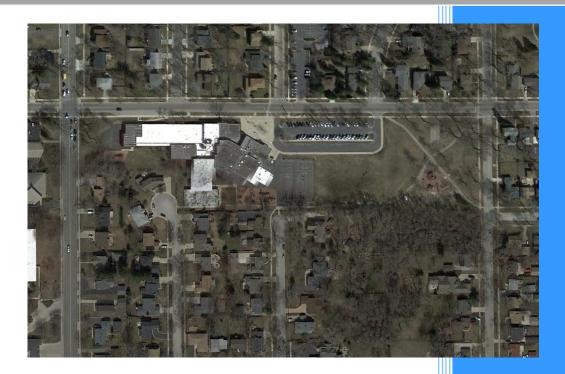
# July 2015

# Olive-Mary Stitt Elementary School Traffic and Parking Study



Prepared for: Arlington Heights School District 25

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## INTRODUCTION

Eriksson Engineering Associates, Ltd. (EEA) was retained by Arlington Heights School District 25 (AHSD 25) to conduct a traffic and parking study for the proposed expansion of Olive-Mary Stitt Elementary School in Arlington Heights, Illinois. Olive-Mary Stitt School is located on the south side of Olive Street east of Arlington Heights Road. The current enrollment of the school is 599 students in Kindergarten through 5<sup>th</sup> grade with 68 staff members.

The school expansion will serve the projected growth in student population with a new gym and classrooms. Student population is expected to grow 7% to 642 students over a period of several years. The number of staff is expected to remain at 68.

The purpose of the study was to observe the existing traffic patterns around the school, determine the traffic characteristics of the existing and expanded school, review the parking needs, and develop roadway and parking recommendations.

### **EXISTING CONDITIONS**

#### Site Location and Area Land-Uses

The existing school is located at the southeast corner of Arlington Heights Road and Olive Street in Arlington Heights, Illinois within in a single-family neighborhood. Two churches are west and northeast of the school. Thomas Middle School is located a quarter mile to the north. **Figure 1** illustrates the site location and the surrounding land-uses and roads. (Note: all figures are located at the end of the report).

#### **Bicycle and Pedestrian Routes**

Douglas and Belmont Avenues are designated on-street bike routes. Olive Street, east of Belmont Avenue, is a proposed bikeway route. Public sidewalks are located on both sides of the streets around the school. The All-Way Stop Controlled (AWSC) intersections on Olive Street at Belmont and Douglas Avenues have crosswalks.

#### **Roadway Characteristics**

A description of the area roadways providing access to the site is provided below:

**Arlington Heights Road** is a north-south major arterial roadway extending from Elk Grove Village thru Arlington Heights to Long Grove. It has two travel lanes in each direction without a center median. At Olive Street, Arlington Heights Road is signalized and has shared thru/right and shared thru/left-turn lanes with painted crosswalks in both directions. The posted speed limit is 30 miles per hour and is under the jurisdiction of the Illinois Department of Transportation (IDOT).

**Olive Street** is a local road that extends between Windsor Drive and Ridge Road. It has one travel lane in each direction at its signalized intersection with Arlington Heights Road and its AWSC intersections at Belmont and Douglas Avenues. The posted speed limit is 25 miles per hour with a 20 mph school speed zone by the school. It is under the jurisdiction of the Village of Arlington Heights.

**Douglas Avenue** is a local road that extends east of the school with one travel lane in each direction. The posted speed limit is 25 miles per hour and is under the jurisdiction of the Village of Arlington Heights.

**Belmont Avenue** is a local road extending north of Olive Street and is a cul-de-sac south of the school. The posted speed limit is 25 miles per hour and is under the jurisdiction of the Village of Arlington Heights.

**Harwood Avenue** is a local residential road that ends in a cul-de-sac north of Olive Street. It has a speed limit of 25 miles per hour and is under the jurisdiction of the Village of Arlington Heights.

**Pine Avenue** is a local residential road that ends in a cul-de-sac north of Olive Street and is a cul-de-sac south of the school. It has a speed limit of 25 miles per hour and is under the jurisdiction of the Village of Arlington Heights.

Figure 2 illustrates the existing loading and parking regulations around the school.

#### **Existing Traffic Volumes**

Olive-Mary Stitt School starts the school day at 9:05 AM and ends at 3:35 PM. Weekday morning (8:00 to 9:30 AM) and afternoon (3:00 to 4:30 PM) manual traffic counts of vehicles and pedestrians were conducted in May, 2015 at the following intersections:

- Arlington Heights Road and Olive Street
- Belmont Avenue/School Parking Lot Exit and Olive Street
- Harwood Avenue/School Parking Lot Entrance and Olive Street
- The Orchard Evangelical Free Church Parking Lot Drive on Olive Street
- Douglas Avenue and Olive Street
- Belmont Avenue and Pine Avenue

These counts showed the peak-hours of traffic occurring from 8:15 to 9:15 AM and 3:15 to 4:15 PM on a weekday. The existing traffic volumes are shown in **Figure 3** and included in the **Appendix**.

#### School Observations

School bus loading occurs in a pull off lane on the south side of Olive Street by the west end of the school. This area is 165 feet long and is used by one school bus.

The main student loading area is provided in the school parking lot. Parents enter the east entrance (inbound only) and travel clockwise through the lot and unload/load their students on the driver's side of the car. Staff members assist in loading students out of or into the vehicle. A sidewalk is provided on the perimeter of the lot. The doors for the school are near the southwest corner of the lot.

During the morning arrival, parent enter the lot and drop-off their students in the parking lot with minimal congestion. In the afternoon dismissal, parents fill up the parking lot perimeter and back up onto Olive Street. School traffic from the east wait to pull into the parking lot, stands along the north Olive Street curb until the parking lot has room to accommodate them.

Some staff and parents use the church parking lot on the north side of Olive Street to park or to walk their students to and from school. The only entrance to the lot is on Olive Street. The northern part of the church lot is coned off from the main parking lot.

On-street loading is permitted on the south side of Olive Street east of the parking lot exit.

As with most other schools, congestion occurs in the area and lasts 10 to 15 minutes during the peak arrival and dismissal periods. Traffic exiting the parking lot is prohibited from making left-turns during the morning and afternoon periods to prevent conflicts with the pedestrian Olive-Mary Stitt Elementary School Traffic Study July 23, 2015

crossing on the west leg of Olive Street which ranges from 133 to 158 crossings per hour. Vehicles were observed violating this left-turn (9 to 16 vehicles per hour).

Parents were observed crossing Olive Street by the church parking lot and Haddow Avenue where there are no crosswalks.

### SITE TRAFFIC CHARACTERISTICS

#### Site Plan

The proposed building plan includes additional commons space, a new gym, and new classrooms. The parking lot circulation was modified by closing the existing exit by Belmont Avenue and relocating it next to the parking lot entrance. Student loading will be reversed from the current loading on the driver's side of the vehicle to loading on the passenger side of the vehicle. It double the amount of internal queuing space within the parking lot (400 feet to 800 feet) for the afternoon dismissal and decreases the frequency of back-up onto Olive Street. During the peak periods, only right-turns out will be permitted from the parking lot.

#### Trip Generation

Olive-Mary Stitt School currently serves 599 students and uses one school bus for transportation. As indicated by the school boundary map, only two small areas of the school are eligible for busing. With the expansion, the school can accommodate up to 642 students or a net increase of 43 additional students over the next several years. Additional school buses will not be needed.

Traffic estimates were made for the additional students using the traffic counts at the current school. The trip generation rates for the existing school are higher than the data provided by the Institute of Transportation Engineer's <u>Trip Generation</u> 9<sup>th</sup> Ed. manual for elementary schools due to the low percentage of bus usage. The rate of vehicle trip generation was applied to the proposed increase in students with the results shown in **Table 1**.

School Expansion	Mo	rning Ar	rival	Aftern	ioon Dis	missal
	In	Out	Total	In	Out	Total
43 Additional Students	16	15	31	12	13	25

Table 1School Expansion Traffic Volumes

#### **Trip Distribution**

The trip distribution for school is based on the existing traffic volumes at the school, the existing road network, and the proposed circulation system. The trip distribution for the site is shown in **Table 2** and **Figure 4**.

#### Trip Assignment

The future vehicular trips that are generated by the development were distributed to the area roadways based on the directional distribution analysis and the proposed expansion plan. **Figure 5** displays the trip assignment for the projected site traffic volumes. **Figure 6** shows the Total Traffic volumes, which are the sum of the existing traffic volumes and the site traffic volumes.

Direction	Inbound Percentage	Outbound Percentage
North on Arlington Heights Road	5%	5%
South on Arlington Heights Road	10%	5%
West on Olive Street	20%	5%
East on Olive Street	20%	20%
North on Belmont Avenue	5%	0%
North on Douglas Road	5%	20%
South on Douglas Road	5%	15%
South on Belmont/Pine Avenues	30%	30%
Total	100%	100%

Table 2 **Directional Distribution** 

#### **Intersection Capacity Analyses**

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 Highway Capacity Manual definitions for levels of service and the corresponding control delay for both signalized and unsignalized intersections are shown in Table 3.

Table 3 Level of Service Criteria for Intersections

Level of	Description		o <b>l Delay</b> s/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
E	High delays and number of stops	>55-80	>35-50
F	Unacceptable delays and over capacity	>80	>50

Source: Highway Capacity Manual 2010

Capacity analyses were conducted for each intersection using the computer program Highway Capacity Software (HCS) to determine the existing operating conditions of the access system. These analyses were performed for the school's peak arrival and dismissal periods.

**Table 4** shows the existing and future level of service results for each intersection. Copies of the capacity analysis summaries are included in the **Appendix**.

		AM A	rrival	PM Dis	smissal
Intersection	Movement	Existing	Total	Existing	Total
Olive Street at:					
Arlington Heights Road (Traffic Signal)	Intersection	A-7.4	A-7.3	A-7.0	A-6.8
	SB Lt/Rt	A-8.3	A-8.0	A-7.9	A-7.8
Belmont Avenue And School Lot Exit <sup>(1)</sup>	WB Lt/Th	A-8.3	A-7.8	A-8.2	A-8.0
(All-Way Stop)	NB Lt/Th/Rt	A-8.3	Closed	A-7.9	Closed
	EB Th/Rt	A-8.7	A-8.1	A-8.5	A-8.2
Church Parking Access	SB Lt /Rt	B-13.5	B-10.1	A-9.8	A9.6
(Two-Way Stop)	EB Left	A-7.5	A-7.5	A-7.5	A-7.5
	SB Lt/Th/Rt	C-16.3	C-15.8	B-12.0	B-13.9
Harwood Avenue And School Lot	WB Lt/Th/Rt	A-8.5	A-8.1	A-7.9	A-7.8
Entrance (Exit) <sup>(2)</sup> (Two-Way Stop)	EB Lt/Th/Rt	A-7.4	A-7.4	A-7.5	A-7.5
	NB Rt		B-10.8		A-9.9
	SB Lt/Th/Rt	A-8.5	A-8.9	A-8.1	A-8.3
Douglas Avenue	WB Lt/Th/Rt	A-9.1	A-9.4	A-8.5	A-8.7
(All-Way Stop)	NB Lt/Th/Rt	A-9.0	A-9.4	A-8.3	A-8.5
	EB Lt/Th/Rt	A-9.9	B-11.5	A-8.6	A-9.1
South Belmont Avenue at	SB Th/Rt	A-0.0	A-0.0	A-0.0	A-0.0
Pine Avenue	NB Lt/Th	A-3.4	A-3.5	A-4.3	A-4.2
(No Control)	EB Lt /Rt	A-9.3	A-9.4	A-8.8	A-8.8

Table 4Intersection Level of Service and Delay

(1) The northbound exit from the school parking lot will be closed and relocated by Haddow Avenue. The intersection will remain AWSC.

(2) The exit to the school parking lot will be relocated to Haddow and exiting traffic will be limited to right-out only during the school arrival and dismissal periods.

#### Arlington Height Road at Olive Street

Overall, the traffic signal at Arlington Height Road and Olive Street works well and will continue to do so after the school expansion. Since Arlington Heights Road is an arterial route, it gets the majority of the green time at the signal (70-76%) and the side street gets less. Olive Street traffic has higher delays but still falls within acceptable ranges. No improvements are needed to accommodate the school expansion.

#### **Belmont Avenue at Olive Street**

With the proposed changes to the school parking lot, the school exit onto Olive Street will be removed and replaced with sidewalk and parkway. The intersection will operate as a three legged AWSC intersection and will still provide the stop signs on Olive Street to stop traffic at the pedestrian crosswalk (with crossing guard) to remain. The intersection will operate better with less traffic movements and pedestrian/vehicular conflicts. It also eliminates the northbound left-turn violations during school peak-hours.

#### Church Lot Access at Olive Lot

The 32 spaces used by the school in the church lot will not be changed and the access does not require additional improvements. Parents should be reminded to use the crosswalk when walking to and from the school.

#### Haddow Avenue/School Parking Access

The school parking lot is being redesigned to have a two-way access drive opposite of Haddow Avenue. School traffic will turn off of Olive Street and then turn right in a counterclockwise direction thru the existing angled parking and then around to the existing loading area. This doubles the amount of off-street queuing area from 400 to 800 feet. This additional storage will not eliminate all back-ups onto Olive Street but it will signicantly decrease the length and frequency of the back-ups.

Parent traffic will then exit onto Olive Street. During the peak arrival and dismissal periods, traffic will only be able to turn right towards Douglas Avenue and not conflict with the inbound right- and left-turns. This is similar to the existing lot exit where 60-65% of the traffic turns right out today. Haddow Avenue is a cul-de-sac so the straight movement that was at Belmont Avenue is not available.

#### Douglas Avenue at Belmont Avenue

This AWSC intersection works well and will continue to do so after the school expansion.

#### South Belmont and Pine Avenues

South of the school, students are dropped-off and picked-up in the cul-de-sacs on Belmont and Pine Avenue. The intersection of these two streets does not have any traffic control (yield or stop signs) but operates well due to the low speed limits and the traffic volumes. No changes are proposed to this intersection.

### PARKING

The existing school on-site parking supply provides a total of 50 parking spaces including two accessible spaces. Additional off-site parking is provided through an agreement with the Orchard Evangelical Free Church parking lot (32 spaces) at the northeast corner of Olive Street and Belmont Avenue. A total of 82 off-street parking spaces are currently available to the school. With the proposed changes to the parking lot, there will be a net loss of 1 space for a total of 49 spaces including two accessible spaces.

The Village of Arlington Heights Zoning Ordinance requires elementary schools to provide two parking spaces per each employee (68 staff) and one per classroom (31 rooms) for a total of 167 spaces. A parking variation of 118 spaces (167-49) would be required.

National parking data is available from the Institute of Transportation Engineers (ITE) in their publication <u>Parking Generation</u>, 4<sup>th</sup> Edition for elementary schools (Land Use Code 520). The peak demand in the ITE data was 0.17 spaces per student (642 students) or 109 spaces.

Parking counts were conducted on Wednesday May 27, 2015 after the morning arrival period which found 63 vehicles parked on-site including staff and visitors. No on-street parking near the school was observed. The school currently has 68 staff members but they are not all present on-site at the same time. Sufficient parking is available at the school to accommodate current and projected staff and visitor parking needs during a typical school day on the two parking lots.

Parking for special events at the school can be accommodated by a combination of the offstreet parking and on-street parking by the school on the south side of Olive Street, Belmont Avenue, and Douglas Avenue.

The existing parking supply of 81 spaces meets the existing and projected parking needs of the school during the day for staff and visitors without impacting on-street parking. Special event parking is available on-street near the school.

### SUMMARY

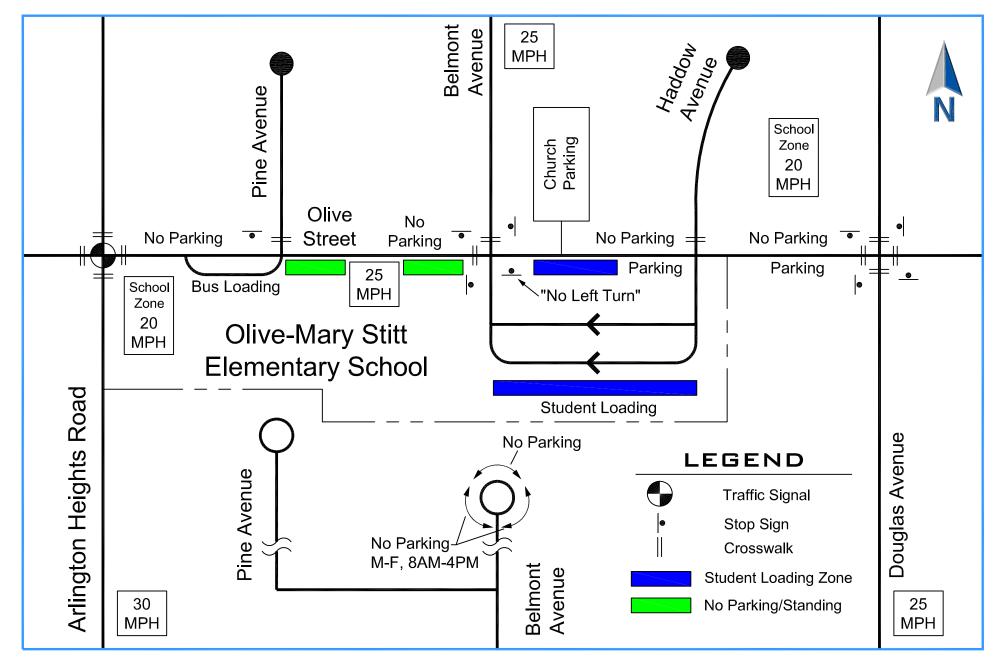
This report summarizes the results of traffic and parking study for the expansion of Olive-Mary Stitt Elementary School in Arlington Heights, Illinois. The findings of the study area:

- The volume of additional school traffic generated by the school expansion is low due to small increase in students. The net change in area traffic volumes is nominal.
- The proposed changes to the school parking lot will increase the off-street queuing area, allow parents to drop students off on the passenger side of their vehicle, and reduce pedestrian conflicts at the Belmont Avenue cross-walks.
- While there is a slight increase in traffic from the expansion of the school the proposed changes to the parking lot will offset the increased traffic volumes and improve the existing traffic congestion caused by afternoon back-ups out of the school lot.
- Parking for the school provides 49 on-site and 32 off-site parking spaces will meet its projected needs but will require a variation of 118 spaces from the zoning code requirements.



# School Location and Area Roadways



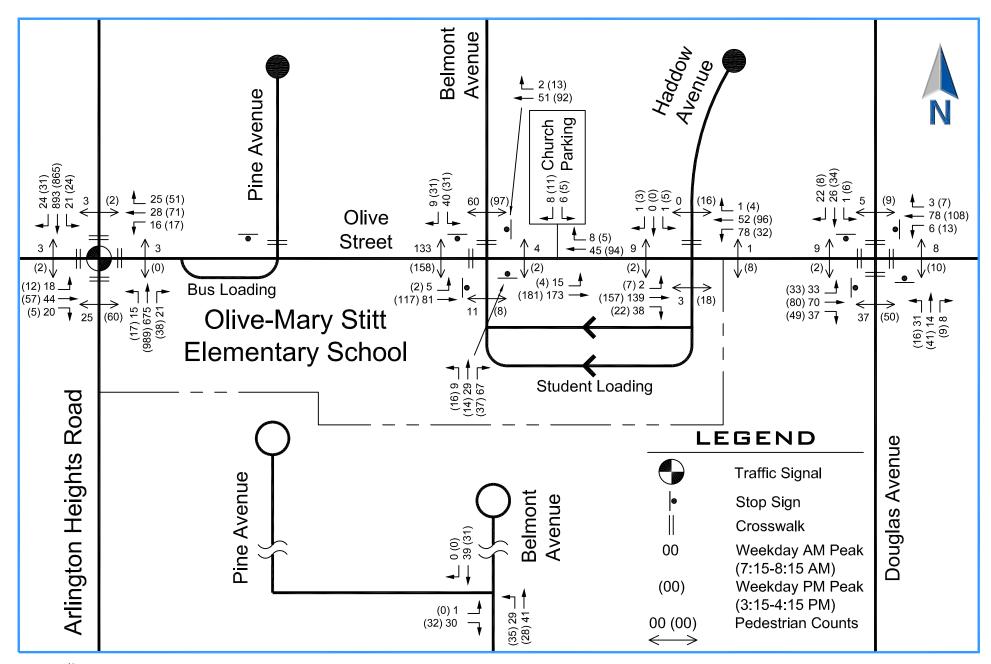




### ERIKSSON ENGINEERING

## ASSOCIATES, LTD.

# **Existing Traffic Control and Parking**

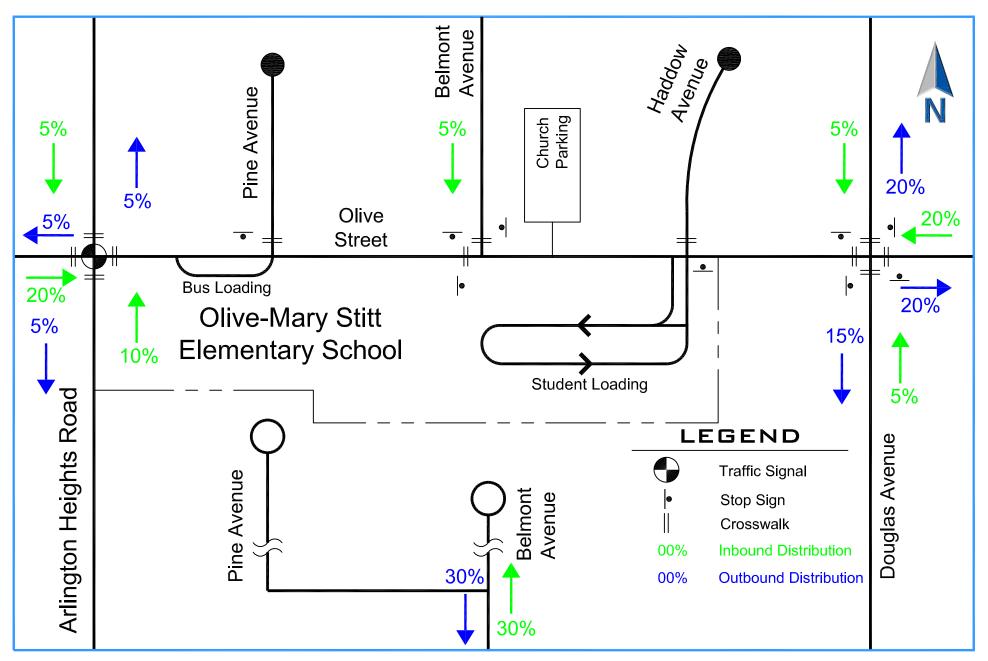




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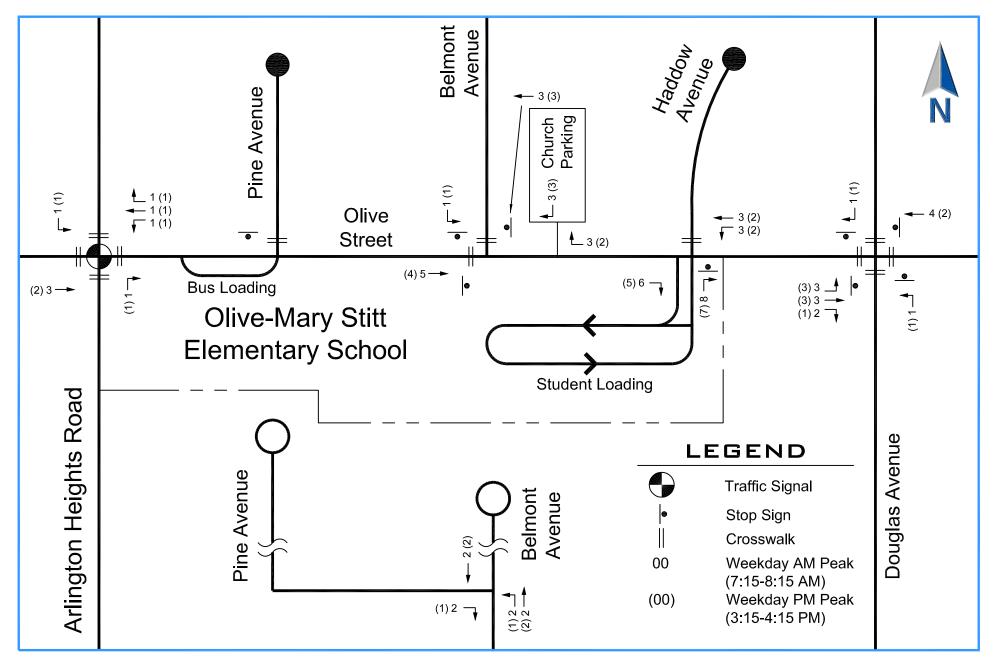
ASSOCIATES, LTD.

# **Existing Traffic Volumes**

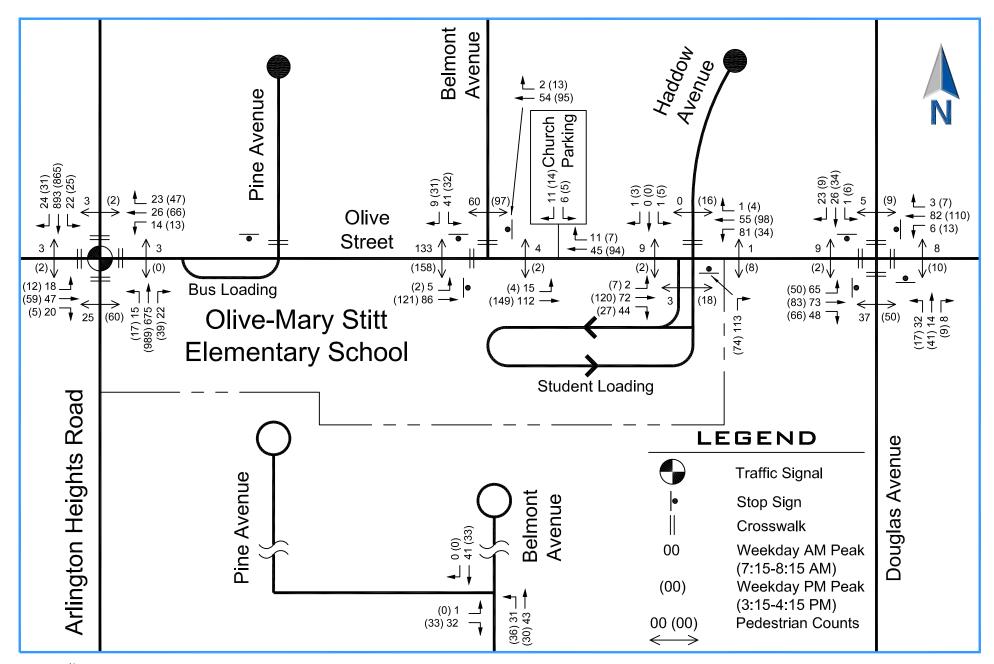




**Directional Distrubution** 



# **Additional School Traffic Volumes**



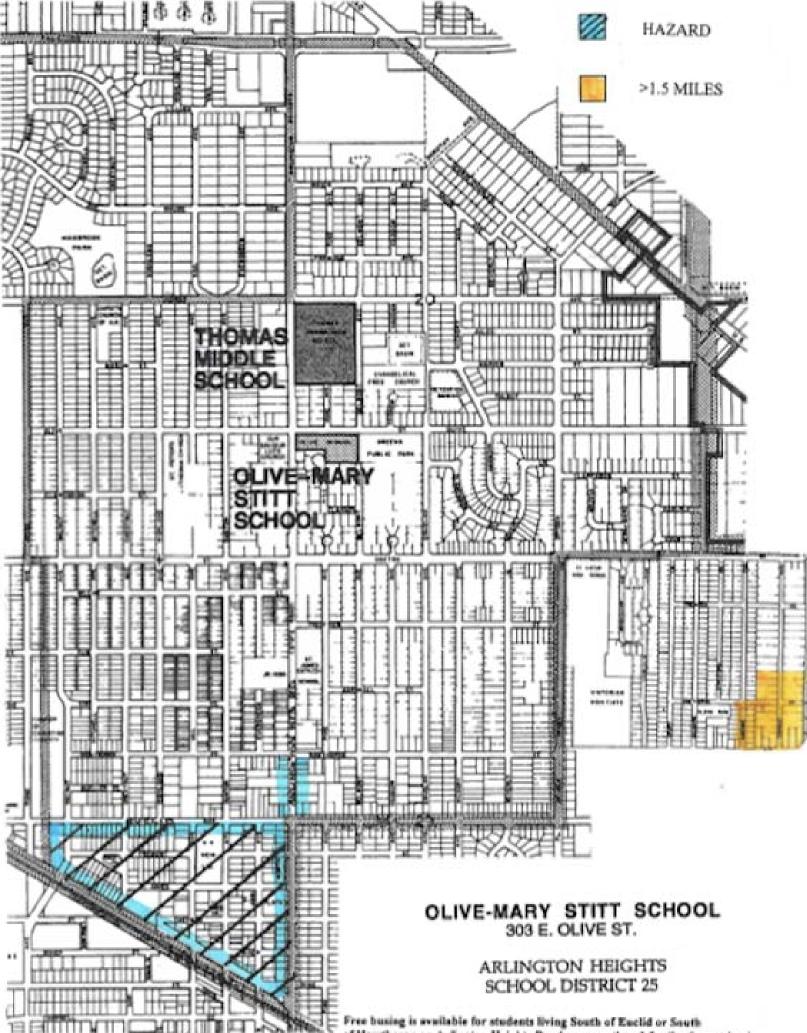


**Total Traffic Volumes** 

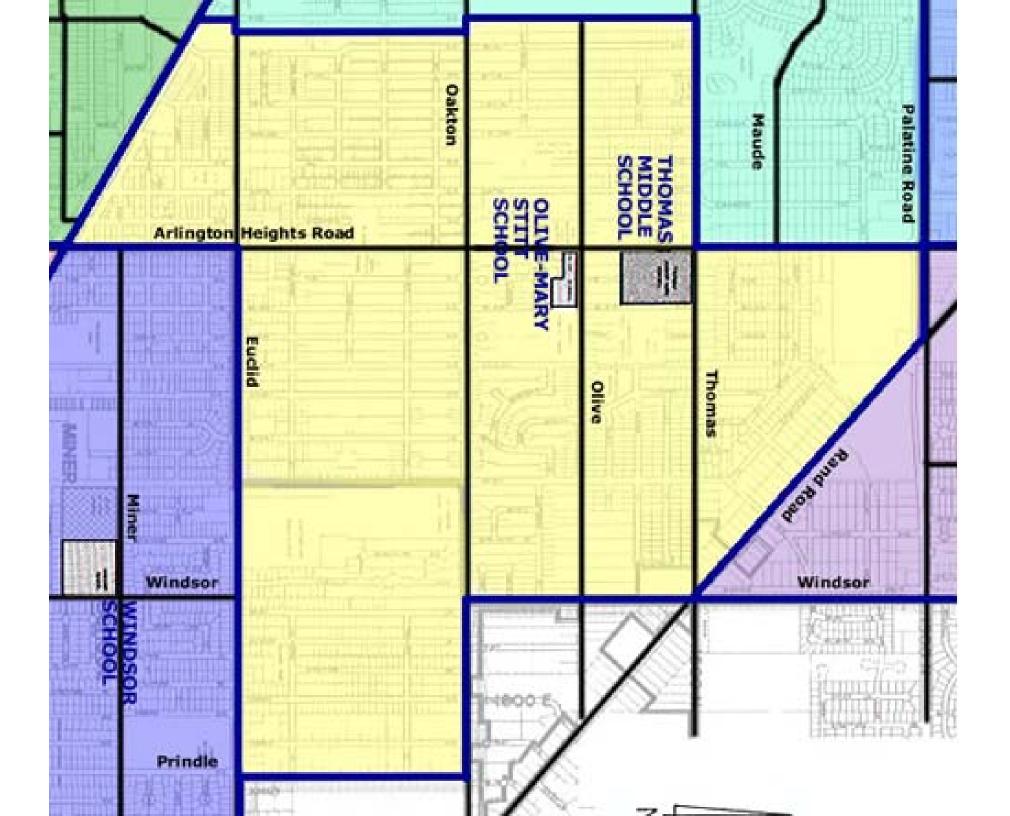
# Traffic and Parking Study Appendix

- School Boundaries and Bussing Areas
- 2015 Existing Traffic Counts
- 2015 Existing Capacity Analyses
- Total Capacity Analyses





of Hawthorne on Arlington Heights Road or more than 1.5 stilles from school





## Intersection Counts Arlington Heights Road at Olive Street

	Arlingt	on Heights	s Schoo	l District	25											Arlington	h Heights, l	llinois	
		ngton Hts I Southboun			Olive Stree Westbound			ngton Hts Northboun			Olive Stree Eastbound		15	60	Peak		Pedestria	n Counts	
Begin	Right		Left	Right		Left	Right		Left	Right		Left	Minute	Minute	Hour	North	East Leg	South	West
Time	Turn	Through	Turn	Turn	Through	Turn	Turn	Through	Turn	Turn	Through	Turn	Totals	Totals	Factor	Leg	East Leg	Leg	Leg
	Wedne	sday May	27, 20	15													Leg		
8:00 AM	11	241	2	5	19	5	7	130	3	5	15	4	447	1845	0.92	0	0	0	0
8:15 AM	8	265	2	3	12	4	4	170	6	6	10	10	500	1797	0.90	0	1	0	0
8:30 AM	7	233	8	7	3	2	9	163	2	4	9	3	450	1630	0.91	1	1	1	1
8:45 AM	8	205	6	3	10	5	5	171	4	6	23	2	448			2	0	18	2
9:00 AM	1	190	2	12	3	5	3	171	3	4	2	3	399			0	1	6	0
9:15 AM	4	155	1	5	5	6	3	144	2	4	1	3	333			0	0	0	0
Total	39	1289	21	35	52	27	31	949	20	29	60	25				3	3	25	3
8:15-9:15 AM	24	893	18	25	28	16	21	675	15	20	44	18	1797			3	3	25	3
	Wedne	sday May	27, 20	15															
3:00 PM	10	223	2	6	20	7	9	195	2	2	5	2	483	2109	0.94	2	0	3	0
3:15 PM	8	204	5	15	7	5	4	259	1	1	12	1	522	2133	0.95	0	0	0	0
3:30 PM	6	224	5	17	17	3	5	241	4	1	13	5	541	2141	0.95	0	0	43	2
3:45 PM	6	219	4	13	31	5	4	261	6	2	10	2	563			0	0	17	0
4:00 PM	11	218	6	6	16	4	3	228	6	1	4	4	507			2	0	0	0
4:15 PM	10	231	4	11	11	6	4	239	1	1	5	7	530			0	0	1	1
Total	51	1319	26	68	102	30	29	1423	20	8	49	21				4	0	64	3
3:15-4:15 PM	31	865	20	51	71	17	16	989	17	5	39	12	2133			2	0	60	2



## Intersection Counts Belmont Avenue/School Parking Lot Exit at Olive Street

	Arlington	Heights S	ichool D	istrict 25									Arlington	Heights,	Illinois	
	Belmont Southl	Avenue bound		e Street tbound		ool Exit D Northboun		Olive S Eastbo		15	60	Peak		Pedestrie	an Counts	
Begin	Right	Left	Right		Right		Left		Left	Minute	Minute	Hour	North Leg	East Leg	South Leg	West Le
Time	Turn	Turn	Turn	Through	Turn	Through	Turn	Through	Turn	Totals	Totals	Factor	Ped.	Ped.	Ped.	Ped.
	Tuesday I	May 26, 2	2015													
8:00 AM	1	4	1	9	1	0	3	29	2	50	239	0.51	0	1	0	1
8:15 AM	3	12	0	7	1	1	5	12	2	43	275	0.59	1	2	0	1
8:30 AM	0	4	0	7	3	2	1	11	1	29	254	0.54	5	2	0	5
8:45 AM	0	13	1	7	37	19	2	38	0	117			50	0	7	94
9:00 AM	6	11	1	12	26	7	1	20	2	86			4	0	4	33
9:15 AM	0	6	1	5	3	0	4	3	0	22			0	7	2	6
Total	10	50	4	47	71	29	16	113	7				60	12	13	140
8:15-9:15 AM	9	40	2	33	67	29	9	81	5	275			60	4	11	133
	Wednesd	ay May 2	7, 2015													
3:00 PM	3	3	0	11	1	0	1	6	0	25	263	0.68	0	0	0	6
3:15 PM	6	3	3	21	2	2	0	19	0	56	300	0.78	5	2	0	10
3:30 PM	9	13	4	15	16	1	0	27	1	86	266	0.69	52	0	5	101
3:45 PM	10	11	3	25	16	9	4	18	0	96			36	0	2	40
4:00 PM	6	4	3	18	3	2	12	13	1	62			4	0	1	7
4:15 PM	2	1	0	10	0	1	0	7	1	22			2	2	1	2
Total	36	35	13	100	38	15	17	90	3				99	4	9	166
3:15-4:15 PM	31	31	13	79	37	14	16	77	2	300			97	2	8	158



## Intersection Counts Haddow Avenue/ School Parking Lot Entrance at Olive Street

	Arlingt	on Heights	s Schoo	l Distric	t 25								Arlington	Heights,	Illinois	
		addow Av Southboun			Olive Stree Westbound			Olive Stree Eastbounc		15	60	Peak		Pedestric	an Counts	
Begin	Right		Left	Right		Left	Right		Left	Minute	Minute	Hour	North Leg	East Leg	South Leg	West Le
Time	Turn	Through	Turn	Turn	Through	Turn	Turn	Through	Turn	Totals	Totals	Factor	Ped.	Ped.	Ped.	Ped.
	Tuesdo	iy May 26,	, 2015													
8:00 AM	1	0	0	0	8	12	12	16	0	49	278	0.45	0	0	1	0
8:15 AM	0	0	0	0	6	7	6	13	1	33	293	0.48	0	0	0	0
8:30 AM	0	0	1	1	7	10	1	23	0	43	281	0.46	0	0	2	0
8:45 AM	0	0	0	0	14	49	22	68	0	153			0	0	1	6
9:00 AM	1	0	0	0	6	12	9	35	1	64			0	1	0	3
9:15 AM	0	0	0	0	5	1	1	14	0	21			0	0	0	0
Total	2	0	1	1	46	91	51	169	2				0	1	4	9
8:15-9:15 AM	1	0	1	1	33	78	38	139	2	293			0	1	3	9
	Thursd	ay May 27	7, 2015													
3:00 PM	0	0	0	2	26	3	6	18	0	55	302	0.66	5	0	1	0
3:15 PM	0	0	0	0	24	11	7	15	0	57	297	0.65	0	0	1	1
3:30 PM	2	0	2	4	24	14	4	58	7	115	286	0.62	8	1	6	1
3:45 PM	1	0	3	0	7	4	8	52	0	75			6	7	6	0
4:00 PM	0	0	0	0	18	3	3	26	0	50			2	0	0	0
4:15 PM	0	0	0	0	18	7	2	19	0	46			2	0	1	0
Total	3	0	5	6	117	42	30	188	7				23	8	15	2
3:15-4:15 PM	3	0	5	4	73	32	22	151	7	297			16	8	13	2



# Intersection Counts

## Church Parking Lot at Olive Street

Arlington Heights	s School	District 2	5	Arlingto	on Heigh	ts, Illinoi	is
	Olive EB	Street WB	-	ng Lot bound	15	60	Peak
Begin	Left Right		Right	Left	Minute	Minute	Hour
Time	Turn	Turn	Turn	Turn	Totals	Totals	Factor
	_	May 26,					
8:00 AM	2	1	0	0	3	32	0.35
8:15 AM	2	0	0	0	2	37	0.40
8:30 AM	2	2	0	0	4	38	0.41
8:45 AM	10	6	5	2	23		
9:00 AM	1	0	3	4	8		
9:15 AM	0	0	1	2	3		
Total	17	9	9	8			
8:15-9:15 AM	15	8	8	6	37		
	Wednesd	lay May 2	27, 2015				
3:00 PM	1	2	0	0	3	26	0.72
3:15 PM	3	4	1	0	8	25	0.69
3:30 PM	1	1	3	1	6	19	0.53
3:45 PM	0	0	5	4	9		
4:00 PM	0	0	2	0	2		
4:15 PM	1 0		1	0	2		
Total	6	7	12	5			
3:15-4:15 PM	4	5	11	5	25		



## Intersection Counts Douglas Avenue at Olive Street

	Arlington Heights School District 25   Douglas Avenue Olive Street Douglas															Arlington	Heights,	Illinois	
		uglas Ave Southboun			Olive Stree Westbound			uglas Ave Northboun			Olive Stree Eastbound		15	60	Peak	Pedestrian Counts		an Counts	
Begin	Right		Left	Right		Left	Right		Left	Right		Left	Minute	Minute	Hour	North Leg	East Leg	South Leg	West Leg
Time	Turn	Through	Turn	Turn	Through	Turn	Turn	Through	Turn	Turn	Through	Turn	Totals	Totals	Factor	Ped.	Ped.	Ped.	Ped.
	Wedne	sday May	27, 20	5															
8:00 AM	2	11	0	2	15	2	4	12	11	1	14	3	77	319	0.57	0	2	0	1
8:15 AM	0	9	0	1	12	2	0	3	5	4	15	2	53	285	0.51	0	0	2	1
8:30 AM	2	5	0	0	10	2	4	2	5	3	11	5	49	264	0.47	0	0	8	4
8:45 AM	10	8	0	2	29	1	2	9	11	22	25	21	140			5	6	27	4
9:00 AM	0	4	1	0	10	1	2	0	0	8	12	5	43			0	2	0	0
9:15 AM	0	6	0	1	9	1	0	5	1	1	6	2	32			0	3	0	0
Total	14	43	1	6	85	9	12	31	33	39	83	38				5	13	37	10
8:15-9:15 AM	12	26	1	3	61	6	8	14	21	37	63	33	285			5	8	37	9
	Wedne	sday May	27, 20	5															
3:00 PM	8	7	1	2	20	1	2	7	4	7	15	3	77	382	0.80	1	1	0	0
3:15 PM	2	6	1	4	33	5	3	7	6	6	15	2	90	386	0.80	0	0	3	0
3:30 PM	5	11	0	1	26	4	2	12	6	16	24	13	120	354	0.74	4	4	40	0
3:45 PM	0	8	2	2	9	0	1	10	2	17	30	14	95			4	0	5	0
4:00 PM	1	9	3	0	22	4	3	12	2	10	11	4	81			1	6	2	2
4:15 PM	0	9	2	2	15	2	1	11	2	4	9	1	58			1	1	0	3
Total	16	50	9	11	125	16	12	59	22	60	104	37				11	12	50	5
3:15-4:15 PM	8	34	6	7	90	13	9	41	16	49	80	33	386			9	10	50	2



# Intersection Counts Pine Avenue at Belmont Avenue

	Arlingto	n Heights	School Di	strict 2	5					Arlington	Heights,	llinois
	South	Belmont nbound	Avenue Northb	ound		Street ound	15	60	Peak	Ped	estrian Co	unts
Begin	Right			Left	Right	Left	Minute	Minute	Hour	North Leg	South Leg	West Leg
Time	Turn	Through	Through	Turn	Turn	Turn	Totals	Totals	Factor	Ped.	Ped.	Ped.
	Thursda	y May 28	, 2015									
8:00 AM	0	0	0	1	1	0	2	122	0.30	0	0	0
8:15 AM	0	1	0	2	6	0	9	140	0.35	0	0	1
8:30 AM	0	1	5	3	1	0	10	137	0.34	4	0	5
8:45 AM	0	29	35	21	16	0	101			4	0	47
9:00 AM	0	8	1	3	7	1	20			0	0	6
9:15 AM	0	1	1	2	2	0	6			3	0	3
Total	0	40	42	32	33	1				11	0	62
8:15-9:15 AM	0	39	41	29	30	1	140			8	0	59
	Wednes	day May (	27, 2015									
3:00 PM	0	1	4	6	1	0	12	128	0.55	0	0	4
3:15 PM	0	2	16	19	1	0	38	126	0.54	0	2	5
3:30 PM	0	18	9	11	20	0	58	98	0.42	8	0	51
3:45 PM	0	9	0	1	10	0	20			0	0	7
4:00 PM	0	2	3	4	1	0	10			0	0	4
4:15 PM	0	2	0	2	6	0	10			0	0	1
Total	0	34	32	43	39	0				8	2	72
3:15-4:15 PM	0	31	28	35	32	0	126			8	2	67

	1103 2	010.3	iynan	zeu	inter se	SCHOI	I NGS	Juits S	umme	al y				
General Information							·	Intersect	tion Info	ormatio	on	1	4244	
Agency	Eriksson Engineerir	าต						Duration,		0.25			4 4	
Analyst	SBC	.9	Analys	sis Dat	e 7/23/2	2015		Area Typ		Other	r	- <u>-</u> -		۲. ۲.
Jurisdiction	IDOT/V of A. Hts.		Time F		AM Ar			PHF		0.90	·		W + E	
Intersection	Olive Street				ar 2015	invai		Analysis	Period	1> 7:0	00	4 7		+ ₹
File Name	A Hts AM exst.xus		/ mary c		2010			Taryois	T Chou	121.	00			F
Project Description	2015 Existing Volur	nes										- 5	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	* * *
1 Toject Description	2013 Existing Volu	1103												
Demand Information	ı			EB			WE	3		NB			SB	
Approach Movement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), veh/h			18	44	20	16	28	25	21	675	15	21	893	24
			I	<b>b</b> 112										
Signal Information		1	-	<b>11</b>	., .	<u> </u>						-+-		_
Cycle, s 120.		2		l 🚮	7 <b>8</b> *						1	$\mathbf{Y}_{2}$	3	
Offset, s 0	Reference Point	End	Green	78.0	30.0	0.0	0.0	0.0	0.0	_				ĸ
Uncoordinated No	Simult. Gap E/W	On	Yellow	-	4.5	0.0	0.0		0.0					
Force Mode Fixed	d Simult. Gap N/S	On	Red	1.5	1.5	0.0	0.0	0.0	0.0		5	6	7	8
The Deck			EDI		EDT			MDT			NDT			ODT
Timer Results			EBI	-	EBT 4	WB	└──	WBT	NBL	·	NBT	SBL	<u> </u>	SBT
Assigned Phase	<u> </u>					<u> </u>	$\rightarrow$	8	<u> </u>	+	2	<u> </u>	$\rightarrow$	6
	case Number					<u> </u>	$\rightarrow$	8.0	<u> </u>	+	8.0	<u> </u>	$\rightarrow$	8.0
	Phase Duration, s					<u> </u>	$\rightarrow$	36.0	<u> </u>	$\rightarrow$	84.0		$\rightarrow$	84.0
Change Period, (Y+F	· ·			$\rightarrow$	6.0		$\rightarrow$	6.0		+	6.0		$\rightarrow$	6.0
Max Allow Headway			<u> </u>		3.3	<u> </u>	$\rightarrow$	3.3	<u> </u>	$\rightarrow$	0.0	<u> </u>	$\rightarrow$	0.0
Queue Clearance Tin			<u> </u>		6.7	<u> </u>	$\rightarrow$	6.0	<u> </u>	_	0.0	<u> </u>	$\rightarrow$	
Green Extension Tim				$\rightarrow$	0.3	<u> </u>	$\rightarrow$	0.3	<u> </u>	$\rightarrow$	0.0		$\rightarrow$	0.0
Phase Call Probabilit	y			$\rightarrow$	1.00	<u> </u>	$\rightarrow$	1.00		$\rightarrow$			$\rightarrow$	
Max Out Probability					0.00			0.00						
Movement Group R	esults			EB			WB			NB			SB	
Approach Movement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Movement			7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (	v), veh/h			91			77		401		389	539		503
Adjusted Saturation F	low Rate (s), veh/h/ln			1729	)		1678		1688		1646	1759		1643
Queue Service Time	( <i>g</i> s), s			0.0			0.0		0.0		5.9	0.0		8.9
Cycle Queue Clearar	ice Time (gc), s			4.7			4.0		5.4		5.9	8.3		8.9
Green Ratio (g/C)				0.25			0.25		0.65		0.65	0.65		0.65
Capacity (c), veh/h				469			456		1129		1070	1175		1068
Volume-to-Capacity F	Ratio (X)			0.194	1		0.168	\$	0.355		0.364	0.459		0.471
Available Capacity (c	a), veh/h			469			456		1129		1070	1175		1068
	eh/In (95th percentile)			4.1			3.4		3.4		3.3	4.7		4.6
	(RQ) (95th percentile			0.00			0.00		0.00		0.00	0.00		0.00
Uniform Delay (d1), s				35.5			35.3		3.5		3.4	3.6		3.7
Incremental Delay (d				0.9			0.8		0.9		1.0	1.3		1.5
	nitial Queue Delay ( <i>d</i> <sub>3</sub> ), s/veh						0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/v			0.0 36.4			36.1		4.3		4.4	4.9		5.2	
Level of Service (LOS			D			D		A		A	A		A	
Approach Delay, s/ve		36.4		D	36.1		D	4.4		A	5.0		A	
Intersection Delay, s/					.4		-				A 0.0			
	· · ·													
<b>Multimodal Results</b>				EB			WB			NB			SB	
		2.7		В	2.7		В	2.1		В	2.1		В	
Pedestrian LOS Scor	e / LOS		2.1					h						

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		1103 2	010 0	ignan	Zeu	inter se	Section	11100	suns c	umma	ai y				
General Inform	nation								Intersec	tion Info	ormatio	on	1	* 7 ** 1	
Agency	lution	Eriksson Engineerir	חמ						Duration		0.25			44	
Analyst		SBC	19	Analys	eie Da	te 7/23/2	2015		Area Typ	•	Other	r	- <u>-</u>		۲. 4
Jurisdiction		IDOT/V of A. Hts.		Time F					PHF		0.90		→ ∻- <b>∻</b>		
Intersection		Olive Street		Analys			IIVai		Analysis	Poriod	1> 7:	00			+ +
File Name		A Hts AM Total.xus		Analys					Analysis	Fenou	/ .	00			<u> </u>
	tion	Total Traffic Volume	-										-	۲۲ Terr	2 to 7
Project Descrip	tion	Total Traffic Volume	s												
Demand Inform	nation				EB	3		W	3		NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), ve	h/h			18	47	20	14	26	6 23	22	675	15	22	893	24
														i and a state	
Signal Informa	tion			-	11										
Cycle, s	120.0	Reference Phase	2			•≠≓ *							$\mathbf{\Psi}$	2	<b>-</b>
Offset, s	0	Reference Point	End	Green	78 (	) 30.0	0.0	0.0	0.0	0.0	_	1		3	M 4
Uncoordinated	No	Simult. Gap E/W	On	Yellow		4.5	0.0	0.0		0.0					$\rightarrow$
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.5	1.5	0.0	0.0		0.0		5	6	7	8
							1								
Timer Results				EBI	-	EBT	WB	L	WBT	NBL	-	NBT	SBL		SBT
Assigned Phase	<u> </u>					4			8			2			6
Case Number						8.0			8.0			8.0			8.0
Phase Duration	Phase Duration, s					36.0			36.0			84.0			84.0
Change Period	, (Y+Rc)	, S				6.0			6.0			6.0			6.0
Max Allow Head	dway ( <i>I</i> /	<i>IAH</i> ), s				3.3			3.3			0.0			0.0
Queue Clearan	ce Time	e ( <i>gs</i> ), s				6.9			5.7						
Green Extensio	n Time	( <i>g</i> <sub>e</sub> ), s				0.3			0.3			0.0			0.0
Phase Call Pro	bability					1.00			1.00						
Max Out Proba	bility					0.00			0.00						
Movement Gro	un Ros	ulte			EB			WB			NB			SB	
Approach Move	-			L	Т	R	L	Т	R	L	T	R	L	T	R
Assigned Move				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow F		veh/h			94			70		400	-	391	539		504
		w Rate (s), veh/h/ln			1738	2		1682	>	1678		1646	1755		1643
Queue Service					0.0	_		0.0	-	0.0		5.9	0.0		8.9
Cycle Queue C		.,.			4.9			3.7		5.4		5.9	8.3		8.9
Green Ratio (g/		e fille ( <i>gc</i> ), 3			0.25			0.25		0.65		0.65	0.65		0.65
Capacity (c), ve	,				471	_		457	_	1123		1070	1172		1068
Volume-to-Cap		tio (X)			0.20			0.153	_	0.356		0.365	0.460		0.472
Available Capa		( )			471			457		1123		1070	1172		1068
· ·		n/ln (95th percentile)			4/1	_		3.1		3.4		3.3	4.7		4.6
		· · · ·			4.2			0.00					0.00		
		RQ) (95th percentile	)		<u> </u>	_				0.00		0.00			0.00
Uniform Delay					35.6 1.0			35.1	-	3.5		3.4	3.6		3.7
	ncremental Delay ( <i>d</i> <sub>2</sub> ), s/veh					_		0.7		0.9		1.0	1.3		1.5
	nitial Queue Delay (d₃), s/veh							0.0		0.0		0.0	0.0		0.0
	Control Delay (d), s/veh					5		35.8		4.4		4.4	4.9		5.2
	Level of Service (LOS) Approach Delay, s/veh / LOS						07.0	D		A		A	A		A
		36.5		D _	35.8	5	D	4.4		А	5.0		A		
Intersection De	iay, s/ve				7	.3						A			
Multimodal De											NB			SB	
Multimodal Re Pedestrian LOS		/1.05		07	EB	В	07	WB	В	2.1	INB	В	0.1	38	P
				2.7	_		2.7						2.1	+	B
Bicycle LOS Sc	ore / LC	13		0.6		A	0.6		A	1.1		A	1.3		A

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	1105 20	010 3	iynan	zeu	inter se	SCHOI	INCS	Suns S	umma	ary				
General Information								Intersec	tion Info	ormati	on	J.	* 7 *	
Agency	Eriksson Engineerir	าต						Duration		0.25	•		4 1	
Analyst	SBC	.9	Analys	sis Dat	e 7/23/2	015		Area Typ		Othe	r	-7 -5		₹. #
Jurisdiction	IDOT/V of A. Hts.		Time F			ismissal		PHF		0.90	•	→ + +	w+E	
Intersection	Olive Street				ar 2015	onnoou		Analysis	Period	1> 7:	00	4 4		-+ ⊋
File Name	A Hts PM Exst.xus		7 thatye		2010			rangele	T ONOG	12 1.	00			E C
Project Description	2015 Exisitng Volu	mes										_	ין אין דיריי די די	P 17 P
Troject Description	2010 Exisiting Volu	ines												
Demand Information				EB			WE	3		NB			SB	
Approach Movement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), veh/h			12	57	5	17	71	51	38	989	17	24	865	5 31
				<b>6 11</b>										11
Signal Information		r	-	<b>.</b>								-+-		_
Cycle, s 130.0		2		l 51	7 <b>8</b> *						1	$\mathbf{Y}_{2}$	3	
Offset, s 0	Reference Point	End	Green	92.8	25.2	0.0	0.0	0.0	0.0					ĸ
Uncoordinated No	Simult. Gap E/W	On	Yellow		4.5	0.0	0.0	0.0	0.0					
Force Mode Fixed	Simult. Gap N/S	On	Red	1.5	1.5	0.0	0.0	0.0	0.0		5	6	7	8
			EDI		-67	14/5		MOT			NET	0.51		0.5.7
Timer Results			EBI	-	EBT	WB		WBT	NBL	-	NBT	SBL		SBT
Assigned Phase			<u> </u>		4		$\rightarrow$	8	<u> </u>		2		$\rightarrow$	6
Case Number					8.0			8.0			8.0		-+	8.0
Phase Duration, s					31.2			31.2			98.8		$\rightarrow$	98.8
Change Period, (Y+R	·				6.0			6.0			6.0		$ \rightarrow$	6.0
Max Allow Headway (	· · ·				3.3			3.3			0.0		$\rightarrow$	0.0
	ueue Clearance Time ( $g_s$ ), s				6.7			11.9						
Green Extension Time	-				0.4			0.4			0.0		$\perp$	0.0
Phase Call Probability	,				1.00			1.00						
Max Out Probability					0.00			0.00						
Movement Group Re	sults			EB			WB			NB			SB	
Approach Movement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Movement			7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v	), veh/h			82			154		579		581	519		504
Adjusted Saturation F				1818	;		1742	1	1633		1650	1684		1638
Queue Service Time (				0.0			0.0	1	0.0		4.8	0.0		4.3
Cycle Queue Clearan	ce Time (gc), s			4.7			9.9		4.6		4.8	3.6		4.3
Green Ratio (g/C)				0.19			0.19	1	0.71		0.71	0.71		0.71
Capacity (c), veh/h				385			369		1196		1178	1231		1169
Volume-to-Capacity R	atio (X)			0.214	_		0.419	)	0.484		0.494	0.421		0.431
Available Capacity (ca				385			369		1196		1178	1231		1169
Back of Queue (Q), ve	:			4.3			8.4		2.7		2.5	2.2		2.3
Queue Storage Ratio	, , ,			0.00			0.00		0.00		0.00	0.00		0.00
Uniform Delay ( <i>d</i> <sub>1</sub> ), s/		,		44.1	_		46.2		1.4		1.2	1.2		1.3
Incremental Delay (d2)				1.3			3.5		1.4		1.5	1.1		1.2
Initial Queue Delay (d				0.0			0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/ve	-			45.4			49.7		2.8		2.7	2.3		2.5
Level of Service (LOS				D			D	1	A		A	A		A
Approach Delay, s/veł	·		45.4	L	D	49.7		D	2.7		A	2.4		A
Intersection Delay, s/v						.0						A		
Multimodal Results				EB			WB			NB			SB	
Pedestrian LOS Score	e / LOS		2.7		В	2.7		В	2.1		В	2.1		В
			0.6		А	0.7		А	1.4		А	1.3		А

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	00 20	510 0	ignan	ZCU	inter se	501101	i nee	Sult3 C	amme	al y				
General Information								Intersec	tion Info	ormatio	on	4	4.244	
Agency Eriksson Eng	aineerin	na						Duration	. h	0.25			4 1	
Analyst SBC	,	5	Analys	sis Da	te 7/23/2	015		Area Typ		Other	r			~▲
Jurisdiction IDOT/V of A.	Hts		Time F			smissal		PHF	-	0.90		 	W.FE	÷-
Intersection Olive Street	11101		Analys			onnoou		Analysis	Period	1> 7:	00	4		+ ▼
File Name A Hts PM Tot	al vus		7 thatye					, analysis	1 onou		00			r i i i i i i i i i i i i i i i i i i i
Project Description Total Traffic \		<u>د</u>										- 5	ין וי אילי לא	141
	Volume	3												
Demand Information				EB			WE	3		NB			SB	1.
Approach Movement			L	Т	R	L	Т	R	L	T	R	L	Т	R
Demand (v), veh/h			12	59	5	13	66	47	38	989	39	25	865	31
				<b>b</b> 112						_				
Signal Information			=	11	, <b>,</b> ,							-+-		-
Cycle, s 130.0 Reference P		2		1 5	r 🛱 📍						1		3	
Offset, s 0 Reference P		End	Green	92.8	25.2	0.0	0.0	0.0	0.0					ĸ
Uncoordinated No Simult. Gap		On	Yellow		4.5	0.0	0.0		0.0					
Force Mode Fixed Simult. Gap	N/S	On	Red	1.5	1.5	0.0	0.0	0.0	0.0		5	6	7	8
		_												
Timer Results			EBI	-	EBT	WB		WBT	NBL	-	NBT	SBL	·	SBT
Assigned Phase			<u> </u>		4		$\rightarrow$	8	<u> </u>	_	2		$\rightarrow$	6
Case Number					8.0	<u> </u>		8.0	<u> </u>		8.0		_	8.0
Phase Duration, s				-+	31.2		$\rightarrow$	31.2		$\rightarrow$	98.8			98.8
	Change Period, (Y+ <i>Rc</i> ), s				6.0			6.0			6.0		_	6.0
1ax Allow Headway ( <i>MAH</i> ), s					3.3			3.3			0.0			0.0
	Queue Clearance Time ( $g_s$ ), s				6.9			10.9						
Green Extension Time ( $g_e$ ), s					0.4		-	0.4			0.0			0.0
Phase Call Probability					1.00			1.00						
Max Out Probability					0.00			0.00						
Movement Group Results				EB			WB			NB			SB	
Approach Movement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Movement			7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				84			140		595		590	517		506
Adjusted Saturation Flow Rate (s), ve	eh/h/ln			1824	1		1750		1640		1635	1671		1638
Queue Service Time (gs), s				0.0			0.0		0.0		5.8	0.0		4.3
Cycle Queue Clearance Time ( $g_c$ ), s				4.9			8.9		4.8		5.8	3.6		4.3
Green Ratio (g/C)				0.19			0.19		0.71		0.71	0.71		0.71
Capacity (c), veh/h				386			370		1200		1167	1222		1169
Volume-to-Capacity Ratio ( <i>X</i> )				0.219			0.379	9	0.496		0.505	0.423		0.433
Available Capacity ( <i>c</i> <sub>a</sub> ), veh/h				386			370		1200		1167	1222		1169
Back of Queue $(Q)$ , veh/ln (95th perc	centile)			4.5			7.7		2.8		2.9	2.2		2.3
Queue Storage Ratio ( <i>RQ</i> ) (95th per				0.00			0.00		0.00		0.00	0.00		0.00
Uniform Delay $(d_1)$ , s/veh				44.2	_		45.8	_	1.4		1.4	1.2		1.3
Incremental Delay ( <i>d</i> <sub>2</sub> ), s/veh				1.3			2.9		1.5		1.6	1.1		1.2
Initial Queue Delay ( <i>d</i> <sub>2</sub> ), s/veh				0.0			0.0		0.0		0.0	0.0		0.0
Control Delay ( <i>d</i> ), s/veh				45.5			48.8		2.8		3.0	2.3		2.5
Level of Service (LOS)				D			D		A		A	A		A
Approach Delay, s/veh / LOS			45.5		D	48.8		D	2.9		A	2.4		A
Intersection Delay, s/veh / LOS			70.0			.8		5	2.3			A 2.4		~
					0									
	Aultimodal Posults						B		NB		SB			
Multimodal Results				EB			WB			NB			SB	
Multimodal Results Pedestrian LOS Score / LOS			2.7	1	В	2.7		В	2.1	NB	В	2.1	SB	В

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		ALL-WA	Y STOP C	ONTROL	ANALYS	S			
General Information				Site Infor	mation				
Analyst	SBC			Intersection		Belmo	ont/School Exit a	t Olive	
Agency/Co.		on Engineerin	g	Jurisdiction			e of Arlington He		
Date Performed	7/23/2	015		Analysis Yea	r	2015	Existing Volume:	S	
Analysis Time Period	AM An	rival Period							
Project ID									
East/West Street: Olive Stre				North/South S	Street: Belmont	/School Lot Exi	t		
Volume Adjustments	and Site Cl								
Approach			Eastbound			We	estbound		
Movement Volume (veh/h)	L 5		т 81	R 0	L 0		т 51	R 2	
%Thrus Left Lane			07	0			57	2	
Approach			Northbound				uthbound		
Movement			T	R	L	300		R	
/olume (veh/h)	9		29	67	40		0	9	
%Thrus Left Lane			_	-				-	
	E cont	bound	1/1/0/	stbound	Nort	hbound	South	hbound	
		T	_	1		1		1	
O fi ti		L2	L1	L2		L2	L1	L2	
Configuration		<u> </u>	TR		LTR		LR		
PHF	0.59	<u> </u>	0.59		0.59		0.59		
Flow Rate (veh/h)	145	<b> </b>	89		177		82		
% Heavy Vehicles	0		0		0		0		
No. Lanes	-	1		1		1	1		
Geometry Group	_	1		1		1		1	
Duration, T				0	.25				
Saturation Headway	Adjustment	Workshe	et	*		-			
Prop. Left-Turns	0.1		0.0		0.1		0.8		
Prop. Right-Turns	0.0		0.0		0.6		0.2		
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0		
nLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	
hadj, computed	0.0	1.1	-0.0	1.1	-0.4	1.1	0.1	1.1	
		Time	-0.0		-0.4		0.1		
Departure Headway			0.00	1		<u> </u>	0.00	<del>r</del>	
hd, initial value (s)	3.20		3.20		3.20	_	3.20		
k, initial	0.13	<b> </b>	0.08		0.16		0.07		
hd, final value (s)	4.62	<b> </b>	4.66		4.21		4.73	┨────	
x, final value	0.19		0.12		0.21		0.11		
Move-up time, m (s)		.0	_	2.0	-i	2.0		.0	
Service Time, t <sub>s</sub> (s)	2.6		2.7		2.2		2.7		
Capacity and Level o	of Service								
	East	bound	We	stbound	Nort	hbound	South	hbound	
	L1	L2	L1	L2	L1	L2	L1	L2	
Capacity (veh/h)	395	1	339	1	427	1	332	1	
Delay (s/veh)	8.67		8.26	+	8.30		8.29	<u> </u>	
	_				-		_		
OS	A		A		A		A		
Approach: Delay (s/veh)	3	3.67	_	.26	8.	30	8.	29	
LOS		Α		A A				4	
ntersection Delay (s/veh)				8	.40				
Intersection LOS					A				

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General Information				Site Inform	ation			
				Site Inform	alion	Dala: -	nt/School Fuit -	Oliva
Analyst Agency/Co.	SBC	on Engineerin	~	Intersection Jurisdiction			nt/School Exit at of Arlington He	
Agency/Co. Date Performed	Erikss 7/23/2	on Engineering 2015	d and a second se	Analysis Year			Traffic Volumes	<b>y</b>
Analysis Time Period		rrival Period Pe	eriod					
Project ID Includes closure of	existing parking	g lot exit						
East/West Street: Olive Street	et			North/South Str	eet: Belmont/	School Lot Exit		
/olume Adjustments	and Site C							
Approach Movement			Eastbound	R		We	stbound T	
/olume (veh/h)	5	5	86	0			54	R 2
6Thrus Left Lane		,		0	Ť		<u> </u>	L
Approach		I	Northbound			Sou	thbound	
Vovement	L		T	R	L		T	R
/olume (veh/h)					41		0	9
%Thrus Left Lane								
	Eas	tbound	Wes	stbound	North	nbound	South	bound
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	1	TR				LR	
PHF	0.59		0.59				0.59	
Flow Rate (veh/h)	153		94				84	
% Heavy Vehicles	0		0				0	
No. Lanes		1		1	(	2	1	1
Geometry Group		1		1			1	1
Duration, T				0.2	5			
Saturation Headway	Adjustmen	t Workshe	et					
Prop. Left-Turns	0.1		0.0				0.8	
Prop. Right-Turns	0.0	1	0.0				0.2	l I
Prop. Heavy Vehicle	0.0	1	0.0	1 1			0.0	
nLT-adj	0.2	0.2	0.2	0.2			0.2	0.2
nRT-adj	-0.6	-0.6	-0.6	-0.6			-0.6	-0.6
nHV-adj	1.7	1.7	1.7	1.7			1.7	1.7
adj, computed	0.0	+ '.'	-0.0	,.,			0.1	···/
Departure Headway a		Time	0.0			<u> </u>	0.1	I
id, initial value (s)	3.20		3.20				3.20	
k, initial	0.14		0.08	1 1			0.07	
nd, final value (s)	4.21		4.24	1 1			4.50	1
, final value	0.18	1	0.11	1 1			0.11	1
Nove-up time, m (s)		2.0		2.0		<b>a</b>	2.	0
Service Time, t <sub>s</sub> (s)	2.2		2.2				2.5	
Capacity and Level o	f Service					•		
	Eas	tbound	Wes	stbound	North	ibound	South	bound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	403		344				334	
Delay (s/veh)	8.13		7.77				8.03	
.OS	A		A			1	Α	1
Approach: Delay (s/veh)	8.13 7.77 8.0					03		
LOS		A	_	A			4	
ntersection Delay (s/veh)				8.0	0		,	
ntersection LOS	A							

General Information				Site Inforr	nation			
					nation	D-14	nt/School Fuit -	t Olive
Analyst	SBC	on Engineerin		Intersection Jurisdiction			nt/School Exit a e of Arlington He	
Agency/Co. Date Performed	Erikss 7/23/2	on Engineering 015	1	Analysis Year	r		Existing Volume	0
Analysis Time Period		smissal Period						
Project ID				L				
East/West Street: Olive Stree	et			North/South S	Street: Belmont/	School Lot Exit		
Volume Adjustments	and Site C	haracterist	tics					
Approach			Eastbound			We	stbound	
Movement Volume (veh/h)	L 2		117	R 0	L 0		т 92	R 13
%Thrus Left Lane	2		117	0			92	13
Approach			lorthbound			Sou	thbound	
Novement	L		T	R	L	300	T	R
Volume (veh/h)	1	6	14	37	31		0	31
%Thrus Left Lane								
	Eas	tbound	We	stbound	North	nbound	Sout	hbound
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT		TR		LTR		LR	
PHF	0.78		0.78		0.78		0.78	
Flow Rate (veh/h)	152		133		84		78	
% Heavy Vehicles	0		0	+	0		0	
No. Lanes	-	1		1		1		1
Geometry Group		1	-	1		1	-	1
Duration, T				<u>,</u>	.25	,		
Saturation Headway	⊥ ∆diustment	Workshe	et		.20			
Prop. Left-Turns	0.0		0.0		0.2	1	0.5	1
Prop. Right-Turns	0.0		0.0		0.2		0.5	
-	0.0		0.0	-	0.0		0.0	
Prop. Heavy Vehicle		0.0		0.0	_	0.0	-	0.0
nLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
nRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
nHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
nadj, computed	0.0		-0.1		-0.3		-0.2	
Departure Headway a		Time						
nd, initial value (s)	3.20		3.20		3.20		3.20	
k, initial	0.14		0.12		0.07		0.07	
nd, final value (s)	4.43		4.38		4.36		4.46	
(, final value	0.19		0.16		0.10		0.10	
Move-up time, m (s)		.0	_	2.0		.0		.0
Service Time, t <sub>s</sub> (s)	2.4		2.4		2.4		2.5	
Capacity and Level o	1							
	-	tbound	-	stbound	-	nbound		hbound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	402	<b> </b>	383		334	ļ	328	<b> </b>
Delay (s/veh)	8.45		8.22		7.86		7.93	
.OS	A		А		А		А	
Approach: Delay (s/veh)		8.45	8	.22	7.	86	7.	93
LOS		A		A	/	4		4
Intersection Delay (s/veh)	1		- #		.18		-	
ntersection LOS	A							

				1					
General Information				Site Inform	ation				
Analyst	SBC			Intersection			ont/School Exit a		
Agency/Co. Date Performed	Erikss 7/23/2	on Engineerin	g	Jurisdiction Analysis Year			e of Arlington He Traffic Volumes	ignts	
Analysis Time Period		ismissal Period	l Period	-					
Project ID Includes closure of	existing parking	ı lot exit							
East/West Street: Olive Street				North/South St	reet: Belmont	School Lot Exi	t		
/olume Adjustments	and Site C	haracteris	tics				-		
Approach			Eastbound			We	stbound		
Novement	L		Т	R	L		Т	R	
/olume (veh/h)	2	<u> </u>	121	0	0		95	13	
%Thrus Left Lane									
Approach Movement			Northbound T	R	L	Sou	uthbound	R	
/olume (veh/h)				IX.	32		0	31	
6Thrus Left Lane							-	<u> </u>	
		tbound	10/00	stbound	North	nbound		nbound	
		r	_	1		r	-	r	
		L2	L1	L2	L1	L2	L1	L2	
Configuration	LT		TR				LR	──	
PHF	0.78		0.78				0.78	╂────	
Flow Rate (veh/h) % Heavy Vehicles	157 0		<u>137</u> 0				80 0		
No. Lanes	-	1		1		0		1	
Geometry Group		<u>1</u> 1	_	1		0	1		
Duration, T		1		0.2	25			1	
	<u> </u>	h Markaha	<b>.</b>	0.2	20				
Saturation Headway	1		ñ.			1	1	r	
Prop. Left-Turns	0.0		0.0	_			0.5		
Prop. Right-Turns	0.0		0.1				0.5		
Prop. Heavy Vehicle	0.0		0.0				0.0		
ILT-adj	0.2	0.2	0.2	0.2			0.2	0.2	
nRT-adj	-0.6	-0.6	-0.6	-0.6			-0.6	-0.6	
nHV-adj	1.7	1.7	1.7	1.7			1.7	1.7	
adj, computed	0.0		-0.1				-0.2		
Departure Headway a	and Service	Time							
id, initial value (s)	3.20		3.20				3.20		
<, initial	0.14		0.12				0.07		
id, final value (s)	4.23		4.18				4.35		
, final value	0.18		0.16				0.10		
love-up time, m (s)	-	2.0	_	2.0			2	.0	
Service Time, t <sub>s</sub> (s)	2.2		2.2				2.4		
Capacity and Level o	f Service								
	Eas	tbound	Wes	stbound	Norti	nbound	South	nbound	
	L1	L2	L1	L2	L1	L2	L1	L2	
Capacity (veh/h)	407		387				330		
Delay (s/veh)	8.18		7.97				7.82		
.OS	A		A				Α		
Approach: Delay (s/veh)		8.18		.97		-		82	
LOS		A	_	A			_	4	
ntersection Delay (s/veh)			1	8.0	03		· · · ·		
ntersection LOS				A					

		O-WAY STOP							
General Information	n		Site Ir	nforma	ation				
Analyst	SBC		Interse	ction		Church L	ot on Olive	Street	
Agency/Co.		Engineering	Jurisdi	ction		Village of	Arlington	Hts.	
Date Performed	7/23/2015	5	Analys	is Year		2015 Exis	sting Volun	nes	
Analysis Time Period	AM Arriva	al Period							
Project Description									
East/West Street: Olive			North/S	South Sti	reet: Churc	ch Parking Lo	t		
ntersection Orientation:	East-West		Study F	Period (h	nrs): 0.25				
Vehicle Volumes ar	nd Adjustme	ents							
Major Street		Eastbound				Westbou	nd		
Movement	1	2	3		4	5		6	
	L	Т	R		L	Т		R	
/olume (veh/h)	15	173				45		8	
Peak-Hour Factor, PHF	0.40	0.40	1.00		1.00	0.40		0.40	
Hourly Flow Rate, HFR (veh/h)	37	432	0		0	112		19	
Percent Heavy Vehicles	0				0				
Median Type		u-		Undivid	ded				
RT Channelized			0					0	
_anes	0	1	0		0	1		0	
Configuration	LT							TR	
Jpstream Signal		0				0	0		
Minor Street		Northbound				Southbou	Ind		
Movement	7	8	9		10	11		12	
	L	Т	R		L	Т		R	
Volume (veh/h)					6				
Peak-Hour Factor, PHF	1.00	1.00	1.00		0.40	1.00		0.40	
Hourly Flow Rate, HFR (veh/h)	0	0	0		14	0		0	
Percent Heavy Vehicles	0	0	0		0	0		0	
Percent Grade (%)		0				0			
Flared Approach		N				N			
Storage		0				0			
RT Channelized			0					0	
Lanes	0	0	0		0	0		0	
Configuration						LR			
Delay, Queue Length, a	and Level of Se	ervice							
Approach	Eastbound	Westbound	١	Vorthbou	und	S	outhbound	1	
Vovement	1	4	7	8	9	10	11	12	
ane Configuration	LT			-			LR		
v (veh/h)	37						14	1	
C (m) (veh/h)	1467						439	+	
//C	0.03					-	0.03		
95% queue length	0.08						0.10		
Control Delay (s/veh)	7.5				_		13.5	<b> </b>	
LOS	A						В		
Approach Delay (s/veh)							13.5		
Approach LOS						1	B		

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		O-WAY STOP							
General Informatio	n		Site Ir	nforma	ation				
Analyst	SBC		Interse	ction		Church L	ot on Olive	Street	
Agency/Co.	Eriksson	Engineering	Jurisdi	ction		Village of	Arlington I	Hts.	
Date Performed	7/23/201	5	Analys	is Year		Total Tra	ffic Volume	es	
Analysis Time Period	AM Arriva	al Period							
Project Description									
East/West Street: Olive	Street					h Parking Lo	t		
Intersection Orientation:	East-West		Study F	Period (h	nrs): 0.25				
Vehicle Volumes a	nd Adjustme	ents							
Major Street		Eastbound				Westbou	nd		
Movement	1	2	3		4	5		6	
	L	Т	R		L	Т		R	
Volume (veh/h)	15	112				45		11	
Peak-Hour Factor, PHF	0.40	0.40	1.00		1.00	0.40		0.40	
Hourly Flow Rate, HFR (veh/h)	37	279	0		0	112		27	
Percent Heavy Vehicles	0				0				
Median Type		5		Undivid	ded				
RT Channelized			0					0	
_anes	0	1	0		0	1		0	
Configuration	LT							TR	
Jpstream Signal		0				0	0		
Minor Street		Northbound				Southbou	Ind		
Movement	7	8	9		10	11		12	
	L	Т	R		L	Т		R	
Volume (veh/h)					6			11	
Peak-Hour Factor, PHF	1.00	1.00	1.00		0.40	1.00		0.40	
Hourly Flow Rate, HFR (veh/h)	0	0	0		14	0		27	
Percent Heavy Vehicles	0	0	0		0	0		0	
Percent Grade (%)		0				0			
Flared Approach		N				N			
Storage		0				0			
RT Channelized		1	0					0	
Lanes	0	0	0		0	0		0	
Configuration						LR			
Delay, Queue Length, a	and Level of Se	ervice							
Approach	Eastbound	Westbound	1	lorthbou	und	s	outhbound	1	
Movement	1	4	7	8	9	10	11	12	
_ane Configuration	LT			-			LR		
v (veh/h)	37					1	41		
C (m) (veh/h)	1457						743	1	
//c	0.03						0.06		
							-		
95% queue length	0.08				_		0.17	<u> </u>	
Control Delay (s/veh)	7.5				_		10.1	<b> </b>	
LOS	A						В		
						10.1			
Approach Delay (s/veh) Approach LOS						_	В		

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	TW	O-WAY STOP	CONTRO	OL SU	JWN	IARY			
General Information	า		Site Ir	nform	atic	on			
Analyst	SBC		Interse	ction			Church Lo	ot on Olive	Street
Agency/Co.	Eriksson	Engineering	Jurisdi	ction			Village of	Arlington I	Hts.
Date Performed	7/23/201		Analys	is Year	r		2015 Exis		
Analysis Time Period	Afternoor	n Dismissal Period							
Project Description									
East/West Street: Olive	Street						Parking Lot	-	
ntersection Orientation:	East-West		Study F	Period (	(hrs)	: 0.25			
Vehicle Volumes ar	nd Adjustme	nts							
Major Street		Eastbound					Westbou	nd	
Movement	1	2	3			4	5		6
	L	Т	R			L	Т		R
/olume (veh/h)	4	181					94		5
Peak-Hour Factor, PHF	0.65	0.65	1.00			1.00	0.65		0.65
Hourly Flow Rate, HFR veh/h)	6	278	0			0	144		7
Percent Heavy Vehicles	0					0			
Vedian Type				Undiv	vided				
RT Channelized			0						0
anes	0	1	0			0	1		0
Configuration	LT								TR
Jpstream Signal		0					0		
Minor Street		Northbound					Southbou	ind	
Movement	7	8	9			10	11		12
	L	Т	R			L	Т		R
Volume (veh/h)						5			11
Peak-Hour Factor, PHF	1.00	1.00	1.00			0.65	1.00		0.65
Hourly Flow Rate, HFR veh/h)	0	0	0			7	0		16
Percent Heavy Vehicles	0	0	0			0	0		0
Percent Grade (%)		0					0		
Flared Approach		N					N		
Storage		0					0		
RT Channelized			0						0
Lanes	0	0	0			0	0		0
Configuration	1		1				LR		
Delay, Queue Length, a	nd Level of Se	rvice						-	
Approach	Eastbound	Westbound	1	Vorthbo	ound		s	outhbound	ł
Vovement	1	4	7	8		9	10	11	12
_ane Configuration	LT					-		LR	
v (veh/h)	6						1	23	
C (m) (veh/h)	1442							772	
//c	0.00							0.03	
95% queue length	0.01							0.09	—
Control Delay (s/veh)	7.5						ļ	9.8	
LOS	A						ļ	A	
Approach Delay (s/veh)								9.8	
Approach LOS							1	Α	

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	TW	O-WAY STOP	CONTR	OL SL	JWN	<b>IARY</b>				
General Informatio	n		Site Ir	nform	atic	on				
Analyst	SBC		Interse	ction			Church Lo	ot on Olive	Street	
Agency/Co.	Eriksson	Engineering	Jurisdi	ction			Village of	Arlington	Hts.	
Date Performed	7/23/201		Analys	is Year	-			fic Volume		
Analysis Time Period	Afternoor	n Dismissal Period								
Project Description										
East/West Street: Olive	Street		North/S	South S	tree	t: Church	Parking Lot	t		
ntersection Orientation:	East-West		Study F	Period (	(hrs)	: 0.25				
Vehicle Volumes ar	nd Adiustme	nts								
Major Street	1	Eastbound					Westbou	nd		
Movement	1	2	3			4	5		6	
	L	Т	R			L	Т		R	
/olume (veh/h)	4	149					94		7	
Peak-Hour Factor, PHF	0.65	0.65	1.00			1.00	0.65		0.65	
Hourly Flow Rate, HFR veh/h)	6	229	0			0	144		10	
Percent Heavy Vehicles	0					0				
Vedian Type				Undiv	rided	1				
RT Channelized			0						0	
anes	0	1	0			0	1		0	
Configuration	LT								TR	
Jpstream Signal		0					0			
Vinor Street		Northbound					Southbou	Ind		
Vovement	7	8	9			10	11		12	
	L	Т	R			L	Т		R	
/olume (veh/h)						5			14	
Peak-Hour Factor, PHF	1.00	1.00	1.00			0.65	1.00		0.65	
Hourly Flow Rate, HFR (veh/h)	0	0	0			7	0		21	
Percent Heavy Vehicles	0	0	0			0	0		0	
Percent Grade (%)		0					0			
-lared Approach		N					N			
Storage		0	1				0			
RT Channelized			0				1		0	
_anes	0	0	0			0	0		0	
Configuration		Ť	Ť			-	LR		-	
Delay, Queue Length, a	and Level of Se	rvice						1		
Approach	Eastbound	Westbound	1	Northbo	ound		8	outhbound	d	
Novement	1	4	7	8		9	10	11	12	
ane Configuration	LT		1	0				LR	12	
-	6									
/ (veh/h)								28		
C (m) (veh/h)	1439						<b></b>	808		
//c	0.00						<u> </u>	0.03	1	
95% queue length	0.01							0.11		
Control Delay (s/veh)	7.5							9.6		
LOS	А							A		
Approach Delay (s/veh)						-		9.6		
Approach LOS							1	A		
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	TW	O-WAY STOP	CONTR	OL SUI	MMARY			
General Informatior	ו		Site I	nforma	tion			
Analyst	SBC		Interse	ection			School Enti	'y at
Agency/Co.	Eriksson	Engineering	Jurisdi	otion		Olive	Arlington H	Jto.
Date Performed	7/23/2015			is Year			sting Volum	
Analysis Time Period	AM Arriva	al Period	Analys			2015 EXIS	sung volum	100
Project Description								
East/West Street: Olive	Street		North/S	South Str	eet: Haddo	w/School En	try	
ntersection Orientation:					rs): 0.25			
Vehicle Volumes an	d Adjustme	nts						
Major Street		Eastbound		<u> </u>		Westbou	nd	
Movement	1	2	3		4	5		6
	L	Т	R		L	Т		R
Volume (veh/h)	2	139	38		78	52		1
Peak-Hour Factor, PHF	0.48	0.48	0.48		0.48	0.48	(	0.48
Hourly Flow Rate, HFR	4	289	79		162	108		2
(veh/h) Percent Heavy Vehicles	0				0			
Median Type	0			Undivid				
RT Channelized	+	1	0			1		0
	0	1	0		0	1		0
Lanes Configuration	LTR	/	0		LTR	/		0
Jpstream Signal	LIK	0			LIK	0		
Minor Street		Northbound				Southbou		
Movement	7	8	9		10	11		12
Novement	, L	т	R		L	Т Т		R
Volume (veh/h)					1	0		IX.
Peak-Hour Factor, PHF	1.00	1.00	1.00		0.48	0.48		0.48
Hourly Flow Rate, HFR	0	0	0		2	0		0
(veh/h)								-
Percent Heavy Vehicles	0	0	0		0	0		0
Percent Grade (%)		0				0		
Flared Approach		N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	0	0		0	1		0
Configuration						LTR		
Delay, Queue Length, a	nd Level of Se	rvice						
Approach	Eastbound	Westbound		Northbou	Ind	S	outhbound	
Vovement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR					LTR	
v (veh/h)	4	162					2	
C (m) (veh/h)	1493	1202					321	
//c	0.00	0.13					0.01	
95% queue length	0.00	0.47				+	0.07	
	7.4	8.5				+	16.3	
Control Delay (s/veh)								
LOS	A	A	ļ			+	C	
Approach Delay (s/veh)							16.3	
Approach LOS							С	

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		O-WAY STOP						
General Informatior	<u>ا</u>		Site I	nformatio	on			
Analyst	SBC		Interse	ection			School Enti	'y at
Agency/Co.		Engineering	Jurisdi			Olive	Arlington F	lto
Date Performed	7/23/201	5		is Year			fic Volume	
Analysis Time Period	AM Arriva	al Period	Analys			10(a) 11a		3
Project Description								
East/West Street: Olive	Street		North/S	South Stree	t: Haddov	v/School En	try/Exit	
ntersection Orientation:	East-West			Period (hrs)			•	
Vehicle Volumes an	d Adjustme	nts						
Major Street	1	Eastbound				Westbou	nd	
Movement	1	2	3		4	5		6
	L	Т	R		L	Т		R
Volume (veh/h)	2	72	44		81	55		1
Peak-Hour Factor, PHF	0.48	0.48	0.48		0.48	0.48		0.48
Hourly Flow Rate, HFR	4	150	91		168	114		2
(veh/h) Percent Heavy Vehicles	0				0			
Median Type				Undivideo	-			
RT Channelized			0		<i>.</i>			0
Lanes	0	1	0		0	1		0
Configuration	LTR	,	- v		LTR	· ·		0
Upstream Signal	EIN	0			LIIX	0		
Minor Street		Northbound				Southbou	und	
Movement	7	8	9		10	11		12
	L	т	R		 L	Т		R
Volume (veh/h)			113		1	0		1
Peak-Hour Factor, PHF	1.00	1.00	0.48		0.48	0.48		0.48
Hourly Flow Rate, HFR (veh/h)	0	0	235		2	0		2
Percent Heavy Vehicles	0	0	0		0	0		0
Percent Grade (%)		0				0		
Flared Approach		N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	0	1		0	1		0
Configuration			R			LTR		
Delay, Queue Length, a	nd Level of Se	rvice						
Approach	Eastbound	Westbound	1	Vorthbound	ł	S	outhbound	
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR			R		LTR	İ 👘
v (veh/h)	4	168	1	L	235	1	4	
C (m) (veh/h)	1485	1337			850		338	
v/c	0.00	0.13		L	0.28	<u> </u>	0.01	
95% queue length	0.00	0.43			1.13		0.01	
	7.4	8.1		ļ		<u> </u>		
Control Delay (s/veh)					10.8		15.8	
LOS	A	A			В	<b> </b>	C	
Approach Delay (s/veh)				10.8			15.8	
Approach LOS				В			С	

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		O-WAY STOP	-					
General Information	1		Site Ir	nformat	tion			
Analyst	SBC		Interse	ction		Haddow/S Olive	School Ent	ry at
Agency/Co.		Engineering	Jurisdi	ction			Arlington I	Hts.
Date Performed	7/23/201			is Year			sting Volum	
Analysis Time Period	PM Dism	issal Period					•	
Project Description								
East/West Street: Olive						w/School Er	try	
Intersection Orientation:			Study F	Period (hr	rs): 0.25			
Vehicle Volumes an	d Adjustme	nts						
Major Street		Eastbound				Westbou	nd	
Movement	1	2	3		4	5		6
	L	Т	R		L	Т		R
Volume (veh/h)	7	157	22		32	96		4
Peak-Hour Factor, PHF	0.65	0.65	0.65		0.65	0.65		0.65
Hourly Flow Rate, HFR (veh/h)	10	241	33		49	147		6
Percent Heavy Vehicles	0				0			
Median Type		4		Undivid	ed		<b>"</b>	
RT Channelized			0					0
Lanes	0	1	0		0	1		0
Configuration	LTR				LTR			
Upstream Signal		0				0		
Minor Street		Northbound				Southbou	ind	
Movement	7	8	9		10	11		12
	L	Т	R		L	Т		R
Volume (veh/h)					5	0		1
Peak-Hour Factor, PHF	1.00	1.00	1.00		0.65	0.65		0.65
Hourly Flow Rate, HFR (veh/h)	0	0	0		7	0		1
Percent Heavy Vehicles	0	0	0		0	0		0
Percent Grade (%)		0				0		
Flared Approach		N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	0	0		0	1		0
Configuration						LTR		
Delay, Queue Length, a	nd Level of Se	rvice						
Approach	Eastbound	Westbound	1	lorthboui	nd	S	outhbound	
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR					LTR	1
v (veh/h)	10	49				1	8	
C (m) (veh/h)	1440	1301					523	
//c	0.01	0.04			+		0.02	
95% queue length	0.02	0.12					0.02	
	7.5	7.9			+		12.0	
Control Delay (s/veh)						_		—
LOS	A	A					B	
Approach Delay (s/veh)						_	12.0	
Approach LOS							В	

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	TW	O-WAY STOP	CONTR	OL SUMI	MARY			
General Informatior	1		Site I	nformatio	on			
Analyst	SBC		Interse	ection			School Enti	ry at
Agency/Co.		Engineering				Olive	Arlington	Jto
Date Performed	7/23/201	5	Jurisdi	is Year			Arlington H Affic Volum	
Analysis Time Period	PM Dism	issal Period		is i Edi			anic volum	ರು
Project Description								
East/West Street: Olive	Street		North/S	South Stree	t: Haddov	v/School En	ntry/Exit	
Intersection Orientation:	East-West			Period (hrs)				
Vehicle Volumes an	nd Adiustme	nts						
Major Street	]	Eastbound				Westbou	nd	
Movement	1	2	3		4	5		6
	L	Т	R		L	Т		R
Volume (veh/h)	7	120	27		34	98		4
Peak-Hour Factor, PHF	0.65	0.65	0.65		0.65	0.65		0.65
Hourly Flow Rate, HFR (veh/h)	10	184	41		52	150		6
Percent Heavy Vehicles	0				0		<u> </u>	
Median Type	<u> </u>			Undivideo				
RT Channelized	1		0	2.1.4.1.4.00	-			0
Lanes	0	1	0		0	1		0
Configuration	LTR		Ť		LTR	· ·		•
Upstream Signal		0				0		
Minor Street		Northbound				- Southbou	und	
Movement	7	8	9		10	11		12
	L	Т	R		L	Т		R
Volume (veh/h)			74		5	0		
Peak-Hour Factor, PHF	1.00	1.00	0.65		0.65	0.65		0.65
Hourly Flow Rate, HFR (veh/h)	0	0	113		7	0		1
Percent Heavy Vehicles	0	0	0		0	0		0
Percent Grade (%)		0				0		
Flared Approach		N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	0	1		0	1		0
Configuration			R			LTR		
Delay, Queue Length, a	nd Level of Se	rvice						
Approach	Eastbound	Westbound		Vorthbound	ł	S	outhbound	
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR			R		LTR	1
v (veh/h)	10	52			113		8	
C (m) (veh/h)	1436	1356			842		411	1
v/c	0.01	0.04			0.13		0.02	1
95% queue length	0.02	0.12			0.46		0.02	
Control Delay (s/veh)	7.5	7.8			9.9		13.9	├───
LOS	A	A			A		B	
Approach Delay (s/veh)				9.9		<b> </b>	13.9	
Approach LOS				Α			В	

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General Information				Site Inforr	nation			
Analyst	SBC			Intersection		Doug	as and Olive	
Agency/Co.		on Engineering	7	Jurisdiction			e of Arlington Ht	
Date Performed	7/23/2	015		Analysis Year	•	2015	Existing Volume	S
Analysis Time Period	Existin	g AM Arrival						
Project ID								
East/West Street: Olive Stree	et			North/South S	treet: Douglas	Avenue		
Volume Adjustments	and Site C	naracterist	tics	-				
Approach			Eastbound			We	stbound	
Movement	L		Т	R	L		Т	R
Volume (veh/h)	33	}	70	37	6		78	3
%Thrus Left Lane								
Approach		Ν	lorthbound	_		Soι	uthbound	_
Movement	L	· · · · ·	T	R	L		T	R
/olume (veh/h)	31		14	8	1		26	22
%Thrus Left Lane								
	East	bound	Wes	stbound	North	bound	Sout	hbound
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	1
PHF	0.51		0.51	1	0.51		0.51	1
Flow Rate (veh/h)	273		168		102		94	
% Heavy Vehicles	0		0		0		0	
No. Lanes		1	Ť	1	1		-	1
Geometry Group		1	_	1	1			1 1
Duration, T	+			·	25			1
		We wheels a	4	0.	25			
Saturation Headway		worksnee				r		r
Prop. Left-Turns	0.2		0.1		0.6		0.0	
Prop. Right-Turns	0.3		0.0		0.1		0.5	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
nLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
nRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
nHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
nadi, computed	-0.1		-0.0		0.0		-0.3	
Departure Headway a		Timo						
			2.00	1	2.00		2.00	1
nd, initial value (s)	3.20		3.20		3.20		3.20	
(, initial	0.24		0.15		0.09		0.08	
nd, final value (s)	4.51		4.74		5.12		4.83	
k, final value	0.34		0.22		0.14		0.13	
Move-up time, m (s)		.0	_	2.0	2.			.0
Service Time, t <sub>s</sub> (s)	2.5		2.7		3.1		2.8	
Capacity and Level o	f Service							
	East	bound	Wes	stbound	North	bound	Sout	hbound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (yeh/h)				+				
Capacity (veh/h)	523	<b> </b>	418		352	ļ	344	┨────
Delay (s/veh)	9.85	ļ	9.08		8.98		8.53	<b> </b>
LOS	A		A		A		A	
Approach: Delay (s/veh)	9	9.85	9	.08	8.9	98	8.	53
LOS	1	A		A		1	1 ,	4
		- ·						
ntersection Delay (s/veh)				۵	31			

Conoral Information				Site Inform	nation			
General Information	<u>.</u>			Site Inform	nation	In	a and Olive	
Analyst	SBC	n Franks		Intersection Jurisdiction			as and Olive of Arlington Hts	
Agency/Co. Date Performed	Erikss 7/23/2	on Engineering 015	ł	Analysis Year	r		raffic Volumes	
Analysis Time Period		rival Period						
Project ID								
East/West Street: Olive Stree	et			North/South S	Street: Douglas	Avenue		
Volume Adjustments	and Site C			•				
Approach		E	Eastbound			We	stbound	
Movement Volume (veh/h)	L 65	-	т 73	R 48	L 6		т 82	R 3
%Thrus Left Lane		,	/3	40	0		02	3
Approach			lorthbound				thbound	
Vovement	L		T	R	L	300	T	R
/olume (veh/h)	32	2	14	8	1		26	23
%Thrus Left Lane								-
-	Faet	bound	We	stbound	North	hbound	South	nbound
		L2		L2		L2		T
Configuration		L2		L2		L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	<b> </b>
	0.51		0.51	+	0.51		0.51	<b> </b>
Flow Rate (veh/h)	364		176	+	104		96	
% Heavy Vehicles	0	1	0	1	0	1	0	1
No. Lanes		1		1	_	1		1
Geometry Group		1		1		1	1	1
Duration, T				0.	.25			
Saturation Headway	Adjustment	Workshee	et					
Prop. Left-Turns	0.3		0.1		0.6		0.0	
Prop. Right-Turns	0.3		0.0		0.1		0.5	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
nLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
nRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
nadj, computed	-0.1		-0.0		0.0		-0.3	
Departure Headway a		I Time	0.0		0.0		0.0	
nd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.32		0.16		0.09		0.09	<u> </u>
nd, final value (s)	4.60		4.90	+	5.39		5.10	<u> </u>
(, final value	0.47		0.24	+	0.16		0.14	1
Move-up time, m (s)		.0		2.0	-	2.0	-	.0
	2.6		2.9	1	3.4	T	3.1	Ť
Service Time, t <sub>s</sub> (s)			2.9	1	5.4		5.1	
Capacity and Level o	1	bound	10/00	stbound	North	hbound	Court	bound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	614		426		354		346	
	+			+	-	+		
Delay (s/veh)	11.53		9.44		9.39		8.91	<u> </u>
OS	В		A		A		A	
Approach: Delay (s/veh)	1	1.53	9	.44	9.	39	8.	91
LOS		В		A		A	A	4
ntersection Delay (s/veh)			•		0.39			
ntersection LOS	1				B			

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General Information

East/West Street: Olive Street

Analyst Agency/Co.

Project ID

Approach

Movement

Volume (veh/h)

Date Performed

Analysis Time Period

SBC

Volume Adjustments and Site Characteristics

7/23/2015

1 33

Eriksson Engineering

PM Dismissal Period

							Page 1 of
AL	L-WA	STOP C	ONTROL	ANALYSIS	5		
			Site Inform	ation			
			Intersection			as and Olive	
	Engineering		Jurisdiction			e of Arlington	
/2015			Analysis Year		2015	Existing Volur	nes
Dismi	ssal Period						
			North/South St	reet: Douglas A	Avenue		
Cha	racteristi						
-	E	astbound			We	stbound	
		T	R	L		T	R
33		80	49	13		108	7
1	N	orthbound T	R		Sou	thbound T	R
16		41	<u> </u>	5		34	8
10		47	3	<u> </u>		34	0
		<u> </u>		<u> </u>			
stbou	und	We	stbound	North	bound	So	outhbound
Т	L2	L1	L2	L1	L2	L1	L2
		LTR		LTR		LTR	
		0.80		0.80		0.80	
		158		81		57	
			_			-	

0

0.1

0.2

0.0

0.2

-0.6

1.7

-0.1

3.20

0.05

4.75

0.08

2.8

2.0

1

1

0.2

-0.6

1.7

### %Thrus Left Lane Approach Northbou Movement L Т 41 Volume (veh/h) 16 %Thrus Left Lane Eastbound L2 L1 LTR Configuration PHF 0.80 Flow Rate (veh/h) 201 158 81 0 0 0 % Heavy Vehicles 1 1 1 No. Lanes Geometry Group 1 1 1 Duration, T 0.25 Saturation Headway Adjustment Worksheet 0.2 Prop. Left-Turns 0.2 0.1 Prop. Right-Turns 0.3 0.1 0.1 0.0 0.0 0.0 Prop. Heavy Vehicle hLT-adj 0.2 0.2 0.2 0.2 0.2 0.2 -0.6 -0.6 hRT-adj -0.6 -0.6 -0.6 -0.6 hHV-adj 1.7 1.7 1.7 1.7 1.7 1.7 -0.1 -0.0 -0.0 hadj, computed Departure Headway and Service Time hd, initial value (s) 3.20 3.20 3.20 0.18 0.07 x, initial 0.14 4.46 hd, final value (s) 4.28 4.76 0.24 x, final value 0.20 0.11

### Service Time, t<sub>s</sub> (s) 2.3 Canacity and Level of Service

Move-up time, m (s)

	Eas	tbound	Wes	tbound	North	bound	South	nbound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	451		408		331		307	
Delay (s/veh)	8.63		8.54		8.33		8.14	
LOS	A		A		A		A	
Approach: Delay (s/veh)		8.63	8.	54	8.3	33	8.	14
LOS		A	/	4	A		/	4
Intersection Delay (s/veh)				8.4	49			
Intersection LOS				ŀ	4			

2.0

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HCS+<sup>TM</sup> Version 5.6

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General Information				Site Inform	nation			
	*				nation	Davia		
Analyst	SBC	<b>— — — — — — — — — —</b>		Intersection Jurisdiction			as and Olive e of Arlington Hts	
Agency/Co. Date Performed	Erikss 7/23/2	on Engineerin 015	y	Analysis Year	r		Traffic Volumes	
Analysis Time Period		smissal Period	1					
Project ID	-							
East/West Street: Olive Street	et			North/South S	Street: Douglas	Avenue		
Volume Adjustments		naracteris	tics					
Approach			Eastbound			We	stbound	
Movement	L	<u></u>	T	R	L 10		T	R 7
Volume (veh/h)	50	,	83	66	13		110	7
%Thrus Left Lane								
Approach Movement			Northbound T	R	L	Sou	thbound T	R
Volume (veh/h)	1	7	41	9	5		34	9
%Thrus Left Lane			71	3	<b>-</b>	<u> </u>	<u> </u>	3
	East	bound	10/01	stbound	North	nbound		nbound
		1	-	1		1		1
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR	<b> </b>	LTR	<b> </b>
PHF	0.80	ļ	0.80		0.80	<b> </b>	0.80	<b> </b>
Flow Rate (veh/h)	247		161		83	<b> </b>	59	<b> </b>
% Heavy Vehicles	0		0		0	ļ	0	Ļ
No. Lanes		1		1	_	1		1
Geometry Group		1		1		1		1
Duration, T				O.	.25			
Saturation Headway	Adjustment	Workshe	et					
Prop. Left-Turns	0.3		0.1		0.3		0.1	
Prop. Right-Turns	0.3		0.0		0.1		0.2	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
nLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
nRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
nadj, computed	-0.1		-0.0		-0.0		-0.1	
Departure Headway a		I Time	0.0		0.0		0.7	
nd, initial value (s)	3.20		3.20	Т	3.20		3.20	
x, initial	0.22		0.14	+	0.07	1	0.05	1
hd, final value (s)	4.30		4.53	+	4.88	1	4.86	1
k, final value	0.30		0.20	+	0.11	1	0.08	1
Move-up time, m (s)	-	.0	-	2.0		.0	-	.0
Service Time, $t_s$ (s)	2.3		2.5	1	2.9		2.9	
Capacity and Level o			2.0	1	2.3		2.3	
	1	bound	W/e	stbound	North	nbound	South	nbound
	Lasi	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	497		411		333		309	
	9.09			+	-		8.28	<del> </del>
Delay (s/veh)	-		8.67	+	8.50			
LOS	A		A		A		A	
Approach: Delay (s/veh)		9.09	8	.67	8.	50	8.	28
LOS		Α		Α		4	/	4
Intersection Delay (s/veh)				8	.79			
Intersection LOS					A			

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			र्स	¢.	
Volume (veh/h)	1	30	29	41	39	0
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.35	0.35	0.35	0.35	0.35	0.35
Hourly flow rate (vph)	3	86	83	117	111	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	394	111	111			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	394	111	111			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	94			
cM capacity (veh/h)	576	942	1478			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	<u> </u>	200	111			
Volume Left	3	200				
	3 86		0 0			
Volume Right cSH	923	0 1478	1700			
	923 0.10	0.06	0.07			
Volume to Capacity						
Queue Length 95th (ft)	8 9.3	4 3.4	0 0.0			
Control Delay (s) Lane LOS		3.4 A	0.0			
	A		0.0			
Approach Delay (s)	9.3	3.4	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utiliz	zation		20.4%	IC	CU Level o	of Service
Analysis Period (min)			15			

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			र्भ	ţ.	
Volume (veh/h)	1	32	31	43	41	0
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.35	0.35	0.35	0.35	0.35	0.35
Hourly flow rate (vph)	3	91	89	123	117	0
Pedestrians			0.			Ŭ
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	417	117	117			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	417	117	117			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	90	94			
cM capacity (veh/h)	557	935	1471			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	<u> </u>	211	117			
Volume Left	94 3	211 89	0			
Volume Right	3 91	89 0	0			
cSH	91	1471	1700			
Volume to Capacity	0.10	0.06	0.07			
	0.10		0.07			
Queue Length 95th (ft) Control Delay (s)	9.4	5 3.5	0.0			
Lane LOS		3.5 A	0.0			
Approach Delay (s)	A 9.4	3.5	0.0			
Approach LOS		3.0	0.0			
	А					
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utili	zation		20.6%	IC	CU Level o	of Service
Analysis Period (min)			15			

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	۲			र्स	¢.	
Volume (veh/h)	0	32	35	28	31	0
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Hourly flow rate (vph)	0	59	65	52	57	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	239	57	57			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	239	57	57			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	96			
cM capacity (veh/h)	718	1009	1547			
Direction, Lane #	EB 1	NB 1	SB 1			
	<u>EB 1</u> 59					
Volume Total		117	57			
Volume Left	0	65	0			
Volume Right	59	0	0			
cSH Valume te Conceitu	1009	1547	1700			
Volume to Capacity	0.06	0.04	0.03			
Queue Length 95th (ft)	5	3	0			
Control Delay (s)	8.8	4.3	0.0			
Lane LOS	A	A	0.0			
Approach Delay (s)	8.8	4.3	0.0			
Approach LOS	А					
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utiliz	zation		20.1%	IC	CU Level o	of Service
Analysis Period (min)			15			

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			र्स	¢î	
Volume (veh/h)	0	33	36	30	33	0
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Hourly flow rate (vph)	0	61	67	56	61	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	250	61	61			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	250	61	61			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	96			
cM capacity (veh/h)	707	1004	1542			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	61	122	61			
Volume Left	0	67	0			
Volume Right	61	0	0			
cSH	1004	1542	1700			
Volume to Capacity	0.06	0.04	0.04			
Queue Length 95th (ft)	5	3	0			
Control Delay (s)	8.8	4.2	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.8	4.2	0.0			
Approach LOS	А					
Intersection Summary						
Average Delay			4.3			
Intersection Capacity Utiliz	zation		20.2%	IC	CU Level c	of Service
Analysis Period (min)			15			