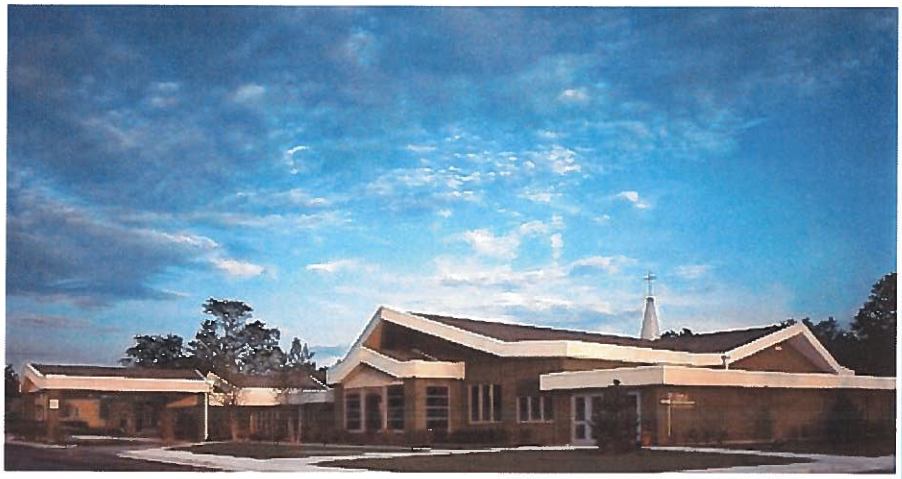
August 2013

St. Edna Catholic Church

Parish Center Traffic and Parking Study



Prepared for:

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MEMORANDUM

To: Ms. Susan Maish
Jaeger, Nickola & Associates, Ltd.

From: Stephen B. Corcoran, P.E., PTOE
Director of Traffic Engineering

Date: October 25, 2012

Re: Proposed Parish Center
St. Edna's Catholic Church
Arlington Heights, Illinois

ERIKSSON ENGINEERING ASSOCIATES, LTD.

This report summarizes the traffic and parking analysis for a proposed Parish Center at Saint Edna's Catholic Church in Arlington Heights, Illinois. The church is located at 2525 North Arlington Heights Road on the east side of the street. St. Edna's Church proposes to demolish the existing rectory (7,569 square feet) and build a Parish Center (11,000 square feet). The parking lot will be expanded from 356 to 401 or 395 spaces.

The purpose of the study is to observe the existing traffic patterns in the area, to determine the traffic characteristics of the development, and to analyze the future traffic conditions and access needs. The following sections of this report present a detailed description of the proposed site, the existing transportation conditions, the proposed development's traffic and parking characteristics, and the future transportation conditions.

EXISTING CONDITIONS

Site Location and Area Land-Use

The site is located on the east side of Arlington Heights Road in Arlington Heights, Illinois. It is currently occupied by two buildings served by three access drives on Arlington Heights Road. Land-uses near the site include single-family subdivisions to the north, east, south, and west. West of the site is the Chicago Futabakai Japanese School. **Figure 1** illustrates the site location and the adjacent roadways. *(All figures are located at the end of the this report)*

Roadway Characteristics

Arlington Heights Road is a north-south, major arterial roadway extending from Elk Grove Village thru Arlington Heights to Long Grove, Illinois. It has two through lanes in each direction with a flush painted left-turn median. A pedestrian crossing signal and six foot crosswalk are located across Arlington Heights Road just north of Waverly Road. Arlington Heights Road is under the jurisdiction of the Cook County Highway Department and has a posted speed limit of 35 miles per hour (mph).

Bike Routes

An existing bike path runs along the south side of the St. Edna Church property and crosses Arlington Heights Road at the existing pedestrian signal. It then follows the side walk south to Waverly Road and continues west on Waverly Road.

Existing Traffic Volumes

Weekday afternoon (4:00 to 6:00 PM) and Sunday morning (9:00 AM to Noon) manual traffic counts were conducted at the entrances to the church on Arlington Heights Road. These counts showed the peak-hours of traffic occurring from 5:00 to 6:00 PM on a weekday, from 9:00 to 10:00 AM for the inbound Sunday peak at the church, and 10:30 AM to 11:30 AM for outbound traffic. The week day count was done during the religious education classes. The Sunday peaks coincides with the start and end of the 9:30 AM Mass which has the largest attendance. Arlington Height Road carries two-way traffic volumes ranging from 2,525 vehicles per hour (vph) during the evening peak to 1,000 and 1,400 vph on Sunday in front of the church. Pedestrian crossings at the signal ranged from 7 to 41 persons including bicyclists. The existing traffic volumes are shown in **Figure 2** and included in the **Appendix.**

The north driveway serving the church is restricted to right-out only. However, during the Sunday counts, illegal left-turns into the site were observed at this location.

Existing Traffic Operations

In order to quantify the operations of each intersection, the Highway Capacity Manual was used to define the capacity and vehicular delay of each intersection during the peak hours. The level of service ranges from LOS A to LOS F, with LOS A having minimal delays and LOS E/F having high levels of delay. **Table 1** summarizes the existing level of service results of the study intersections. Copies of the capacity analyses can be found in **Appendix.**

Table 1
Existing Intersection Level of Service

Intersection	Sunday Inbound Peak	Sunday Inbound Peak	Evening Peak Hour
North Driveway on Arlington Heights Road	Sb Left- LOS A- 8.3 sec Wb Right- LOS A- 9.5 sec **Overall – LOS A- 9.1 sec**	Sb Left- LOS A- 9.0 sec Wb Right- LOS B- 10.7 sec **Overall – LOS B- 10.6 sec**	Wb Right- LOS B- 13.0 sec **Overall – LOS B- 13.08 sec**
Center Driveway(1) on Arlington Heights Road	Wb Right- LOS D- 40.2 sec Wb Left- LOS D- 40.3 sec Nb Th/Rt- LOS A- 7.0 sec Sb Thru- LOS A- 2.2 sec Sb Left – LOS A- 3.1 sec **Overall- LOS A- 4.2**	Wb Right- LOS C- 33.6 sec Wb Left- LOS C- 34.5 sec Nb Th/Rt- LOS B-12.9 sec Sb Thru- LOS A- 5.3 sec Sb Left – LOS A- 6.5 sec **Overall- LOS B- 11.0**	Sb Left- LOS B-12.2 sec Wb Right- LOS F- 60+ sec Wb Left- LOS B- 12.9 sec **Overall – LOS E- 42.6 sec**
South Driveway on Arlington Heights Road	Sb Left- LOS A- 8.7 sec Wb Rt/Lt- LOS B- 14.2 sec **Overall – LOS A- 9.9 sec**	Sb Left- LOS A- 9.5 sec Wb Rt/Lt- LOS D- 26.7 sec **Overall – LOS C- 24.4 sec**	Wb Rt/Lt- LOS E- 50.0 sec **Overall – LOS E- 50.0 sec**

(1) During the Sunday peaks, the Center Drive is under police control. In the evening peak, the intersection is under stop sign control.

Each driveway is under stop sign control at Arlington Heights Road. On Sundays, the church uses two police officers to direct traffic entering or exiting traffic at the Center Drive. Each intersection works well under stop sign control during the Sunday peaks but experiences some delay for exiting left-turns during the weekday peak due to the volume of commuter traffic on Arlington Heights Road. Longer delays onto major arterials at unsignalized driveways are not an uncommon occurrence.

SITE CHARACTERISTICS

Church Activities

St. Edna's Church has five weekly masses: Saturday at 5:00 PM, Sunday at 7:30 AM, 9:30 AM, 11:30 AM, and 5:30 PM. Religious educations classes for students in Kindergarten thru 5th grade are divided among three sessions during the week: Tuesdays from 4:15 to 5:30 PM and 6:00 to 7:15 PM and Wednesday from 4:15 to 5:30 PM. Other programs are provided throughout the day at the church but are much smaller in size.

Site Plan

The site plan includes the demolition of the existing rectory (7,569 square feet) and building a new Parish Center (10,800 square feet) on the east side of the site. The parking lot will be expanded from 356 to 395 spaces.

The purpose of the new Parish Center is to provide a large gathering space for existing activities that occur in the Doherty Center. The Doherty Center has ten multi-purpose rooms with movable walls that can create a large meeting space. It also has a kitchen, bathrooms, and additional rooms/office. It does not have a stage. During the course of the week, the multi-purpose rooms are constantly reconfigured for the different program needs of the church. The room changes require time and staff to complete. Based on discussions with church staff, no new programs are planned with the Parish Center that will generate new traffic or parking on the site.

Trip Generation

Traffic generation at the existing church is shown below in **Table 2.**

Table 2
Existing Traffic Volumes at St. Edna's Church

Sunday Inbound Peak			Sunday Outbound Peak			Evening Peak		
In	Out	Total	In	Out	Total	In	Out	Total
274	13	287	173	242	415	97	61	158

Trip Distribution

The trip distribution for the church is based on the existing traffic volumes and is shown on **Table 3** and **Figure 3.**

Table 3
Directional Distribution

Distribution	Weekday	Sunday Inbound	Sunday Outbound
North on Arlington Heights Road	47%	57%	56%
South on Arlington Heights Road	53%	43%	44%
Total	**100%**	**100%**	**100%**

Site Parking Requirements

The parking requirements for the proposed planned development are based on the Village of Arlington Heights's Zoning Code are summarized in **Table 4.** With the proposed Parish Center, the number of required parking spaces is 565 spaces with 395 spaces provided resulting in a parking variation needed of 170 spaces.

The Arlington Heights' Zoning Code is based on the maximum occupancy of the site for the permitted uses on-site, assuming that those peaks occur simultaneously. St. Edna's Church does not plan using the church sanctuary, the Doherty and Hurley Centers, and the new Parish Center simultaneously.

Table 4
Proposed Site Plan Parking Requirements

Scenario	Use	Size	Village Requirement	Parking Required
Revised Planned Development	Sanctuary	1,030 seats	1 space per 5 seats	206
	Office	4,500 sq. ft.	1 space per 300 sq. ft.	15
	Multi-Purpose Rooms	645 persons	30% of Occupancy	194
	Parish Center	500 persons	30% of Occupancy	150
			Total Required	**565**
			Proposed Supply	**395**

Parking Surveys

EEA conducted parking surveys concurrently with the traffic counts at the church. **Table 5** summarized the on-site parking usage in 15 minute increments on a Sunday during mass and on a Tuesday when religious education classes were held.

Table 5
St. Edna's Parking Survey
(356 Existing Parking Spaces)

Time	Sunday, September 9, 2012				Tuesday, October 2, 2012		
	Church Lot	School Lot	Total	Percent	Time	Church Lot	Percent
9:00 AM	35	0	35	10%	**4:00 PM**	18	5%
9:15 AM	86	0	86	24%	**4:15 PM**	38	11%
9:30 AM	241	7	248	70%	**4:30 PM**	26	7%
9:45 AM	294	10	304	85%	**4:45 PM**	22	6%
10:00 AM	296	11	307	86%	**5:00 PM**	26	7%
10:15 AM	**298**	**11**	**309**	**87%**	**5:15 PM**	27	7%
10:30 AM	289	11	300	84%	**5:30 PM**	37	10%
10:45 AM	162	2	164	46%	**5:45 PM**	34	9%
11:00 AM	91	0	91	26%	**6:00 PM**	**62**	**17%**
11:15 AM	123	0	123	35%			
11:30 AM	220	1	221	62%			
11:45 AM	284	2	286	80%			
Noon	290	2	292	82%			

The peak-parking demand was at 10:15 AM with 309 total parkers or 87% of the parking lot's capacity. During the Sunday counts, a few church members were parking in the Futabakai School parking lot (11 vehicles) even though spaces were available in the church lot. No church parking in the school lot was observed during the Tuesday religious education classes.

ANALYSES

Parking Supply

The proposed site plan increases the parking lot from 356 spaces to 395 spaces (+11%). Additional parking is provided by expanding the parking lot to the east in two parking bays north of the new Parish Center. The southern parking bay is aligned with the parking aisle serving the Center Driveway which allows traffic to enter the lot and go straight to the new parking area bypassing the pick-up/drop-off area in front of the church.

The additional parking provided on-site will accommodate more parking during peak holiday conditions.

North Church Driveway

The North Church driveway was originally an outbound only driveway with separate left and right turn lanes under stop sign control. This drive was then narrowed to a right-turn out only. Two "Do Not Enter" and two "Right Turns Only" signs are provided at the driveway.

During the Sunday counts, left-turns were observed turning into the North Drive from southbound Arlington Heights Road (32 vehicles over three hours). These cars are avoiding the queue and wait to turn left at the Center Drive. When the peak traffic is entering the parking lot, very little traffic is exiting at the same time, so drivers see the driveway as clear and make the turn. This activity did not occur during the weekday observations.

EEA recommends that church remind the congregation that the North Drive is exit only and turns into the drive are prohibited and not safe. To further discourage left-turns into the drive, plastic bollards could be installed to narrow the driveway within the parking lot. Using plastic bollards will still allow emergency equipment from the fire station to the north on Arlington Heights Road to use this drive as an access point if the other drives are blocked.

Center Church Driveway

The Center Church driveway has one inbound lane and two outbound lanes (left and right). Police control is provided during the Sunday morning services and works well. During the weekday PM peak, the left-turns out operate at LOS F which is not uncommon for unsignalized driveways on major arterials. However the volume of traffic exiting after religious education classes is significantly less than during Sunday mass.

South Church Driveway

This driveway has one inbound and one outbound lane. It works well under stop sign control during the Sunday peaks but experiences some delay (LOS E) during the weekday peak due to the volume of commuter traffic on Arlington Heights Road. Longer delays onto major arterials at unsignalized driveways are not an uncommon occurrence. The low exiting volumes at this drive on a weekday do not create problems or queuing problems. No changes are proposed at this drive.

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SBC
Agency/Co.	EEA
Date Performed	10/3/2012
Analysis Time Period	Sunday Outbound Peak

Site Information

Intersection	North Drive/Arlington Hts Road
Jurisdiction	IDOT/Arlington Heights
Analysis Year	2012

Project Description

East/West Street: *St Edna North Drive* | North/South Street: *Arlington Heights Road*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		678		4	795	
Peak-Hour Factor, PHF	1.00	0.96	1.00	0.96	0.82	1.00
Hourly Flow Rate, HFR (veh/h)	0	706	0	4	969	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T		L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						58
Peak-Hour Factor, PHF	1.00	1.00	0.80	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	58
Percent Heavy Vehicles	0	0	1	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	1
Configuration						R

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L			R			
v (veh/h)		4			58			
C (m) (veh/h)		895			695			
v/c		0.00			0.08			
95% queue length		0.01			0.27			
Control Delay (s/veh)		9.0			10.7			
LOS		A			B			
Approach Delay (s/veh)	--	--	10.7					
Approach LOS	--	--	B					

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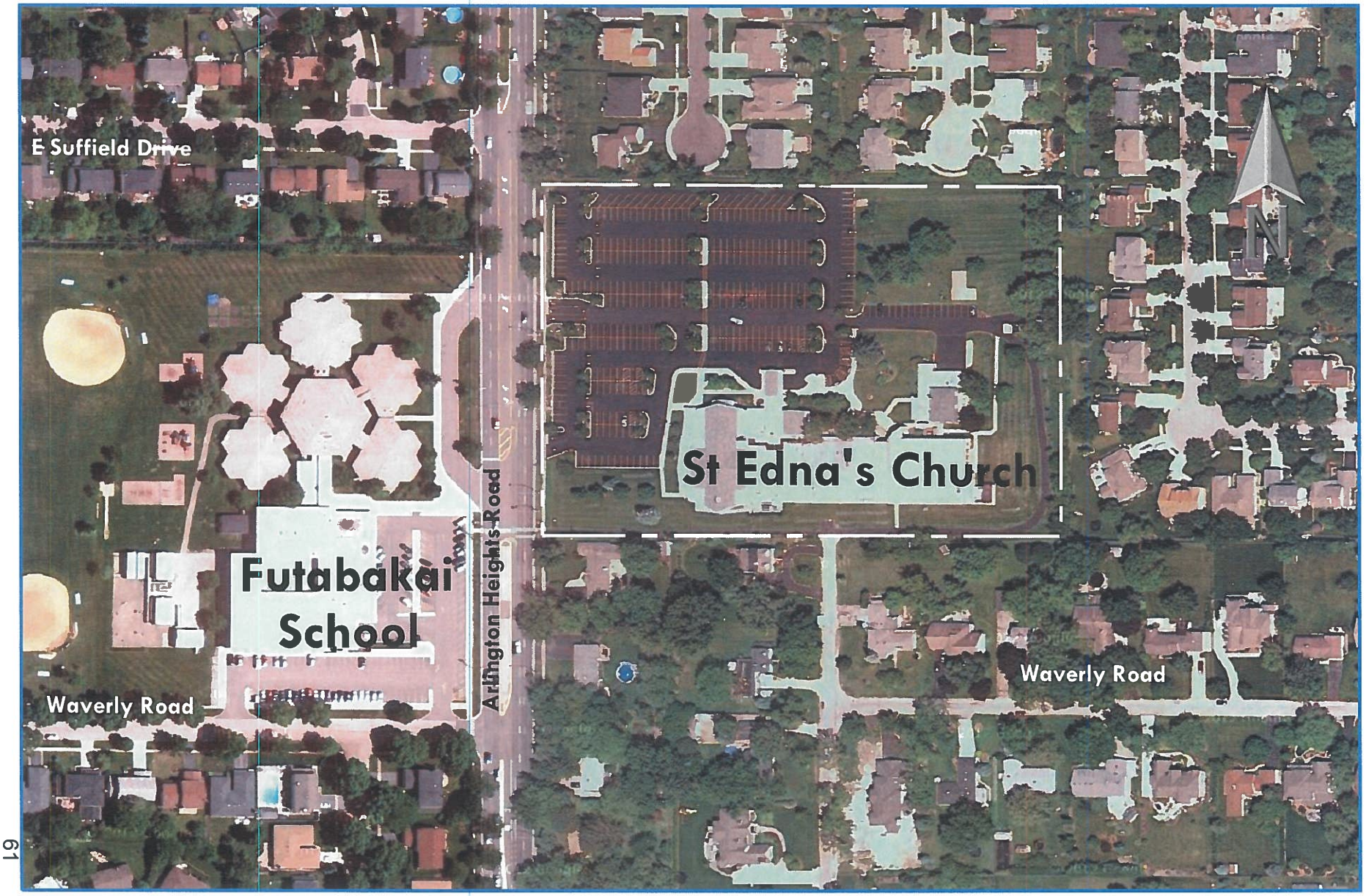
Overall LOS B - 10.6

CONCLUSIONS

The preceding traffic and parking analysis analyzed the proposed Parish Center developed the following conclusions:

- The proposed use of the Parish Center will not increase the trip generation or parking demand at St. Edna's Church.
- Plastic bollards could be installed at the North Driveway to prevent left-turns into the driveway from Arlington Heights Road. They would be located on church property.
- No improvements are required at the South Driveway.
- The parking supply will be increased from 356 spaces to 395 spaces which meets the needs of the church.
- A parking variation of 170 spaces from the zoning code is warranted because the St. Edna's Church does not plan of scheduling two concurrent events in the Parish Center and the existing Church facilities.



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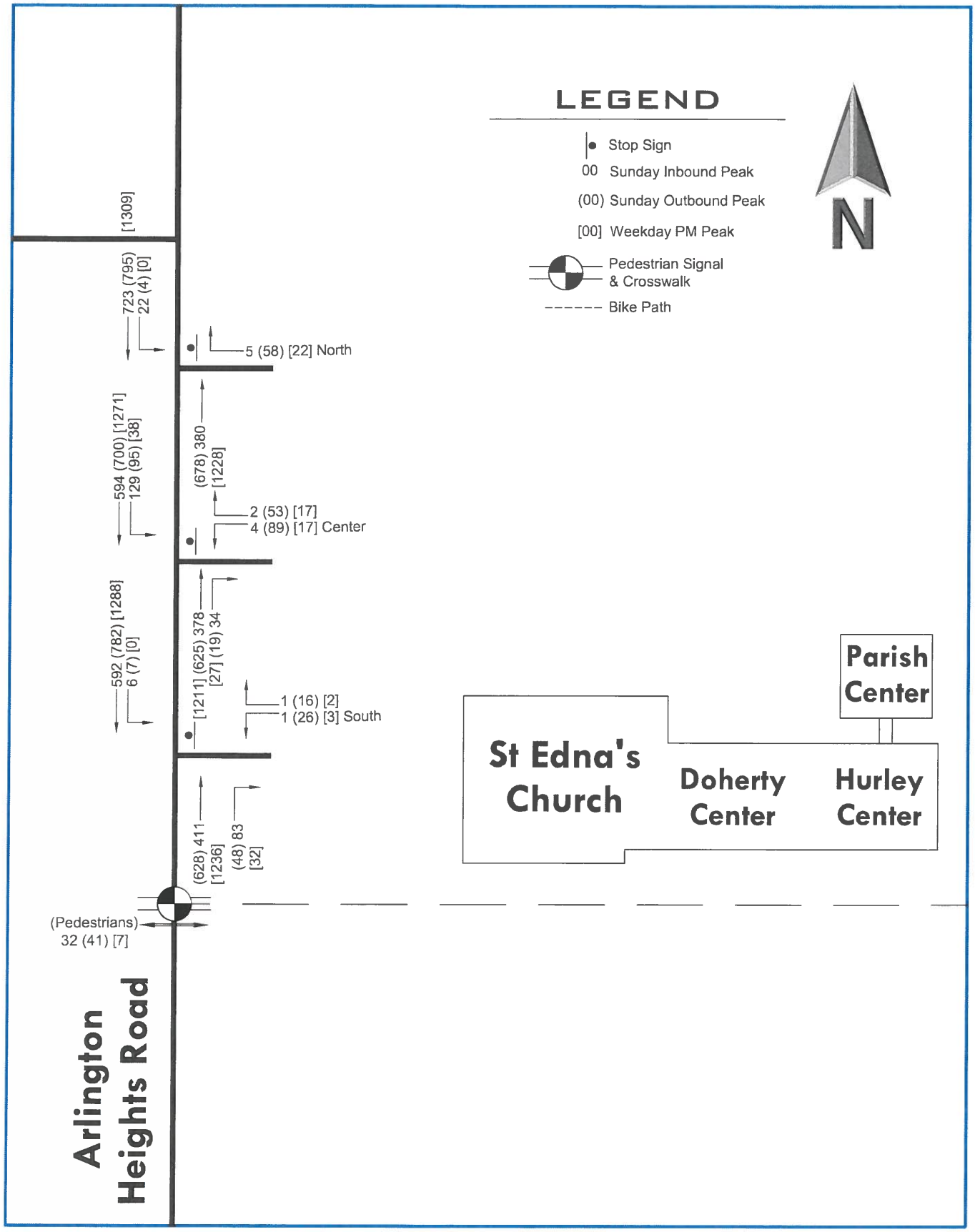
Site Location and Area Roadways

Figure 1



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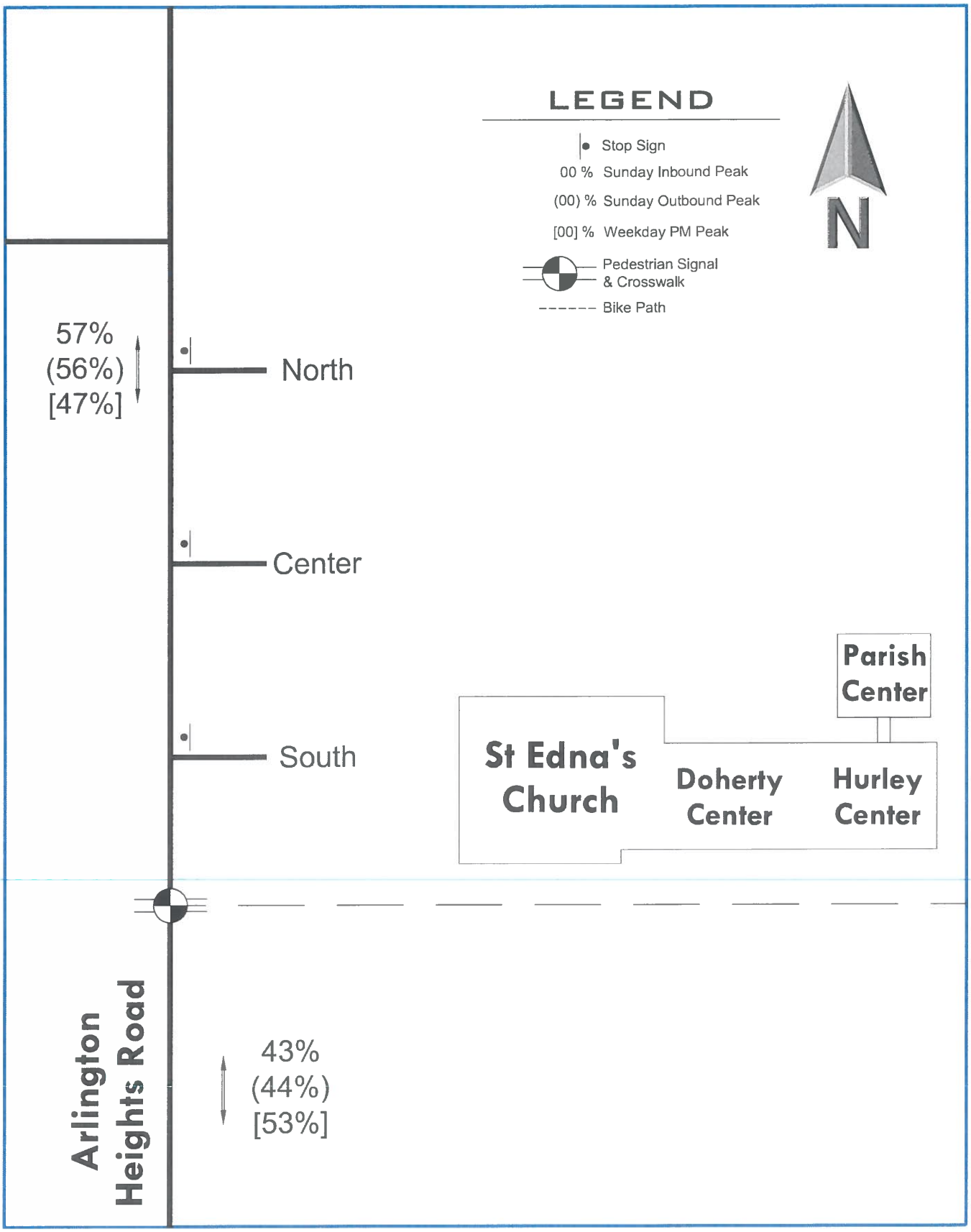
Existing Traffic Volumes

Figure 2



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Directional Distribution

Figure 3

Appendix

- 2012 Traffic Counts
- Existing Capacity Analyses

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Intersection Traffic Counts

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St. Edna's Church Drives on Arlington Heights Road

Arlington Heights, Illinois

Sunday, September 9, 2012

Begin Time	North Exit Drive Left In	North Exit Drive Right Out	Center Site Access Drive Left In	Center Site Access Drive Right Out	Center Site Access Drive Left Out	Center Site Access Drive Right In	Southern Site Access Drive Left In	Southern Site Access Drive Right Out	Southern Site Access Drive Left Out	Southern Site Access Drive Right In	15 Minute Totals	60 Minute Totals	St Edna's Church Totals In	St Edna's Church Totals Out	St Edna's Church Totals Total	Arlington Heights Road at South Entrance NB Thru	Arlington Heights Road at South Entrance SB Thru	Arlington Heights Road at South Entrance Total	60 Minute Totals	Pedestrian Crossing 15 Minute Totals	Pedestrian Crossing 60 Minute Totals
9:00 AM	10	0	18	0	0	6	1	0	0	16	51	**287**	51	0	51	90	132	222	**1003**	0	**32**
9:15 AM	8	3	75	1	1	26	4	0	1	48	167	240	161	6	167	118	187	305	1021	13	32
9:30 AM	3	1	34	1	2	2	1	1	0	18	63	92	58	5	63	98	115	213	1045	18	20
9:45 AM	1	1	2	0	1	0	0	0	0	1	6	160	4	2	6	105	158	263	1177	1	27
10:00 AM	0	0	0	0	1	1	1	0	0	1	4	241	3	1	4	110	130	240	1258	0	39
10:15 AM	0	7	2	3	3	0	0	0	1	3	19	299	5	14	19	147	182	329	1385	1	40
10:30 AM	0	25	0	29	44	0	0	12	19	2	131	**415**	2	129	131	149	196	345	**1410**	25	**41**
10:45 AM	0	23	4	18	32	2	1	2	4	1	87	372	8	79	87	145	199	344	1445	13	24
11:00 AM	0	6	28	3	6	6	2	0	0	11	62	299	47	15	62	166	201	367	1557	1	13
11:15 AM	4	4	63	3	7	11	4	2	3	34	135		116	19	135	168	186	354		2	
11:30 AM	6	6	42	4	2	5	1	0	0	22	88		76	12	88	189	191	380		8	
11:45 AM	0	4	4	0	0	2	0	0	0	4	14		10	4	14	247	209	456		2	
Total	32	80	0	62	99	61	15	17	28	161			541	286	827	1732	2086	3818		84	
Inbound Peak 9:00-10:00 AM	**22**	**5**	**129**	**2**	**4**	**34**	**6**	**1**	**1**	**83**	**287**		**274**	**13**	**287**	**411**	**592**	**1003**		**32**	
Outbound Peak 10:30-11:30 AM	**4**	**58**	**95**	**53**	**89**	**19**	**7**	**16**	**26**	**48**	**415**		**173**	**242**	**415**	**628**	**782**	**1410**		**41**	

Tuesday, October 2, 2012

Begin Time	North Exit Drive Left In	North Exit Drive Right Out	Center Site Access Drive Left In	Center Site Access Drive Right Out	Center Site Access Drive Left Out	Center Site Access Drive Right In	Southern Site Access Drive Left In	Southern Site Access Drive Right Out	Southern Site Access Drive Left Out	Southern Site Access Drive Right In	15 Minute Totals	60 Minute Totals	St Edna's Church Totals In	St Edna's Church Totals Out	St Edna's Church Totals Total	Arlington Heights Road at South Entrance NB Thru	Arlington Heights Road at South Entrance SB Thru	Arlington Heights Road at South Entrance Total	60 Minute Totals	Pedestrian Crossing 15 Minute Totals	Pedestrian Crossing 60 Minute Totals
4:00 PM	0	5	14	1	2	5	0	0	0	9	36	76	28	8	36	268	259	527	2326	2	**3**
4:15 AM	0	3	0	4	14	4	0	0	0	5	30	49	9	21	30	270	271	541	2395	0	1
4:30 PM	0	1	0	1	2	0	0	1	0	1	6	55	1	5	6	302	345	647	2511	0	1
4:45 PM	0	0	0	0	0	1	0	0	0	3	4	104	4	0	4	279	332	611	2482	1	4
5:00 PM	0	1	3	2	1	1	0	0	0	1	9	**158**	5	4	9	278	318	596	**2524**	0	**7**
5:15 PM	0	9	7	2	2	11	0	0	0	5	36	149	23	13	36	328	329	657	1928	0	7
5:30 PM	0	7	7	8	11	9	0	1	2	10	55	113	26	29	55	305	313	618	1271	3	7
5:45 PM	0	5	21	5	3	6	0	1	1	16	58	58	43	15	58	325	328	653	653	4	4
Total	0	31	52	23	35	37	0	3	3	50			139	95	234	2355	2495	4850		10	
5:00-6:00 PM	**0**	**22**	**38**	**17**	**17**	**27**	**0**	**2**	**3**	**32**	**158**		**97**	**61**	**158**	**1236**	**1288**	**2524**		**7**	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SBC
Agency/Co.	EEA
Date Performed	10/1/2012
Analysis Time Period	Sunday Inbound Peak

Site Information

Intersection	North Drive/Arlington Hts Road
Jurisdiction	IDOT/Arlington Heights
Analysis Year	2012

Project Description

East/West Street: St Edna North Drive	North/South Street: Arlington Heights Road
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		380		22	723	
Peak-Hour Factor, PHF	1.00	0.82	1.00	0.82	0.82	1.00
Hourly Flow Rate, HFR (veh/h)	0	463	0	26	881	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T		L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						5
Peak-Hour Factor, PHF	1.00	1.00	0.80	1.00	1.00	0.80
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	6
Percent Heavy Vehicles	0	0	1	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	1
Configuration						R

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L			R			
v (veh/h)		26			6			
C (m) (veh/h)		1102			812			
v/c		0.02			0.01			
95% queue length		0.07			0.02			
Control Delay (s/veh)		8.3			9.5			
LOS		A			A			
Approach Delay (s/veh)	--	--	9.5					
Approach LOS	--	--	A					

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Overall LOS A - 9.1 sec

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SBC
Agency/Co.	EEA
Date Performed	10/3/2012
Analysis Time Period	Weekday PM Peak

Site Information

Intersection	North Drive/Arlington Hts Road
Jurisdiction	IDOT/Arlington Heights
Analysis Year	2012

Project Description

East/West Street: St Edna North Drive	North/South Street: Arlington Heights Road
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		1228		0	1309	
Peak-Hour Factor, PHF	1.00	0.96	1.00	0.96	0.82	1.00
Hourly Flow Rate, HFR (veh/h)	0	1279	0	0	1596	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T		L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						22
Peak-Hour Factor, PHF	1.00	1.00	0.80	1.00	1.00	0.80
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	27
Percent Heavy Vehicles	0	0	1	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	1
Configuration						R

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L			R			
v (veh/h)		0			27			
C (m) (veh/h)		544			479			
v/c		0.00			0.06			
95% queue length		0.00			0.18			
Control Delay (s/veh)		11.6			13.0			
LOS		B			B			
Approach Delay (s/veh)	--	--	13.0					
Approach LOS	--	--	B					

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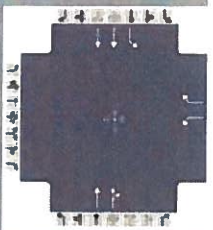
Generated: 10/3/2012 7:54 AM

Overall LOS B - 11.6 sec

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	EEA			Duration, h	0.25
Analyst	SBC	Analysis Date	Oct 1, 2012	Area Type	Other
Jurisdiction	IDOT/Arlington Heights	Time Period	9 - 10 AM	PHF	0.82
Intersection	Arlington Heights/Center D	Analysis Year	2012 Existing	Analysis Period	1> 7:00
File Name	Inbd Peak.xus				
Project Description	Police Control				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				4		2		378	34	129	594	

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	9.0	58.0	5.0	0.0	0.0	0.0	
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	
Red	2.0	2.0	2.0	0.0	0.0	0.0	

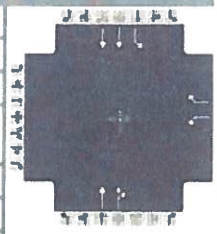
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4		6	5	2
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				11.0		64.0	15.0	79.0
Change Period, (*Y+Rc*), s				6.0		6.0	6.0	6.0
Max Allow Headway (*MAH*), s				3.2		0.0	3.1	0.0
Queue Clearance Time (g_s), s				2.2			4.0	
Green Extension Time (g_e), s				0.0		0.0	0.1	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				1.00			0.12	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14		6	16	5	2	
Adjusted Flow Rate (*v*), veh/h				5		2		254	248	157	724	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1810		1610		1900	1845	1810	1809	
Queue Service Time (g_s), s				0.2		0.1		5.0	5.0	2.0	4.3	
Cycle Queue Clearance Time (g_c), s				0.2		0.1		5.0	5.0	2.0	4.3	
Capacity (*c*), veh/h				101		89		1224	1189	797	2934	
Volume-to-Capacity Ratio (*X*)				0.049		0.027		0.208	0.209	0.197	0.247	
Available Capacity (c_a), veh/h				101		89		1224	1189	797	2934	
Back of Queue (*Q*), veh/ln (95th percentile)				0.2		0.1		3.3	3.2	0.8	1.5	
Overflow Queue (Q_3), veh/ln				0.0		0.0		0.0	0.0	0.0	0.0	
Queue Storage Ratio (*RQ*) (95th percentile)				0.00		0.00		0.00	0.00	0.00	0.00	
Uniform Delay (d_1), s/veh				40.2		40.2		6.6	6.6	3.0	2.0	
Incremental Delay (d_2), s/veh				0.1		0.0		0.4	0.4	0.0	0.2	
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh				40.3		40.2		7.0	7.0	3.1	2.2	
Level of Service (LOS)				D		D		A	A	A	A	
Approach Delay, s/veh / LOS	0.0			40.3		D	7.0		A	2.4		A
Intersection Delay, s/veh / LOS	4.2						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.7	B	2.9	C	2.2	B	0.6	A
Bicycle LOS Score / LOS				F	0.9	A	1.2	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	EEA			Duration, h	0.25
Analyst	SBC	Analysis Date	Oct 1, 2012	Area Type	Other
Jurisdiction	IDOT/Arlington Heights	Time Period	Sunday outbound Peak	PHF	0.82
Intersection	Arlington Heights/Center D	Analysis Year	2012 Existing	Analysis Period	1> 7:00
File Name	Outbd Peak.xus				
Project Description	Police Control				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				89		53		625	19	95	700	

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	9.0	49.0	14.0	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	2.0	2.0	2.0	0.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4		6	5	2
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				20.0		55.0	15.0	70.0
Change Period, (Y+Rc), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.2		0.0	3.1	0.0
Queue Clearance Time (g_s), s				6.8			4.1	
Green Extension Time (g_e), s				0.2		0.0	0.1	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				0.02			0.10	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14		6	16	5	2	
Adjusted Flow Rate (v), veh/h				109		65		395	391	116	854	
Adjusted Saturation Flow Rate (s), veh/h/ln				1810		1610		1900	1880	1810	1809	
Queue Service Time (g_s), s				4.8		3.2		10.8	10.8	2.1	8.0	
Cycle Queue Clearance Time (g_c), s				4.8		3.2		10.8	10.8	2.1	8.0	
Capacity (c), veh/h				281		250		1034	1024	558	2573	
Volume-to-Capacity Ratio (X)				0.386		0.258		0.382	0.382	0.207	0.332	
Available Capacity (c_a), veh/h				281		250		1034	1024	558	2573	
Back of Queue (Q), veh/ln (95th percentile)				3.8		2.2		7.9	7.8	1.2	4.3	
Overflow Queue (Q_3), veh/ln				0.0		0.0		0.0	0.0	0.0	0.0	
Queue Storage Ratio (RQ) (95th percentile)				0.00		0.00		0.00	0.00	0.00	0.00	
Uniform Delay (d_1), s/veh				34.1		33.4		11.8	11.8	6.4	4.9	
Incremental Delay (d_2), s/veh				0.3		0.2		1.1	1.1	0.1	0.3	
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (d), s/veh				34.5		33.6		12.9	12.9	6.5	5.3	
Level of Service (LOS)				C		C		B	B	A	A	
Approach Delay, s/veh / LOS	0.0			34.1		C	12.9		B	5.4		A
Intersection Delay, s/veh / LOS	11.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.7	B	2.9	C	2.3	B	0.8	A
Bicycle LOS Score / LOS				F	1.1	A	1.3	A

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SBC
Agency/Co.	EEA
Date Performed	10/3/2012
Analysis Time Period	Weekday PM Peak

Site Information

Intersection	Center Dr/Arlington Hts Road
Jurisdiction	IDOT/Arlingotn Heihgts
Analysis Year	2012 Existing

Project Description

East/West Street: *St Edna's Center Drive* | North/South Street: *Arlington Heights Road*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		1211	27	38	1271	
Peak-Hour Factor, PHF	1.00	0.96	0.96	0.96	0.96	1.00
Hourly Flow Rate, HFR (veh/h)	0	1261	28	39	1323	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				17		17
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.80	1.00	0.80
Hourly Flow Rate, HFR (veh/h)	0	0	0	21	0	21
Percent Heavy Vehicles	0	0	0	1	0	0
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, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (veh/h)		39	21		21			
C (m) (veh/h)		539	48		476			
v/c		0.07	0.44		0.04			
95% queue length		0.23	1.59		0.14			
Control Delay (s/veh)		12.2	128.9		12.9			
LOS		B	F		B			
Approach Delay (s/veh)	--	--	70.9					
Approach LOS	--	--	F					

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Over 1 LOSE -42.6

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SBC
Agency/Co.	EEA
Date Performed	10/1/2012
Analysis Time Period	Sunday Inbound Peak

Site Information

Intersection	South Drive/Arlington Hts Road
Jurisdiction	IDOT/Arlingotn Heihgts
Analysis Year	2012 Existing

Project Description

East/West Street: *St Edna's South Drive* | North/South Street: *Arlington Heights Road*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		411	83	6	592	
Peak-Hour Factor, PHF	1.00	0.82	0.82	0.82	0.82	1.00
Hourly Flow Rate, HFR (veh/h)	0	501	101	7	721	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				1		1
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	0	0	0	1	0	1
Percent Heavy Vehicles	0	0	0	1	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, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		7		2				
C (m) (veh/h)		978		393				
v/c		0.01		0.01				
95% queue length		0.02		0.02				
Control Delay (s/veh)		8.7		14.2				
LOS		A		B				
Approach Delay (s/veh)	--	--	14.2					
Approach LOS	--	--	B					

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Overall LOSA - 9.9

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SBC
Agency/Co.	EEA
Date Performed	10/1/2012
Analysis Time Period	Sunday Outbound Peak

Site Information

Intersection	South Drive/Arlington Hts Road
Jurisdiction	IDOT/Arlingotn Heihgts
Analysis Year	2012 Existing

Project Description

East/West Street: *St Edna's South Drive* | North/South Street: *Arlington Heights Road*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		628	48	7	782	
Peak-Hour Factor, PHF	1.00	0.82	0.82	0.82	0.82	1.00
Hourly Flow Rate, HFR (veh/h)	0	765	58	8	953	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				26		16
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.80	1.00	0.80
Hourly Flow Rate, HFR (veh/h)	0	0	0	32	0	19
Percent Heavy Vehicles	0	0	0	1	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, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		8		51				
C (m) (veh/h)		809		216				
v/c		0.01		0.24				
95% queue length		0.03		0.89				
Control Delay (s/veh)		9.5		26.7				
LOS		A		D				
Approach Delay (s/veh)	--	--	26.7					
Approach LOS	--	--	D					

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Overall-LOSC-24.4 sec

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SBC
Agency/Co.	EEA
Date Performed	10/3/2012
Analysis Time Period	Weekday PM Peak

Site Information

Intersection	South Drive/Arlington Hts Road
Jurisdiction	IDOT/Arlingotn Heihgts
Analysis Year	2012 Existing

Project Description

East/West Street: St Edna's South Drive | North/South Street: Arlington Heights Road

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		1236	32	0	1288	
Peak-Hour Factor, PHF	1.00	0.96	0.96	0.96	0.96	1.00
Hourly Flow Rate, HFR (veh/h)	0	1287	33	0	1341	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				3		2
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.80	1.00	0.80
Hourly Flow Rate, HFR (veh/h)	0	0	0	3	0	2
Percent Heavy Vehicles	0	0	0	1	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, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		0		5				
C (m) (veh/h)		525		85				
v/c		0.00		0.06				
95% queue length		0.00		0.18				
Control Delay (s/veh)		11.9		50.0				
LOS		B		E				
Approach Delay (s/veh)	--	--	50.0					
Approach LOS	--	--	E					

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Overall LOS E 50.0