6				11.5				
Approach LOS										E	3		В				

	HCS7 Two-Way Stop	o-Control Report	
General Information		Site Information	
Analyst	SBC	Intersection	Internal/East Drives
Agency/Co.	EEA	Jurisdiction	Naperville
Date Performed	10/23/2018	East/West Street	Internal Collector
Analysis Year	2024	North/South Street	East Drives
Time Analyzed	AM Peak	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Future	·	
Lanes	- -		



Approach		Eastb	ound			Westb	ound			North	bound		Southbound			
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	1	0		1	1	0		0	1	0
Configuration		LT						TR		L		TR			LR	
Volume (veh/h)		30	84				50	118		1	1	1		84		30
Percent Heavy Vehicles (%)		3								3	3	3		3		3
Proportion Time Blocked																
Percent Grade (%)										()		0			
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up He	adway	adways														
Base Critical Headway (sec)		4.1								7.1	6.5	6.2		7.1		6.2
Critical Headway (sec)		4.13								7.13	6.53	6.23		7.13		6.23
Base Follow-Up Headway (sec)		2.2								3.5	4.0	3.3		3.5		3.3
Follow-Up Headway (sec)		2.23								3.53	4.03	3.33		3.53		3.33
Delay, Queue Length, and	Leve	l of Se	ervice													
Flow Rate, v (veh/h)		33								1		2			124	
Capacity, c (veh/h)		1386								624		713			715	
v/c Ratio		0.02								0.00		0.00			0.17	
95% Queue Length, Q ₉₅ (veh)		0.1								0.0		0.0			0.6	
Control Delay (s/veh)		7.7								10.8		10.1			11.1	
Level of Service (LOS)		A					ВВ						В			
Approach Delay (s/veh)		2.	2						10.3				11.1			
Approach LOS									В				В			

HCS7 Two-Way Stop-Control Report											
General Information		Site Information									
Analyst	SBC	Intersection	Internal/East Drives								
Agency/Co.	EEA	Jurisdiction	Naperville								
Date Performed	10/25/2018	East/West Street	Internal Collector								
Analysis Year	2024	North/South Street	East Drives								
Time Analyzed	Midday	Peak Hour Factor	0.92								
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25								
Project Description	Future										
Lanes											



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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Number of Lanes	0	0	1	0	0	0	1	0		1	1	0		0	1	0	
Configuration		LT						TR		L		TR			LR		
Volume (veh/h)		25	96				104	88		40	1	33		36		25	
Percent Heavy Vehicles (%)		3								3	3	3		3		3	
Proportion Time Blocked																	
Percent Grade (%)										()			()		
Right Turn Channelized																	
Median Type Storage				Undi	vided												
Critical and Follow-up He	adwa	ys															
Base Critical Headway (sec)		4.1								7.1	6.5	6.2		7.1		6.2	
Critical Headway (sec)		4.13								7.13	6.53	6.23		7.13		6.23	
Base Follow-Up Headway (sec)		2.2								3.5	4.0	3.3		3.5		3.3	
Follow-Up Headway (sec)		2.23							3.53	4.03	3.33		3.53		3.33		
Delay, Queue Length, and	l Leve	l of Se	ervice														
Flow Rate, v (veh/h)		27								43		37			66		
Capacity, c (veh/h)		1356								590		928			675		
v/c Ratio		0.02								0.07		0.04			0.10		
95% Queue Length, Q ₉₅ (veh)		0.1								0.2		0.1			0.3		
Control Delay (s/veh)		7.7								11.6		9.0			10.9		
Level of Service (LOS)	A								В		А			В			
Approach Delay (s/veh)		1	.7					10.4				10.9					
Approach LOS									В					В			

HCS7 Two-Way Stop-Control Report										
General Information		Site Information								
Analyst	SBC	Intersection	Internal/East Drives							
Agency/Co.	EEA	Jurisdiction	Naperville							
Date Performed	10/25/2018	East/West Street	Internal Collector							
Analysis Year	2024	North/South Street	East Drives							
Time Analyzed	PM	Peak Hour Factor	0.92							
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25							
Project Description	Future									
Lanes										



Approach		Eastb	ound			Westb	bound			North	bound			South	oound		
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	1	0		1	1	0		0	1	0	
Configuration		LT						TR		L		TR			LR		
Volume (veh/h)		28	90				82	88		10	1	21		69		28	
Percent Heavy Vehicles (%)		3								3	3	3		3		3	
Proportion Time Blocked																	
Percent Grade (%)										()			()		
Right Turn Channelized																	
Median Type Storage				Undi	vided												
Critical and Follow-up He	adwa	ys															
Base Critical Headway (sec)		4.1								7.1	6.5	6.2		7.1		6.2	
Critical Headway (sec)		4.13								7.13	6.53	6.23		7.13		6.23	
Base Follow-Up Headway (sec)		2.2								3.5	4.0	3.3		3.5		3.3	
Follow-Up Headway (sec)		2.23								3.53	4.03	3.33		3.53		3.33	
Delay, Queue Length, and	Leve	l of Se	ervice														
Flow Rate, v (veh/h)		30								11		24			105		
Capacity, c (veh/h)		1384								607		926			679		
v/c Ratio		0.02								0.02		0.03			0.16		
95% Queue Length, Q ₉₅ (veh)		0.1								0.1		0.1			0.5		
Control Delay (s/veh)		7.7								11.0		9.0			11.3		
Level of Service (LOS)	A									В		А			В		
Approach Delay (s/veh)		2	.0						9.6				11.3				
Approach LOS									A					В			

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General Inform	nation	1								Int	tersect	ion Info	ormati	ion	_	ALANT.	ta l <u>a</u>		
Agency		EEA		1						Dι	uration,	h	0.25				*		
Analyst		SBC		Analys	is Da	ate 1	0/16/2	2018		Ar	еа Тур	e	Othe	er	×		<u>∧</u> <u>∧</u> ≻		
Jurisdiction		Naperville		Time F	Perio	d A	M Pe	ak		PH	HF		0.96		* *		€ ‡		
Urban Street		Naper Boulevard		Analys	is Ye	ar 2	024			Ar	nalysis	Period	1> 7	:00	<u>1</u> 4		7 7		
Intersection		Tower Crossing		File Na	ame	N	laper	2024 A	M.xu	IS						nttr			
Project Descrip	tion	Future Conditions													1	* 1 * *	7 4		
	_														1				
Demand Inform	nation				El	B			N	VB			NE	3		SB	1		
Approach Move	ement			L	Т		R	L		Т	R	L	Т	R	L	Т	R		
Demand (v), v	eh/h			84	14	4	70	53	1	4	36	70	157	6 137	66	516	84		
	41 o 10				1 1	1		1 115		B									
Signal Informa				-		2		124 M		- 2	1.2				KŤ2				
Cycle, s	150.0	Reference Phase	2		5		517	' <u>5</u> †ř	7	Ľ	'R'	2		1	2	3			
Offset, s	0	Reference Point	End	Green	3.5	2	2.2	106.5	5 5.	6	12.2	0.0		_			<u>⊼</u>		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.0	0	0.0	4.5	3.	0	4.0	0.0	_	\mathbf{Y}			Y		
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	C).0	2.0	1.	0	1.5	0.0	- 11	5	6	7	8		
							_										0.5.7		
Timer Results				EBL	-	EB	31	WBI		V	VBI	NBL	- -	NBI	SBL	-	SBI		
Assigned Phase	e			\rightarrow	4		3			8	5		2	1	_	6			
Case Number					6.3	3	1.0		2	4.0	1.1		3.0	1.1		4.0			
Phase Duration	, S				17.	.7	9.6		2	27.3	9.7		115.2	7.5		113.0			
Change Period	, (Y+R	c), S			6		2	4.0		6	6.0	4.0		6.5	4.0		6.5		
Max Allow Head	dway(/	<i>MAH</i>), s				3.2	2	3.1		3	3.2	3.1		0.0	3.1		0.0		
Queue Clearan	ce Time	e (g s), s				11.	4	6.2		6	6.1	3.6			3.6				
Green Extensio	n Time	(ge), s				0.3	3	0.0		(0.4	0.1		0.0	0.1		0.0		
Phase Call Pro	bability					1.0	0	0.90)	1	.00	0.95	;		0.94	۱			
Max Out Proba	bility					0.0	2	0.77	'	0	0.00	0.00			0.00)			
	_	•													_				
Movement Gro	oup Res	sults			EE	3	_		W	В	_		NB			SB			
Approach Move	ement			L		_	R	L		\rightarrow	R	L		R	L		R		
Assigned Move	ment			7	4		14	3	8	\rightarrow	18	5	2	12	1	6	16		
Adjusted Flow I	Rate (v), veh/h		88	88			55	52	2		73	1642	143	69	319	306		
Adjusted Satura	ation Flo	ow Rate (s), veh/h/l	n	1374	165	2		1767	168	32		1810	1859	1572	1767	1856	1765		
Queue Service	Time (g	g s), S		9.4	7.7	7		4.2	4.1	1		1.6	5.4	4.1	1.6	1.8	4.0		
Cycle Queue C	learance	e Time (<i>g c</i>), s		9.4	7.7	7		4.2	4.1	1		1.6	5.4	4.1	1.6	1.8	4.0		
Green Ratio (g	/C)			0.08	0.0	8		0.13	0.1	4		0.75	0.72	0.72	0.73	0.71	0.71		
Capacity (c), v	/eh/h			155	129	9		148	23	9		672	2696	1140	294	1318	1253		
Volume-to-Capa	acity Ra	tio (X)		0.565	0.68	31		0.373	0.21	18		0.108	0.609	0.125	0.234	0.242	0.244		
Back of Queue	(Q), ft/	In (95 th percentile)		150.9	150	.7		88.2	79.	5		25.1	58.4	63.6	26.8	32.4	62.7		
Back of Queue	(Q), ve	eh/In (95 th percenti	le)	6.0	6.0)		3.4	3.2	2		1.0	2.3	2.5	1.0	1.3	2.5		
Queue Storage	Ratio (RQ) (95 th percent	ile)	3.02	0.0	0		0.88	0.0	0		0.24	0.00	0.64	0.14	0.00	0.00		
Uniform Delay	(d 1), s	/veh		68.1	67.	3		59.1	57.	0		5.0	0.8	6.2	5.7	1.2	2.9		
Incremental De	lay (<i>d</i> 2), s/veh		1.2	2.4	1		0.6	0.2	2		0.0	1.0	0.2	0.2	0.4	0.5		
Initial Queue De	elay(d	з), s/veh	0.0	0.0)		0.0	0.0)		0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay (Delay (d), s/veh				69.	7		59.7	57.	2		5.0	1.8	6.5	5.8	1.6	3.3		
Level of Service	evel of Service (LOS)				E			Е	E			A	Α	A	Α	A	A		
Approach Delay, s/veh / LOS				69.5		E		58.5	5		E	2.3		А	2.8		А		
Intersection De	lay, s/ve	h / LOS					8.	7							A				
Multimodal Results					EE	3			W	В			NB			SB			
Pedestrian LOS	S Score	/ LOS																	
Bicycle LOS Sc	ore / LC	DS																	

		псэ	7 Sig	nalize	an	ners	seci		esi	un	s Jui	nmar	у						
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General Inform	nation									In	tersect	ion Infe	ormati	on		▲丛ゆ↓↓ ↓↓↓	4 L <u>4</u>		
Agency		EEA								D	uration,	h	0.25				K_		
Analyst		SBC		Analys	is Da	ate 10	0/16/2	2018		A	rea Typ	e	Othe	r	<u></u> →		***		
Jurisdiction		Naperville		Time F	Perio	M b	lidday	/ Peak		Pl	HF		0.96				↓		
Urban Street		Naper Boulevard		Analys	is Ye	ear 20	024			A	nalysis	Period	1> 7:	00	7		*		
Intersection		Tower Crossing		File Na	ame	Na	aper	2024 N	1id.xu	us						httr			
Project Descrip	tion	Future Conditions													1	* 1 * * 1	T (T		
	_											1							
Demand Inform	nation				EI	B			V	VB		<u> </u>	NB		<u> </u>	SB			
Approach Move	ement			L	Т		R	L		Т	R	L	Т	R	L	Т	R		
Demand (v), v	eh/h			96	10	6	80	181	1	16	126	80	764	207	173	673	96		
	41.0.00				1 1			1 11:		E		8							
Signal Informa			2	5		9 P	312	sk∱,a		- Sec	1.2	<u>ا</u>	ļ		KŤ Z				
Cycle, s	120.0	Reference Phase	2		5			51	7	Ľ	'R'	6		1	2	3			
Offset, s	0	Reference Point	End	Green	5.6	1	.3	71.6	9.	2	12.3	0.0					5		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.0	0	0.0	4.5	3.	0	4.0	0.0	_	く 4			Y		
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0	0.0	2.0	1.	0	1.5	0.0		5	6	7	8		
							_ 1												
Timer Results				EBL		EB	Т	WBI		V	NВТ	NBL	-	NBT	SBL		SBT		
Assigned Phase	e				4	_	3			8	5		2	1		6			
Case Number						6.3	3	1.0			4.0	1.1		3.0	1.1		4.0		
Phase Duration	, S				17.8	8	13.2	2	3	31.0	9.6		78.1	10.9		79.4			
Change Period	, (Y+R	c), S				6.0)	4.0			6.0	4.0		6.5	4.0		6.5		
Max Allow Head	dway(/	<i>MAH</i>), s				3.3	3	3.1			3.3	3.1		0.0	3.1		0.0		
Queue Clearan	ce Time	e (g s), s				11.3	3	11.2	2	1	11.4	4.1			6.7				
Green Extensio	n Time	(g _e), s				0.5	5	0.0			0.7	0.1		0.0	0.2		0.0		
Phase Call Pro	bability					1.00	0	1.00)	1	1.00	0.94			1.00				
Max Out Proba	bility					0.10	0	1.00)	C	0.00	0.00)		0.00)			
	_	-			_					_		_							
Movement Gro	oup Res	sults			EE	3	_		W	B			NB			SB	-		
Approach Move	ement			L	T	F	R	L	Т		R	L	T	R	L	Т	R		
Assigned Move	ment			7	4	1	14	3	8		18	5	2	12	1	6	16		
Adjusted Flow I	Rate (v), veh/h		100	100)		189	14	8		83	796	216	180	409	392		
Adjusted Satura	ation Flo	ow Rate (s), veh/h/l	n	1259	165	2		1767	163	38		1810	1859	1572	1767	1856	1774		
Queue Service	Time (g	g s), S		9.3	7.0)		9.2	9.4	4		2.1	7.4	7.7	4.7	7.1	8.8		
Cycle Queue C	learance	e Time (<i>g c</i>), s		9.3	7.0)		9.2	9.4	4		2.1	7.4	7.7	4.7	7.1	8.8		
Green Ratio (g	/C)			0.10	0.1	0		0.19	0.2	21		0.64	0.60	0.60	0.65	0.61	0.61		
Capacity (c), v	/eh/h			184	162	2		247	34	1		501	2219	938	524	1127	1078		
Volume-to-Capa	acity Ra	tio (X)		0.544	0.61	6		0.763	0.43	34		0.166	0.359	0.230	0.344	0.363	0.364		
Back of Queue	(Q), ft/	(In (95 th percentile)		133.9	132	2		87.8	171	.9		34.7	114.4	125.9	78.5	115.3	138.3		
Back of Queue	(Q), ve	eh/In (95 th percenti	le)	5.4	5.3	3		3.4	6.9	9		1.4	4.5	4.9	3.1	4.5	5.5		
Queue Storage	Ratio (RQ) (95 th percent	ile)	3.35	0.0	0		0.88	0.0	0		0.33	0.00	1.26	0.42	0.00	0.00		
Uniform Delay	(d 1), s	/veh		53.0	51.	9		46.1	41.	.3		8.4	5.7	11.3	8.3	5.2	6.8		
Incremental De	lay (<i>d</i> 2), s/veh		0.9	1.4	1		11.9	0.3	3		0.1	0.5	0.6	0.1	0.9	1.0		
Initial Queue De	elay(d	з), s/veh		0.0	0.0)		0.0	0.0	D		0.0	0.0	0.0	0.0	0.0	0.0		
Control Delay (ontrol Delay (<i>d</i>), s/veh				53.	4		58.0	41.	7		8.5	6.2	11.9	8.4	6.1	7.7		
Level of Service	Level of Service (LOS)				D			Е	D			A	Α	В	A	A	A		
Approach Delay	, s/veh	/ LOS		53.6		D		50.8	3		D	7.5		А	7.2		А		
Intersection De	lay, s/ve	h / LOS					16	.5							B				
Multimodal Results				EE	3			W	В			NB			SB				
Pedestrian LOS	S Score	/ LOS																	
Bicycle LOS Sc	ycle LOS Score / LOS																		

Intersection Information Duration, n 0.25 Agency EEA Analysis Date 10/16/2018 Area Type Other Other Jurisdiction Noper Boulevand Analysis Vera Other Other Other Jurisdiction Note Crossing File Name Name Second 10 Other Crossing File Name NB Second 10 Second 10 Other Crossing File Name Second 10 Second 10 Second 10			1100	7 Sig	nanze	un	ne	13601		.03	un	3 Oui	innai j	У										
Demand (P) EEA Analysis Deta Tork Sector HIV Hauton Molescular Link Sector Jurisdiction Naper Boulevard Analysis Deta 10/16/2018 Area Type Other Jurisdiction Intersection Intersection Intersection Sector Intersection Intersection Intersection Intersection Sector Intersection Intersection <td< td=""><td>Conoral Inform</td><td>action</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>In</td><td>torcost</td><td>ion Inf</td><td>ormoti</td><td></td><td></td><td>47411</td><td>4 L.</td></td<>	Conoral Inform	action									In	torcost	ion Inf	ormoti			47411	4 L.						
Index EEA Analysis Data 10/16/2018 Area Type Other Other Jurisdiction Naper Bouleward Analysis Date 10/16/2018 Area Type Other 0.96 Untaba Street Naper Bouleward Analysis Verz (2004) Analysis Verz (2004) Naper Bouleward Analysis Verz (2004) Naper Bouleward Analysis Verz (2004) Naper Bouleward Naper Boulew	General Inform	nation										itersect		ormatio	on	- 1	444							
Arrayset DetC Arrayset with the Period Note of the Period	Agency		EEA		Arrahis	:- D	. 4	40/40/	004.0			uration,	n -	0.25	-			K. X						
Juriadiction NaperVise Inter Period PM Peak PHI PHI U36 Total State	Analyst		SBC		Analys		ate	10/16/	2018		A	rea Typ	e	Other		-		******						
Undary Strete Napper SouleValo Analysis Year 2/2/4 Analysis Year 2/2/4 Analysis Year 2/2/4 Napper Source <	Jurisdiction		Naperville		Time F		a		ак			HF 	D · · ·	0.96		X		¥ء ج						
Intersection Driver Crossing File Name Naper 2024 PM xus NB NB <t< td=""><td>Urban Street</td><td></td><td>Naper Boulevard</td><td></td><td>Analys</td><td>IS YE</td><td>ear</td><td>2024</td><td></td><td></td><td>A</td><td>nalysis</td><td>Period</td><td>1>7:</td><td>00</td><td></td><td></td><td>×</td></t<>	Urban Street		Naper Boulevard		Analys	IS YE	ear	2024			A	nalysis	Period	1>7:	00			×						
Project Description FULLIPECONDITIONS VB NB SB A Demand (v), velvh 90 14 76 85 14 27 76 912 100 143 1594 90 Signal Information Cycle, s 1000 Reference Phase 2 -	Intersection		Tower Crossing		File Na	ame		Naper	2024 P	M.xu	JS					_	<u> ነ † † ሶ</u>							
Demand Information EB WB NB SB Approach Movement L T R D	Project Descrip	tion	Future Conditions													1	<u>41</u> 471	<u>, ['</u>						
Approach Movement L T R	Demand Inform	nation				E	B			V	VB			NB			SB							
Demand (v), veh/h 90 14 76 85 14 27 76 912 100 143 1594 90 Signal Information Cycle, s 150.0 Reference Point Call 102.9 8.5 12.7 0.0 143 1594 90 Offset, s 0 Reference Point Call 102.9 8.5 12.7 0.0 11.0 10.0 10.0 11.0 10.0 11.0 10.0 10.0 11.0 10.0 11.0 10.0 11.0 10.0 11.0 10.0 11.0 10.0 11.0 11.0 10.0 11.0 10.0 11.0 10.0 11.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	Approach Move	ement			L	Т	-	R	L		T	R	L	Т	R	L	T	R						
Signal Information Cycle, s 150.0 Reference Phase 2 Offset, s 0 Reference Point End Vencondinated No Simult. Gap LW On Red 1.0 0.0 4.5 3.0 4.0 0.0 Force Mode Fixed Simult. Gap LW On Red 1.0 0.0 4.5 3.0 4.0 0.0 Timer Results EBL EBT WBL WBT NBL NBT SBL SBT Assigned Phase 6.3 1.0 4.0 1.1 3.0 1.1 4.0 Phase Duration, s 18.2 12.5 3.0.7 8.8 100.4 6.9 109.5 Change Deriod, (Y+R-), s 3.2 3.1 3.2 3.1 0.0 3.1 0.0 Queue Clearance Time (g +), s 3.2 3.1 3.2 3.1 3.2 3.1 0.0 0.1 0.0 1.00 0.40 0.1 0.0 1.00 0.43 1.00 0.41 0	Demand (v), v	/eh/h			90	1.	4	76	85	-	14	27	76	912	100	143	1594	90						
Signal Information Cycle, s 150.0 Reference Phase 2 Green 6.8 0.1 102.9 8.6 1.0 0.0 4.7 0.0 Timer Results EE EET WBL WBT NBL SBT Timer Results EET WBL WBT NBL SBT Signal Fhase EET WBL WBT NBL SBT Green 5x460, 31.0 4.0 4.0 4.0 A Saturation, s Saturation, s Saturation, s Saturation, s Saturation for (g a), s <th (g="" a)<="" colspan="6" for="" saturation="" td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th>	<td></td>																							
Cycle. 150.0 Reference Phate Z Green E 5.8 1 102.9 8.5 12.7 0.0 1 0.0	Signal Informa	ation					2	215	14		5	<u>.</u>	2											
Offset 0 Reference Poil End Green 5.8 0.1 101/2 8.5 12.7 0.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 0.0 1.0 0.0 0.0 1.0 0.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 0.0 1.0 0.0 0.0 0.0 1.0 0.	Cycle, s	150.0	Reference Phase	2					5.4	,	è	7₩°	3		Y	$\mathbf{\Psi}$	K	÷						
Uncoordinated No Simult. Gap E/W On Yeilow SO 0.0 4.5 3.0 4.0 0.0 Force Mode Fixed Simult. Gap N/S On Red 1.0 0.0 2.0 1.0 1.5 0.0 Velow Ve	Offset, s	0	Reference Point	End	Green	5.8		0.1	102 0		5	127	0.0	_	1	2	3	Y 4						
Force Mode Fixed Simult. Gap N/S On Red 1.0 0.0 2.0 1.0 1.5 0.0 Image N/S N	Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.0		0.0	4.5	3.	.0	4.0	0.0	_				\rightarrow						
Timer Results EBL EBT WBL WBL NBT NBT SBL SBT Assigned Phase 4 3 8 5 2 1 6 Case Number 18.2 12.5 30.7 9.8 109.4 9.9 109.5 Change Period. (Y4Re), s 6.0 4.0 6.0 4.0 6.0 4.0 6.5 4.0 6.5 Max Allow Headway (MAH), s 2.2 3.1 3.2 3.1 0.0 3.1 0.0 Green Extension Time (g *), s 0.2 0.0 0.4 0.1 0.0 1.0 0.0 1.00 0.0 1.00 0.0 1.00 0.0 1.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0	Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0		0.0	2.0	1.	.0	1.5	0.0		5	6	7	8						
Time Results EBL EBT WBL WBL NBL NBL NBL SBL SBL SBL Asigned Phase Assigned Phase - 6.3 1.0 4.0 1.1 3.0 1.1 4.0 Phase Duration, s - 6.0 4.0 6.0 4.0 6.5 4.0 6.5 Max Allow Headway (MA/H), s - 3.2 3.1 0.0 3.2 3.1 0.0																								
Assigned Phase 4 3 8 5 2 1 6 Case Number 6.3 1.0 4.0 1.1 3.0.0 1.1 4.0 Phase Duration, s 18.2 12.5 30.7 9.8 109.4 9.9 109.5 Change Period, (Y+Rc), s - 3.2 3.1 3.2 3.1 0.0	Timer Results				EBL	-	E	BT	WB	_	١	WBT	NBI	-	NBT	SBL	-	SBT						
Case Number 6.3 1.0 4.0 1.1 3.0 1.1 4.0 Phase Duration, s 12.2 30.7 9.8 109.4 9.9 109.5 Change Period, (Y+R c), s 6.0 4.0 6.0 4.0 6.0 4.0 6.5 Max Allow Headway (MAH), s 3.2 3.1 3.2 3.1 0.0 0.0 6.5 Green Extension Time (g *), s - 1.00 0.98 1.00 0.96 - 1.00 0.1 0.0 Max Out Probability - 0.50 1.00 0.00 0.00 0.01 - 0.01 - - 0.01 - - 0.01 - - 0.01 - - 0.01 - 0.01 - - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.0 0.01 0.0 <td>Assigned Phas</td> <td>е</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>4</td> <td>3</td> <td></td> <td></td> <td>8</td> <td>5</td> <td></td> <td>2</td> <td>1</td> <td></td> <td>6</td>	Assigned Phas	е						4	3			8	5		2	1		6						
Phase Duration, s 18.2 12.5 30.7 9.8 109.4 9.9 109.5 Change Period, (Y+R c), s 6.0 4.0 6.0 4.0 6.5 4.0 7.5 7.5 3.0 5.0 7.0	Case Number						6	6.3	1.0			4.0	1.1		3.0	1.1		4.0						
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Phase Duration	1, S				1	8.2	12.5	;	3	30.7	9.8		109.4	9.9	1	09.5							
Max Allow Headway (MAH), s i 3.2 3.1 3.2 3.1 3.2 3.1 0.0 3.1 0.0 Queue Clearance Time ($g \circ$), s i 12.0 8.7 5.2 3.9 i 5.8 i 5.2 3.9 i 0.0 0.0 i i 6.16 6.6 6.6 6.7 6.9 6.8 88 43 7.9 9.5 1.04 4.9 880 874 1.9 5.0 3.3 3.8 16.3 2.8 2.8 2.9 1.9 5.0 3.3 3.8 16.3 2.8 2.9 2.9 1.9 5.0 3.3 3.8 16.3 2.8	Change Period	, (Y+ R a	c), S			6	5.0	4.0			6.0	4.0		6.5	4.0		6.5							
Queue Clearance Time ($g *$), s Image of the set of	Max Allow Head	dway (A	<i>MAH</i>), s				3.2		3.1			3.2	3.1		0.0	3.1		0.0						
Green Extension Time (g_{\circ}), s O <td>Queue Clearan</td> <td>ce Time</td> <td>e (g s), s</td> <td></td> <td></td> <td></td> <td>1</td> <td>2.0</td> <td>8.7</td> <td></td> <td colspan="2">5.2</td> <td colspan="2">3.9</td> <td></td> <td>5.8</td> <td></td> <td></td>	Queue Clearan	ce Time	e (g s), s				1	2.0	8.7		5.2		3.9			5.8								
Phase Call Probability 1.00 0.98 1.00 0.96 $$ 1.00 0.96 $$ 1.00 0.96 $$ 1.00 0.96 $$ 1.00 0.00 $$ 0.10 $$ 0.01 $$ 0.01 $ $	Green Extensio	on Time	(g _e), s				C).2	0.0	0.0		0.4	0.1		0.0	0.1		0.0						
Max Out ProbabilityImage: Constraint of the percentileImage: Constraint of	Phase Call Pro	bability					1	.00	0.98	;	1	1.00	0.96	3		1.00								
Movement Group Results Image: Barlow of the state	Max Out Proba	bility					0	.50	1.00)	(0.00	0.00)		0.01								
Movement Group ResultsLLTRLTRLTRLTRLTRLTRLTRLTRLTRLTRAssigned MovementTRARLTRLTRLTRAssigned MovementTRARRLTRLTRAssigned MovementRAssigned MovementRLTRRRRRRLTRLTRAssigned MovementRAssigned MovementRLTRR<		_	•				_				_				_									
Approach MovementIIIRIIRIIRIIRIIRIIRIIRIIRIIRIIRIIRIIRIIRIIRIIRIIRIIRIIIRIIIRIIIRIIIRIIIRIII </td <td>Movement Gro</td> <td>oup Res</td> <td>sults</td> <td></td> <td></td> <td>EE</td> <td>3</td> <td>_</td> <td></td> <td>W</td> <td>в.</td> <td>-</td> <td></td> <td>NB</td> <td></td> <td></td> <td>SB</td> <td>-</td>	Movement Gro	oup Res	sults			EE	3	_		W	в.	-		NB			SB	-						
Assigned Movement/414381852121616Adjusted Flow Rate (v), veh/h9494894379950104149880874Adjusted Saturation Flow Rate (s), veh/h/ln1385164917671699181018591572176718561820Queue Service Time (gs), s10.08.36.73.21.95.03.33.816.320.8Cycle Queue Clearance Time (gc), s10.08.36.73.21.95.03.33.816.320.8Green Ratio (g/C)0.080.080.080.150.160.720.690.690.730.690.69Capacity (c), veh/h1601341822792662551107950012751251Volume-to-Capacity Ratio (X)0.5840.700.4880.1530.2970.3720.970.2980.690Back of Queue (Q), veh/ln (95 th percentile)161.7164.6140.162.831.770.453.562.8174.3208Back of Queue (Q), veh/ln (95 th percentile)6.56.65.52.51.32.82.12.56.88.3Queue Storage Ratio (RQ) (95 th percentile)4.040.001.400.020.300.000.00.00.00Uniform Delay (d 1), s/veh69.271.458.053.88.62.68.	Approach Move	ement			L	1	\rightarrow	R	L	1		R	L		R	L		R						
Adjusted Flow Rate (V), veh/n949494894379950104149880874Adjusted Saturation Flow Rate (s), veh/h/ln13851649176716991699181018591572176718561820Queue Service Time (g c), s10.08.36.73.21.95.03.33.816.320.8Green Ratio (g/C)0.080.080.0150.160.720.690.690.730.690.69Capacity (c), veh/h1601341822792662551107950012751251Volume-to-Capacity Ratio (X)0.5840.700.4880.1530.2970.3720.6970.2980.699Back of Queue (Q), veh/ln (95 th percentile)161.7164.6140.162.831.77.453.562.8174.3208Back of Queue (Q), veh/ln (95 th percentile)6.56.65.52.51.32.82.12.56.88.3Queue Storage Ratio (RQ) (95 th percentile)4.040.001.400.000.300.000.540.33.13.13.3Intra mental Delay (d_2), s/veh6.927.157.353.78.32.68.17.43.0Uniform Delay (d_1), s/veh6.9271.458.053.88.62.68.16.45.76.9Level of Service (LOS)EEEDA <td>Assigned Move</td> <td>ement</td> <td><u> </u></td> <td></td> <td>/</td> <td>4</td> <td>+</td> <td>14</td> <td>3</td> <td>8</td> <td></td> <td>18</td> <td>5</td> <td>2</td> <td>12</td> <td>1</td> <td>6</td> <td>16</td>	Assigned Move	ement	<u> </u>		/	4	+	14	3	8		18	5	2	12	1	6	16						
Adjusted Saturation Flow Rate (s), vent/nin1385164917671699181018591572176718561820Queue Service Time (g s), s10.08.36.73.21.95.03.33.816.320.8Cycle Queue Clearance Time (g c), s10.08.36.73.21.95.03.33.816.320.8Green Ratio (g/C)0.080.080.080.150.160.720.690.690.730.690.69Capacity (c), ven/h1601341822792662551107950012751251Volume-to-Capacity Ratio (X)0.5840.7000.4880.1530.2970.3720.0970.2980.699Back of Queue (Q), th/n (95 th percentile)161.7164.6140.162.831.770.453.562.8174.3208Back of Queue (Q), ven/ln (95 th percentile)6.56.65.52.51.32.82.12.56.88.3Queue Storage Ratio (RQ) (95 th percentile)4.040.001.400.000.300.000.540.400.00Uniform Delay (d 1), s/veh69.271.458.053.88.62.68.16.45.76.9Level of Service (LOS)EEEDAAAAAApproach Delay, s/veh / LOS70.3E56.6E3.6A6.3A<	Adjusted Flow I	Rate (v), veh/h		94	94			89	43	3		79	950	104	149	880	874						
Clucie Service lime (g s), s 10.0 8.3 6.7 3.2 1.9 5.0 3.3 3.8 16.3 20.8 Cycle Queue Clearance Time (g c), s 10.0 8.3 6.7 3.2 1.9 5.0 3.3 3.8 16.3 20.8 Green Ratio (g/C) 0.08 0.08 0.15 0.16 0.72 0.69 0.69 0.73 0.69 0.69 Capacity (c), veh/h 160 134 182 279 266 255 10.9 5.09 0.69 0.69 0.69 Back of Queue (Q), twh/h 054 0.700 0.488 0.153 0.297 0.37 0.97 0.298 0.690 0.69 Back of Queue (Q), veh/ln (95 th percentile) 161.7 164.6 140.1 62.8 31.7 70.4 53.5 62.8 174.3 208 Back of Queue (Q), veh/ln (95 th percentile) 4.04 0.00 1.40 0.00 0.30 0.00 0.54 0.34 0.00 0.00 Uniform Delay (d 1), s/veh 67.9 67.1 57.3 53.7 8.3 2.6	Adjusted Satura	ation Flo	w Rate (s), veh/h/l	n	1385	164	9		1/6/	169	99		1810	1859	1572	1/6/	1856	1820						
Cycle Queue Clearance Time (g_c), s 10.0 8.3 6.7 3.2 1.9 5.0 3.3 3.8 16.3 20.8 Green Ratio (g/C) 0.08 0.08 0.15 0.16 0.72 0.69 0.69 0.73 0.69 0.69 0.73 0.69 0.69 0.73 0.69 0.69 0.73 0.69 0.69 0.69 0.73 0.69	Queue Service	Time (g	Js), S - Time ()		10.0	8.3	5		6.7	3.2	2		1.9	5.0	3.3	3.8	16.3	20.8						
Green Ratio (g/C) 0.08 0.08 0.15 0.16 0.72 0.69 0.69 0.73 0.69 0		learance	e Time (<i>g c</i>), s		10.0	8.3	5		6.7	3.2	2		1.9	5.0	3.3	3.8	16.3	20.8						
Capacity (c), ven/n 160 134 182 279 266 2551 1079 500 1275 1251 Volume-to-Capacity Ratio (X) 0.584 0.700 0.488 0.153 0.297 0.372 0.097 0.298 0.690 0.699 Back of Queue (Q), tr/ln (95 th percentile) 161.7 164.6 140.1 62.8 31.7 70.4 53.5 62.8 174.3 208 Back of Queue (Q), veh/ln (95 th percentile) 4.04 0.00 1.40 0.00 0.300 0.00 0.54 0.34 0.00	Green Ratio (g	1/C)			0.08	0.0	8		0.15	0.1	6		0.72	0.69	0.69	0.73	0.69	0.69						
Volume-to-Capacity Ratio (X) 0.584 0.70 0.488 0.153 0.297 0.372 0.097 0.298 0.690 0.699 Back of Queue (Q), tt/ln (95 th percentile) 161.7 164.6 140.1 62.8 31.7 70.4 53.5 62.8 174.3 208 Back of Queue (Q), veh/ln (95 th percentile) 6.5 6.6 5.5 2.5 I.33 2.8 2.1 2.5 6.8 8.3 Queue Storage Ratio (RQ) (95 th percentile) 4.04 0.00 1.40 0.00 0.30 0.00 0.54 0.34 0.00 0.00 0.00 Uniform Delay (d 1), s/veh 67.9 67.1 57.3 53.7 8.3 2.2 7.9 6.3 2.7 3.7 Incremental Delay (d 2), s/veh 1.3 4.3 0.8 0.1 0.2 0.4 0.2 0.1 3.1 3.3 Initial Queue Delay (d 3), s/veh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		/en/n			160	134	4		182	27	9		266	2551	1079	500	1275	1251						
Back of Queue (Q), tr/in (95 th percentile) 161.7 164.6 140.1 62.8 31.7 70.4 53.5 62.8 174.3 208 Back of Queue (Q), veh/ln (95 th percentile) 6.5 6.6 5.5 2.5 1.3 2.8 2.1 2.5 6.8 8.3 Queue Storage Ratio (RQ) (95 th percentile) 4.04 0.00 1.40 0.00 0.30 0.00 0.54 0.34 0.00 0.00 Uniform Delay (d1), s/veh 67.9 67.1 57.3 53.7 8.3 2.2 7.9 6.3 2.7 3.7 Incremental Delay (d2), s/veh 1.3 4.3 0.8 0.1 0.2 0.4 0.2 0.1 3.1 3.3 Initial Queue Delay (d3), s/veh 69.2 71.4 58.0 53.8 8.6 2.6 8.1 6.4 5.7 6.9 Level of Service (LOS) E E E D A A A A A A Approach Delay, s/veh / LOS 70.3 E 56.6 E 3.6 A 6.3 A A<	Volume-to-Cap	acity Ra	itio (X)		0.584	0.70	00		0.488	0.1	53		0.297	0.372	0.097	0.298	0.690	0.699						
Back of Queue (Q), ven/in (95 th percentile)6.56.65.52.52.51.32.82.12.56.88.3Queue Storage Ratio (RQ) (95 th percentile)4.040.001.400.000.300.000.540.340.000.00Uniform Delay (d_1), s/veh67.967.157.353.78.32.27.96.32.73.7Incremental Delay (d_2), s/veh1.34.30.80.10.00.00.00.00.00.00.00.0Control Delay (d), s/veh0.00.00.00.00.00.00.00.00.00.00.00.00.0Control Delay (d), s/veh69.271.458.053.88.62.68.16.45.76.9Level of Service (LOS)EEEE0AAAAAApproach Delay, s/veh / LOS70.3E56.6E3.6A6.3AAIntersection Delay, s/veh / LOSEEVBNBSVBVBVBPedestrian LOS Score / LOSEEIIIIIIIIBicycle LOS Score / LOSIIIIIIIIIIIIBicycle LOS Score / LOSIIIIIIIIIIBicycle LOS Score /	Back of Queue	(Q), ft/	in (95 th percentile)	1-)	161.7	164	.6		140.1	62.	.8		31.7	70.4	53.5	62.8	174.3	208						
Code of Storage Ratio (Rd) (95 in percentile)4.040.001.400.00 <t< td=""><td>Back of Queue</td><td>(Q), Ve</td><td>en/in (95 th percenti</td><td>le) Hile)</td><td>6.5</td><td>6.6</td><td>0</td><td></td><td>5.5</td><td>2.</td><td>5</td><td></td><td>1.3</td><td>2.8</td><td>2.1</td><td>2.5</td><td>6.8</td><td>8.3</td></t<>	Back of Queue	(Q), Ve	en/in (95 th percenti	le) Hile)	6.5	6.6	0		5.5	2.	5		1.3	2.8	2.1	2.5	6.8	8.3						
Officient Delay (d_1), siven 67.9 67.1 67.3 57.3 53.7 63.3 2.2 7.9 6.3 2.7 3.7 Incremental Delay (d_2), siven1.3 4.3 0.8 0.1 0.2 0.4 0.2 0.1 3.1 3.3 Initial Queue Delay (d_3), siven 0.0	Queue Storage		KQ) (95 th percent	lile)	4.04	0.0	1		1.40	0.0	7		0.30	0.00	0.54	0.34	0.00	0.00						
Incremental Delay (d_2), siven I.3 4.3 Image: Constraint of the structure of the	Uniform Delay	$(a_1), s_1$	ven		67.9	67.			57.3	53.	./		8.3	2.2	7.9	6.3	2.7	3.7						
Initial Queue Delay (43), s/ven 0.0	Incremental De), s/ven		1.3	4.3	5		0.8	0.	1		0.2	0.4	0.2	0.1	3.1	3.3						
Control Delay (u), s/ven 09.2 /1.4 58.0 53.8 8.6 2.6 8.1 6.4 5.7 6.9 Level of Service (LOS) E E E D A B B B B B B B B B B B B B B B		ial Queue Delay (<i>d</i> ₃), s/veh			0.0	0.0			0.0	0.0	U Q		0.0	0.0	0.0	0.0	0.0	0.0						
Level of Service (LOS) E E E D A B B B B B <td>Control Delay (</td> <td colspan="3">Control Delay (d), s/veh</td> <td><u>69.2</u> Г</td> <td>71.</td> <td>4</td> <td></td> <td>0.8c</td> <td>53</td> <td>.ð</td> <td></td> <td>0.6</td> <td>2.6</td> <td>8.1</td> <td>0.4</td> <td>5./</td> <td>0.9</td>	Control Delay (Control Delay (d), s/veh			<u>69.2</u> Г	71.	4		0.8c	53	.ð		0.6	2.6	8.1	0.4	5./	0.9						
Multimodal Results EB WB NB SB Pedestrian LOS Score / LOS Image: S	Level OI Service	Level of Service (LOS)				E			E		'	_	A	A	A	A	A	A						
Multimodal Results EB WB NB SB Pedestrian LOS Score / LOS Image: Control of the state of the st	Approach Delay, s/veh / LOS				70.3			10	0.00			C	3.0		A	0.3		A						
Multimodal Results EB WB NB SB Pedestrian LOS Score / LOS Image: Control of the state of the st	Intersection Delay, s/veh / LOS							10	.9															
Pedestrian LOS Score / LOS Bicycle LOS Score / LOS	Multimodal Re	Multimodal Results				FF	3			W	Β			NB			SB							
Bicycle LOS Score / LOS	Pedestrian LOS	Pedestrian LOS Score / LOS									-													
	Bicycle LOS Sc	core / I C)S																					

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HCS7 Two-Way Stop-Control Report										
General Information		Site Information								
Analyst	SBC	Intersection	N-W Rd/Ogden							
Agency/Co.	EEA	Jurisdiction	Naperville							
Date Performed	10/16/2018	East/West Street	Ogden Mall/Site							
Analysis Year	2024	North/South Street	N-W Road							
Time Analyzed	AM Peak	Peak Hour Factor	0.85							
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25							
Project Description	Future									
anes										



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	1	0		0	1	0	0	0	2	0	0	0	2	0
Configuration			LTR				LTR			LT		TR		LT		TR
Volume (veh/h)		8	1	2		56	1	56		4	555	56		56	286	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)		()			()									
Right Turn Channelized																
Median Type Storage				Undi	vided											
Critical and Follow-up He	adway	ys														
Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		
Delay, Queue Length, and	l Leve	l of Se	ervice													
Flow Rate, v (veh/h)			13				133			5				66		
Capacity, c (veh/h)			249				280			1211				872		
v/c Ratio			0.05				0.47			0.00				0.08		
95% Queue Length, Q ₉₅ (veh)			0.2				2.4			0.0				0.2		
Control Delay (s/veh)			20.2				29.0			8.0				9.5		
Level of Service (LOS)			С				D			А				А		
Approach Delay (s/veh)		20).2		29.0				0.1				1.8			
Approach LOS		(2		D											

HCS7 Two-Way Stop-Control Report										
General Information		Site Information								
Analyst	SBC	Intersection	N-W Rd/Ogden							
Agency/Co.	EEA	Jurisdiction	Naperville							
Date Performed	10/16/2018	East/West Street	Ogden Mall/Site							
Analysis Year	2024	North/South Street	N-W Road							
Time Analyzed	Midday	Peak Hour Factor	0.95							
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25							
Project Description	Future									
anes										



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	1	0		0	1	0	0	0	2	0	0	0	2	0
Configuration			LTR				LTR			LT		TR		LT		TR
Volume (veh/h)		11	1	6		64	1	64		8	524	64		64	658	4
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)		()			()									
Right Turn Channelized																
Median Type Storage				Undi	vided											
Critical and Follow-up He	adwa	ys														
Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		
Delay, Queue Length, and	Leve	l of S	ervice													
Flow Rate, v (veh/h)			19				136			8				67		
Capacity, c (veh/h)			173				245			888				951		
v/c Ratio			0.11				0.55			0.01				0.07		
95% Queue Length, Q ₉₅ (veh)			0.4				3.1			0.0				0.2		
Control Delay (s/veh)			28.4				36.6			9.1				9.1		
Level of Service (LOS)			D				E			А				А		
Approach Delay (s/veh)		28	3.4		36.6				0.2				1.2			
Approach LOS		[)		E											

HCS7 Two-Way Stop-Control Report										
General Information		Site Information								
Analyst	SBC	Intersection	N-W Rd/Ogden							
Agency/Co.	EEA	Jurisdiction	Naperville							
Date Performed	10/16/2018	East/West Street	Ogden Mall/Site							
Analysis Year	2024	North/South Street	N-W Road							
Time Analyzed	PM Peak	Peak Hour Factor	0.90							
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25							
Project Description	Future									
anes										



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Approach	Eastbound				Westbound				Northbound				Southbound			
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	1	0		0	1	0	0	0	2	0	0	0	2	0
Configuration			LTR				LTR			LT		TR		LT		TR
Volume (veh/h)		9	1	7		60	1	60		3	397	60		30	608	6
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type Storage	Undiv				<i>i</i> ided											
Critical and Follow-up Headways																
Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)			19				134			3				33		
Capacity, c (veh/h)			251				340			900				1046		
v/c Ratio			0.08				0.40			0.00				0.03		
95% Queue Length, Q ₉₅ (veh)			0.2				1.8			0.0				0.1		
Control Delay (s/veh)			20.5				22.3			9.0				8.6		
Level of Service (LOS)			С				С			А				А		
Approach Delay (s/veh)	20.5				22.3				0.1				0.6			
Approach LOS	С				С											