



January 15, 2024

Ms. Marnie Saunders
Senior Land Use Planner
D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, ON
K9J 0B9

Re: Response to Peer Review comments provided by Stantec Consulting Ltd., dated June 7, 2023, for the proposed Residential Subdivision in Township of Douro-Dummer, County of Peterborough

Dear Ms. Saunders,

As requested, we have reviewed the Peer Review Report provided by Stantec Consulting Ltd. (Appendix A1) for the Traffic Impact Study (TIS) dated June, 2018 of the proposed residential subdivision to be located on the northern edge of the Hamlet of Warsaw along east side of CR 4. This letter provides our response to the comments which follow the same numbering as the comments in peer review report dated June 7, 2023.

TIS ADDENDUM

Our Response:

1. The 2018 TIS used 2017 traffic data as the existing condition. The study has been updated with the recent 2023 traffic data. Please see **Exhibit 1.1** (attached at the back of this report) for the Existing 2023 traffic volumes used as the base for the traffic analysis.
2. Tranplan Associates Inc. collected the peak hour traffic volumes on County Road 4 & English Line South intersection on November 23, 2023. The detailed 15 min traffic count report and an output diagram is attached in Appendix A.2 for reference.
3. The site trip generation is done based on ITE Trip Generation Manual-11th Edition. The Land-use code LU 210 (single family detached dwelling) was used to calculate trips based on average rate and fitted curve equation; the method that generated the highest number of trips was used for analysis. The fitted curve equation generated 17 total trips (4 inbound, 13 outbound) during AM peak hour and 22 total trips (14 inbound, 8 outbound) during PM peak hour.



Table 1: Trip Generation

TRIP GENERATION CALCULATIONS										
Land Use	Units	Expected Units	Rate	AM PEAK HOUR			Rate	PM PEAK HOUR		
				TOTAL	IN	OUT		TOTAL	IN	OUT
LU 210 (Single family detached dwelling)					26%	74%			63%	37%
(1) Based on ITE 11th Edition			Average Rate							
Single Family detached dwelling	Units	20	0.70	14	4	10	0.94	19	12	7
			Total Trips	14	4	10		19	12	7
(2) Based on ITE 11th Edition			Fitted Curve Equation							
Single Family detached dwelling	Units	20	$\ln(T)=0.91\ln(X)+0.12$	17	4	13	$\ln(T)=0.94\ln(X)+0.27$	22	14	8
			Total Trips	17	4	13		22	14	8

4. Future Background Traffic Volumes: The existing 2023 traffic volumes are projected ahead to 2033 using an annual growth rate of 2% (compounded). No other background developments are expected to be in the planning approval/construction stage near the study area. Please see Exhibit 1.2 for the 2033 future background traffic volumes and Exhibit 1.3 for the new site traffic generated by the residential subdivision. The directional orientation and site traffic distribution remains the same as in the 2018 traffic study.

Future Traffic Volumes: The new site traffic volumes are added to the background traffic volumes to generate the future 2033 traffic volumes. Please see Exhibit 1.4 for the 2033 total traffic volumes.

5. Available Sight Lines

Based on the TAC Geometric Design Guide for Canadian Roads, 2017, Section 9.9, the following table provides the intersection sight distance standards for 60 km/h design speed:

Table 2: Sight Line Requirements

	Intersection Sight Distance			
Design Speed*	Minimum Stopping Distance (m)	Left Turns from Minor Road (m)	Right Turns from Minor Road (m)	Left Turns from Major Road (m)
60km/h	85	130	110	95

*County Road 4, has a posted speed limit of 50 km/h. The study assumed 10km/h above posted speed as design speed.



As requested, Exhibit 2.0 illustrates approximate “airline” distance of relevant sight distance measured from the proposed site access on County Road 4 (measured using Google Aerial Photo Distance Measure Function).

It indicates that the available sight distance to the north of County Road 4 for vehicles turning left from proposed site access to travel south is approximately 300m which meets the requirement of 130m. Similarly, the available sight distance to the south of County Road 4 for vehicles turning right from the proposed site access to travel north is approximately 140m which meets the requirement of 110m. Both these distances also satisfy the minimum stopping distance standard of road with 60km/h design speed.

6. Synchro Parameters:

- For intersection capacity analysis using Synchro, the observed peak hour factors are used as synchro parameters for each approach on the County Road 4 & English Line South intersection. The observed peak hour factors can be found in Appendix A.2, Traffic Data.
- Pedestrian volumes were observed during the AM & PM peak hours and no conflicting pedestrians were noted for the County Road 4 & English Line South intersection. The pedestrians were observed to be coming from the south side of County Road 4, using the sidewalk connected to English Line South and then crossing at the pedestrian cross provided near Warsaw Public school entrance.

The synchro analysis was updated using the revised traffic volumes. The resulting synchro reports for Existing 2023 condition, 2033 background condition and 2033 total traffic condition is attached in Appendix B, Synchro Reports. The intersection capacity analysis summary table is provided below.

Table 3: Intersection capacity analysis summary table

INTERSECTIONS		Existing 2023 Traffic Conditions								Background 2033 Traffic Conditions								Total 2033 Traffic Conditions							
		AM Peak Hour				PM Peak Hour				AM Peak Hour				PM Peak Hour				AM Peak Hour				PM Peak Hour			
		LoS	Delay	V/C	95 th Q	LoS	Delay	V/C	95 th Q	LoS	Delay	V/C	95 th Q	LoS	Delay	V/C	95 th Q	LoS	Delay	V/C	95 th Q	LoS	Delay	V/C	95 th Q
Country Rd 4 & English Line S	WBLR	A	9.3	0.08	2.0	A	9.7	0.02	0.5	A	9.6	0.10	2.7	B	10.0	0.03	0.7	A	9.6	0.11	2.8	A	10.0	0.03	0.8
	NBTR	-	0.0	0.04	0.0	-	0.0	0.06	0.0	-	0.0	0.05	0.0	-	0.0	0.07	0.0	-	0.0	0.05	0.0	-	0.0	0.08	0.0
	SBTL	A	1.6	0.01	0.3	A	0.1	0.00	0.0	A	1.7	0.01	0.4	A	0.1	0.00	0.0	A	1.6	0.02	0.4	A	0.2	0.00	0.0
Country Rd 4 & Site Entrance	WBLR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	9.1	0.02	0.4	A	9.3	0.01	0.2
	NBTR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.04	0.0	-	0.0	0.06	0.0
	SBTL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	0.1	0.00	0.0	A	0.5	0.00	0.1



The intersection capacity analysis indicates that all individual movements of County Road 4 & English Line South is operating very well with LOS "A", minimal delay, and queue lengths at the existing, background and total traffic conditions. The proposed site access is also forecast to operate very well.

Please feel free to contact if you have any questions or concerns.

Yours truly,

Sreelakshmi Changaradil, M.Sc., E.I.T

Reviewed By,

Seo-Woon (Swan) Im, B.E.S
Tranplan Associates,
Senior Transportation Planner



EXHIBITS

EXHIBIT : 1 Traffic Volumes



EXHIBIT : 1.1 Existing 2023 Traffic Volumes

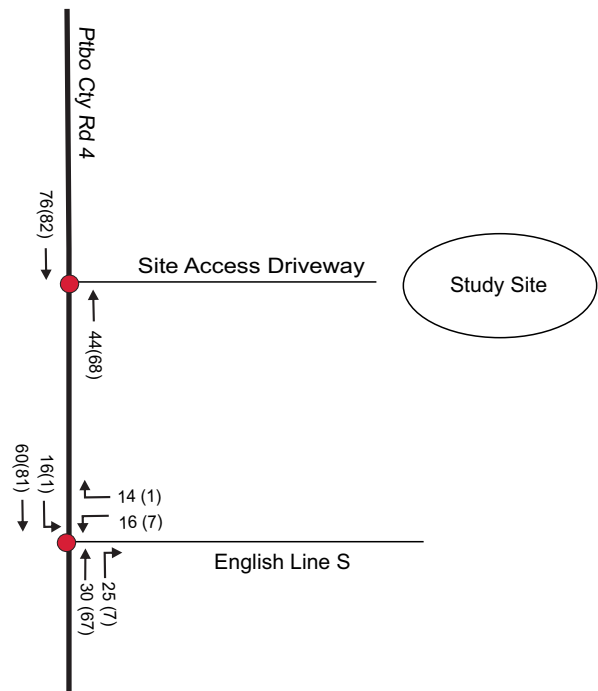


EXHIBIT : 1.2 2033 Total Future Background Traffic Volumes

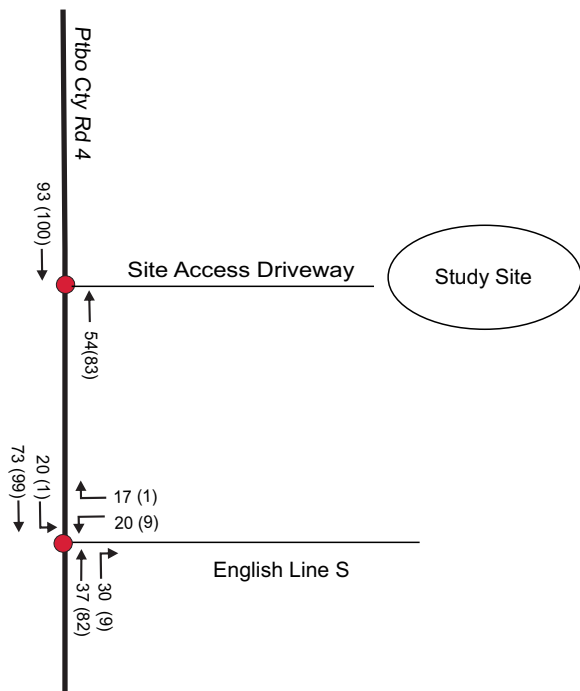


EXHIBIT : 1.3 New Site Traffic

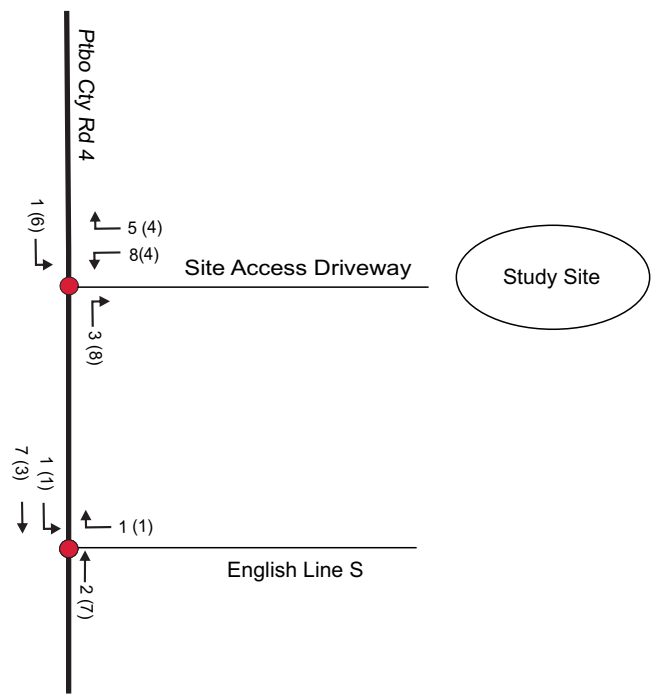
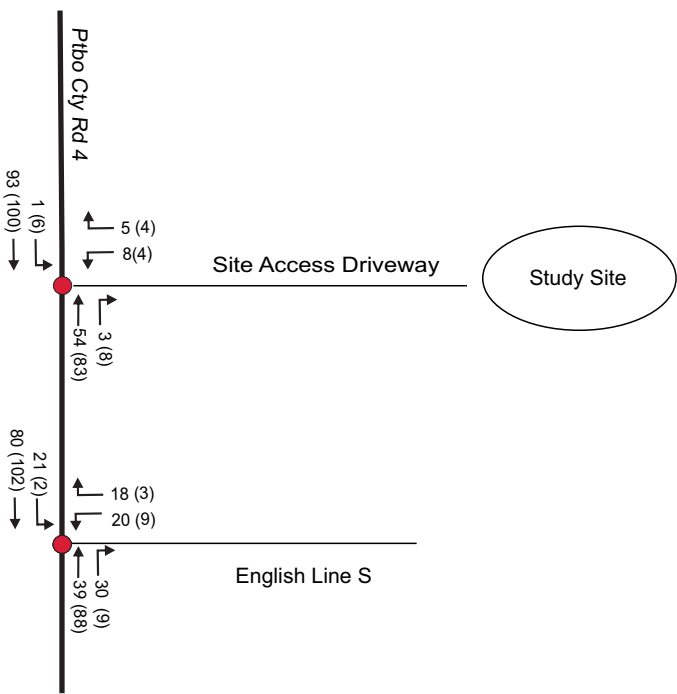


EXHIBIT 1.4 2033 Total Traffic Volumes



LEGEND
436 Weekday AM peak hour volume
(350) Weekday PM peak hour volume
 Unsignalized intersection
 Signalized intersection

EXHIBIT 2 : Available Sight Lines





APPENDIX A1 – PEER REVIEW REPORT (STANTEC)



Stantec Consulting Ltd.
300W-675 Cochrane Drive, Markham ON L3R 0B8

June 7, 2023
File: 160900933

Attention: Ken Scullion
Planner
Peterborough County
470 Water Street
Peterborough, ON
K9H 3M3

Email: kscullion@ptbocounty.ca

**Reference: Traffic Impact Study Peer Review Warsaw Residential Subdivision Peterborough
County Rd. 4 Township of Douro-Dummer, County of Peterborough, Ontario**

INTRODUCTION

The County of Peterborough (The County) has requested Stantec Consulting Ltd. (Stantec) to conduct a peer review of the Traffic Impact Study (TIS) for the proposed development captioned above (herein referred to as the Site).

SUBJECT DEVELOPMENT

The proposed Warsaw Residential Subdivision site is located in the geographic Township of Dummer now part of the amalgamated Township of Douro-Dummer. The subdivision will be located on the northern edge of the Hamlet of Warsaw along the east side of CR 4 on a green-field site. The proposed plan of subdivision will contain up to 20 individual lots for single family residential housing. Each lot will have its own driveway accessing a new local street that will provide direct access to CR 4.

DOCUMENT REVIEWED

The following document was reviewed for purposes of the Traffic Impact Study Report peer review:

- Warsaw Residential Subdivision Peterborough County Rd. 4 - Traffic Impact Study", dated June 2018. The Terms of Reference and/or information regarding pre-consultation discussions with The County or the Township for the TIA was not made available for review.

Reference: Traffic Impact Study Peer Review Warsaw Residential Subdivision Peterborough County Rd. 4 Township of Douro-Dummer, County of Peterborough, Ontario

TRAFFIC REPORT REVIEW COMMENTS

This peer review report provides a review of the methodology, technical analysis, findings, and recommendations presented in the TIS and is solely based on the content of the provided report and its appendices.

While spot-checks on calculations were undertaken to confirm the study was prepared using industry accepted practice and appropriate methodology, Stantec does not take liability for any omissions/exceptions that Tranplan Associates may have made throughout their assessment.

Peer Review comments

1. Section 1.1: Background
 - The study uses 2017 as the existing condition that is 6 years prior to this review process. We request the consultant to provide support on the validity of the TIS as the TIS documents are usually considered obsolete after 3 years.
2. Section 2.4: Current Traffic Data
 - The detailed traffic counts should be provided in the Appendix for reference.
3. Section 3.1: Trip Generation Forecasts
 - When using the ITE Trip Generation Manual, it is recommended to calculate the site generated traffic based on average rate as well as fitted curve equation and choose whichever is higher for the analysis.
4. Section 4.1: Future Background Traffic
 - No background development was considered in this study. It is recommended to confirm if any background development exists. This is a concern especially with the 6-year span between preparation of the TIS and its peer review.
5. Section 4.5: Future Site Access
 - The design ISD for left turn from stop is at the verge of exceeding the available ISD. It is recommended to provide a map illustrating the actual available sightline.
6. Synchro Parameters
 - The Section 2.4 indicates that peak hour factor of 0.70 is used in this study but peak hour factor of 0.92 is found in the Synchro analysis.
 - It seems that the conflicting pedestrians at the English Line South and County Road 4 intersections are assumed values (AM and PM pedestrian volumes are the same). It is recommended to use actual pedestrian volumes since it is a school access.



APPENDIX A.2 – 2023 TRAFFIC DATA

County Road 4/English Line South _ November 23, 2023

Time	North Approach			South Approach			East Approach		
AM Peak Hour	Left	Thru	Total	Right	Thru	Total	Left	Right	Total
8.00	1	20	21	4	6	10	2	0	2
8.15	4	16	20	5	7	12	1	1	2
8.30	7	14	21	8	9	17	10	8	18
8.45	4	10	14	8	8	16	3	5	8
Grand Total	16	60	76	25	30	55	16	14	30
Peak Hour Factor	0.90			0.81			0.42		

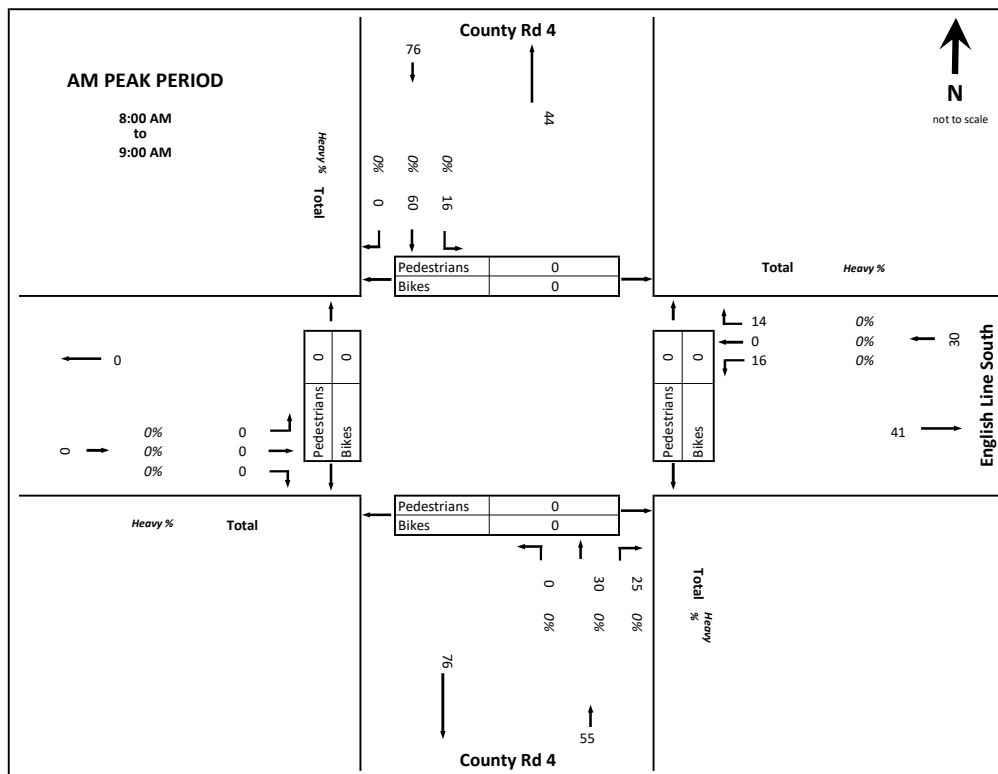
Time	North Approach			South Approach			East Approach		
PM Peak Hour	Left	Thru	Total	Right	Thru	Total	Left	Right	Total
4.00	0	31	31	2	23	25	3	1	4
4.15	0	18	18	0	12	12	1	0	1
4.30	0	21	21	1	16	17	2	0	2
4.45	1	11	12	4	16	20	1	0	1
Grand Total	1	81	82	7	67	74	7	1	8
Peak Hour Factor	0.66			0.74			0.50		

TURNING MOVEMENT DIAGRAMS

North-South Road: County Rd 4
East-West Road: English Line South

Municipality: Warsaw
Weather: AM: Mainly Clear

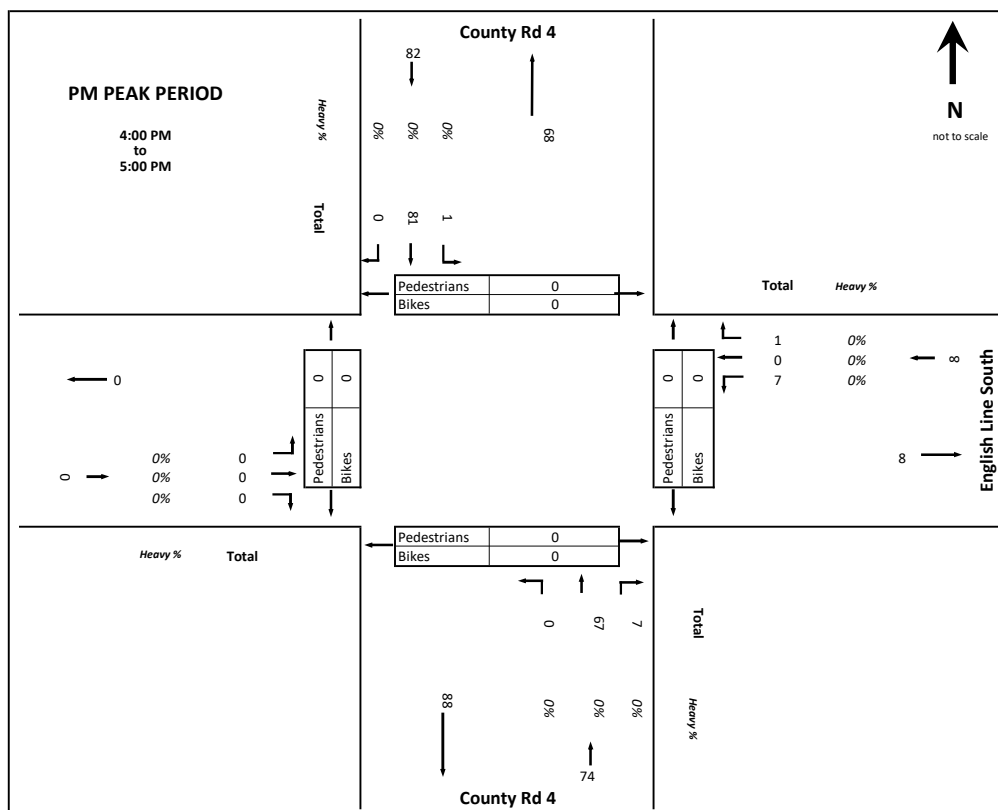
Day: Thursday
Survey Date: November 23, 2023



South Road: County Rd 4
East-West Road: English Line South

Municipality: Warsaw
Weather: PM: Mainly Clear

Day: Thursday
Survey Date: November 23, 2023














APPENDIX B – SYNCHRO REPORTS










Warsaw Residential Subdivision
County Road 4 & English Line South

Existing 2023 Traffic Volumes
AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	14	30	25	16	60
Future Volume (Veh/h)	16	14	30	25	16	60
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.42	0.42	0.81	0.81	0.90	0.90
Hourly flow rate (vph)	38	33	37	31	18	67
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						106
pX, platoon unblocked						
vC, conflicting volume	156	52			68	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	156	52			68	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	97			99	
cM capacity (veh/h)	826	1015			1533	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	71	68	85			
Volume Left	38	0	18			
Volume Right	33	31	0			
cSH	904	1700	1533			
Volume to Capacity	0.08	0.04	0.01			
Queue Length 95th (m)	2.0	0.0	0.3			
Control Delay (s)	9.3	0.0	1.6			
Lane LOS	A		A			
Approach Delay (s)	9.3	0.0	1.6			
Approach LOS	A					
Intersection Summary						
Average Delay		3.6				
Intersection Capacity Utilization		20.7%		ICU Level of Service		A
Analysis Period (min)		15				










Warsaw Residential Subdivision
County Road 4 & English Line South

Existing 2023 Traffic Volumes
PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	1	67	7	1	81
Future Volume (Veh/h)	7	1	67	7	1	81
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.74	0.74	0.66	0.66
Hourly flow rate (vph)	14	2	91	9	2	123
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						106
pX, platoon unblocked						
vC, conflicting volume	222	96			100	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	222	96			100	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	765	961			1493	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	16	100	125			
Volume Left	14	0	2			
Volume Right	2	9	0			
cSH	785	1700	1493			
Volume to Capacity	0.02	0.06	0.00			
Queue Length 95th (m)	0.5	0.0	0.0			
Control Delay (s)	9.7	0.0	0.1			
Lane LOS	A		A			
Approach Delay (s)	9.7	0.0	0.1			
Approach LOS	A					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			15.1%	ICU Level of Service		A
Analysis Period (min)			15			










Warsaw Residential Subdivision
County Road 4 & English Line South

Background 2033 Traffic Volumes
AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	17	37	30	20	73
Future Volume (Veh/h)	20	17	37	30	20	73
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.42	0.42	0.81	0.81	0.90	0.90
Hourly flow rate (vph)	48	40	46	37	22	81
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						106
pX, platoon unblocked						
vC, conflicting volume	190	64			83	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	190	64			83	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	96			99	
cM capacity (veh/h)	788	1000			1514	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	88	83	103			
Volume Left	48	0	22			
Volume Right	40	37	0			
cSH	872	1700	1514			
Volume to Capacity	0.10	0.05	0.01			
Queue Length 95th (m)	2.7	0.0	0.4			
Control Delay (s)	9.6	0.0	1.7			
Lane LOS	A		A			
Approach Delay (s)	9.6	0.0	1.7			
Approach LOS	A					
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization			21.6%	ICU Level of Service		A
Analysis Period (min)			15			










Warsaw Residential Subdivision
County Road 4 & English Line South

Background 2033 Traffic Volumes
PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	1	82	9	1	99
Future Volume (Veh/h)	9	1	82	9	1	99
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.74	0.74	0.66	0.66
Hourly flow rate (vph)	18	2	111	12	2	150
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						106
pX, platoon unblocked						
vC, conflicting volume	271	117			123	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	271	117			123	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	717	935			1464	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	20	123	152			
Volume Left	18	0	2			
Volume Right	2	12	0			
cSH	735	1700	1464			
Volume to Capacity	0.03	0.07	0.00			
Queue Length 95th (m)	0.7	0.0	0.0			
Control Delay (s)	10.0	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	10.0	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay		0.7				
Intersection Capacity Utilization		16.0%		ICU Level of Service		A
Analysis Period (min)		15				










Warsaw Residential Subdivision
County Road 4 & English Line S

Total 2033 Traffic Volumes
AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	18	39	30	21	80
Future Volume (Veh/h)	20	18	39	30	21	80
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.42	0.42	0.81	0.81	0.90	0.90
Hourly flow rate (vph)	48	43	48	37	23	89
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						106
pX, platoon unblocked						
vC, conflicting volume	202	66			85	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	202	66			85	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	96			98	
cM capacity (veh/h)	775	997			1512	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	91	85	112			
Volume Left	48	0	23			
Volume Right	43	37	0			
cSH	866	1700	1512			
Volume to Capacity	0.11	0.05	0.02			
Queue Length 95th (m)	2.8	0.0	0.4			
Control Delay (s)	9.6	0.0	1.6			
Lane LOS	A		A			
Approach Delay (s)	9.6	0.0	1.6			
Approach LOS	A					
Intersection Summary						
Average Delay		3.7				
Intersection Capacity Utilization		22.0%	ICU Level of Service	A		
Analysis Period (min)		15				










Warsaw Residential Subdivision
County Road 4 & English Line S

Total 2033 Traffic Volumes
PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	3	88	9	2	102
Future Volume (Veh/h)	9	3	88	9	2	102
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.74	0.74	0.66	0.66
Hourly flow rate (vph)	18	6	119	12	3	155
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						106
pX, platoon unblocked						
vC, conflicting volume	286	125			131	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	286	125			131	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			100	
cM capacity (veh/h)	703	926			1454	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	24	131	158			
Volume Left	18	0	3			
Volume Right	6	12	0			
cSH	748	1700	1454			
Volume to Capacity	0.03	0.08	0.00			
Queue Length 95th (m)	0.8	0.0	0.0			
Control Delay (s)	10.0	0.0	0.2			
Lane LOS	A		A			
Approach Delay (s)	10.0	0.0	0.2			
Approach LOS	A					
Intersection Summary						
Average Delay		0.8				
Intersection Capacity Utilization		17.0%	ICU Level of Service	A		
Analysis Period (min)		15				










Warsaw Residential Subdivision
County Road 4 & Site Entrance

Total 2033 Traffic Volumes
AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	5	54	3	1	93
Future Volume (Veh/h)	8	5	54	3	1	93
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	5	59	3	1	101
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	164	60			62	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	164	60			62	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	827	1005			1541	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	14	62	102			
Volume Left	9	0	1			
Volume Right	5	3	0			
cSH	883	1700	1541			
Volume to Capacity	0.02	0.04	0.00			
Queue Length 95th (m)	0.4	0.0	0.0			
Control Delay (s)	9.1	0.0	0.1			
Lane LOS	A		A			
Approach Delay (s)	9.1	0.0	0.1			
Approach LOS	A					
Intersection Summary						
Average Delay		0.8				
Intersection Capacity Utilization		15.7%		ICU Level of Service		A
Analysis Period (min)		15				

Warsaw Residential Subdivision
County Road 4 & Site Entrance

Total 2033 Traffic Volumes
PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	4	83	8	6	100
Future Volume (Veh/h)	4	4	83	8	6	100
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	4	90	9	7	109
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	218	94			99	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	218	94			99	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	767	962			1494	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	8	99	116			
Volume Left	4	0	7			
Volume Right	4	9	0			
cSH	854	1700	1494			
Volume to Capacity	0.01	0.06	0.00			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	9.3	0.0	0.5			
Lane LOS	A		A			
Approach Delay (s)	9.3	0.0	0.5			
Approach LOS	A					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			20.2%	ICU Level of Service		A
Analysis Period (min)			15			