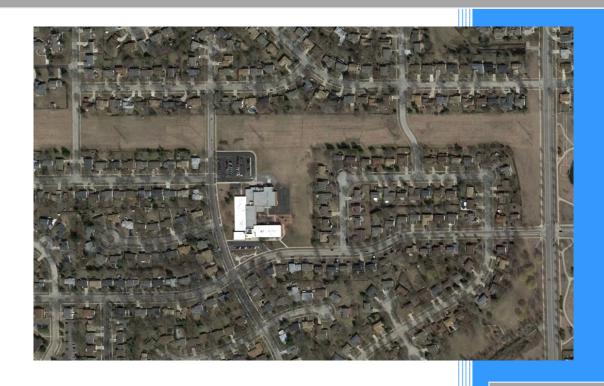
July 2015

Ivy Hill Elementary School

Traffic and Parking Study



Prepared for:

Arlington Heights School District 25

Eriksson Engineering Associates, Ltd.

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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 Ivy Hill Elementary School in Arlington Heights, Illinois. Ivy Hill School is located at the northeast corner of Valley Lane and Burke Drive. The current enrollment of the school is 562 students in kindergarten through 5th grade with 68 staff members. Access to the school is provided by a bus loading zone with its entrance from Valley Lane and exit on Burke Drive. Parent loading occurs around the perimeter of the staff/visitor parking lot with a separate entrance and exit on Burke Drive.

A new gym, common areas, and classrooms will be added on the eastern side of the building. The school population is expected to grow 14% to 641 students over a period of several years. Staff growth will be one person for a total of 69 staff.

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

School Location and Area Land-Uses

The existing school is located at the northeast corner of the Valley Lane and Burke Drive in Arlington Heights, Illinois. It is located in a single-family neighborhood with Commonwealth Edison power lines along its north border. **Figure 1** illustrates the site and the surrounding landuses and roads. (Note: all figures are located at the end of the report).

The boundaries of the school attendance area is Rand Road to the south, Windsor Drive to the east, Hintz Road to the north, and includes a neighborhood north of Hintz Road and west of Kennicott Avenue. Students living south of Palatine Road and west of Arlington Heights Road are eligible for busing. The Ivy Hill School boundary map is included in the **Appendix**.

Bicycle and Pedestrian Routes

Valley Lane, east of Burke Drive, is an on-street bike route leading towards Lake Arlington Park. Burke Road north of Valley Lane is a planned bikeway. Public sidewalks are located on both sides of the streets around the school. The All-Way Stop Controlled (AWSC) intersections on Burke Drive at Valley Lane and Ivy Lane have crosswalks with crossing guards before and after school.

Roadway Characteristics

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

Burke Drive is a north-south local roadway extending north from Palatine Road to north of Appletree Lane. It has one travel lane in each direction. At Ivy Lane and Valley Lane, it has an AWSC intersection with painted crosswalks. The posted speed limit is 25 miles per hour and is under the jurisdiction of the Village of Arlington Heights.

Valley Lane is a collector road that extends from Arlington Heights Road east to Windsor Drive and Lake Arlington. At its intersection with Burke Drive, it has one travel lane in each direction and is an AWSC. The posted speed limit is 25 miles per hour and is under the jurisdiction of the Village of Arlington Heights.

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Ivy Lane is a local road that extends east from Arlington Heights Road to Burke Drive. The posted speed limit is 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. The streets around the school are posted with 20 mph School Speed Zone signs.

Existing Traffic Volumes

lvy Hill 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:

- Valley Lane and Burke Drive
- Ivy Lane/School Parking Lot Entrance and Burke Drive
- School Parking Lot Exit and Burke Drive
- School Bus Loading Area Entrance and Exit

These counts showed the peak-hours of traffic occurring from 8:30 to 9:30 AM and 3:30 to 4:30 PM on a school day. The existing traffic volumes are shown in **Figure 2** and included in the **Appendix**.

School Operations

All school bus loading occurs in the southern parking lot that can accommodate the six buses currently serving the school. Buses enter from Valley Lane and exit onto Burke Drive. Thirteen parking spaces are provided in the bus loading area that is occupied by staff vehicles which do not interfere with bus operations.

The main student loading area is provided in the north parking lot. Parents enter the south entrance (inbound only) and travel counter clockwise through the lot and unload/load their students on the passenger side of the car. A sidewalk is provided on the north, south, and east perimeter of the lot. The doors for the school are near the southeast corner of the lot.

During the morning arrival, parent enter the lot and drop-off their students in the southern part of the parking lot. In the afternoon dismissal, parents use the majority of the parking lot perimeter. Some parents do park in the lot and walk their student in or out of school. The perimeter of the lot with sidewalk is approximately 560 feet long with capacity for 28 vehicles.

On-street loading is permitted on the east side of Burke Drive and the north side of Valley Lane south of the school. Those areas are signed "Student: Drop-off and Pick-up/8 AM to 4 PM/ School Days/ No Unattended Vehicles".

As with most other schools, congestion occurs in the area and lasts 10 to 15 minutes during the peak arrival and dismissal periods. However, overall the traffic generally operates well around the school.

Traffic exiting the north parking lot is restricted to right-turns out (No Left-Turns) from 8:30-9:30 AM and 3:00-4:00 PM. The traffic counts showed that 26% of the morning and 36% of the afternoon exiting traffic from the main lot turned left in violation of the restriction. This is equivalent of 24 to 29 vehicles per hour. This additional southbound traffic on Burke Drive did not create congestion at the lvy Lane stop sign.

SITE TRAFFIC CHARACTERISTICS

Site Plan

The proposed building plan shows the addition on the east side of the existing school building with additional commons space, a new gym, and new classrooms. School bus loading in the southern parking lot will be extended to the east to accommodate additional buses. No changes to the northern parking lot are proposed.

Trip Generation

lvy Hill School currently serves 562 students and uses six school buses for transportation. With the expansion, the school can accommodate up to 641 students and would need eight school buses to transport students. It is anticipated that most of the 79 additional students will come from areas that provide bus service.

Traffic estimates were made for the site using data provided by the Institute of Transportation Engineer's <u>Trip Generation</u> 9th Ed. manual which contains trip generation surveys of other elementary schools. The rate of vehicle trip generation was applied to the proposed increase in students with the results shown in **Table 1**. The two additional buses were added separately to the traffic volumes.

Table 1
Site Traffic Volumes

Expansion	Мо	rning Ar	rival	Afternoon Dismissal				
Expansion	In	Out	Total	In	Out	Total		
79 Additional Students	20	15	35	10	12	22		
2 Additional School Buses	2	2	4	2	2	4		
Total	22	17	39	12	14	26		

Trip Distribution

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

Table 2
Directional Distribution

Direction	Inb	ound	Outbound				
Direction	Morning	Afternoon	Morning	Afternoon			
North on Burke Drive	28%	29%	74%	64%			
South on Burke Drive	8%	14%	10%	21%			
West on Ivy Lane	45%	21%	5%	3%			
East on Valley Lane	8%	14%	4%	6%			
West on Valley Lane	11%	22%	7%	6%			
Total	100%	100%	100%	100%			

Trip Assignment

The additional vehicular trips that are generated by the school expansion were distributed to the local roadways based on the directional distribution analysis. **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.

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. 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 with extensive delays. The <u>Highway Capacity Manual</u> 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		ol Delay s/vehicle)
Service	•	Signals	Stop Signs
Α	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
Е	High delays and number of stops	>55-80	>35-50
F	Unacceptable delays / 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 weekday peak-hours. Copies of the capacity analysis summaries are included in the **Appendix**.

Table 4 shows the existing level of service results for each intersection, which are working well during the peak-hours under existing and projected traffic conditions. The additional school traffic will have no impact on the intersection level of service and a nominal increase in vehicular delays.

Table 4
Intersection Level of Service and Delay

Intersection	Movement	AM A	Arrival	PM Dismissal			
imersection	Movement	Existing	Total	Existing	Total		
Parking Lot Exit	WB Left	A-9.6	A-9.8	B-10.0	B-10.1		
At Burke Drive	WB Right	A-9.1	A-9.3	A-9.2	A-9.2		
Ivy Lane/Parking	SB Lt/Th/Rt	A-8.0	A-8.2	A-8.0	A-8.1		
Entrance At	NB Lt/Th/Rt	A-7.2	A-7.3	A-7.6	A-7.6		
Burke Drive	EB Lt/Th/Rt	A-7.9	A-8.0	A-7.7	A-7.7		
School Bus Exit At Burke Drive	WB Left/Right	B-10.8	B-11.0	B-11.2	B-11.4		
	SB Lt/Th/Rt	A-7.7	A-7.7	A-8.5	A-8.6		
Burke Drive at	EB Lt/Th/Rt	A-7.8	A-7.9	A-8.6	A-8.7		
Valley Lane	NB Lt/Th/Rt	A-7.5	A-7.5	A-7.9	A-7.9		
	WB Lt/Th/Rt	A-7.7	A-7.7	A-8.1	A-8.2		
School Bus Entrance On Valley Lane	WB Left	A-8.5	A-8.5	A-8.5	A-8.5		

RECOMMENDATIONS

The following recommendations were developed for Ivy Hill School and its proposed expansion based on this traffic study:

- Traffic conditions will continue work well around the school with the expansion.
- Expand the bus loading area to the east to accommodate two additional busses and relocate the entry driveway from Valley Lane. A bus turning radius analysis has been completed to ensure that the buses can turn into the driveway from both directions.
- The school website has a page with the school's arrival and dismissal procedures for parents. Currently it is not working and should be repaired and updated if necessary.
- The violation of the "Right-turn only" restriction for traffic exiting the north parking lot should continue to be monitored to determine if it increases and causes problems on southbound Burke Drive. If it does become a problem, school staff can place traffic cones or barriers to prevent left-turning traffic.

PARKING

The existing and proposed site plan provides a total of 72 parking spaces including three accessible spaces. The north lot has 59 spaces and the south lot has 13 spaces. Truck loading is provided on the northeast side of the building.

The Village of Arlington Heights Zoning Ordinance requires elementary schools to provide two parking spaces per each employee (69 staff) and one per classroom (35 rooms) for a total of 173 spaces. A parking variation of 101 spaces would be required.

National parking data is available from the Institute of Transportation Engineers (ITE) in their publication <u>Parking Generation</u>, 4th Edition_for elementary schools (Land Use Code 520). The peak demand in the ITE data was 0.17 spaces per student (641 students) or 109 spaces.

Parking counts were conducted on Wednesday May 27, 2015 after the morning arrival period which found 55 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.

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 Ivy Lane, Valley Lane, and Burke Drive after school hours (4:00 PM).

The existing parking supply of 72 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

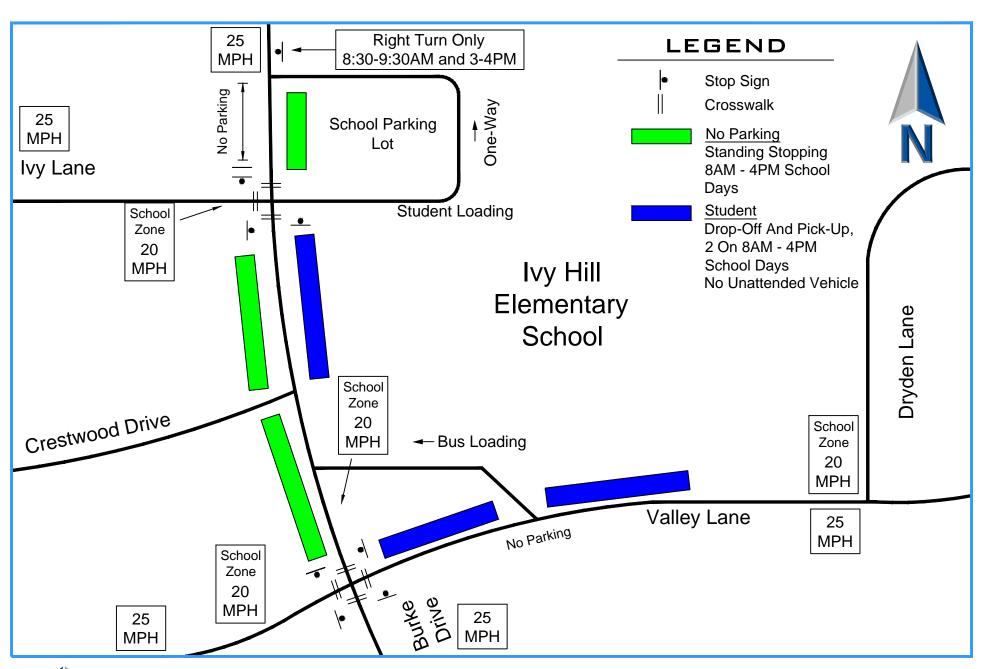
This report summarizes the results of traffic and parking study for the expansion of lvy Hill Elementary School in Arlington Heights, Illinois. The findings of the study area:

- The volume of additional school traffic generated by the school expansion is low due to one additional staff member and the majority of the additional students will be bused to school.
- The net change in area traffic volumes is nominal.
- The school website has a page with the school's arrival and dismissal procedures for parents. Currently it is not working and should be repaired and updated if necessary.
- The violation of the "Right-turn only" restriction for traffic exiting the north parking lot should continue to be monitored to determine if it increases and causes problems on southbound Burke Drive. If it does become a problem, school staff can place traffic cones or barriers to prevent left-turning traffic.
- Parking for the school provides 72 on-site parking spaces will meet its projected needs but will require a variation of 101spaces from the zoning code requirements.



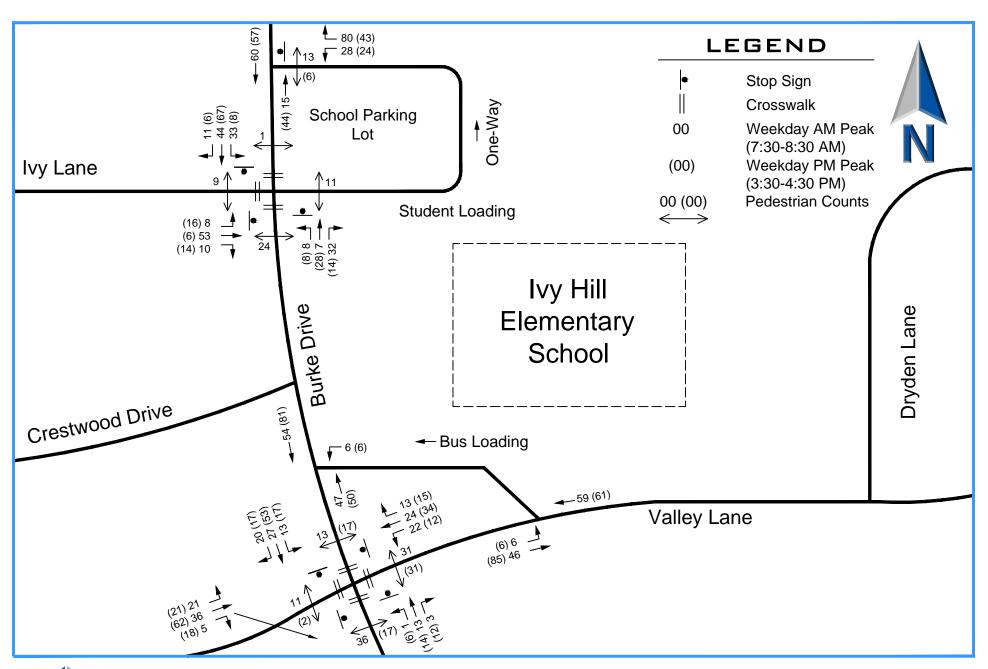


School Location and Area Roadways



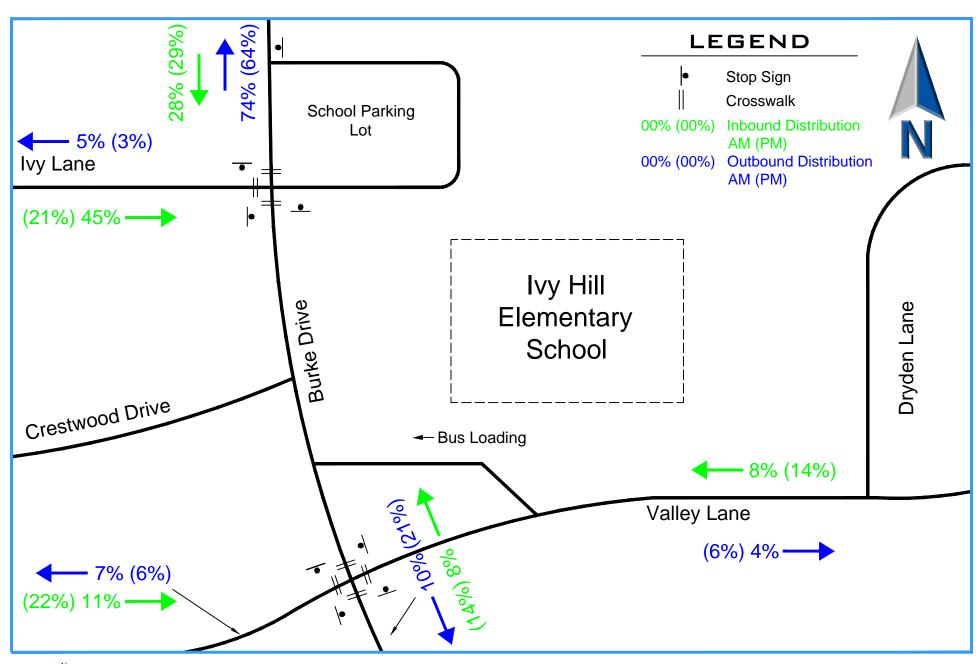


Existing Traffic Control and Parking



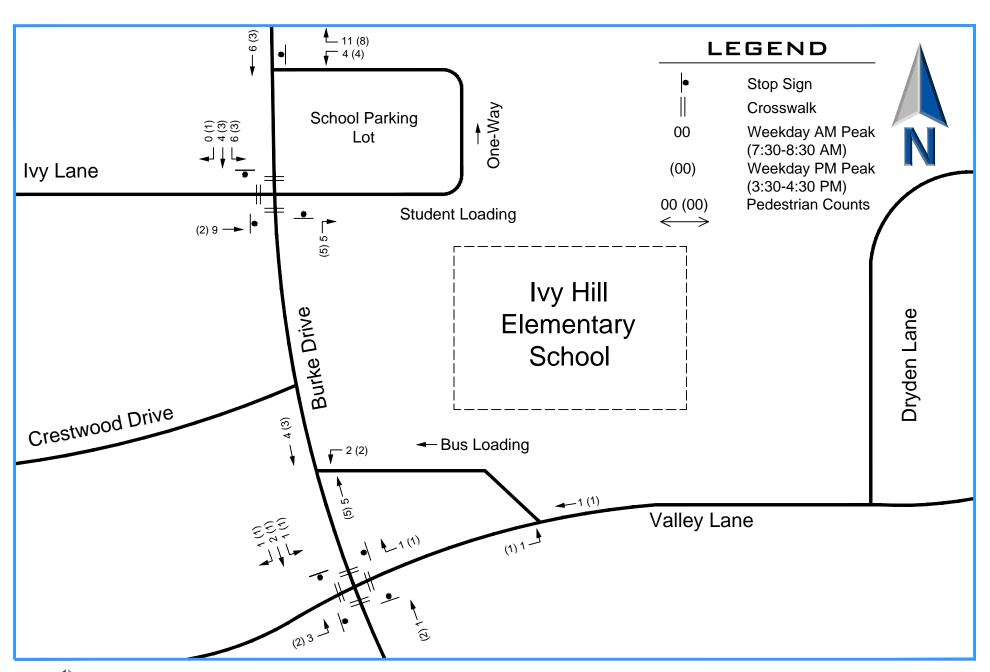


Existing Traffic Volumes



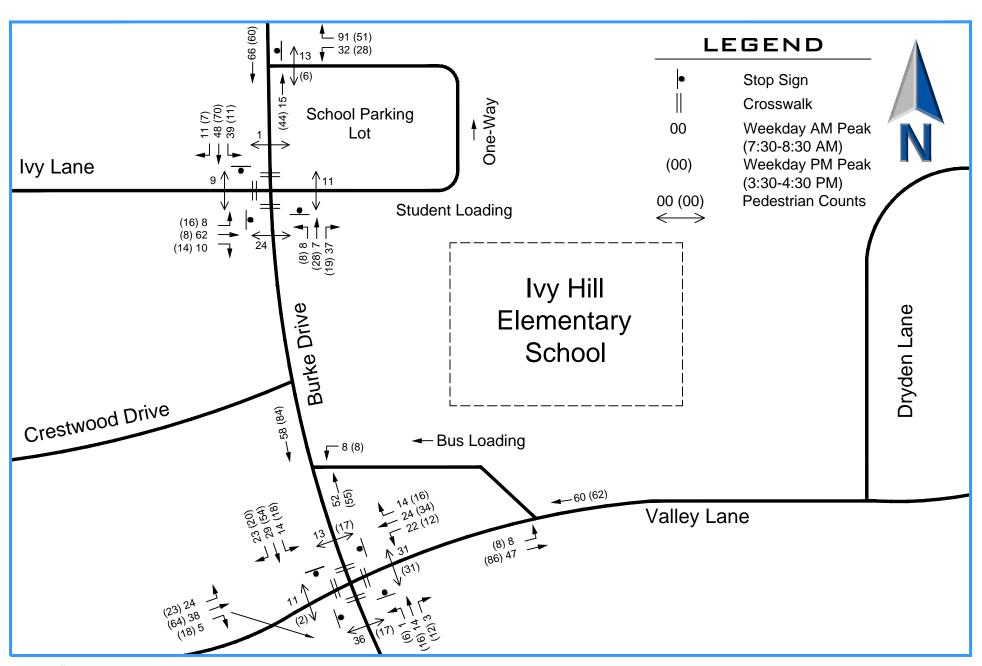


Directional Distribution





Additional School Traffic Assignment

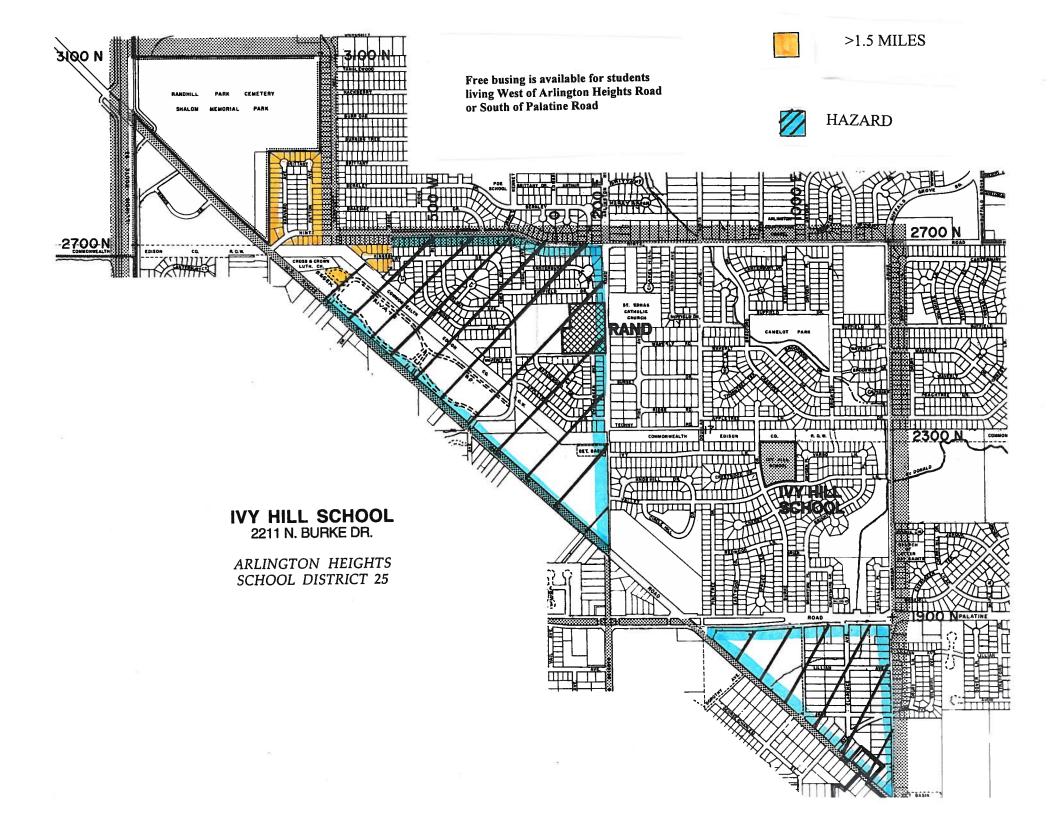




Traffic and Parking Study Appendix

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







Intersection Counts Valley Lane at Burke Drive

	Arlingt	on Heights	School	Distric	25											Arlingto	n Heig	hts, Illin	ois
		Burke Drive Southboun	-		Valley Land Westbound			Burke Driv Northboun	-		/alley Lan Eastbound		15	60	Peak	ı	Pedestric	ın Count	s
Begin	Right		Left	Right		Left	Right		Left	Right		Left	Minute	Minute	Hour	North	East	South	West
Time	Turn	Through	Turn	Turn	Through	Turn	Turn	Through	Turn	Turn	Through	Turn	Totals	Totals	Factor	Leg	Leg	Leg	Leg
	Wedne	sday May	27, 201	15															
8:00 AM	0	6	1	2	4	5	1	4	0	1	9	4	37	184	0.63	2	1	0	0
8:15 AM	1	1	2	0	3	0	3	0	0	2	9	0	21	193	0.66	3	0	0	0
8:30 AM	3	7	4	3	7	7	1	4	1	0	13	3	53	198	0.68	3	2	1	0
8:45 AM	10	4	5	7	12	7	0	6	0	1	10	11	73			9	28	33	9
9:00 AM	7	11	3	3	3	6	1	2	0	0	5	5	46			1	0	0	1
9:15 AM	0	5	1	0	2	2	1	1	0	4	8	2	26			0	1	2	1
Total	21	34	16	15	31	27	7	1 <i>7</i>	1	8	54	25				18	32	36	11
8:30-9:30 AM	20	27	13	13	24	22	3	13	1	5	36	21	198			13	31	36	11
	Wedne	sday May	27, 201	15															
3:00 PM	2	8	4	6	2	1	0	1	0	2	12	7	45	264	0.62	0	0	1	6
3:15 PM	0	4	1	9	5	1	2	4	1	2	15	9	53	274	0.65	1	7	5	0
3:30 PM	14	20	8	5	8	1	5	8	1	4	18	14	106	281	0.66	15	25	3	0
3:45 PM	3	12	2	5	10	6	4	3	0	1	13	1	60			1	5	3	1
4:00 PM	0	10	3	2	9	3	1	2	1	7	13	4	55			0	0	0	0
4:15 PM	0	11	4	3	7	2	2	1	4	6	18	2	60			1	1	1	1
Total	19	65	22	30	41	14	14	19	7	22	89	37				18	38	13	8
3:30-4:30 PM	1 <i>7</i>	53	1 <i>7</i>	15	34	12	12	14	6	18	62	21	281			1 <i>7</i>	31	7	2



Intersection Counts

Ivy Lane/School Lot Entrance at Burke Drive

	Arlingt	on Heights	School	District	25								Arlington	Heights,	Illinois	
		Burke Drive Southboun			Burke Driv Northboun			lvy Lane Eastbound		15	60	Peak		Pedestri	an Counts	
Begin	Right		Left	Right		Left	Right		Left	Minute	Minute	Hour	North	East	South	West
Time	Turn	Through	Turn	Turn	Through	Turn	Turn	Through	Turn	Totals	Totals	Factor	Leg	Leg	Leg	Leg
	Wedne	sday May	27, 201	5												
8:00 AM	3	8	1	9	0	1	1	12	0	35	159	0.54	2	2	0	1
8:15 AM	2	3	1	3	1	0	1	4	0	15	198	0.67	0	0	0	0
8:30 AM	3	8	3	6	1	2	4	8	1	36	201	0.68	0	5	2	0
8:45 AM	3	9	23	10	1	3	2	19	3	73			0	4	8	2
9:00 AM	4	16	6	13	4	1	3	24	3	74			0	0	11	6
9:15 AM	1	6	1	3	1	2	1	2	1	18			1	2	3	1
Total	16	50	35	44	8	9	12	69	8				3	13	24	10
8:30-9:30 AM	11	39	33	32	7	8	10	53	8	201			1	11	24	9
	Thursd	ay May 28	, 2016													
3:00 PM	2	1	4	5	4	4	3	3	4	30	133	0.71				
3:15 PM	2	4	5	2	1	1	9	10	0	34	123	0.65				
3:30 PM	2	6	5	11	6	1	3	6	7	47	104	0.55				
3:45 PM	0	5	1	1	6	2	4	0	3	22						
4:00 PM	2	6	1	1	0	2	4	0	4	20						
4:15 PM	2	4	1	1	1	1	3	0	2	15						
Total	10	26	1 <i>7</i>	21	18	11	26	19	20							
3:30-4:30 PM	6	21	8	14	13	6	14	6	16	104						



Intersection Counts Burke Drive at School Lot Exit

Arlington Height	s School	District 2	5	Arlingto	n Heigh	ts, Illinoi	is	
	Burke SB	Drive NB		ng Lot oound	15	60	Peak	Pedestrians
Begin			Right	Left	Minute	Minute	Hour	East
Time	Through	Through	Turn	Turn	Totals	Totals	Factor	Leg
	Wednesd	lay May 2	27, 2015					
8:00 AM	6	0	1	7	14	108	0.39	1
8:15 AM	2	1	1	4	8	169	0.56	0
8:30 AM	6	2	6	2	16	1 <i>7</i> 1	0.57	4
8:45 AM	25	5	32	8	70			8
9:00 AM	14	6	40	15	75			0
9:15 AM	4	1	2	3	10			1
Total	57	15	82	39				14
8:30-9:30 AM	49	14	80	28	1 <i>7</i> 1			13
	Thursday	May 28,	2016					
3:00 PM			0	3	3	59	0.42	0
3:15 PM			1	1	2	67	0.48	2
3:30 PM			30	5	35	67	0.48	5
3:45 PM			8	11	19			1
4:00 PM			4	7	11			0
4:15 PM			1	1	2			0
Total	0	0	44	28				8
3:30-4:30 PM	0	0	43	24	67			6

	TW	O-WAY STOP	CONTR	OL S	UMM	ARY						
General Information	n		Site Ir	nform	natio	n						
Analyst	SBC		Interse				Valley/Sc	hool Bu	ıs En	try		
Agency/Co.	ERIKSSO	ON ENGINEERING	Jurisdi	ction			Arlington					
Date Performed	6/22/201	5	Analys	is Yea	ar		2015 Exis	sting Co	ounts			
Analysis Time Period	AM Arriva	al										
Project Description Ivy	/ Hill School											
East/West Street: Valle							Bus Entran	се				
Intersection Orientation:			Study F	Period	(hrs):	0.25						
Vehicle Volumes ar	<u>nd Adjustme</u>											
Major Street		Eastbound					Westbou	nd				
Movement	1 1	2	3			4	5			6		
Volume (voh/h)	6 6	7 46	R			L	59			R O		
Volume (veh/h) Peak-Hour Factor, PHF	0.50	0.60	1.00			0.50	0.60	-		60		
Hourly Flow Rate, HFR					– '							
(veh/h)	12	76	0			0	98		()		
Percent Heavy Vehicles	100					100				-		
Median Type				Undi	vided							
RT Channelized			0						()		
Lanes	0	1	0			0	1)		
Configuration	LT										T	R
Upstream Signal		0					0					
Minor Street		Northbound	1				Southbou	î				
Movement	7	8	9			10	11			12		
	L	Т	R			L	Т			R		
Volume (veh/h)	4.00		1.00			4.00	0.00					
Peak-Hour Factor, PHF	1.00	0.60	1.00			1.00	0.60	-	1.	00		
Hourly Flow Rate, HFR (veh/h)	0	0	0			0	0		()		
Percent Heavy Vehicles	0	0	0			0	0		()		
Percent Grade (%)		0					0					
Flared Approach		N					N					
Storage		0					0					
RT Channelized			0						()		
Lanes	0	0	0			0	0			2		
Configuration												
Delay, Queue Length, a	and Level of Se	ervice	-		-		-	-				
Approach	Eastbound	Westbound	1	Vorthb	ound		S	outhbo	und			
Movement	1	4	7	8		9	10	11		12		
Lane Configuration	LT				\dashv		1		\dashv			
v (veh/h)	12				\dashv				\dashv			
C (m) (veh/h)	1054							<u> </u>	\dashv			
v/c	0.01				\dashv				\dashv			
95% queue length	0.03				\dashv				\dashv			
Control Delay (s/veh)	8.5	 			$\overline{}$				\dashv			
LOS	A	 			\dashv		1	 	\dashv			
Approach Delay (s/veh)								<u> </u>				
							 					
Approach LOS Copyright © 2010 University of FI					Version			ated: 6/2				

HCS+TM Version 5.6

Generated: 6/22/2015 10:54 AM

	TW	O-WAY STOP	CONTR	OL S	UMN	/IARY				
General Information	<u> </u>		Site I	nforn	natio	n				
Analyst	SBC		Interse				Valley/Sc	hool E	Bus Er	ntrv
Agency/Co.		ON ENGINEERING					Arlington			· · · · ·
Date Performed	6/22/201	5	Analys	sis Yea	ar		2015 Exis			3
Analysis Time Period	PM Dism	issal								
Project Description Ivy	Hill School									
East/West Street: Valle							ol Bus Entrance			
Intersection Orientation:	East-West		Study	Period	(hrs)	: 0.25				
Vehicle Volumes ar	nd Adjustme	nts								
Major Street		Eastbound	_				Westbou	ınd		
Movement	1	2	3			4	5			6
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	L L	T	R			L	T			R
Volume (veh/h) Peak-Hour Factor, PHF	6	85	1.00	`		0.50	61			0
Hourly Flow Rate, HFR	0.50	0.60	1.00			0.50	0.60			.60
(veh/h)	12	141	0			0	101			0
Percent Heavy Vehicles	100				100					
Median Type				Undiv		!				
RT Channelized			0							0
Lanes	0	1	0	0		0	1			0
Configuration	LT								TR	
Upstream Signal		0					0			
Minor Street		Northbound					Southbou	ınd		
Movement	7	8	-	9		10	11			12
	L	Т	R	R		L	Т			R
Volume (veh/h)			<u> </u>		1.00					
Peak-Hour Factor, PHF	1.00	0.60	1.00)		1.00	0.60		1	.00
Hourly Flow Rate, HFR (veh/h)	0	0	0			0	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				1			0
Lanes	0	0	0			0	0			0
Configuration			i i							
Delay, Queue Length, a	nd Level of Se	rvice								
Approach	Eastbound	Westbound		Northb	ound		<u> </u>	Southb	ound	
Movement	1	4	7	8		9	10	1		12
Lane Configuration	LT		· · · · · · · · · · · · · · · · · · ·	Ť			 			
v (veh/h)	12									
C (m) (veh/h)	1051				-					
v/c	0.01				-					
95% queue length	0.03									
Control Delay (s/veh)	8.5									
LOS	A				-					
Approach Delay (s/veh)	A									
* ' '							+			
Approach LOS Copyright © 2010 University of Flo				CS+TM						5 10:56

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	TW	O-WAY STOP	CONTRO	L SUMI	MARY				
General Information	 າ		Site Inf	formation	on				
Analyst	SBC		Intersec			Burke/Sc	hool Bu	s Exit	
Agency/Co.	ERIKSSO	ON ENGINEERING				Arlington			
Date Performed	6/22/201	5	Analysis	Year		2015 Exis			
Analysis Time Period	AM Arriva	al							
Project Description Ivy			•						
East/West Street: Scho					t: Burke L	Drive			
Intersection Orientation:	North-South		Study Pe	eriod (hrs)): 0.25				
Vehicle Volumes ar	nd Adjustme								
Major Street	<u> </u>	Northbound				Southbou	ınd		
Movement	1 1	2	3		4	5		6	
\	L	47	R		L	T 54		R	
Volume (veh/h) Peak-Hour Factor, PHF	1.00	0.60	1.00		1.00	0.60		1.00	
Hourly Flow Rate, HFR	1.00		1.00		1.00				
(veh/h)	0	78	0		0	89		0	
Percent Heavy Vehicles	0				0				
Median Type				Undivided					
RT Channelized			0					0	
Lanes	0	1	0		0	1		0	
Configuration		Т				T			
Upstream Signal		0				0			
Minor Street		Eastbound				Westbound			
Movement	7	8	9	9 1		11		12	
	L	Т	R		L	Т		R	
Volume (veh/h)					6			0	
Peak-Hour Factor, PHF	1.00	1.00	1.00		0.50	1.00		0.50	
Hourly Flow Rate, HFR (veh/h)	0	0	0		12	0		0	
Percent Heavy Vehicles	0	0	0		100	0		2	
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	nd Level of Se	ervice							
Approach	Northbound	Southbound	W	estbound	l		Eastbou	nd	
Movement	1	4	7	8	9	10	11	12	
Lane Configuration				LR					
v (veh/h)				12					
C (m) (veh/h)				633					
v/c				0.02		1			
95% queue length				0.06		1			
Control Delay (s/veh)				10.8	<u> </u>	†			
LOS				В					
Approach Delay (s/veh)			1	10.8		+	<u> </u>		
Approach LOS				B		+			
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	TW	O-WAY STOP	CONTR	OL SI	JMN	MARY				
General Information	<u> </u>		Site I	nform	atio	on .				
Analyst	SBC		Interse				Burke/Sc	hool E	Bus E.	xit
Agency/Co.	ERIKSSC	N ENGINEERIN					Arlington			
Date Performed	6/22/2015	5	Analys	sis Year	r		2015 Exis			S
Analysis Time Period	PM Dismi	issal								
Project Description Ivy										
East/West Street: Scho						t: Burke D	Drive			
Intersection Orientation:	North-South		Study	Period ((hrs)	: 0.25				
Vehicle Volumes ar	nd Adjustme									
Major Street		Northbound					Southbou	und		
Movement	1 1	2	3			4	5			6
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<u> </u>	T	R			L	T			R
Volume (veh/h)	1.00	50	1.00	\leftarrow		1.00	81			1.00
Peak-Hour Factor, PHF Hourly Flow Rate, HFR	1.00	0.60	1.00	,		1.00	0.60			1.00
(veh/h)	0	83	0			0	134			0
Percent Heavy Vehicles	0					0				
Median Type				Undiv	/idea	1	_			
RT Channelized			0							0
Lanes	0	1	0			0	1			0
Configuration		T					T			
Upstream Signal		0					0	0		
Minor Street		Eastbound					Westbou	ınd		
Movement	7	8	9			10	11			12
	L	Т	R			L	Т			R
Volume (veh/h)						6				0
Peak-Hour Factor, PHF	1.00	1.00	1.00)		0.50	1.00	0.		0.50
Hourly Flow Rate, HFR (veh/h)	0	0	0			12	0			0
Percent Heavy Vehicles	0	0	0			100	0			2
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	nd Level of Se	rvice								
Approach	Northbound	Southbound		Westbo	ound			Eastb	ound	
Movement	1	4	7	8		9	10		11	12
Lane Configuration	•	· ·	· ·	LR		<u> </u>	1	-	•	
v (veh/h)				12				f		
C (m) (veh/h)				588				f		
v/c				0.02				f		
95% queue length				0.06						
Control Delay (s/veh)				11.2				f		
LOS				В						
Approach Delay (s/veh)				11.2	,	I	1	1		<u> </u>
Approach LOS				B	-					
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	TW	O-WAY STOP	CONTR	OL SU	MMARY				
General Information	<u> </u>		Site I	nforma	ation				
Analyst	SBC		Interse	ection		Burke/Pa	rking Ex	it	
Agency/Co.	ERIKSSO	ON ENGINEERING	Jurisdi	ction		Arlington			
Date Performed	6/22/201	5	Analys	is Year		2015 Exis	sting Co	unts	
Analysis Time Period	AM ARRI	IVAL							
	Hill School								
East/West Street: Scho					reet: Burke L	Drive			
Intersection Orientation:	North-South		Study I	Period (h	nrs): 0.25				
Vehicle Volumes ar	nd Adjustme								
Major Street		Northbound	_			Southbou	ınd		
Movement	1	2	3		4	5		6	
	L	T	R		L	T	-	R	
Volume (veh/h)	1.00	15	4.00		4.00	60		1.00	
Peak-Hour Factor, PHF Hourly Flow Rate, HFR	1.00	0.57	1.00		1.00	0.57	_	1.00	
(veh/h)	0	26	0		0	105		0	
Percent Heavy Vehicles	0				0				
Median Type				Undivi	ded				
RT Channelized			0					0	
Lanes	0	1	0		0	1		0	
Configuration		T				T			
Upstream Signal		0				0			
Minor Street		Eastbound				Westbound			
Movement	7	8	9		10	11		12	
	L	Т	R		L	Т		R	
Volume (veh/h)					28			80	
Peak-Hour Factor, PHF	1.00	1.00	1.00		0.57	1.00		0.57	
Hourly Flow Rate, HFR (veh/h)	0	0	0		49	0		140	
Percent Heavy Vehicles	0	0	0		2	0		2	
Percent Grade (%)		0	_			0			
Flared Approach		N				N			
Storage		0				0			
RT Channelized			0					0	
Lanes	0	0	0		1	0		1	
Configuration					L			R	
Delay, Queue Length, a	nd Level of Se	rvice							
Approach	Northbound	Southbound	,	Westbou	ınd		Eastbou	nd	
Movement	1	4	7	8	9	10	11	12	
Lane Configuration			L		R				
v (veh/h)			49	 	140			+	
C (m) (veh/h)			840		1022	 	 	_	
v/c			0.06	 	0.14		 	+	
95% queue length			0.19	 	0.14		-	+	
				 				+	
Control Delay (s/veh)			9.6	<u> </u>	9.1		-	-	
LOS			Α		Α				
Approach Delay (s/veh)				9.2		1			
Approach LOS			А			i e			

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	TW	O-WAY STOP	CONTR	OL SU	MMARY			
General Information	1		Site I	nforma	ation			
Analyst	SBC		Interse	ection		Burke/Pa	rking Ex	it
Agency/Co.	ERIKSSO	N ENGINEERING	Jurisdi	ction		Arlington		
Date Performed	6/22/201		Analys	is Year		2015 Exi	sting Col	unts
Analysis Time Period	PM Dism	issal						
	Hill School		7					
East/West Street: School					reet: Burke	Drive		
Intersection Orientation:	North-South		Study I	Period (I	hrs): 0.25			
Vehicle Volumes ar	nd Adjustme	nts						
Major Street		Northbound	_			Southboo	ınd	
Movement	1	2	3		4	5		6
	L	T	R		L			R
Volume (veh/h)	1.00	44	4.00		4.00	57		4.00
Peak-Hour Factor, PHF	1.00	0.48	1.00	<u>'</u>	1.00	0.48		1.00
Hourly Flow Rate, HFR (veh/h)	0	91	0		0	118		0
Percent Heavy Vehicles	0				0			
Median Type				Undivi	ded			
RT Channelized			0					0
Lanes	0	1	0		0	1		0
Configuration		T				T		
Upstream Signal		0				0		
Minor Street		Eastbound				Westbou	ınd	
Movement	7	8	9		10	11		12
	L	T	R		L	Т		R
Volume (veh/h)					24			43
Peak-Hour Factor, PHF	1.00	1.00	1.00	·	0.48	1.00		0.48
Hourly Flow Rate, HFR (veh/h)	0	0	0		50	0		89
Percent Heavy Vehicles	0	0	0		2	0		2
Percent Grade (%)		0				0		
Flared Approach		N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	0	0		1	0		1
Configuration					L			R
Delay, Queue Length, a	nd Level of Se	rvice				•	•	
Approach	Northbound	Southbound		Westbo	und		Eastboui	nd
Movement	1	4	7	8	9	10	11	12
Lane Configuration	•		L		R	1		
v (veh/h)			50		89	+		
C (m) (veh/h)			769		954	+		
v/c			0.07		0.09	+		
				-		+	1	
95% queue length			0.21	-	0.31	+		
Control Delay (s/veh)			10.0		9.2			
LOS			В		Α			
Approach Delay (s/veh)				9.5				
Approach LOS				Α				

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General Information				Site Inforr	mation			
	lone			Intersection	nation	lvv an	d Burke	
Analyst Agency/Co.	SBC Frikss	on Enginee	rina	Jurisdiction			ton Heights	
Date Performed	6/26/2		9	Analysis Yea	r		Existing Volume	s
Analysis Time Period	AM Ai	rival						
Project ID								
ast/West Street: Ivy Lane				North/South S	Street: Burke Dri	ive		
/olume Adjustments	and Site C	haracter	istics					
pproach			Eastbound			We	stbound	
Novement	<u> </u>		T	R	L		Т	R
/olume (veh/h)	8		53	10				
6Thrus Left Lane								
Approach	+		Northbound T	R		Sou	thbound	R
Novement Yolume (veh/h)	- 8	2	7	32	33		44	11
Thrus Left Lane	 '	<u>'</u>	,	32	- 33		77	
THINGS LEIL LAIR					, 		<u> </u>	
	Eas	tbound	W	/estbound	North	bound	Sout	hbound
	L1	L2	L1	L2	L1	L2	L1	L2
configuration	LTR				LTR		LTR	
HF	0.68				0.68		0.68	
low Rate (veh/h)	102				68		128	1
Heavy Vehicles	2				2		2	1
lo. Lanes		1		Ö	1	1		1
eometry Group		1			1	1		1
uration, T				0	.25			
Saturation Headway	Adiustmen	Worksh	neet					
rop. Left-Turns	0.1	T	1		0.2		0.4	Ī
rop. Right-Turns	0.1				0.7		0.1	+
	0.7						0.0	1
rop. Heavy Vehicle	+				0.0			
LT-adj	0.2	0.2			0.2	0.2	0.2	0.2
RT-adj	-0.6	-0.6			-0.6	-0.6	-0.6	-0.6
HV-adj	1.7	1.7			1.7	1.7	1.7	1.7
adj, computed	-0.0				-0.3		0.0	
eparture Headway a	nd Service	Time						
d, initial value (s)	3.20				3.20		3.20	T
, initial	0.09				0.06		0.11	
d, final value (s)	4.30				3.92		4.24	
, final value	0.12				0.07		0.15	1
Nove-up time, m (s)	2	.0		-	2.	.0		2.0
service Time, t _s (s)	2.3				1.9		2.2	
Capacity and Level of					1			
apacity and Level of	1		<u> </u>		1		<u> </u>	
	Eas	tbound	W	/estbound	North	bound		hbound
	L1	L2	L1	L2	L1	L2	L1	L2
apacity (veh/h)	352				318		378	
elay (s/veh)	7.89				7.23		7.99	T
os	A			1	A		A	+
	+	7 00	_			22	+	00
pproach: Delay (s/veh)	-	7.89			+	23		99
LOS		Α			ļ ,	F	/	<u> </u>
tersection Delay (s/veh)				7.	.78			

General Information				Site Inforr	mation				
Analyst	SBC			Intersection		lvy an	nd Burke		
Agency/Co.		on Engineerir	ng	Jurisdiction			ton Heights		
Date Performed	6/26/2	015		Analysis Yea	r	2015	Existing Volume	S	
Analysis Time Period	PM Di	smissal							
Project ID									
East/West Street: Ivy Lane				North/South S	Street: Burke Dr	ive			
Volume Adjustments	and Site C	haracteris							
Approach	-	<u> </u>	Eastbound	R	-	We	estbound		
Movement Volume (veh/h)	L	<u> </u>		14	<u> </u>		'	R	
%Thrus Left Lane				17					
Approach			Northbound			Sou	uthbound		
Movement	L		T	R	L	300	T	R	
Volume (veh/h)	8	3	28	19	8		67	6	
%Thrus Left Lane									
	Eco	tbound	14/	estbound	North	nbound	904	hbound	
	-	1			+	1	+	1	
	L1	L2	L1	L2	L1	L2	L1	L2	
Configuration	LTR				LTR	ļ	LTR	 	
PHF	0.55				0.55		0.55		
Flow Rate (veh/h)	64				98		145		
% Heavy Vehicles	2				2	<u> </u>	2		
No. Lanes		1		0		1		1	
Geometry Group		1				1		1	
Duration, T				0.	.25				
Saturation Headway A	Adjustment	Workshe	et						
Prop. Left-Turns	0.5				0.1		0.1		
Prop. Right-Turns	0.4				0.3		0.1		
Prop. Heavy Vehicle	0.0				0.0		0.0	1	
hLT-adj	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	
hHV-adj	1.7	1.7	_		1.7	1.7	1.7	1.7	
hadj, computed	-0.1	1.7			-0.1	1.7	0.0	1.7	
		<u> </u>			-0.1		0.0		
Departure Headway a	ii.	Time			Т		T	_	
hd, initial value (s)	3.20				3.20		3.20		
x, initial	0.06				0.09		0.13		
hd, final value (s)	4.31			_	4.05		4.16	 	
x, final value	0.08				0.11		0.17	<u></u>	
Move-up time, m (s)		2.0		1		.0	_	2.0	
Service Time, t _s (s)	2.3				2.0		2.2		
Capacity and Level o	f Service								
	T	tbound	w	estbound	North	nbound	Sout	hbound	
	L1	L2	L1	L2	L1	L2	L1	L2	
Canacity (yah/h)	-							+	
Capacity (veh/h)	314	-			348	 	395	+	
Delay (s/veh)	7.67				7.55		7.99		
LOS	Α				Α		Α		
Approach: Delay (s/veh)		7.67			7.	55	7.	99	
LOS		Α			,	4		A	
ntersection Delay (s/veh)	 	<u> </u>		7	.78				
Intersection LOS	1				A				

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				lau				
General Information				Site Inform	mation			
Analyst	SBC			Intersection			and Burke	
Agency/Co. Date Performed		on Engineerin	9	Jurisdiction Analysis Year	r		ton Heights Existing Volume	<u> </u>
Analysis Time Period	6/26/2 AM Ar			- Valarysis i car	•	2010	Existing Volume	
Project ID	70070	iivai		<u> </u>				
East/West Street: Valley Lan				North/Courth C	Street: Burke Dr	riu o		
			4!	North/South S	Sireet. Burke Dr	ive		
Volume Adjustments Approach	and Site C		Eastbound			\\/o	stbound	
Movement			T	R	L	VVE	T	R
Volume (veh/h)	2.	1	36	5	22		24	13
%Thrus Left Lane								
Approach		<u>ı</u>	Northbound			Sou	ıthbound	
Movement	L		T	R	L		Т	R
/olume (veh/h)	1		13	3	13		27	20
%Thrus Left Lane								
	Fas	tbound	Wes	stbound	North	nbound	South	hbound
		1		1	+	1	_	1
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	├
PHF	0.68		0.68		0.68		0.68	
Flow Rate (veh/h)	89	ļ	86		24		87	ļ
% Heavy Vehicles	2		2		2		2	<u> </u>
No. Lanes		1		1	_	1	_	1
Geometry Group		1		1		1		1
Duration, T				0.	.25			
Saturation Headway A	Adjustment	Workshe	et					
Prop. Left-Turns	0.3		0.4		0.0		0.2	
Prop. Right-Turns	0.1		0.2	1	0.2		0.3	
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	0.1		-0.0		-0.1		-0.1	
Departure Headway a	ınd Service	Time						
nd, initial value (s)	3.20		3.20		3.20		3.20	
κ, initial	0.08		0.08		0.02		0.08	
nd, final value (s)	4.29		4.22		4.33		4.20	
k, final value	0.11		0.10		0.03		0.10	
Move-up time, m (s)	2	.0	2	2.0	2	.0	2	.0
Service Time, t _s (s)	2.3		2.2		2.3		2.2	
Capacity and Level o			1		=:•			
Japacity and Level 0	ı						1	
	Eas	tbound	Wes	stbound	North	nbound		hbound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	339		336		274		337	
Delay (s/veh)	7.80		7.69		7.46	Ì	7.67	1
-OS	A	+	_	1	7.40 A	 	+	
	+		A 7	<u> </u>		10	A	<u> </u>
Approach: Delay (s/veh)	<u> </u>	7.80	_	.69	+	46		67
LOS		Α		Α		4	/	4
ntersection Delay (s/veh)				7.	.70			
ntersection LOS					A			

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General Information				Site Inforr	mation			
Analyst	SBC			Intersection		Valle	y and Burke	
Agency/Co.		on Engineerin	a	Jurisdiction			ton Heights	
Date Performed	6/26/2		5	Analysis Yea	r	2015	Existing Volumes	S
Analysis Time Period	PM Di	smissal		╗				
Project ID								
East/West Street: Valley Lan	е			North/South S	Street: Burke Dr.	ive		
Volume Adjustments	and Site C	naracteris	tics					
Approach			Eastbound			We	estbound	
Movement	L		Т	R	L		Т	R
Volume (veh/h)	21		62	18	12		34	15
%Thrus Left Lane								
Approach		!	Northbound			So	uthbound	
Movement	L		T	R	L 47		T	R
/olume (veh/h)	6		14	12	17		53	17
%Thrus Left Lane								
	East	bound	We	stbound	North	bound	South	nbound
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.60		0.60	+	0.60	 	0.60	
Flow Rate (veh/h)	166		99	+	51	 	144	
% Heavy Vehicles	2		2		2		2	
No. Lanes	+	1		1	+	1		1
Geometry Group	4	<u>, </u>	+	1		1	_	<u>, </u>
Duration, T	-	<u> </u>		<u>-</u>	.25			<u>'</u>
	<u> </u> 	Markaba		0.	.20			
Saturation Headway	-	vvorksne	-		T	1	1	1
Prop. Left-Turns	0.2		0.2		0.2		0.2	
Prop. Right-Turns	0.2		0.2		0.4		0.2	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-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		-0.1		-0.2		-0.0	
Departure Headway a		Timo	• • • • • • • • • • • • • • • • • • • •				0.0	
<u> </u>		Tillie	1 2 20		1 2 20	1	1 2 20	1
hd, initial value (s)	3.20		3.20		3.20		3.20	1
x, initial	0.15		0.09	+	0.05		0.13	-
nd, final value (s)	4.46		4.49	+	4.55		4.54	-
x, final value	0.21		0.12	2.0	0.06		0.18	
Move-up time, m (s)	1	.0		2.0	2.	1	- 	.0
Service Time, t _s (s)	2.5	<u> </u>	2.5	<u> </u>	2.5	<u></u>	2.5	<u>L</u>
Capacity and Level o	f Service							
	East	bound	Wes	stbound	North	bound	South	nbound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	416		349	+	301	 	394	
	+			-	+		+	
Delay (s/veh)	8.60		8.12		7.86		8.54	
_OS	Α		Α		Α		Α	<u> </u>
Approach: Delay (s/veh)		3.60	8	.12	7.	86	8.	54
LOS		Α		Α	1	4		4
ntersection Delay (s/veh)					.40			
ntersection LOS	+				A			

	TW	O-WAY STOP	CONTR	OL S	UMN	IARY				
General Information	n		Site I	nforn	natio	n				
Analyst	AJB		Interse				Valley/Sc	hool E	Bus E	ntry
Agency/Co.	ERIKSSO	ON ENGINEERING					Arlington	Heigh	nts	
Date Performed	7/6/2015		Analys	sis Yea	ar		Total Tra	ffic Vo	lume	S
Analysis Time Period	AM Arriva	al								
Project Description Ivy	Hill School									
East/West Street: Valle							Bus Entran	ce		
Intersection Orientation:			Study	Period	(hrs)	: 0.25				
Vehicle Volumes ar	nd Adjustme									
Major Street		Eastbound					Westbou	ınd		
Movement	1	2	3			4	5			6
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	8	47	R			L	T			R 0
Volume (veh/h) Peak-Hour Factor, PHF	0.50	0.60	1.00)		0.50	60 0.60			0.60
Hourly Flow Rate, HFR				<u>'</u>	 			-		
(veh/h)	16	78	0			0	99			0
Percent Heavy Vehicles	100					100				
Median Type				Undi	vided					
RT Channelized			0							0
Lanes	0	1	0			0	1			0
Configuration	LT									TR
Upstream Signal		0					0			
Minor Street		Northbound					Southbou	und		
Movement	7	8	9			10	11			12
	L	T	R			L	Т			R
Volume (veh/h)										
Peak-Hour Factor, PHF	1.00	0.60	1.00)		1.00	0.60		1	1.00
Hourly Flow Rate, HFR (veh/h)	0	О	0			0	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										
Delay, Queue Length, a	nd Level of Se	ervice						-		
Approach	Eastbound	Westbound		Northb	ound		5	Southb	ound	
Movement	1	4	7	8		9	10		1	12
Lane Configuration	LT	·	•	T			 		-	
v (veh/h)	16						†			
C (m) (veh/h)	1053						†			
v/c	0.02									
95% queue length	0.05			1			+			
Control Delay (s/veh)	8.5									
LOS	A				-		+			
Approach Delay (s/veh)	A						1			
* ' '							+			
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	TW	O-WAY STOP	CONTR	OL S	UMN	//ARY				
General Information	<u> </u>		Site I	nforn	natio	n				
Analyst	AJB		Interse				Valley/Sc	hool B	Bus Er	ntry
Agency/Co.	ERIKSSO	ON ENGINEERING					Arlington	Heigh	ts	
Date Performed	7/6/2015		Analys	sis Yea	ar		Total Tra	ffic Vol	lumes	;
Analysis Time Period	PM Dism	issal								
Project Description Ivy	Hill School									
East/West Street: Valle							Bus Entran	се		
Intersection Orientation:			Study I	Period	(hrs)	: 0.25				
Vehicle Volumes ar	nd Adjustme									
Major Street		Eastbound					Westbou	nd		
Movement	1	2	3			4	5	_		6
\(\langle \la	8	T	R			L	T			R 0
Volume (veh/h) Peak-Hour Factor, PHF	0.50	86 0.60	1.00)		0.50	62 0.60	-		.60
Hourly Flow Rate, HFR			1	,	 			$\overline{}$		
(veh/h)	16	143	0	_		0	103			0
Percent Heavy Vehicles	100					100				
Median Type				Undi	videa	!				
RT Channelized			0							0
Lanes	0	1	0			0	1			0
Configuration	LT								-	TR
Upstream Signal		0					0			
Minor Street		Northbound					Southbou	ınd		
Movement	7	8	9						12	
	L	Т	R			L T			R	
Volume (veh/h)						100				
Peak-Hour Factor, PHF	1.00	0.60	1.00)		1.00	0.60	_	1	.00
Hourly Flow Rate, HFR (veh/h)	0	0	0			0	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										
Delay, Queue Length, a	nd Level of Se	rvice						•		
Approach	Eastbound	Westbound		Northb	ound		S	Southbo	ound	
Movement	1	4	7	8		9	10	1		12
Lane Configuration	LT						1			
v (veh/h)	16						1		$\neg \uparrow$	
C (m) (veh/h)	1049						1			
v/c	0.02									
95% queue length	0.05						1			
Control Delay (s/veh)	8.5						1	1		
LOS	A						†		\neg	
Approach Delay (s/veh)							1	1		
Approach LOS							+			
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		TW	0-1	WAY STOP	CONTR	OL S	UMN	//ARY					
General Information	า				Site I	nforn	natio	on .					
Analyst	1/	AJB			Interse				Burke/S	cho	ol Bus	s Ex	rit
Agency/Co.		ERIKSSC	N E	NGINEERING	Jurisdi	ction			Arlingto	n He	eights		
Date Performed	7	7/6/2015			Analys	sis Yea	ır		Total Tr	affic	Volu	mes	3
Analysis Time Period		AM Arriva	l										
Project Description Ivy													
East/West Street: School								t: Burke D	rive				
Intersection Orientation:					Study I	Period	(hrs)	: 0.25					
Vehicle Volumes ar	<u>ıd Ad</u>	justme	nts										
Major Street	_	4		Northbound	1 0				Southbo	ounc	<u> </u>		
Movement	+	1	+	2 	3 R			4	5 T		+		6 R
Volume (veh/h)	-	L	+	<u> </u>	K			L	58		_		K
Peak-Hour Factor, PHF		1.00	+	0.60	1.00)		1.00	0.60)	_		.00
Hourly Flow Rate, HFR			\dashv										
(veh/h)		0		86	0			0	96				0
Percent Heavy Vehicles		0						0					
Median Type						Undi	vided	1					
RT Channelized					0								0
Lanes		0		1	0			0	1				0
Configuration				T					Т		\perp		
Upstream Signal				0					0				
Minor Street				Eastbound					Westbo	und			
Movement		7	4	8	9			10	11		\bot		12
		L	4	Ţ	R			L	Т				R
Volume (veh/h)		4.00	4		1.00			8				0	
Peak-Hour Factor, PHF		1.00	+	1.00	1.00)		0.50	1.00		_	0	.50
Hourly Flow Rate, HFR (veh/h)		0		0	0			16	0				0
Percent Heavy Vehicles		0		0	0			100	0				2
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				The second secon									
Approach	North	nbound	S	outhbound		Westb	ound			Eas	stbou	nd	
Movement		1		4	7	8		9	10		11		12
Lane Configuration						LF	₹						
v (veh/h)						16	i						
C (m) (veh/h)						61	9						
v/c						0.0	3						
95% queue length						0.0	8			十			
Control Delay (s/veh)						11.				\top			
LOS						В				+			
Approach Delay (s/veh)						11.			 				
Approach LOS						B							
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		TWC	O-WAY STOP	CONTR	OL SI	JMN	//ARY						
General Information	<u> </u>			Site I	nform	atio	on						
Analyst	AJB			Interse	ection			Burke/So	chool I	Bus E	xit		
Agency/Co.	ERIK	SSOI	N ENGINEERING	Jurisdi	ction			Arlington					
Date Performed	7/6/2			Analys	sis Yea	r		Total Tra	ffic Vo	olume	s		
Analysis Time Period	PM L	Dismis	sal										
	Hill Schoo	I		7									
East/West Street: School							t: Burke D	Drive					
Intersection Orientation:	North-So	uth		Study I	Period	(hrs)	: 0.25						
Vehicle Volumes ar	nd Adjus	tmen	its										
Major Street			Northbound					Southbo	und				
Movement	1		2	3			4	5			6		
	L		T	R			L	T			R		
Volume (veh/h)	10		55	4.00			4.00	84			1.00		
Peak-Hour Factor, PHF	1.0)	0.60	1.00			1.00	0.60			1.00		
Hourly Flow Rate, HFR (veh/h)	0		91	0			0	139			0		
Percent Heavy Vehicles	0						0						
Median Type				í	Undi	/idea	<u> </u>	1					
RT Channelized				0							0		
Lanes	0		1	0			0	1			0		
Configuration			Т					T					
Upstream Signal			0					0					
Minor Street			Eastbound	_				Westbound					
Movement	7		8	9			10	11			12		
	L		Т	R			L	Т			R		
Volume (veh/h)							8			0			
Peak-Hour Factor, PHF	1.0)	1.00	1.00	'		0.50	1.00	1.00		1.00		0.50
Hourly Flow Rate, HFR (veh/h)	0		0	0			16	0			0		
Percent Heavy Vehicles	0		0	0			100	0			2		
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	nd Level o	f Ser	vice										
Approach	Northbou	nd	Southbound	,	Westbo	ound			Eastb	ound			
Movement	1		4	7	8		9	10	1	11	12		
Lane Configuration					LR	1							
v (veh/h)		$\neg \uparrow$			16				1		İ		
C (m) (veh/h)		$\neg \dagger$			577						İ		
v/c		\dashv			0.03						1		
95% queue length		\dashv			0.0				\vdash		1		
Control Delay (s/veh)		\dashv			11.4				1		1		
		\dashv				†			1		-		
LOS					В								
Approach Delay (s/veh)					11.4	4							
Approach LOS					В								

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	TW	O-WAY STOR	CONTR	OL SU	MMARY			
General Information	1		Site I	nforma	ation			
Analyst	AJB		Interse	ection		Burke/Pa	rking Exi	't
Agency/Co.	ERIKSS	ON ENGINEERIN	IG Jurisd	iction		Arlington		
Date Performed	7/6/2015		Analys	sis Year		Total Tra	ffic Volur	nes
Analysis Time Period	PM Dism	issal						
	Hill School		-					
East/West Street: Scho					reet: Burke L	Drive		
Intersection Orientation:	North-South		Study	Period (h	nrs): 0.25			
Vehicle Volumes ar	nd Adjustme							
Major Street		Northbound				Southbou	ınd	
Movement	1	2	3		4	5		6
	L	T	R		L	T		R
Volume (veh/h)	1.00	15	4.00		1.00	66		1.00
Peak-Hour Factor, PHF	1.00	0.48	1.00	' 	1.00	0.48	_	1.00
Hourly Flow Rate, HFR (veh/h)	0	31	0		0	137		0
Percent Heavy Vehicles	0				0			
Median Type				Undivi	ded	1		
RT Channelized			0					0
Lanes	0	1	0		0	1		0
Configuration		T				T		
Upstream Signal		0				0		
Minor Street		Eastbound				Westbou	nd	
Movement	7	8	9		10	11		12
	L	Т	R		L	Т		R
Volume (veh/h)					32			91
Peak-Hour Factor, PHF	1.00	1.00	1.00)	0.48	1.00		0.48
Hourly Flow Rate, HFR (veh/h)	0	0	0		66	0		189
Percent Heavy Vehicles	0	0	0		2	0		2
Percent Grade (%)		0				0		
Flared Approach		N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	0	0		1	0		1
Configuration					L			R
Delay, Queue Length, a	nd Level of Se	ervice						
Approach	Northbound	Southbound		Westbou	ınd	1	Eastbour	nd
Movement	1	4	7	8	9	10	11	12
Lane Configuration			L		R			\top
v (veh/h)			66		189			+
C (m) (veh/h)		 	812		1030		 	
v/c			0.08	 	0.18		 	+
95% queue length		1	0.26		0.78			+
		 	-	-				_
Control Delay (s/veh)			9.8	-	9.3	-		+
LOS			Α		Α			
Approach Delay (s/veh)				9.4				
Approach LOS				Α				

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	TV	VO-WAY STO	P CONT	ROL S	UMN	//ARY				
General Information	1		Site	Inform	matic	n				
Analyst	AJB		Inter	section			Burke/Pa	rking Ex	xit	
Agency/Co.	ERIKSS	ON ENGINEERI	NG Juris	diction			Arlington			
Date Performed	7/6/2015		Anal	ysis Ye	ar		Total Tra	ffic Volu	ımes	
Analysis Time Period	PM Disn	nissal								
	Hill School		7							
East/West Street: School						t: Burke D	Prive			
Intersection Orientation:	North-South		Stud	/ Period	d (hrs)	: 0.25				
Vehicle Volumes ar	nd Adjustme	ents								
Major Street		Northboun					Southbou	ınd		
Movement	1	2		3		4	5		- (
	L	Т		₹		L	T		F	₹
Volume (veh/h)	4.00	44		20	-	4.00	60		- 4 6	
Peak-Hour Factor, PHF	1.00	0.48	1.0)0	-	1.00	0.48	-+	1.0	10
Hourly Flow Rate, HFR (veh/h)	0	91	()		0	125		0	
Percent Heavy Vehicles	0		-			0				•
Median Type					livided	1		î		
RT Channelized				0					0	
Lanes	0	1	()		0	1		0	
Configuration		T					T			
Upstream Signal		0					0			
Minor Street		Eastbound					Westbou	nd		
Movement	7	8	_	9		10	11		1	
	L	Т	l	₹		L	Т		F	
Volume (veh/h)						28			51	
Peak-Hour Factor, PHF	1.00	1.00	1.0	00		0.48	1.00		0.4	18
Hourly Flow Rate, HFR (veh/h)	0	0	C)		58	0		10	
Percent Heavy Vehicles	0	0	()	ļ	2	0		2	1
Percent Grade (%)		0					0			
Flared Approach		N					N			
Storage		0					0			
RT Channelized				0					0	
Lanes	0	0	()	Ì	1	0		1	
Configuration						L			R)
Delay, Queue Length, a	nd Level of S	ervice								
Approach	Northbound	Southbound		Westl	oound			Eastbou	ınd	
Movement	1	4	7		8	9	10	11		12
Lane Configuration			L			R			\dashv	
v (veh/h)		1	58			106	<u> </u>		\dashv	
C (m) (veh/h)		†	762			954			+	
v/c		†	0.08	+		0.11	 		\dashv	
95% queue length		+	0.08	+		0.11			+	
		+	_	+					_	
Control Delay (s/veh)		1	10.1			9.2	-		_	
LOS		<u> </u>	В			Α				
Approach Delay (s/veh)				9.						
Approach LOS		l		1	1		I			

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		\	Y STOP (
General Information				Site Inform	mation			
Analyst	AJB			Intersection			d Burke	
Agency/Co.	Eriksso	n Engineerin	g	Jurisdiction			ton Heights	
Date Performed	7/6/201			Analysis Yea	r	l otal	Traffic Volumes	
Analysis Time Period	AM Arr	ival						
Project ID								
East/West Street: Ivy Lane				North/South S	Street: Burke Dri	ive		
Volume Adjustments	and Site Ch	aracteris	tics					
Approach			Eastbound			We	stbound	
Movement	L		Т	R	L		T	R
/olume (veh/h)	8		62	10	0		0	0
%Thrus Left Lane								
Approach		1	Northbound			Sou	thbound	
Movement	<u> </u>			R	L		T	R
/olume (veh/h)	8		7	37	39		48	11
%Thrus Left Lane								
	Eastl	oound	We	estbound	North	bound	South	nbound
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR				LTR		LTR	
Configuration				_	+			
PHF	0.68				0.68		0.68	
Flow Rate (veh/h)	116				75		143	<u> </u>
% Heavy Vehicles	2		_		2		2	
No. Lanes	1			0	1			1
Geometry Group	1	'			1			1
Duration, T				0.	.25			
Saturation Headway A	Adjustment	Workshe	et					
Prop. Left-Turns	0.1		T		0.1	1	0.4	
Prop. Right-Turns	0.1				0.7		0.1	
Prop. Heavy Vehicle	0.0		 		0.0	<u> </u>	0.0	
·	-	0.0			_			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
nadj, computed	-0.0				-0.4		0.0	
Departure Headway a	and Service	Time	-					
nd, initial value (s)	3.20		1		3.20		3.20	l
ια, initial value (s)	0.10			+	0.07		0.13	
<u>, </u>	4.36			+	3.96		4.29	<u> </u>
nd, final value (s)	0.14			+	0.08	 	0.17	
·	-				_		-	
Move-up time, m (s)	2.	U		<u> </u>	2.	U .	+	.0
Service Time, t _s (s)	2.4				2.0		2.3	
Capacity and Level o	f Service					······································		
-	1	oound	\//	estbound	North	bound	South	nbound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	366		+		325		393	
Delay (s/veh)	8.07		+	+	7.31	 	8.18	
OS	A		+		7.31 A		A A	
Approach: Delay (s/veh)		.07	+		7.3	<u>I</u> 31		<u> </u>
	+							
LOS		Α			A	1		4
ntersection Delay (s/veh)				7.	.94			
ntersection LOS					Α			

		ALL-VVA	1 3107	CONTROL		<u> </u>			
General Information				Site Inforr	mation				
Analyst AJB							nd Burke		
Agency/Co.	ncy/Co. Eriksson Engineering						ton Heights		
	ate Performed 7/6/2015			Analysis Year		Total	Traffic Volumes		
Analysis Time Period	PM DIS	missai							
Project ID				<u> </u>					
East/West Street: Ivy Lane				North/South S	Street: Burke Dri	ve			
/olume Adjustments	and Site Ch								
Approach Movement	Ea		Eastbound T	T R		We	stbound T	R	
/olume (veh/h)	16		8 14		L		0	0	
%Thrus Left Lane	- 10		-	17	- 		-	- 0	
Approach			lorthbound		+	Sou	thbound		
Movement	L N		T	T R		300	T I	R	
/olume (veh/h)	8		28	19	11		70	7	
6Thrus Left Lane									
	Fastharine		Weethound		NI m. ett.	hound	Courthhouse		
		Eastbound		Westbound		bound	Southboun		
	L1	L2	L1	L2	L1	L2	L1	L2	
Configuration	LTR		1		LTR		LTR		
PHF	0.55				0.55		0.55		
Flow Rate (veh/h)	68				98		158		
% Heavy Vehicles	2				2		2		
No. Lanes	1			0	1			1	
Geometry Group	1 1 1								
Duration, T				0.	.25				
Saturation Headway A	Adjustment	Workshe	et						
Prop. Left-Turns	0.4				0.1		0.1		
Prop. Right-Turns	0.4				0.3		0.1		
Prop. Heavy Vehicle	0.0				0.0		0.0		
nLT-adj	0.2	0.2			0.2	0.2	0.2	0.2	
	+	-0.6			-0.6	-0.6	-	-0.6	
nRT-adj	-0.6		+		_		-0.6	-	
nHV-adj	1.7	1.7			1.7	1.7	1.7	1.7	
nadj, computed	-0.1				-0.1		0.0		
Departure Headway a	and Service	Time							
nd, initial value (s)	3.20				3.20		3.20		
, initial	0.06				0.09		0.14		
nd, final value (s)	4.35				4.07		4.17		
c, final value	0.08				0.11		0.18		
Move-up time, m (s)	2.	0			2.	0	2	.0	
Service Time, t _s (s)	2.3				2.1		2.2		
Capacity and Level o						<u> </u>	<u> </u>	<u> </u>	
Japacity and Level 0	1		<u> </u>				<u> </u>		
	+	oound		estbound		bound		nbound	
	L1	L2	L1	L2	L1	L2	L1	L2	
Capacity (veh/h)	318				348		408		
Delay (s/veh)	7.74				7.58		8.10		
.OS	Α				Α		Α		
Approach: Delay (s/veh)		.74	+		7.8	<u>. </u>		10	
•	+		+						
LOS	 	<u> </u>		<u>_</u>	<i>A</i>	1	/	4	
ntersection Delay (s/veh)	 				.87				
ntersection LOS					<u> </u>				

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				1		S			
General Information				Site Inforr	nation				
nalyst AJB				Intersection		and Burke			
Agency/Co.	Eriksson Engineering 7/6/2015						ton Heights Traffic Volumes		
Date Performed Analysis Time Period	7/6/20 AM Ar	-		Analysis real 700			ai Tranic Volumes		
Project ID	PW 70	TV GI							
East/West Street: Valley Lan	20			North/South S	treet: Burke Dri	i.o			
			4!	North/South S	tileet. Burke Dii	- Ve			
Volume Adjustments Approach	and Site Ci		TICS Eastbound		_	10/0	esthound		
Movement	L		T	R	L		Westbound T		
/olume (veh/h)	24		38	38 5			24	R 14	
%Thrus Left Lane	<u> </u>				1				
Approach		<u> </u>	Northbound			Sou	ıthbound		
Movement	L		T R		L		T R		
/olume (veh/h)	1		14	3	14		29	23	
%Thrus Left Lane									
	Eastbound		Westbound		North	bound	Southbound		
	L1	L2	L1	L2	L1	L2	L1	L2	
Configuration	LTR	L-2	LTR	L2	LTR	LZ	LTR	L2	
	+		_		+				
PHF	0.68 97		0.68 87	1	0.68		0.68 95		
Flow Rate (veh/h)	2		2		25		2		
% Heavy Vehicles	→			1	2	<u> </u>			
No. Lanes	1		_	1		<u> </u>	1		
Geometry Group		1		1		1		1	
Ouration, T	<u> </u>			0.	25				
Saturation Headway	Adjustment	Workshe	et						
Prop. Left-Turns	0.4		0.4		0.0		0.2		
Prop. Right-Turns	0.1		0.2		0.2		0.3		
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	0.1	7.7	-0.0	7.7	-0.1	7.7	-0.1	1.7	
		T:	-0.0		-0.1		-0.1		
Departure Headway a		Time	T		T	<u> </u>	T	1	
nd, initial value (s)	3.20	-	3.20	1	3.20		3.20		
k, initial	0.09		0.08	-	0.02		0.08		
nd, final value (s)	4.33		4.25	1	4.37	ļ	4.21		
k, final value	0.12		0.10	1	0.03		0.11	<u> </u>	
Move-up time, m (s)		.0	_	2.0	2.	U	+	2.0	
Service Time, t _s (s)	2.3		2.2		2.4		2.2		
Capacity and Level o	f Service								
<u> </u>	1	bound	Wes	stbound	North	bound	Sout	hbound	
	 		L1 L2		L1 L2				
	L1	LZ		LZ		LZ		L2	
Capacity (veh/h)	347		337	1	275		345	ļ	
Delay (s/veh)	7.90		7.73		7.50		7.74		
OS	Α		Α		Α		Α		
Approach: Delay (s/veh)	7.90		_	7.73		50	7.74		
LOS			_	A		4	A		
ntersection Delay (s/veh)	+	Α			<u> </u>	1		1	
are section Delay (S/Ven)				/	11				

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		ALL-WA	Y STOP C	ONTROL	ANALYSI	S		
General Information				Site Inforr	nation			
Analyst AJB				Intersection		and Burke		
Agency/Co.	-)						ton Heights	
Date Performed	7/6/201	-		Analysis Year			Traffic Volumes	
Analysis Time Period	PM Dis	missal						
Project ID								
East/West Street: Valley Lan				North/South S	treet: Burke Dri	ve		
Volume Adjustments	and Site Ch							
Approach			Eastbound	· · · · · · · · · · · · · · · · · · ·		We		R
Movement Volume (veh/h)	23		64	18	12	_	34	
%Thrus Left Lane	23		04	10	12		34	16
			Northbound				ıthbound	
Approach Movement	L N		T	T R		300	T R	
Volume (veh/h)	6		16	12	18		54	20
%Thrus Left Lane					+			
	<u> </u>		1	\\/oothe::=d		h		
	Eastbound			Westbound		bound		
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.60		0.60		0.60		0.60	
Flow Rate (veh/h)	173		101		54		151	
% Heavy Vehicles	2		2		2		2	
No. Lanes	1			1	1	1		1
Geometry Group	1 1 1 1						1	
Duration, T			•	0.	.25			
Saturation Headway	Adjustment	Workshe	et					
Prop. Left-Turns	0.2		0.2		0.2	1	0.2	
Prop. Right-Turns	0.2		0.3	1	0.4		0.2	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
·	0.0	0.2	0.0	0.2		0.2	0.0	0.2
hLT-adj					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		-0.1		-0.1		-0.1	
Departure Headway a	nd Service	Time						
nd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.15		0.09		0.05		0.13	
hd, final value (s)	4.49		4.52		4.59		4.56	
x, final value	0.22		0.13		0.07		0.19	
Move-up time, m (s)	2.	0		2.0	2.	0	2	2.0
Service Time, t _s (s)	2.5		2.5		2.6		2.6	
Capacity and Level o						<u> </u>		
capacity and Level 0	1		<u> </u>				T -	
		ound		stbound		bound	-	hbound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	423		351		304		401	
Delay (s/veh)	8.72		8.17		7.93		8.63	
LOS	Α		A	1	A		Α	
Approach: Delay (s/veh)	8.72		_	8.17) 3 	8.63	
	1		_					
LOS		<u> </u>		A	<i>F</i>	1		A
ntersection Delay (s/veh)	ļ				.49			
ntersection LOS					A			

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