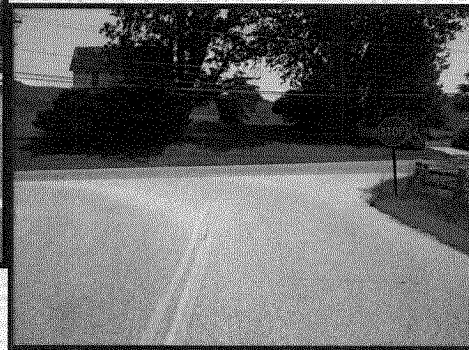


ARDROSSAN FARM-WEST PARCEL TRANSPORTATION IMPACT STUDY

July 26, 2013
TPD # ESII.A.00001

Radnor Township
Delaware County, PA



For Submission To:
Radnor Township

Prepared By:



TRAFFIC PLANNING AND DESIGN, INC.

WWW.TRAFFICPD.COM

TPD Services:
Roadway Design
Bridge Design & Inspection
Transportation Planning

**Traffic Signal System Design
Municipal Services
Environmental Services
Construction Management & Inspection**

ARDROSSAN FARM – WEST PARCEL TRANSPORTATION IMPACT STUDY

For Submission to:

Radnor Township, Delaware County, PA

Prepared For:

**ESII LP
Chadds Ford, PA 19317**

**July 26, 2013
TPD # ESII.A.00001**

Prepared By:

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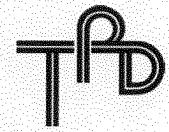
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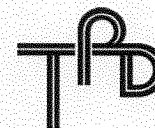
Appendix A:	Study Area Photographs
Appendix B:	Traffic Count Data
Appendix C:	Volume Development worksheets
Appendix D:	Capacity Analyses
Appendix E:	Auxiliary Turn Lane Warrant Analyses



EXECUTIVE SUMMARY

The purpose of this study is to examine the potential traffic impact associated with the proposed Ardrossan Farm (west parcel) development on the roadway network in Radnor Township, Delaware County, PA. Based on this evaluation, the following conclusions were reached:

- The project scope and the extent of the study area were confirmed with representatives of Township staff.
- The project site is located on the western side of Darby-Paoli Road (S.R. 1015), between Saw Mill Road and Godfrey Road (S.R. 1036). The proposed development will consist of 6 single-family homes.
- The site will be served by one driveway to Darby-Paoli Road (S.R. 1015), between Saw Mill Road and Godfrey Road. Please note, Darby-Paoli Road is a state-maintained roadway and thus will require a PennDOT HOP. Therefore, the proposed development is subject to PennDOT's review and approval.
- The measured sight distances at the proposed site driveway exceed PennDOT's sight distance requirements.
- The proposed development is expected to generate 5 new vehicle-trips during the weekday A.M. peak hour and 6 new vehicle-trips during the weekday P.M. peak hour.
- Under 2020 projected conditions with the development of the proposed site, the study area intersections will operate at the same overall intersection level of service (ILOS) as under 2020 base conditions, thus complying with the requirement outlined in PennDOT's TIS Guidelines.
- Under 2020 projected conditions, all levels of service at the site driveway will comply with the requirement outlined in PennDOT's TIS Guidelines.
- Traffic Planning and Design Inc. (TPD) recommends the following roadway improvements as outlined at the study area intersections:
 - Complete spot check counts when school is in session to verify the volumes utilized in this study.
 - Coordinate mutually agreed upon potential safety enhancement improvements with the Township along the roadways in the vicinity of the site.
 - Design the proposed site driveway to Darby-Paoli Road in accordance to the applicable PennDOT standards.



- Levels of Service (LOS) for the study area intersections have been summarized in matrix form. **Table I** details the overall intersection LOS for each study area intersection.

TABLE I
INTERSECTION LEVELS OF SERVICE (DELAY) SUMMARY

Intersection	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour		
	2013 Existing	2020 Build-Out Year		2013 Existing	2020 Build-Out Year	
		Base	Projected		Base	Projected
Darby Paoli Road & Saw Mill Road	B (12.9)	C (16.3)	C (16.7)	A (4.4)	A (5.2)	A (5.2)
Darby Paoli Road & Godfrey Road	A (2.3)	A (2.4)	A (2.4)	A (3.6)	A (3.8)	A (3.9)
Darby Paoli Road & Site Driveway	--	--	A (0.1)	--	--	A (0.0)

Base = No-Build scenario; Projected = Build scenario; ILOS = Overall Intersection Level of Service

INTRODUCTION

Traffic Planning and Design, Inc. (TPD) has completed a Transportation Impact Study (TIS) for the proposed Ardrossan Farm (west parcel) development in Radnor Township, Delaware County, Pennsylvania. The project site is located on the western side of Darby-Paoli Road (S.R. 1015), between Saw Mill Road and Godfrey Road (S.R. 1036), as shown in **Figure 1**. As shown in **Figure 2**, the proposed development will consist of 6 single-family homes.

The project scope and the extent of the study area were confirmed with representatives of Township staff.

Site Access Location

The site will be served by one driveway to Darby-Paoli Road (S.R. 1015), between Saw Mill Road and Godfrey Road. Please note, Darby-Paoli Road is a state-maintained roadway and thus will require a PennDOT HOP. Therefore, the proposed development is subject to PennDOT's review and approval.

EXISTING ROADWAY NETWORK

A field review of the existing roadway system in the study area was conducted. The existing roadway characteristics within the study area are summarized in **Table 1**. The existing lane configuration and intersection controls for the study area intersections are shown in **Figure 3**. Photographs of the study area intersections are included in **Appendix A**.

TABLE 1
ROADWAY CHARACTERISTICS WITHIN STUDY AREA

Roadway	Ownership	PennDOT Functional Classification/ Roadway Type	Predominant Directional Orientation	Average Daily Traffic ¹	Posted Speed Limit
Darby-Paoli Road	State (S.R. 1015)	Urban Collector/ Urban Minor Arterial	North-South	6,820	35 mph
Saw Mill Road	Township	Urban Collector	East-West	1,674	25 mph
Godfrey Road	State (S.R. 1036)	Local Road	East-West	1,175	25 mph

1. Based on PennDOT iTMS data.

Crash Data Investigation

Crash data were obtained from PennDOT for the study area intersections. PennDOT defines a reportable crash as follows, "A reportable (crash) is one in which an injury or fatality occurs or if at least one of the vehicles involved requires towing from the scene." Reportable crashes were

tabulated for the five-year time period beginning 1/1/2008 and ending 12/31/2012. The number of reportable crashes at the study area intersections is shown in **Table 2**.

TABLE 2
PENNDOT REPORTABLE CRASH DATA

Study Area Intersection	Number of Reportable Crashes				
	2008	2009	2010	2011	2012
Darby-Paoli Road and Saw Mill Road	3	0	1	0	1
Darby-Paoli Road and Godfrey Road	0	0	1	0	0

EXISTING TRAFFIC CONDITIONS

Manual Turning Movement Counts

Manual traffic counts were conducted on 15-minute intervals during the weekday morning (7:00 to 9:00 A.M.) and weekday evening (4:00 to 6:00 P.M.) peak periods. Peak hours and count dates for the study area intersections are identified in **Table 3**.

TABLE 3
MANUAL TRAFFIC COUNT INFORMATION

Intersection	Date of Traffic Counts	Time Period	Intersection Peak Hour ¹
Darby-Paoli Road and Saw Mill Road	Wednesday, July 17, 2013	Weekday A.M.	8:00 to 9:00 A.M.
	Wednesday, July 17, 2013	Weekday P.M.	5:00 to 6:00 P.M.
Darby-Paoli Road and Godfrey Road	Wednesday, July 17, 2013	Weekday A.M.	8:00 to 9:00 A.M.
	Wednesday, July 17, 2013	Weekday P.M.	5:00 to 6:00 P.M.

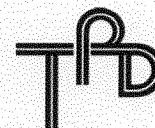
1. Peak Hour consists of the four consecutive 15-minute intervals where the highest traffic volumes occur.

Existing condition traffic volumes for the weekday A.M. and weekday P.M. peak hours are illustrated in **Figure 4**. Manual traffic count data sheets are provided in **Appendix B**.

Automatic Traffic Recorder Counts

Automatic Traffic Recorder (ATR) counts were conducted along the following roadways in the vicinity of the proposed site:

- Darby-Paoli Road, between Newtown Road and Saw Mill Road;
- Newtown Road, between Darby-Paoli Road and Abrahams Lane.



The ATR counts were conducted from Monday, July 15, 2013 until Friday, July 19, 2013. The ATR data sheets are provided in **Appendix B**.

Seasonal Count Comparison

In order to evaluate seasonal fluctuations in traffic TPD compared the Average Daily Traffic (ADT) volumes on Newtown Road and Darby-Paoli Road based on the ATR data to the PennDOT iTMS. In addition, TPD compared the peak volumes from the manual traffic counts for these same roadways to the peak hour volumes as determined based on PennDOT's iTMS data (i.e. K-factor). Based on this comparison, the existing traffic volumes collected are comparable to the PennDOT traffic data. Therefore, no seasonal adjustment was applied to the existing traffic volumes. However, please note, spot check counts will be completed when school is in session to verify the volumes utilized.

BASE (NO-BUILD) CONDITIONS

Annual Background Growth

A background growth factor for the roadways in the study area was developed based on growth factors for September 2012 to July 2013 obtained from the PennDOT Bureau of Planning and Research (BPR). The PennDOT BPR suggests using a background growth trend factor of 0.51% per year in Delaware County for urban non-interstate roadways. As such, the background growth factor was applied annually to yield an overall growth percentage of 3.6% (0.51% per year, compounded over 7 years) for the 2020 build-out.

Nearby Proposed Developments

Base (no-build) traffic conditions were calculated to include traffic volumes from proposed developments, which, though not operating under existing conditions may be operating by 2020. The following nearby planned development was specifically included in this study:

Ardrossan Farm (East Parcel) is a proposed residential development consisting of a maximum of 87 single-family homes. The site is located on the southeast corner of the Newtown Road (S.R. 1021)/Darby-Paoli Road (S.R. 1015) intersection. Access is proposed to Darby-Paoli Road and Newtown Road via multiple driveways. Trip distributions for this development were obtained from the July 2013 study prepared by TPD.

The additional traffic volumes due to background growth and the background development were added to the existing traffic data to produce 2020 base (no-build) condition traffic volumes. The 2020 base condition volumes for the weekday A.M. and weekday P.M. peak hours are illustrated in **Figure 5**. Volume development spreadsheets are included in **Appendix C**.

SCHEDULED ROADWAY IMPROVEMENTS

Programmed Improvements

Based on a review of the DVRPC Transportation Improvement Program (TIP) there are two (2) bridges on Darby Paoli Road over the Little Darby Creek and Wigwam Run which will either be rehabilitated or replaced.

PROPOSED SITE ACCESS

Sight Distance Analysis

A sight distance analysis was prepared for the proposed site driveway. In general, recommended safe sight distances depend upon the posted speed limit and roadway grades. The existing sight distances at the proposed driveways were measured in accordance with PennDOT Publication 282 Highway Occupancy Permit Guidelines and compared to PennDOT's desirable sight distance standard, which is identified in 67 PA Code Chapter 441.8(h), "Access to and Occupancy of Highways by Driveways and Local Roads." In addition, measured sight distances at the proposed driveways were compared to PennDOT's safe stopping sight distance standard, which is calculated by the following equation:

$$SSSD = 1.47VT + V^2/[30(f \pm g)]$$

SSSD = safe stopping sight distance (acceptable sight distance)

V = Vehicle Speed

T = Perception Reaction Time of Driver (2.5 seconds)

f = Coefficient of Friction for Wet Pavements

g = Percent of Roadway Grade Divided by 100

Table 4 shows the measured, desirable, acceptable (SSSD), and required sight distances at the site driveways for vehicles entering and exiting the site.

TABLE 4
SIGHT DISTANCE ANALYSIS
SITE DRIVEWAY TO DARBY-PAOLI ROAD

	<i>Direction</i>	<i>Posted Speed</i>	<i>Grade¹</i>	<i>Sight Distances (feet)</i>		
				DES	SSSD	EXIST
Exiting Movements	<i>To the left</i>	35 mph	+3%	440	239	500+
	<i>To the right</i>	35 mph	-5%	350	269	500+
Entering Left Turns	<i>Approaching same direction</i>	35 mph	-5%	300	269	400+
	<i>Approaching opposite direction</i>	35 mph	+3%	300	239	400+

DES = PennDOT Desirable Sight Distance

¹ = Roadway Grade Approaching Driveway

SSSD = PennDOT Acceptable Sight Distance

EXIST = Existing (measured) Sight Distance

As shown in **Table 4** above, the measured sight distances at the site driveways exceed PennDOT's sight distance requirements.

TRIP GENERATION

The trip generation rates for the proposed development were obtained from the manual Trip Generation, Ninth Edition, 2012, an Institute of Transportation Engineers (ITE) Informational Report. The statistics in Trip Generation are empirical data based on more than 4,800 trip generation studies. The data are categorized by Land Use Codes, with total vehicular trips for a given land use estimated using an independent variable and statistically generated rates or equations.

For the proposed development, Land Use Codes 210 (Single-Family Detached Housing) was used to calculate the number of vehicular trips the development will generate during the following time periods: (1) average weekday; (2) weekday A.M. peak hour; and (3) weekday P.M. peak hour. **Table 5** shows the data for the analyzed time periods.

TABLE 5
ITE TRIP GENERATION DATA

Land Use	ITE #	Time Period	Equations/Rates	Entering %
Single-Family Homes	210	Weekday	$T = 9.52*(X)$	50%
		Weekday A.M. Peak Hour	$T = 0.75*(X)$	25%
		Weekday P.M. Peak Hour	$T = 1.00*(X)$	63%

T = number of site-generated vehicular trips
X = independent variable (units)

Table 6 summarizes the site trip generation for the analyzed time periods.

TABLE 6
ARROSSAN FARM (WEST PARCEL)
TRIP GENERATION SUMMARY

Time Period	Enter	Exit	Total
Weekday (24-Hour Total)	29	29	58
Weekday A.M. Peak Hour	1	4	5
Weekday P.M. Peak Hour	4	2	6

As shown in **Table 6**, the proposed development is expected to generate 5 new vehicle-trips during the weekday A.M. peak hour and 6 new vehicle-trips during the weekday P.M. peak hour.

TRIP DISTRIBUTION

The distribution of trips generated by the proposed development was based on the local road network, the existing traffic patterns, the proposed use of the site, and the site driveway

locations. The new trips for the proposed development were distributed to the local roadway network based on the percentages shown in **Table 7**.

TABLE 7
TRIP DISTRIBUTION PERCENTAGES – NEW TRIPS

Direction - To/From	Assignment (To/From)	Distribution Percentage
East	via Godfrey Road	22%
West	via Saw Mill Road	15%
North	via Darby-Paoli Road	55%
South	via Darby-Paoli Road	8%

The assignment of site-generated trips for the proposed development during the weekday A.M. and P.M. peak hours are shown in **Figure 6**.

PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES

The site-generated trips for the proposed development were added to the 2020 base (no-build) condition traffic volumes to develop 2020 projected (build) condition traffic volumes. The 2020 projected condition traffic volumes for the weekday A.M. and P.M. peak hours are shown in **Figure 7**.

LEVELS OF SERVICE FOR AN INTERSECTION

For analysis of intersections, level of service is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. LOS criteria is stated in terms of control delay per vehicle for a one-hour analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The criteria are shown in **Table 8**. Delay, as it relates to level of service, is a complex measure and is dependent upon a number of variables. For signalized intersections, these variables include the quality of vehicle progression, the cycle length, the green time ratio, and the volume/capacity ratio for the lane group in question. For unsignalized intersections, delay is related to the availability of gaps in the flow of traffic on the major street and the driver's discretion in selecting an appropriate gap for a particular movement from the minor street (straight across, left or right turn).

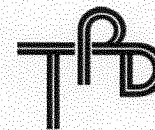


TABLE 8
LEVEL OF SERVICE CRITERIA
UNSIGNALIZED AND SIGNALIZED INTERSECTIONS ¹

Level of Service	Control Delay Per Vehicle (Seconds)	
	Signalized	Unsignalized
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

¹ Obtained from Exhibits 18-4 and 19-1 of the Transportation Research Board's *Highway Capacity Manual 2010*

CAPACITY ANALYSIS METHODOLOGY

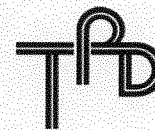
Capacity analyses were conducted for the weekday A.M. and weekday P.M. peak hours at the study area intersections. The study area intersections were analyzed according to the methodologies contained in the 2010 *Highway Capacity Manual* (HCM) using *Synchro 8* software, a Trafficware product. The following conditions were analyzed:

- Existing conditions;
- 2020 Base conditions (Build-out year without development);
- 2020 Projected conditions (Build-out year with development).

In addition, capacity analyses were conducted at the site driveway intersection under the 2020 projected conditions. The capacity analysis worksheets are included in **Appendix D**.

PennDOT's Transportation Impact Study Guidelines outlined in Strike-Off Letter 470-09-4, dated February 12, 2009 contain the following criteria regarding levels of service:

- Page 29 of the Guidelines state that if evaluation of the With Development Horizon Year Scenario to the Without Development Horizon Year Scenario indicates that the overall intersection level of service has dropped, the applicant will be required to mitigate the level of service if the increase in overall intersection delay is greater than 10-seconds. If the overall intersection delay increase is less than or equal to 10-seconds, mitigation of the intersection will not be required.
- Page 29 of the Guidelines state that for mitigation scenarios, applicants are expected to mitigate the overall intersection LOS to the original Without Development LOS; the 10-second delay variance is not applied to mitigation scenarios. Applicants may be required to address available storage and queue lengths at critical movements or approaches even if the overall LOS requirements are met.



- Page 31 of the Guidelines state that if signalization is the preferred alternative for mitigation, overall intersection LOS C in rural areas and LOS D in urban areas is acceptable.
- Page 31 of the Guidelines states new signalized or unsignalized intersection established to serve as access to the development shall be designed to operate at minimum LOS C for rural areas, and minimum LOS D for urban areas.

LEVELS OF SERVICE IN THE STUDY AREA

Level of service (LOS) matrices for the study area intersections are shown in **Table 9** for the weekday A.M. and weekday P.M. peak hours. Per PennDOT standards, the signal timings at the signalized study area intersection have been optimized under base conditions and projected conditions.

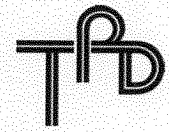
**TABLE 9
LEVEL OF SERVICE (DELAY) SUMMARY**

Intersection	Movement	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour		
		2013 Existing	2020 Build-Out Year		2013 Existing	2020 Build-Out Year	
			Base	Projected		Base	Projected
Darby-Paoli Road & Sawmill Road	EB L/R	D	E (40.1)	E (40.9)	C	D	D
	NB L	A	A	A	A	A	A
	ILOS	B (12.9)	C (16.3)	C (16.7)	A (4.4)	A (5.2)	A (5.2)
Darby-Paoli Road & Godfrey Road	WB L/R	B	B	B	C	C	C
	SB L	A	A	A	A	A	A
	ILOS	A (2.3)	A (2.4)	A (2.4)	A (3.6)	A (3.8)	A (3.9)
Darby-Paoli Road & Site Driveway	EB L/R	--	--	B	--	--	B
	NB L	--	--	A	--	--	A
	ILOS	--	--	A (0.1)	--	--	A (0.0)

Base = No-Build scenario; Projected = Build scenario; ILOS = Overall Intersection Level of Service

As shown in **Table 9**, under 2020 projected conditions with the development of the proposed site, the study area intersections will operate at the same overall intersection level of service (ILOS) as under 2020 base conditions, thus complying with the requirement outlined in PennDOT's TIS Guidelines.

Under 2020 projected conditions, all levels of service at the site driveway will comply with the requirement outlined in PennDOT's TIS Guidelines.



AUXILIARY TURN LANE ANALYSIS

TPD evaluated auxiliary turn lane warrants at the proposed site driveway. The warrant analysis was conducted according to the methodologies contained in Chapter 11 of PennDOT's *Publication 46* and Strike-Off Letter 470-08-07. **Table 10** summarizes the results of the auxiliary turn lane analysis.

TABLE 10
AUXILIARY TURN LANE ANALYSIS SUMMARY

Intersection	Auxiliary Lane	Warrant Satisfied?
Darby-Paoli Road and Site Driveway	NB Left-Turn Lane	No
	SB Right-Turn Lane	No

As shown in **Table 10**, the warrants are not satisfied for turn lanes on Darby-Paoli Road at the proposed site driveway. The calculations for the auxiliary turn lane warrants are included in **Appendix E**.

RECOMMENDATIONS

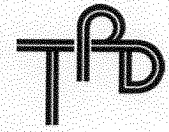
TPD has made the following recommendations in relation to the proposed Ardrossan Farm development in Radnor Township:

- Complete spot check counts when school is in session to verify the volumes utilized in this study.
- Coordinate mutually agreed upon potential safety enhancement improvements with the Township along the roadways in the vicinity of the site.
- Design the proposed site driveway to Darby-Paoli Road in accordance to the applicable PennDOT standards.

CONCLUSIONS

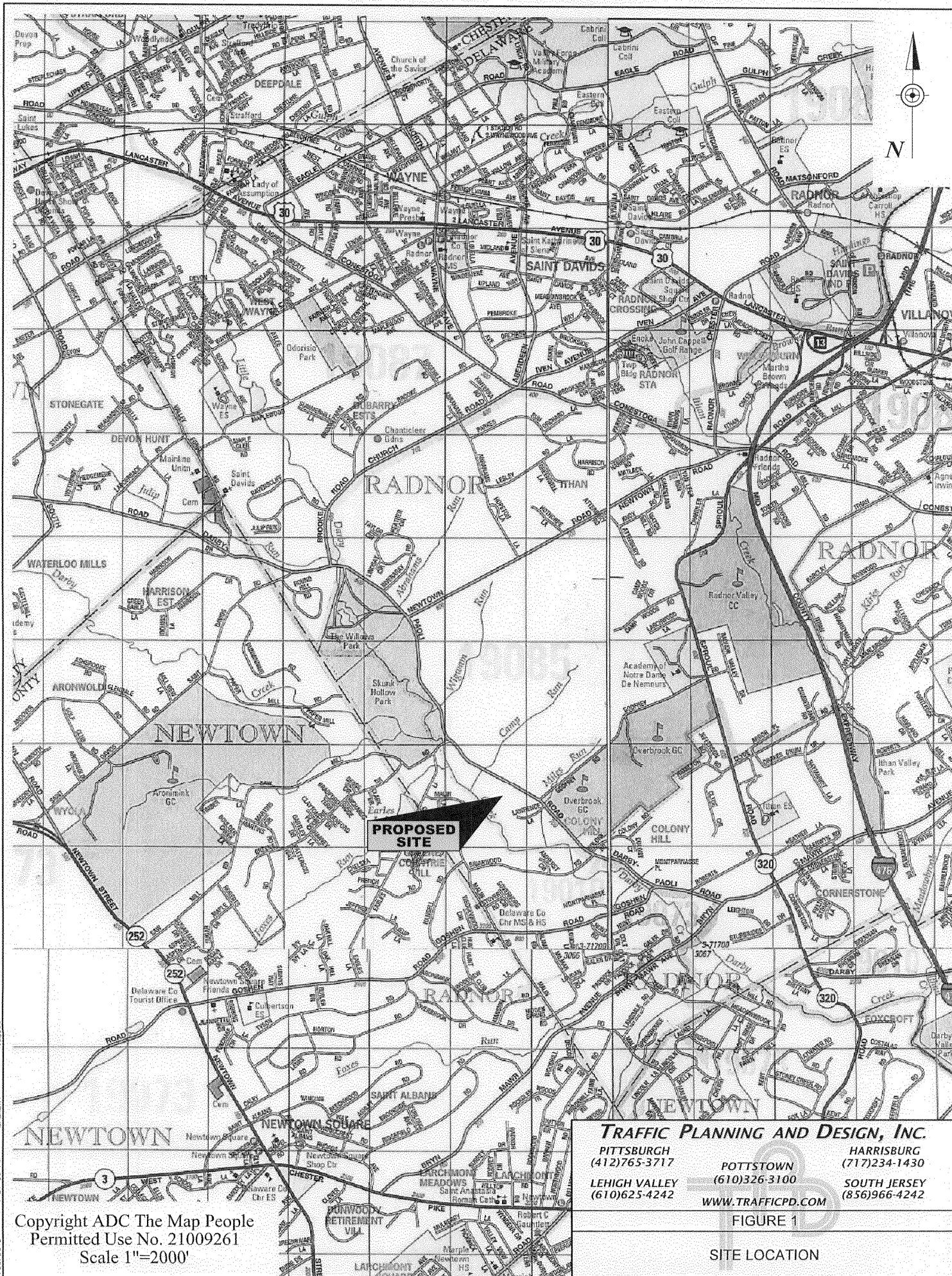
Based on the results of the transportation impact study, TPD offers the following conclusions:

- The project scope and the extent of the study area were confirmed with representatives of Township staff.
- The project site is located on the western side of Darby-Paoli Road (S.R. 1015), between Saw Mill Road and Godfrey Road (S.R. 1036). The proposed development will consist of 6 single-family homes.
- The site will be served by one driveway to Darby-Paoli Road (S.R. 1015), between Saw Mill Road and Godfrey Road. Please note, Darby-Paoli Road is a state-maintained roadway and



thus will require a PennDOT HOP. Therefore, the proposed development is subject to PennDOT's review and approval.

- The measured sight distances at the proposed site driveway exceed PennDOT's sight distance requirements.
- The proposed development is expected to generate 5 new vehicle-trips during the weekday A.M. peak hour and 6 new vehicle-trips during the weekday P.M. peak hour.
- Under 2020 projected conditions with the development of the proposed site, the study area intersections will operate at the same overall intersection level of service (ILOS) as under 2020 base conditions, thus complying with the requirement outlined in PennDOT's TIS Guidelines.
- Under 2020 projected conditions, all levels of service at the site driveway will comply with the requirement outlined in PennDOT's TIS Guidelines.



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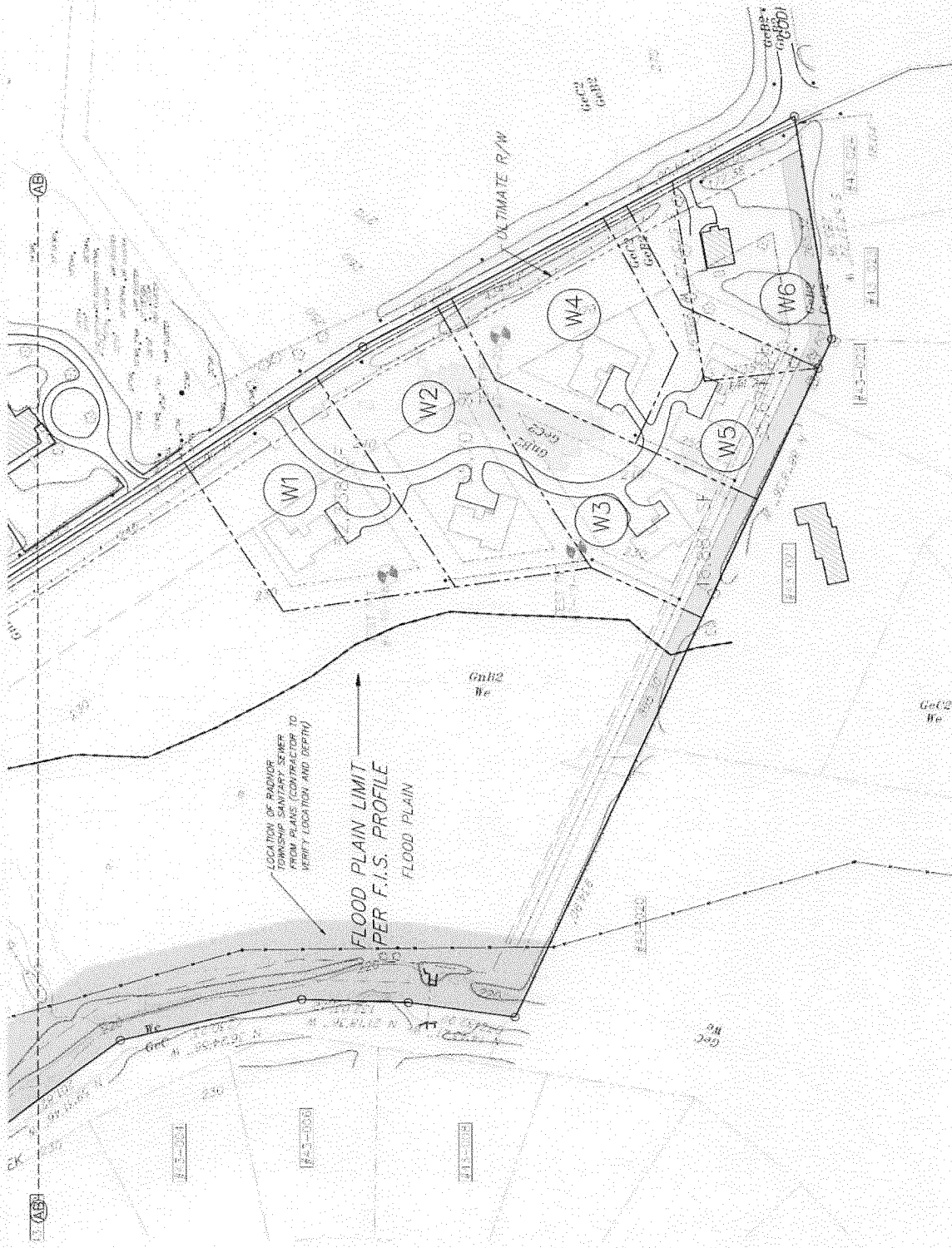
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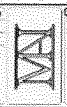
FIGURE 1

SITE LOCATION



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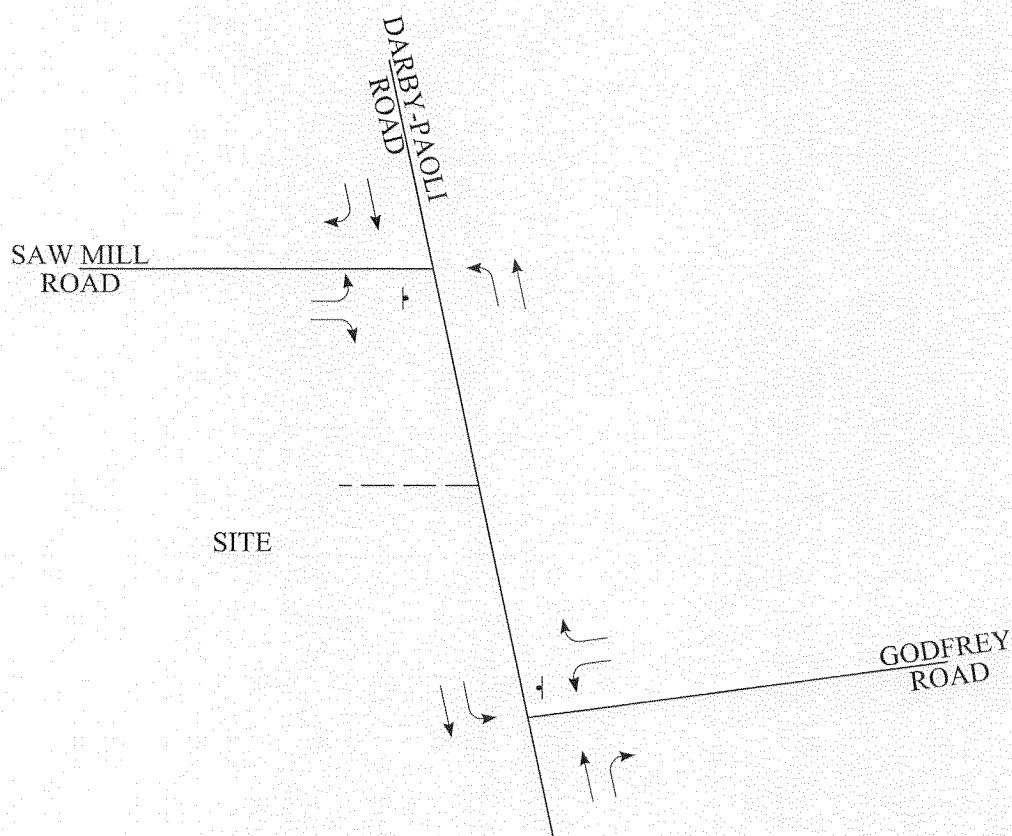
MAI
CHECKED BY: JAC
DATE: 1/23/13
DRAWN BY: JAC
DATE: 1/23/13
PROJECT: THE WHEELER FIELD AT ANDROSSAN FARM
SHEETS: 183-2108
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FIGURE 2
SITE PLAN



KEY:

----- PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE

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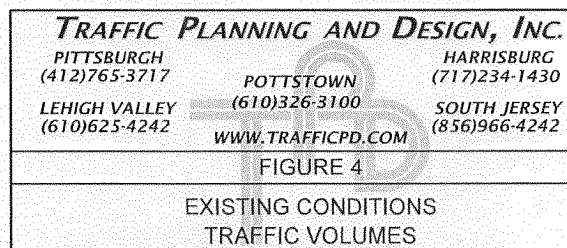
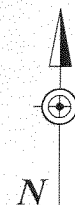
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 (856)966-4242

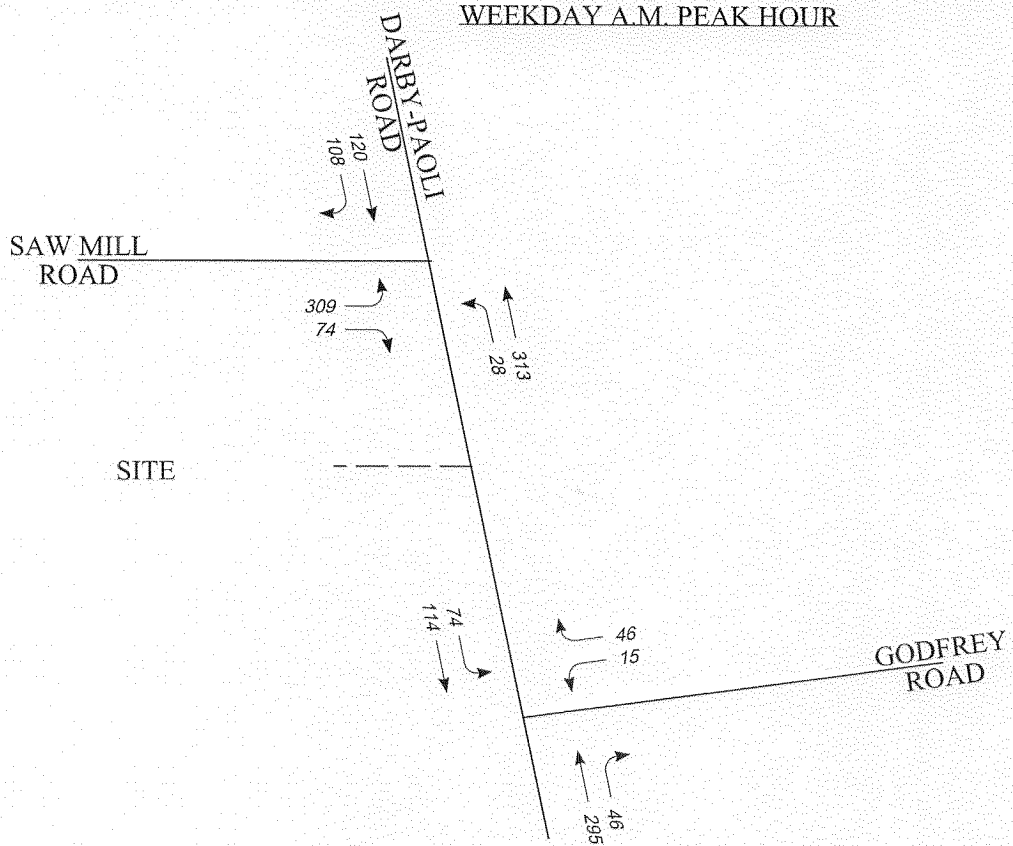
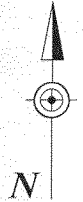
WWW.TRAFFICPD.COM

FIGURE 3

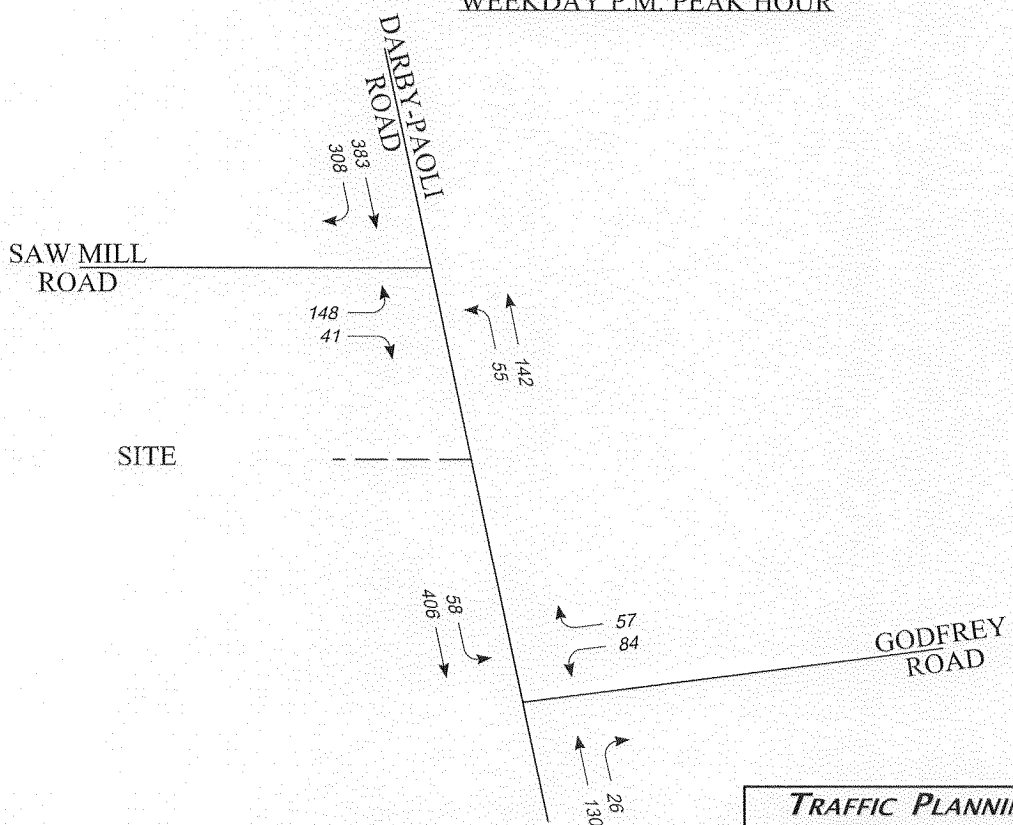
EXISTING LANE CONFIGURATIONS
 AND
 INTERSECTION CONTROLS



WEEKDAY A.M. PEAK HOUR



WEEKDAY P.M. PEAK HOUR



KEY:

----- PROPOSED DRIVEWAY
SCHEMATIC DRAWING: NOT TO SCALE

TRAFFIC PLANNING AND DESIGN, INC.

PITTSBURGH
(412)765-3717

POTTSTOWN
(610)326-3100

HARRISBURG
(717)234-1430

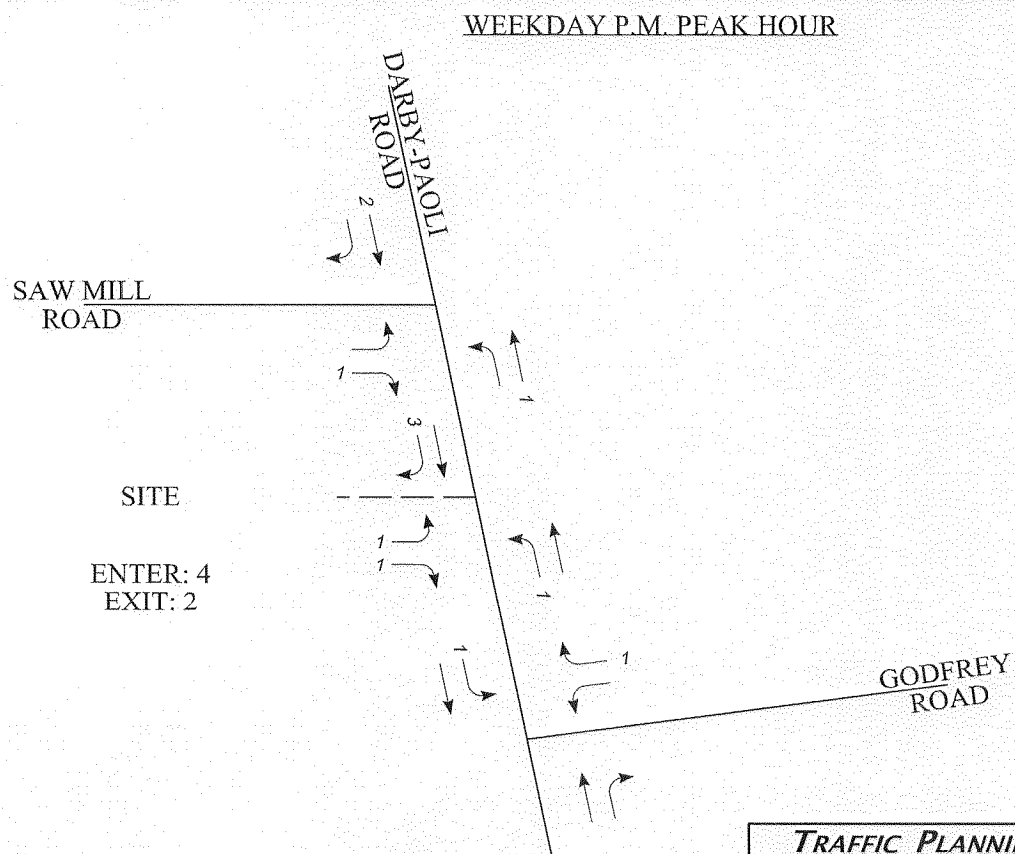
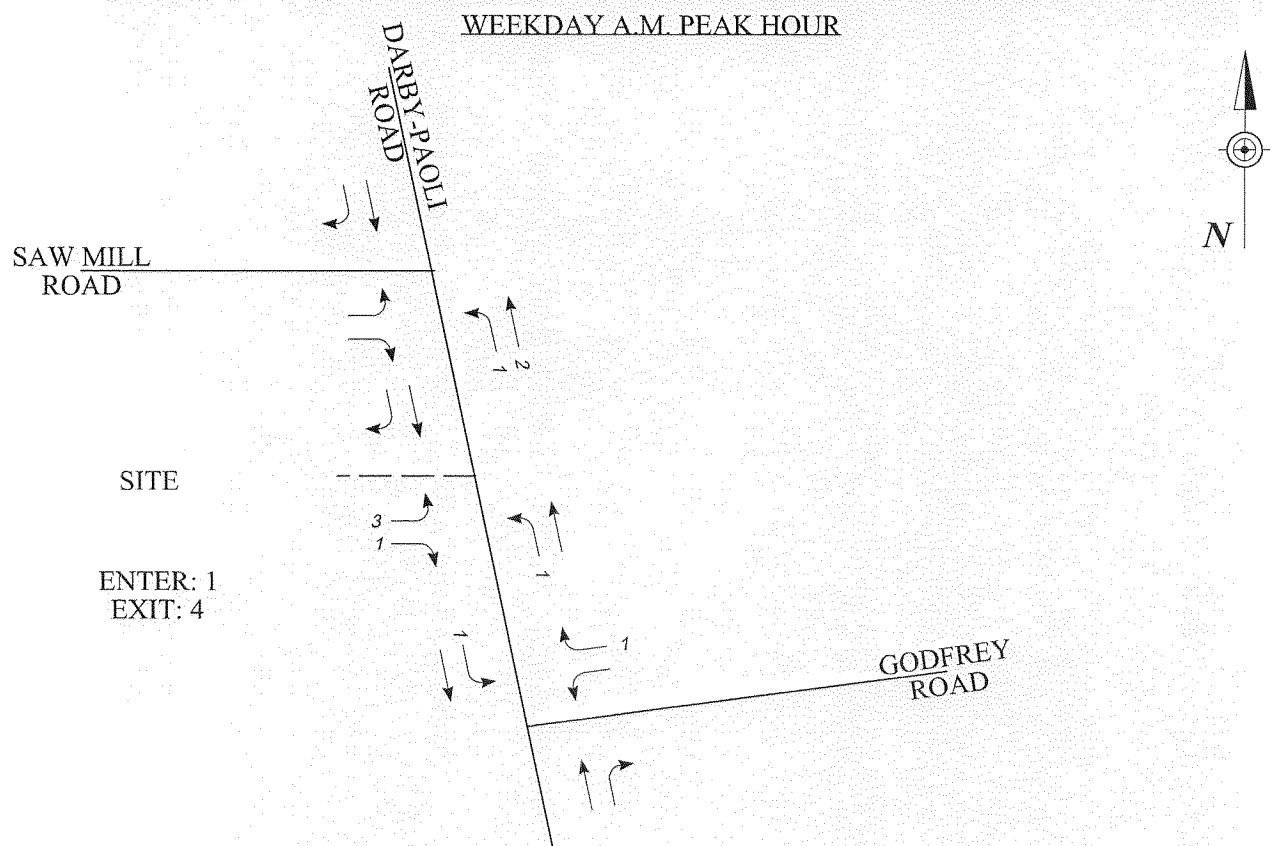
LEHIGH VALLEY
(610)625-4242

WWW.TRAFFICPD.COM

SOUTH JERSEY
(856)966-4242

FIGURE 5

2020 BASE CONDITIONS
TRAFFIC VOLUMES



KEY:

--- -- -- -- -- PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

TRAFFIC PLANNING AND DESIGN, INC.

PITTSBURGH
(412)765-3717

POTTSTOWN
(610)326-3100

HARRISBURG
(717)234-1430

LEHIGH VALLEY
(610)625-4242

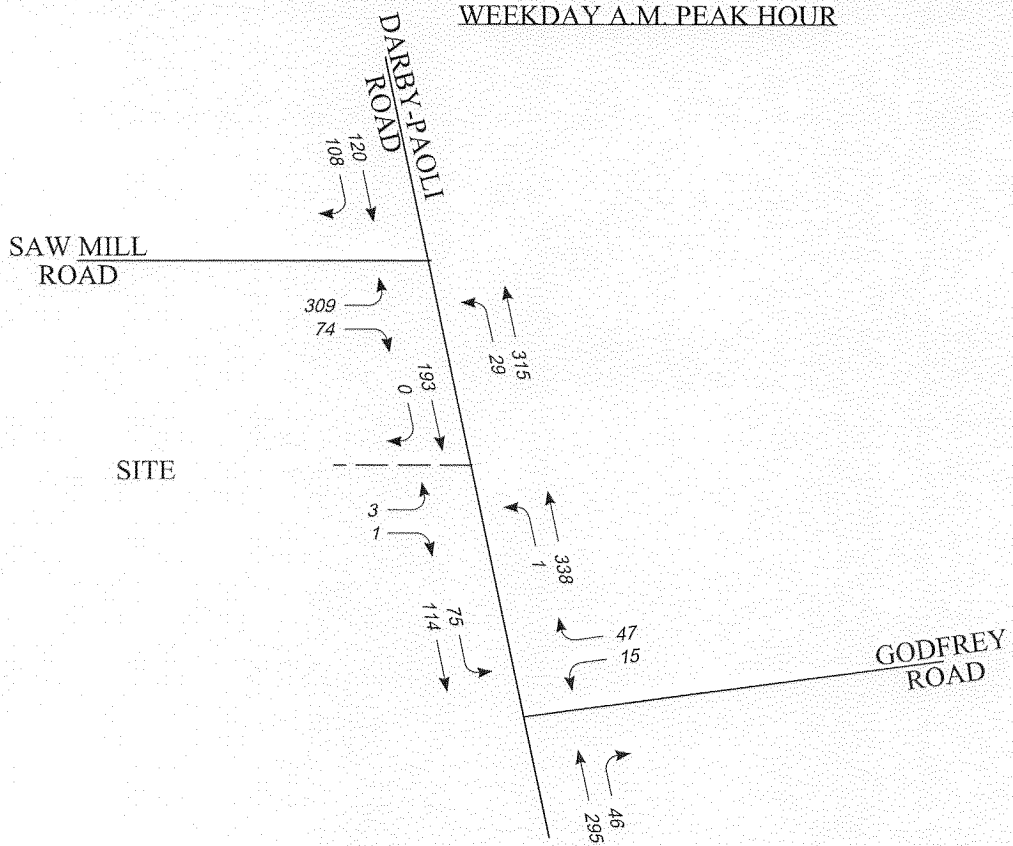
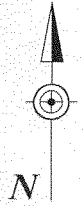
WWW.TRAFFICPD.COM

SOUTH JERSEY
(856)966-4242

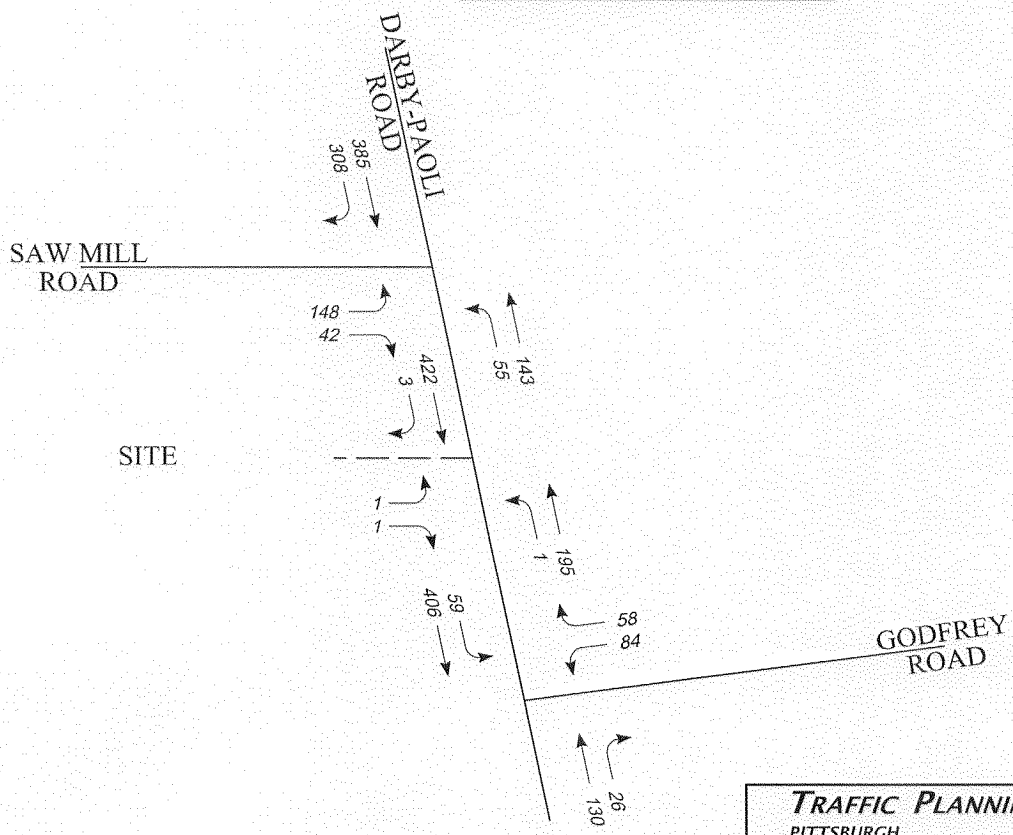
FIGURE 6

TRIP DISTRIBUTION

WEEKDAY A.M. PEAK HOUR



WEEKDAY P.M. PEAK HOUR



KEY:

----- PROPOSED DRIVEWAY

SCHEMATIC DRAWING: NOT TO SCALE

TRAFFIC PLANNING AND DESIGN, INC.

PITTSBURGH
(412)765-3717

POTTSTOWN
(610)326-3100

HARRISBURG
(717)234-1430

LEHIGH VALLEY
(610)625-4242

WWW.TRAFFICPD.COM

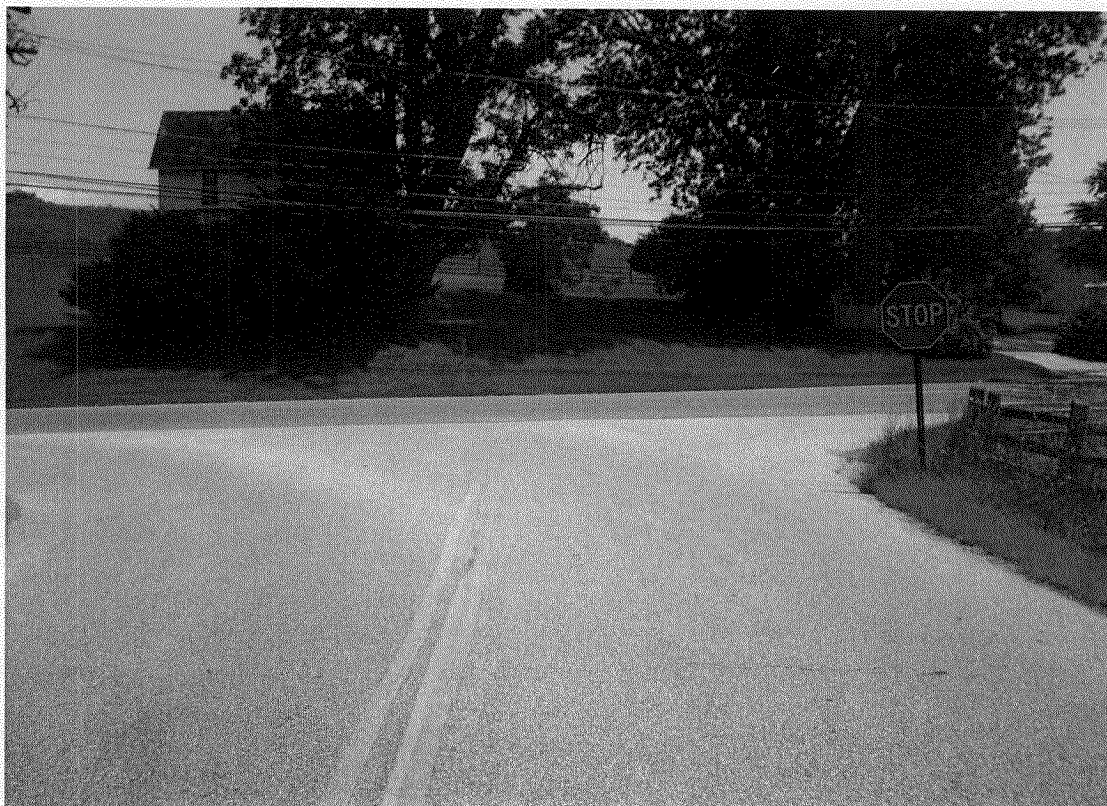
SOUTH JERSEY
(856)966-4242

FIGURE 7

2020 PROJECTED CONDITIONS
TRAFFIC VOLUMES

APPENDIX A

STUDY AREA PHOTOGRAPHS



Direction / Road:
Approach / Departure:
Distance:

EB Saw Mill Road
Approach



Direction / Road:
Approach / Departure:
Distance:

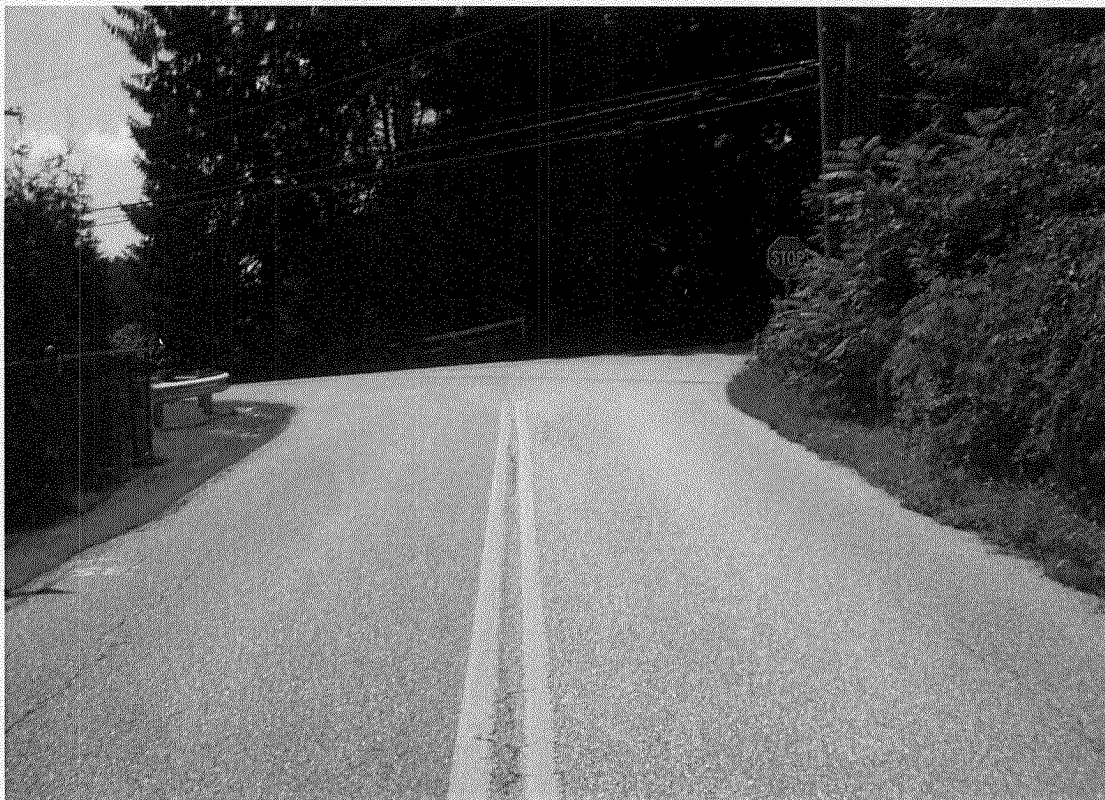
SB Darby-Paoli Road
Approach



Direction / Road:
 Approach / Departure:
 Distance:

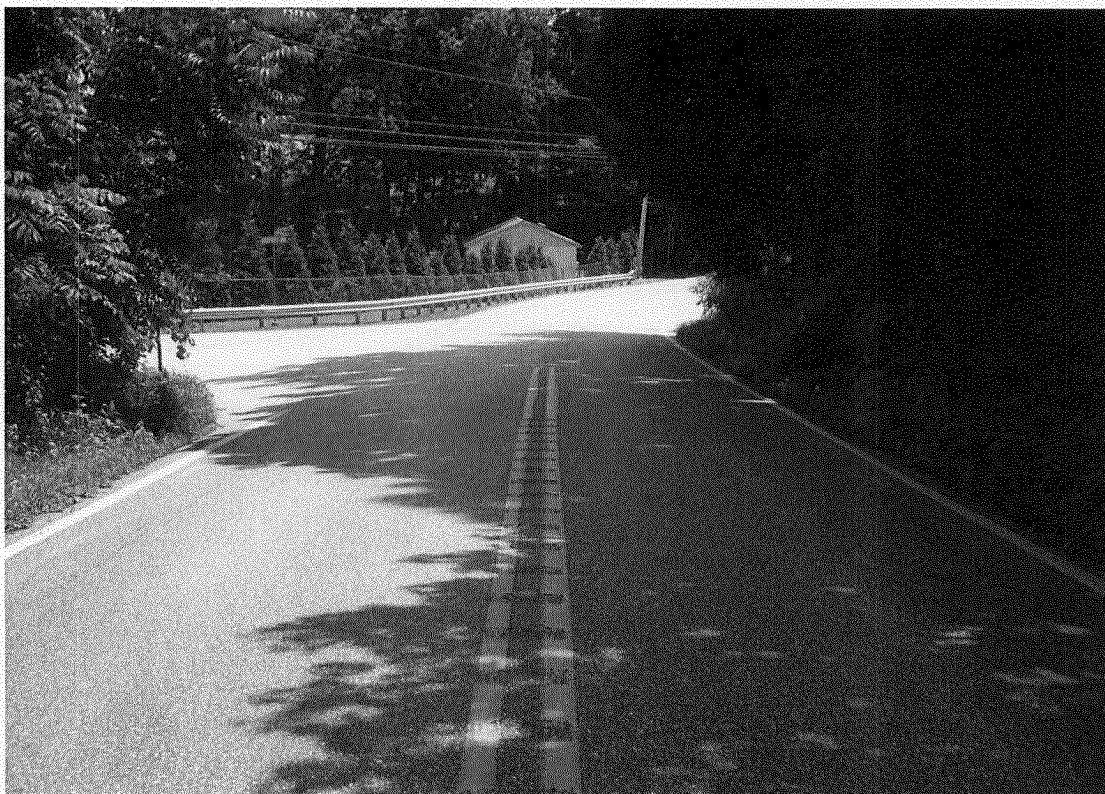
NB Darby-Paoli Road
 Approach

Direction / Road:
 Approach / Departure:
 Distance:



Direction / Road:
Approach / Departure:
Distance:

WB Godfrey Road
Approach



Direction / Road:
Approach / Departure:
Distance:

SB Darby-Paoli Road
Approach



Direction / Road:
Approach / Departure:
Distance:

NB Darby-Paoli Road
Approach

Direction / Road:
Approach / Departure:
Distance:

APPENDIX B

TRAFFIC COUNT DATA

MANUAL COUNTS

Darby-Paoli Road & Saw Mill Road

Counter: 2

Counted by: M. Goodman

Weather: Sunny

Saved as: 2013-07-17 AM DPR_SMR

File Name : 2013-07-17 AM DPR_SMR

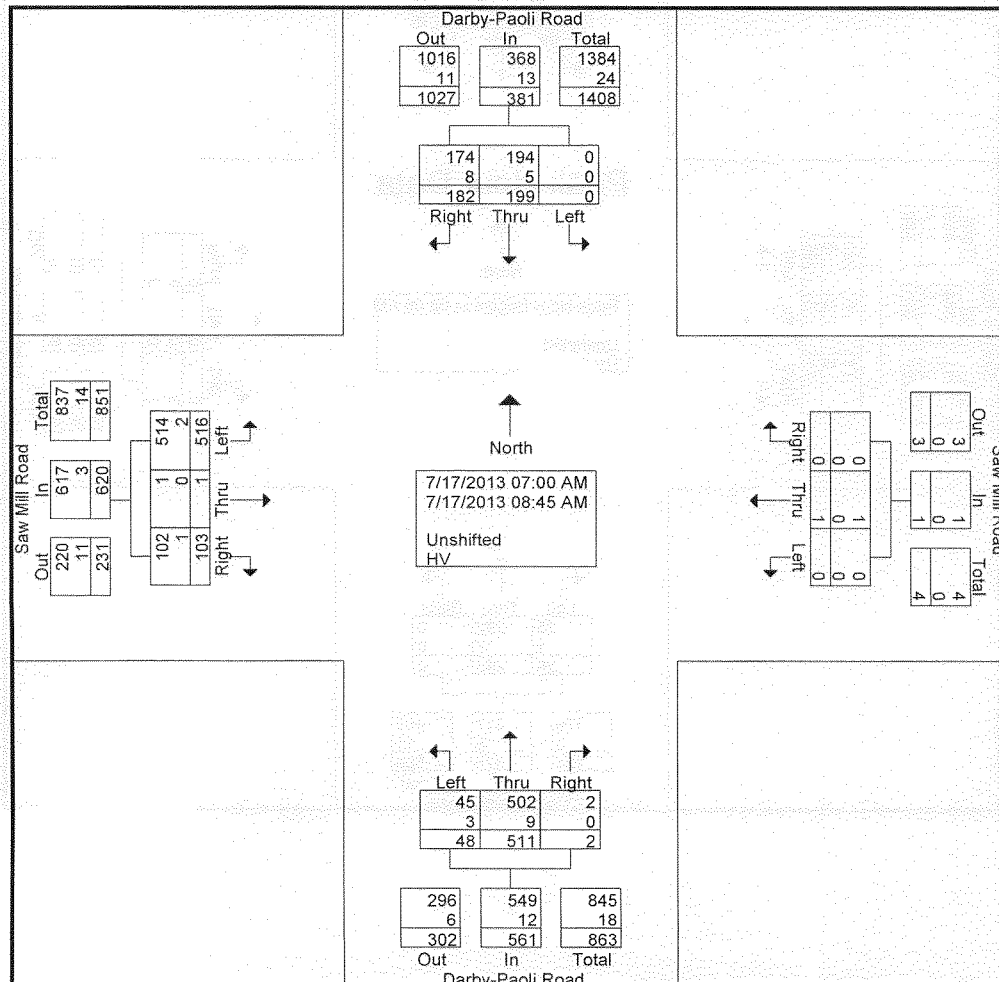
Site Code : 00000000

Start Date : 7/17/2013

Page No : 1

Groups Printed- Unshifted - HV

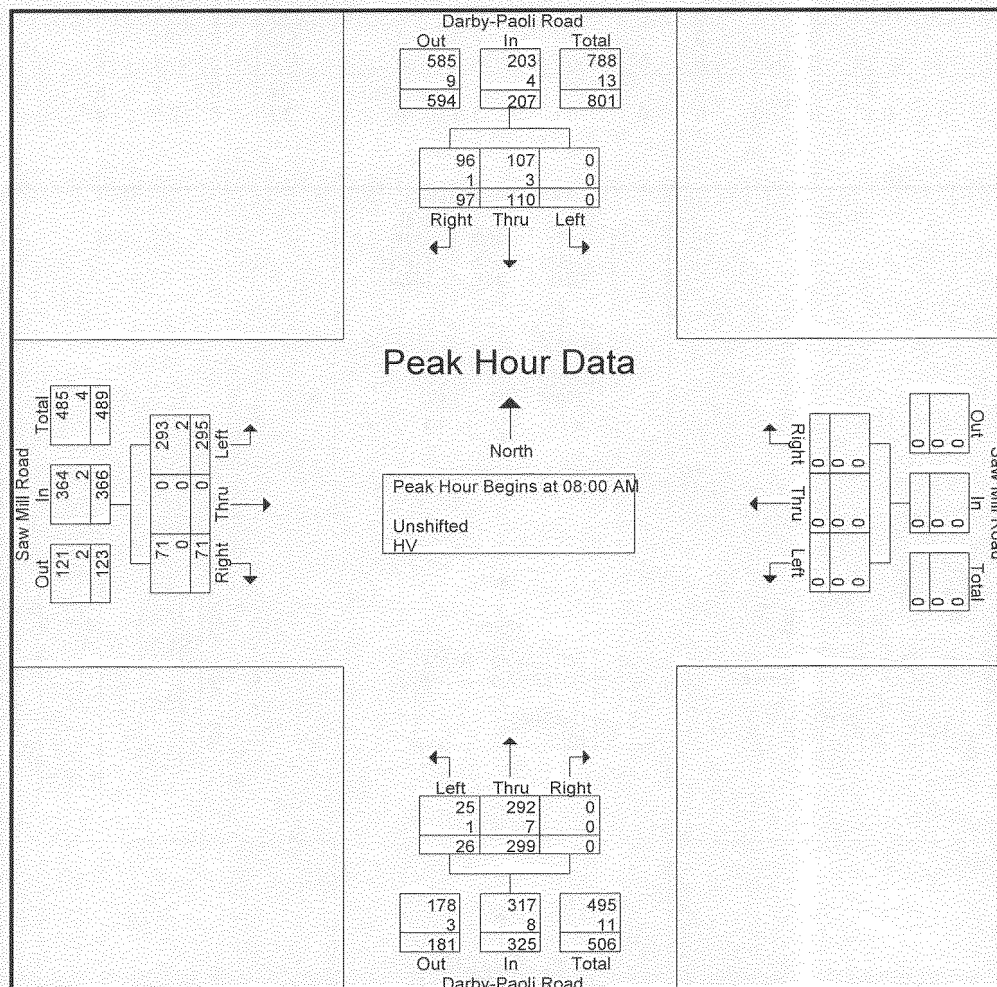
Start Time	Saw Mill Road Eastbound					Saw Mill Road Westbound					Darby-Paoli Road Northbound					Darby-Paoli Road Southbound					Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total			
07:00 AM	41	0	6	0	47	0	1	0	0	1	1	32	0	0	33	0	18	9	0	27	0	108	108
07:15 AM	53	0	7	0	60	0	0	0	0	0	4	50	0	0	54	0	13	27	0	40	0	154	154
07:30 AM	66	1	8	0	75	0	0	0	0	0	10	64	2	0	76	0	28	25	0	53	0	204	204
07:45 AM	61	0	11	0	72	0	0	0	0	0	7	66	0	0	73	0	30	24	0	54	0	199	199
Total	221	1	32	0	254	0	1	0	0	1	22	212	2	0	236	0	89	85	0	174	0	665	665
08:00 AM	62	0	17	0	79	0	0	0	0	0	9	80	0	0	89	0	22	23	0	45	0	213	213
08:15 AM	82	0	19	0	101	0	0	0	0	0	2	61	0	0	63	0	18	17	0	35	0	199	199
08:30 AM	81	0	15	0	96	0	0	0	0	0	7	78	0	0	85	0	34	31	0	65	0	246	246
08:45 AM	70	0	20	0	90	0	0	0	0	0	8	80	0	0	88	0	36	26	0	62	0	240	240
Total	295	0	71	0	366	0	0	0	0	0	26	299	0	0	325	0	110	97	0	207	0	898	898
Grand Total	516	1	103	0	620	0	1	0	0	1	48	511	2	0	561	0	199	182	0	381	0	1563	1563
Apprch %	83.2	0.2	16.6			0	100	0			8.6	91.1	0.4			0	52.2	47.8					
Total %	33	0.1	6.6		39.7	0	0.1	0		0.1	3.1	32.7	0.1		35.9	0	12.7	11.6		24.4	0	100	
Unshifted	514	1	102		617	0	1	0		1	45	502	2		549	0	194	174		368	0	0	1535
% Unshifted	99.6	100	99		99.5	0	100	0		100	93.8	98.2	100		97.9	0	97.5	95.6		96.6	0	0	98.2
HV	2	0	1		3	0	0	0		0	3	9	0		12	0	5	8		13	0	0	28
% HV	0.4	0	1		0.5	0	0	0		0	6.2	1.8	0		2.1	0	2.5	4.4		3.4	0	0	1.8



Darby-Paoli Road & Saw Mill Road

File Name : 2013-07-17 AM DPR_SMR
Site Code : 00000000
Start Date : 7/17/2013
Page No : 2

	Saw Mill Road Eastbound				Saw Mill Road Westbound				Darby-Paoli Road Northbound				Darby-Paoli Road Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak I of I																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	62	0	17	79	0	0	0	0	9	80	0	89	0	22	23	45	213
08:15 AM	82	0	19	101	0	0	0	0	2	61	0	63	0	18	17	35	199
08:30 AM	81	0	15	96	0	0	0	0	7	78	0	85	0	34	31	65	246
08:45 AM	70	0	20	90	0	0	0	0	8	80	0	88	0	36	26	62	240
Total Volume	295	0	71	366	0	0	0	0	26	299	0	325	0	110	97	207	898
% App. Total	80.6	0	19.4		0	0	0		8	92	0		0	53.1	46.9		
PHF	.899	.000	.888	.906	.000	.000	.000	.000	.722	.934	.000	.913	.000	.764	.782	.796	.913
Unshifted	293	0	71	364	0	0	0	0	25	292	0	317	0	107	96	203	884
% Unshifted	99.3	0	100	99.5	0	0	0	0	96.2	97.7	0	97.5	0	97.3	99.0	98.1	98.4
HV	2	0	0	2	0	0	0	0	1	7	0	8	0	3	1	4	14
% HV	0.7	0	0	0.5	0	0	0	0	3.8	2.3	0	2.5	0	2.7	1.0	1.9	1.6



Darby-Paoli Road & Godfrey Road

Counter: 16

Counted by: R. Kearney

Weather: Sunny

Saved as: 2013-07-17 AM DPR_GR

File Name : 2013-07-17 AM DPR_GR

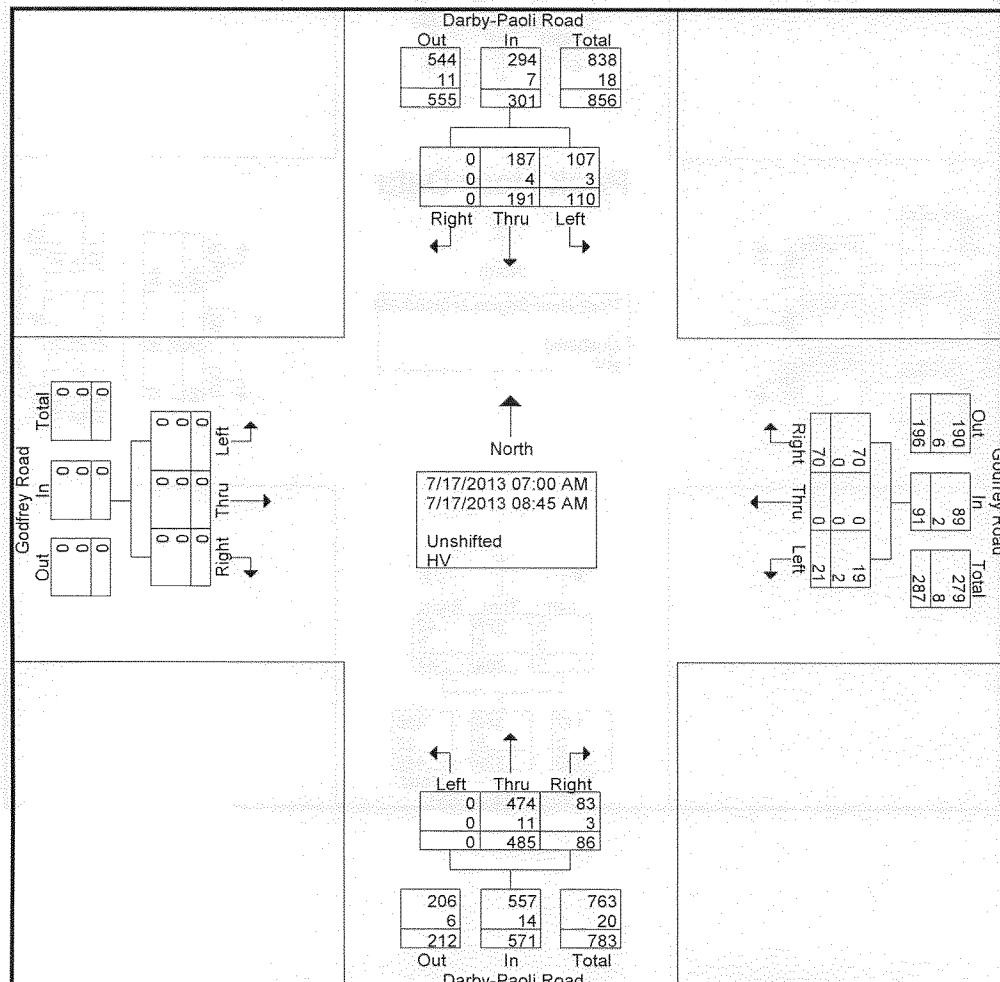
Site Code : 00000000

Start Date : 7/17/2013

Page No : 1

Groups Printed- Unshifted - HV

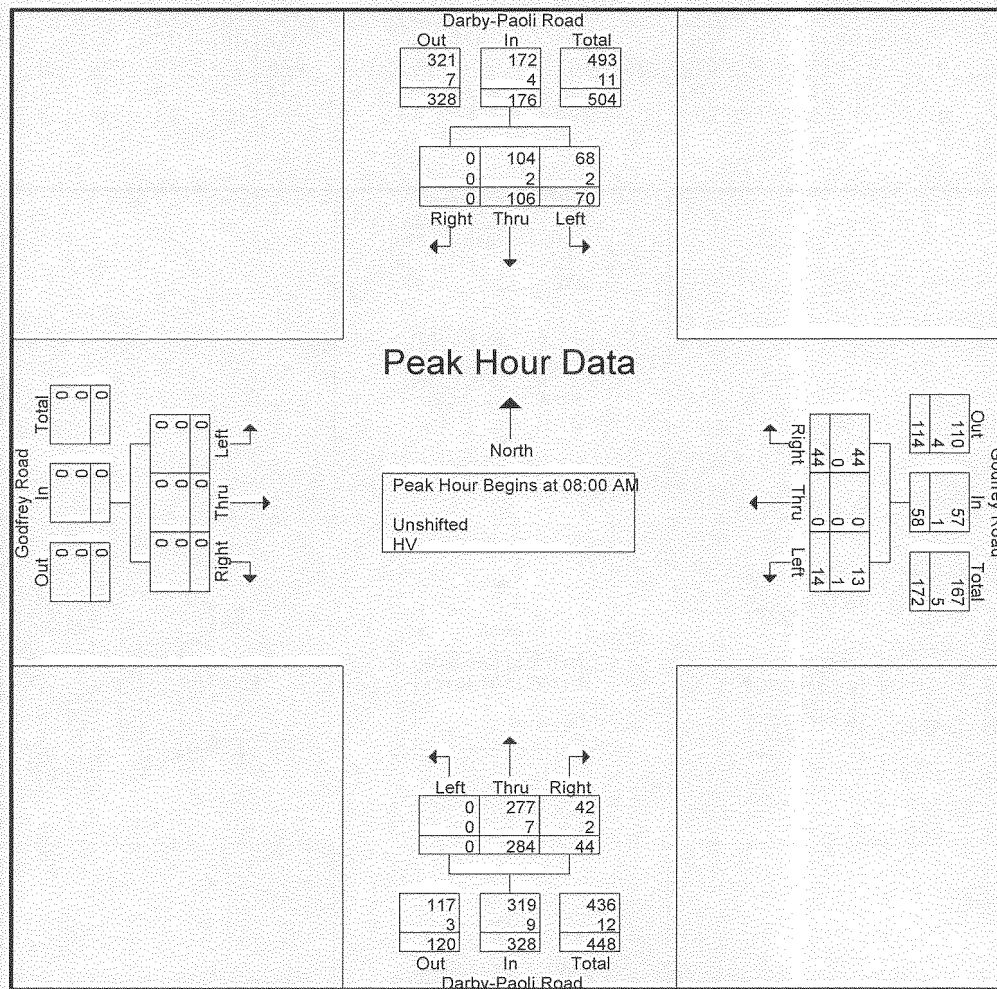
Start Time	Godfrey Road Eastbound					Godfrey Road Westbound					Darby-Paoli Road Northbound					Darby-Paoli Road Southbound					Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total			
07:00 AM	0	0	0	0	0	1	0	4	0	5	0	27	6	0	33	5	21	0	0	26	0	64	64
07:15 AM	0	0	0	0	0	2	0	4	0	6	0	52	9	0	61	6	12	0	0	18	0	85	85
07:30 AM	0	0	0	0	0	3	0	8	0	11	0	65	13	0	78	13	23	0	0	36	0	125	125
07:45 AM	0	0	0	0	0	1	0	10	0	11	0	57	14	0	71	16	29	0	0	45	0	127	127
Total	0	0	0	0	0	7	0	26	0	33	0	201	42	0	243	40	85	0	0	125	0	401	401
08:00 AM	0	0	0	0	0	2	0	9	0	11	0	77	11	0	88	18	14	0	0	32	0	131	131
08:15 AM	0	0	0	0	0	2	0	6	0	8	0	62	5	0	67	18	24	0	0	42	0	117	117
08:30 AM	0	0	0	0	0	3	0	12	0	15	0	69	12	0	81	22	31	0	0	53	0	149	149
08:45 AM	0	0	0	0	0	7	0	17	0	24	0	76	16	0	92	12	37	0	0	49	0	165	165
Total	0	0	0	0	0	14	0	44	0	58	0	284	44	0	328	70	106	0	0	176	0	562	562
Grand Total	0	0	0	0	0	21	0	70	0	91	0	485	86	0	571	110	191	0	0	301	0	963	963
Apprch %	0	0	0			23.1	0	76.9			0	84.9	15.1			36.5	63.5	0					
Total %	0	0	0			2.2	0	7.3		9.4	0	50.4	8.9		59.3	11.4	19.8	0		31.3	0	100	
Unshifted	0	0	0			19	0	70		89	0	474	83		557	107	187	0		294	0	0	940
% Unshifted	0	0	0			90.5	0	100		97.8	0	97.7	96.5		97.5	97.3	97.9	0		97.7	0	0	97.6
HV	0	0	0			2	0	0		2	0	11	3		14	3	4	0		7	0	0	23
% HV	0	0	0			9.5	0	0		2.2	0	2.3	3.5		2.5	2.7	2.1	0		2.3	0	0	2.4



Darby-Paoli Road & Godfrey Road

File Name : 2013-07-17 AM DPR_GR
Site Code : 00000000
Start Date : 7/17/2013
Page No : 2

	Godfrey Road Eastbound				Godfrey Road Westbound				Darby-Paoli Road Northbound				Darby-Paoli Road Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	2	0	9	11	0	77	11	88	18	14	0	32	131
08:15 AM	0	0	0	0	2	0	6	8	0	62	5	67	18	24	0	42	117
08:30 AM	0	0	0	0	3	0	12	15	0	69	12	81	22	31	0	53	149
08:45 AM	0	0	0	0	7	0	17	24	0	76	16	92	12	37	0	49	165
Total Volume	0	0	0	0	14	0	44	58	0	284	44	328	70	106	0	176	562
% App. Total	0	0	0	0	24.1	0	75.9		0	86.6	13.4		39.8	60.2	0		
PHF	.000	.000	.000	.000	.500	.000	.647	.604	.000	.922	.688	.891	.795	.716	.000	.830	.852
Unshifted	0	0	0	0	13	0	44	57	0	277	42	319	68	104	0	172	548
% Unshifted	0	0	0	0	92.9	0	100	98.3	0	97.5	95.5	97.3	97.1	98.1	0	97.7	97.5
HV	0	0	0	0	1	0	0	1	0	7	2	9	2	2	0	4	14
% HV	0	0	0	0	7.1	0	0	1.7	0	2.5	4.5	2.7	2.9	1.9	0	2.3	2.5



Darby-Paoli Road & Saw Mill Road

Counter: 18

Counted by: D. Centofante

Weather: Sunny

Saved as: 2013-07-17 PM DPR_SMR

File Name : 2013-07-17 PM DPR_SMR

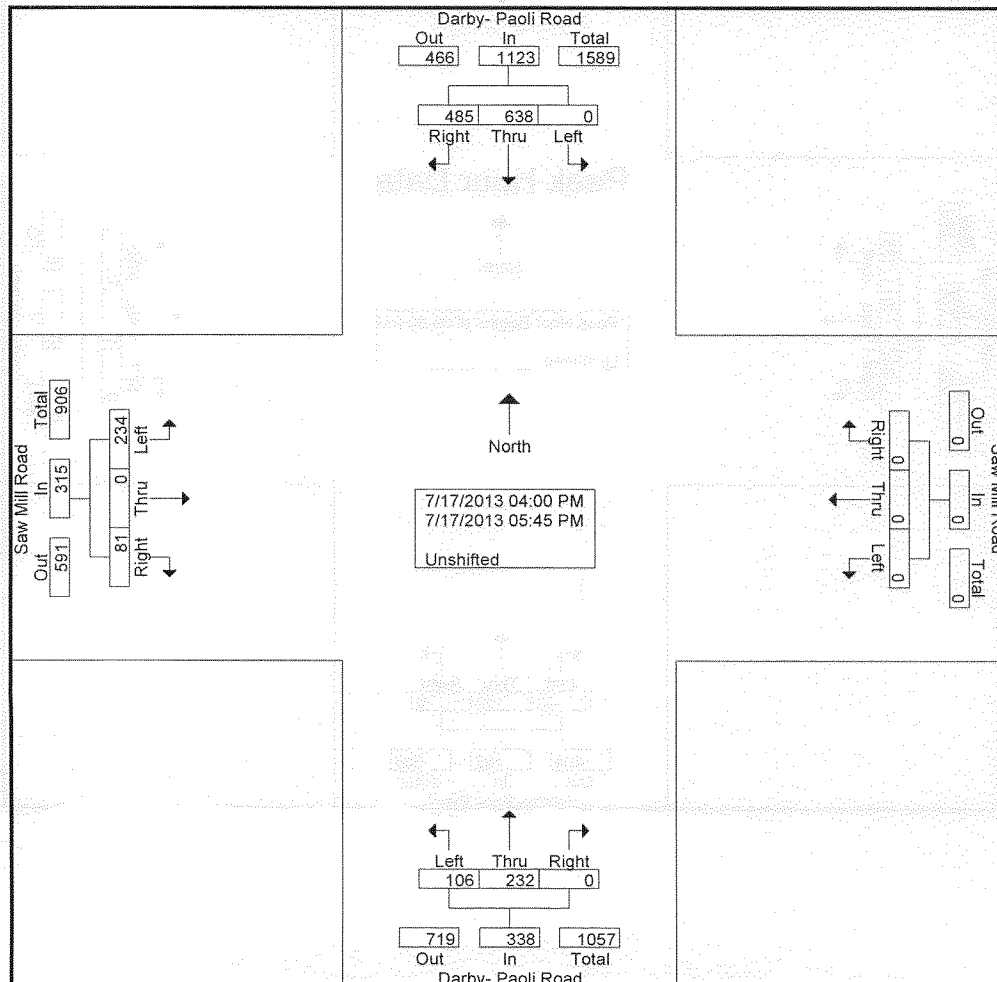
Site Code : 00000000

Start Date : 7/17/2013

Page No : 1

Groups Printed- Unshifted

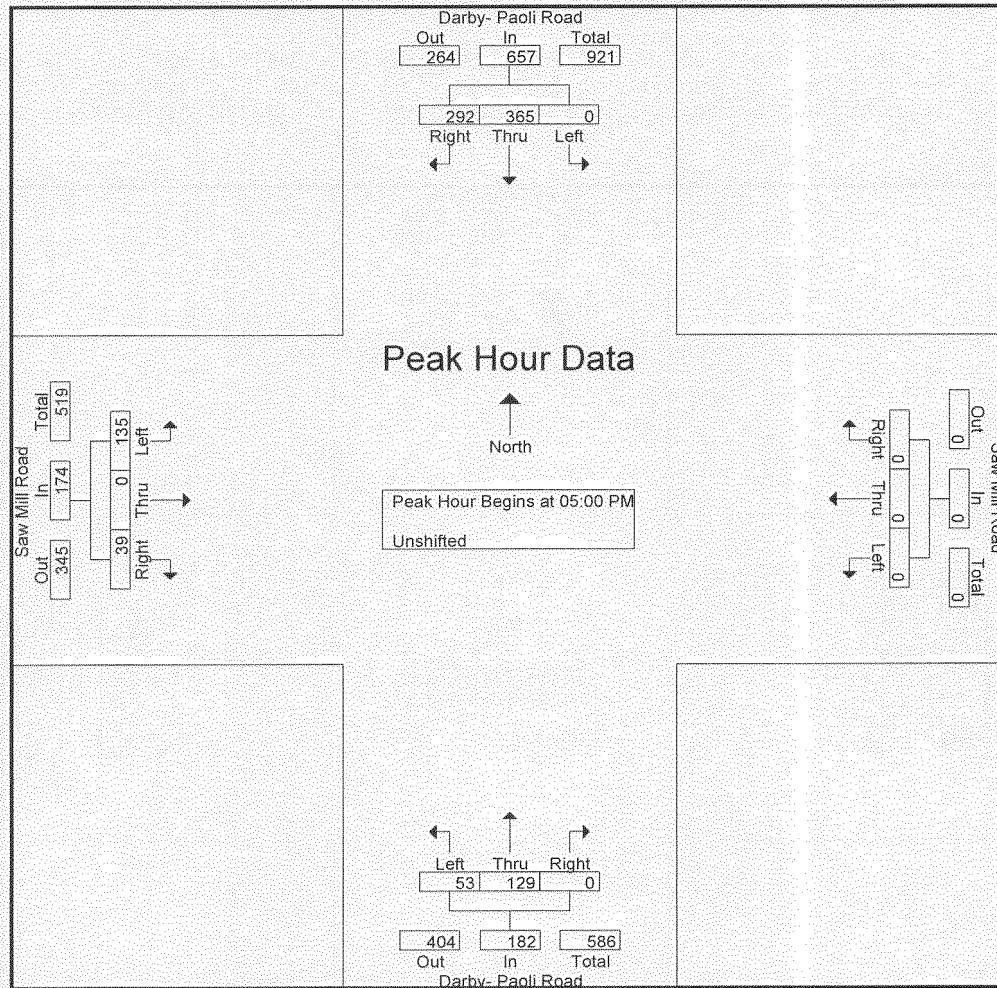
Start Time	Saw Mill Road Eastbound					Saw Mill Road Westbound					Darby- Paoli Road Northbound					Darby- Paoli Road Southbound					Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total			
04:00 PM	26	0	9	0	35	0	0	0	0	0	19	30	0	0	49	0	56	36	0	92	0	176	176
04:15 PM	18	0	9	0	27	0	0	0	0	0	15	21	0	1	36	0	61	48	1	109	2	172	174
04:30 PM	22	0	16	1	38	0	0	0	0	0	5	27	0	0	32	0	83	46	2	129	3	199	202
04:45 PM	33	0	8	1	41	0	0	0	0	0	14	25	0	1	39	0	73	63	1	136	3	216	219
Total	99	0	42	2	141	0	0	0	0	0	53	103	0	2	156	0	273	193	4	466	8	763	771
05:00 PM	29	0	7	0	36	0	0	0	0	0	10	30	0	0	40	0	97	82	2	179	2	255	257
05:15 PM	28	0	14	0	42	0	0	0	0	0	13	31	0	0	44	0	99	76	1	175	1	261	262
05:30 PM	40	0	7	1	47	0	0	0	0	0	16	35	0	1	51	0	84	79	4	163	6	261	267
05:45 PM	38	0	11	1	49	0	0	0	0	0	14	33	0	0	47	0	85	55	1	140	2	236	238
Total	135	0	39	2	174	0	0	0	0	0	53	129	0	1	182	0	365	292	8	657	11	1013	1024
Grand Total	234	0	81	4	315	0	0	0	0	0	106	232	0	3	338	0	638	485	12	1123	19	1776	1795
Apprch %	74.3	0	25.7			0	0	0			31.4	68.6	0			0	56.8	43.2					
Total %	13.2	0	4.6		17.7	0	0	0			6	13.1	0		19	0	35.9	27.3		63.2	1.1	98.9	



Darby-Paoli Road & Saw Mill Road

File Name : 2013-07-17 PM DPR_SMR
Site Code : 00000000
Start Date : 7/17/2013
Page No : 2

	Saw Mill Road Eastbound				Saw Mill Road Westbound				Darby- Paoli Road Northbound				Darby- Paoli Road Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	29	0	7	36	0	0	0	0	10	30	0	40	0	97	82	179	255
05:15 PM	28	0	14	42	0	0	0	0	13	31	0	44	0	99	76	175	261
05:30 PM	40	0	7	47	0	0	0	0	16	35	0	51	0	84	79	163	261
05:45 PM	38	0	11	49	0	0	0	0	14	33	0	47	0	85	55	140	236
Total Volume	135	0	39	174	0	0	0	0	53	129	0	182	0	365	292	657	1013
% App. Total	77.6	0	22.4		0	0	0		29.1	70.9	0		0	55.6	44.4		
PHF	.844	.000	.696	.888	.000	.000	.000	.000	.828	.921	.000	.892	.000	.922	.890	.918	.970



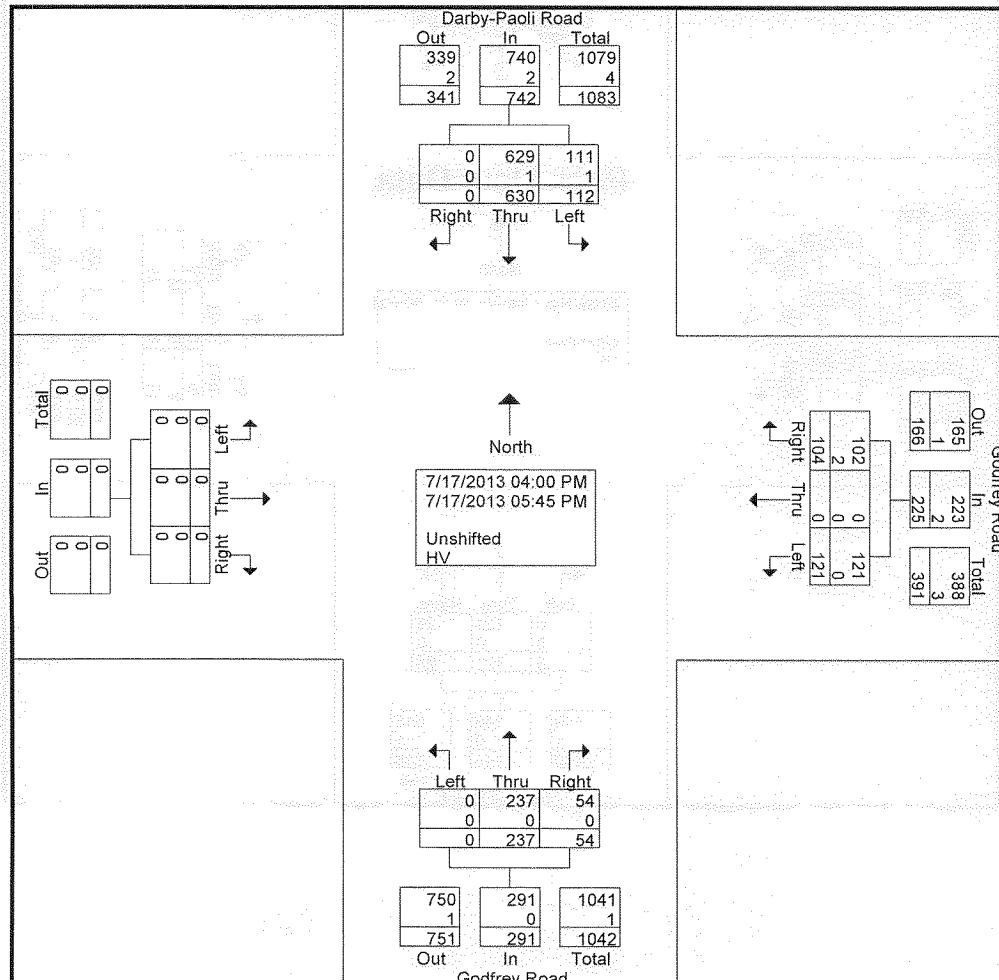
Darby-Paoli Road & Godfrey Road

Counter: 5
Counted by: K. DiSessa
Weather: Sunny
Saved as: 2013-07-17 PM DPR_GR

File Name : 2013-07-17 PM DPR_GR
Site Code : 00000000
Start Date : 7/17/2013
Page No : 1

Groups Printed- Unshifted - HV

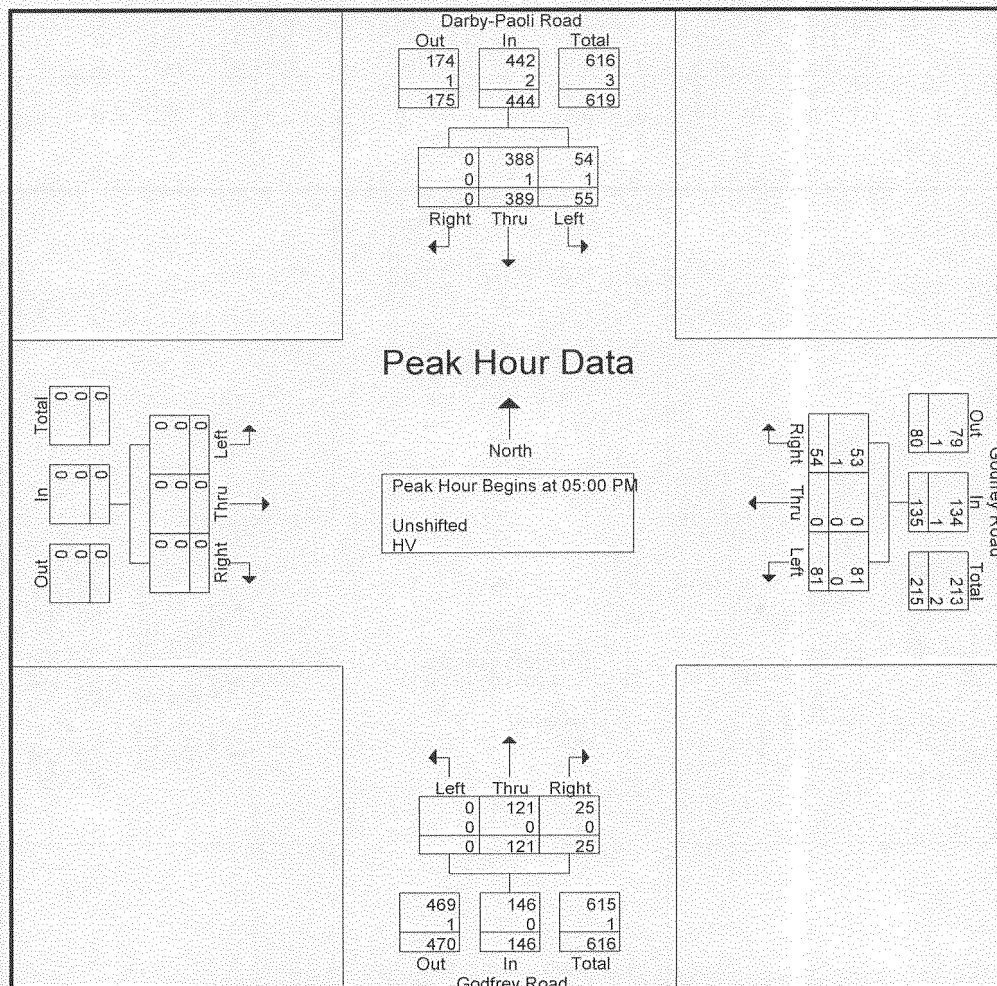
Start Time	Eastbound					Godfrey Road Westbound					Godfrey Road Northbound					Darby-Paoli Road Southbound					Exclu. Total	Indu. Total	Int. Total
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total			
04:00 PM	0	0	0	0	0	11	0	9	0	20	0	35	6	0	41	12	46	0	0	58	0	119	119
04:15 PM	0	0	0	0	0	7	0	20	0	27	0	29	8	0	37	11	60	0	0	71	0	135	135
04:30 PM	0	0	0	0	0	12	0	13	0	25	0	18	6	0	24	17	57	0	0	74	0	123	123
04:45 PM	0	0	0	0	0	10	0	8	0	18	0	34	9	0	43	17	78	0	0	95	0	156	156
Total	0	0	0	0	0	40	0	50	0	90	0	116	29	0	145	57	241	0	0	298	0	533	533
05:00 PM	0	0	0	0	0	21	0	12	0	33	0	24	6	0	30	17	97	0	0	114	0	177	177
05:15 PM	0	0	0	0	0	18	0	13	0	31	0	27	9	0	36	14	116	0	0	130	0	197	197
05:30 PM	0	0	0	0	0	21	0	18	0	39	0	34	5	0	39	12	94	0	0	106	0	184	184
05:45 PM	0	0	0	0	0	21	0	11	0	32	0	36	5	0	41	12	82	0	0	94	0	167	167
Total	0	0	0	0	0	81	0	54	0	135	0	121	25	0	146	55	389	0	0	444	0	725	725
Grand Total	0	0	0	0	0	121	0	104	0	225	0	237	54	0	291	112	630	0	0	742	0	1258	1258
Apprch %	0	0	0			53.8	0	46.2			0	81.4	18.6			15.1	84.9	0					
Total %	0	0	0			9.6	0	8.3		17.9	0	18.8	4.3		23.1	8.9	50.1	0		59	0	100	
Unshifted	0	0	0			121	0	102		223	0	237	54		291	111	629	0		740	0	0	1254
% Unshifted	0	0	0	0	0	100	0	98.1	0	99.1	0	100	100	0	100	99.1	99.8	0	0	99.7	0	0	99.7
HV	0	0	0			0	0	2		2	0	0	0		0	1	1	0		2	0	0	4
% HV	0	0	0	0	0	0	0	1.9	0	0.9	0	0	0	0	0	0.9	0.2	0	0	0.3	0	0	0.3



Darby-Paoli Road & Godfrey Road

File Name : 2013-07-17 PM DPR_GR
Site Code : 00000000
Start Date : 7/17/2013
Page No : 2

	Eastbound				Godfrey Road Westbound				Godfrey Road Northbound				Darby-Paoli Road Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	21	0	12	33	0	24	6	30	17	97	0	114	177
05:15 PM	0	0	0	0	18	0	13	31	0	27	9	36	14	116	0	130	197
05:30 PM	0	0	0	0	21	0	18	39	0	34	5	39	12	94	0	106	184
05:45 PM	0	0	0	0	21	0	11	32	0	36	5	41	12	82	0	94	167
Total Volume	0	0	0	0	81	0	54	135	0	121	25	146	55	389	0	444	725
% App. Total	0	0	0	0	60	0	40	40	0	82.9	17.1	17.1	12.4	87.6	0	87.6	87.6
PHF	.000	.000	.000	.000	.964	.000	.750	.865	.000	.840	.694	.890	.809	.838	.000	.854	.920
Unshifted	0	0	0	0	81	0	53	134	0	121	25	146	54	388	0	442	722
% Unshifted	0	0	0	0	100	0	98.1	99.3	0	100	100	100	98.2	99.7	0	99.5	99.6
HV	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	2	3
% HV	0	0	0	0	0	0	1.9	0.7	0	0	0	0	1.8	0.3	0	0.5	0.4



ATR COUNTS

Newtown Road WB-EB

Start Time	15-Jul-13 Mon	WB		EB		Combined		16-Jul-Tue	WB		EB		Combined	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00		*	*	*	*	*	*		4	47	2	51	6	98
12:15		*	*	*	*	*	*		3	42	2	42	5	84
12:30		*	*	*	*	*	*		2	53	1	50	3	103
12:45		*	*	*	*	*	*		1	33	1	55	2	88
01:00		*	*	*	*	*	*		2	49	0	50	2	99
01:15		*	*	*	*	*	*		1	45	1	43	2	88
01:30		*	*	*	*	*	*		1	33	0	43	1	76
01:45		*	*	*	*	*	*		1	43	0	59	1	102
02:00		*	41	*	37	*	78		0	47	0	32	0	79
02:15		*	54	*	30	*	84		1	46	1	43	2	89
02:30		*	42	*	36	*	78		1	43	0	47	1	90
02:45		*	47	*	44	*	91		0	54	1	47	1	101
03:00		*	60	*	51	*	111		0	54	0	43	0	97
03:15		*	70	*	42	*	112		0	53	1	48	1	101
03:30		*	52	*	34	*	86		1	60	0	44	1	104
03:45		*	57	*	45	*	102		0	64	0	47	0	111
04:00		*	75	*	54	*	129		0	51	0	50	0	101
04:15		*	102	*	58	*	160		0	95	0	44	0	139
04:30		*	90	*	47	*	137		2	99	0	55	2	154
04:45		*	97	*	46	*	143		0	78	1	57	1	135
05:00		*	94	*	60	*	154		1	97	3	63	4	160
05:15		*	103	*	48	*	151		0	115	5	42	5	157
05:30		*	90	*	65	*	155		6	108	8	60	14	168
05:45		*	86	*	67	*	153		9	87	16	53	25	140
06:00		*	80	*	63	*	143		5	79	19	53	24	132
06:15		*	68	*	65	*	133		9	83	20	49	29	132
06:30		*	52	*	37	*	89		19	71	19	34	38	105
06:45		*	47	*	25	*	72		24	53	51	48	75	101
07:00		*	48	*	40	*	88		28	48	64	34	92	82
07:15		*	32	*	32	*	64		33	50	73	23	106	73
07:30		*	40	*	29	*	69		44	27	89	25	133	52
07:45		*	32	*	23	*	55		48	43	120	33	168	76
08:00		*	36	*	23	*	59		49	24	129	22	178	46
08:15		*	46	*	20	*	66		49	34	129	28	178	62
08:30		*	31	*	14	*	45		49	22	136	23	185	45
08:45		*	24	*	23	*	47		65	41	114	26	179	67
09:00		*	29	*	11	*	40		55	28	102	28	157	56
09:15		*	18	*	6	*	24		39	36	73	15	112	51
09:30		*	16	*	6	*	22		37	21	55	10	92	31
09:45		*	16	*	14	*	30		29	14	62	12	91	26
10:00		*	23	*	6	*	29		28	15	39	14	67	29
10:15		*	7	*	4	*	11		34	24	38	13	72	37
10:30		*	7	*	8	*	15		49	10	35	4	84	14
10:45		*	7	*	1	*	8		34	12	37	5	71	17
11:00		*	15	*	4	*	19		31	11	48	5	79	16
11:15		*	6	*	6	*	12		32	7	45	7	77	14
11:30		*	6	*	1	*	7		41	5	33	5	74	10
11:45		*	6	*	3	*	9		37	11	47	2	84	13
Total		0	1852	0	1228	0	3080		904	2265	1620	1686	2524	3951
Day Total		1852		1228		3080		3169		3306		6475		
% Total		0.0%	60.1%	0.0%	39.9%			14.0%	35.0%	25.0%	26.0%			
Peak	-	-	04:30	-	05:30	-	05:00	-	08:15	05:00	07:45	04:45	08:00	05:00
Vol.	-	-	384	-	260	-	613	-	218	407	514	222	720	625
P.H.F.			0.932		0.970		0.989		0.838	0.885	0.945	0.881	0.973	0.930

Newtown Road WB-EB

Start Time	17-Jul-13 Wed	WB		EB		Combined		18-Jul-13 Thu	WB		EB		Combined	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00		6	49	2	44	8	93		10	46	3	40	13	86
12:15		7	45	3	61	10	106		7	45	1	32	8	77
12:30		4	42	1	33	5	75		4	34	1	41	5	75
12:45		2	52	2	42	4	94		3	45	2	37	5	82
01:00		3	45	2	37	5	82		2	42	1	48	3	90
01:15		2	35	0	40	2	75		2	44	1	36	3	80
01:30		2	49	0	41	2	90		1	45	0	34	1	79
01:45		0	33	0	42	0	75		2	35	0	47	2	82
02:00		0	41	0	46	0	87		0	37	0	45	0	82
02:15		1	44	0	43	1	87		0	46	0	35	0	81
02:30		3	47	0	37	3	84		1	49	1	46	2	95
02:45		0	36	1	43	1	79		0	42	0	50	0	92
03:00		0	66	0	40	0	106		0	54	0	47	0	101
03:15		1	50	0	43	1	93		0	54	2	48	2	102
03:30		0	56	0	54	0	110		0	50	0	44	0	94
03:45		0	63	0	51	0	114		1	71	0	68	1	139
04:00		1	56	1	40	2	96		0	80	0	51	0	131
04:15		0	77	1	44	1	121		1	75	1	51	2	126
04:30		4	99	0	46	4	145		2	84	0	46	2	130
04:45		1	111	2	63	3	174		0	110	2	46	2	156
05:00		2	120	1	58	3	178		0	114	2	56	2	170
05:15		1	88	4	54	5	142		1	118	6	70	7	188
05:30		3	105	7	68	10	173		4	103	3	46	7	149
05:45		6	82	14	73	20	155		7	108	11	62	18	170
06:00		7	94	17	54	24	148		4	96	18	55	22	151
06:15		9	88	27	50	36	138		8	78	22	54	30	132
06:30		15	60	22	47	37	107		14	67	23	48	37	115
06:45		20	55	59	47	79	102		16	53	46	34	62	87
07:00		31	38	51	25	82	63		32	52	56	28	88	80
07:15		33	37	74	41	107	78		45	43	71	38	116	81
07:30		45	33	102	32	147	65		41	45	94	30	135	75
07:45		47	40	107	34	154	74		52	27	118	18	170	45
08:00		40	36	106	29	146	65		48	31	125	21	173	52
08:15		45	33	131	25	176	58		55	30	125	25	180	55
08:30		70	15	105	25	175	40		47	30	126	22	173	52
08:45		64	32	113	33	177	65		71	34	126	26	197	60
09:00		60	22	96	22	156	44		50	27	103	20	153	47
09:15		47	34	75	23	122	57		43	30	80	17	123	47
09:30		30	35	71	11	101	46		35	17	55	14	90	31
09:45		35	24	53	19	88	43		55	20	52	12	107	32
10:00		35	19	56	7	91	26		35	19	49	5	84	24
10:15		37	12	52	10	89	22		33	13	40	8	73	21
10:30		36	11	47	5	83	16		29	10	28	18	57	28
10:45		40	12	53	9	93	21		25	19	49	12	74	31
11:00		26	11	43	5	69	16		44	13	40	6	84	19
11:15		38	8	43	4	81	12		32	7	52	2	84	9
11:30		39	10	41	2	80	12		44	8	42	1	86	9
11:45		52	6	55	2	107	8		50	6	49	2	99	8
Total		950	2256	1640	1704	2590	3960		956	2306	1626	1642	2582	3948
Day Total		3206		3344		6550			3262		3268		6530	
% Total		14.5%	34.4%	25.0%	26.0%				14.6%	35.3%	24.9%	25.1%		
Peak	-	08:30	04:45	08:00	05:00	08:15	04:45	-	08:15	04:45	08:00	05:00	08:00	05:00
Vol.	-	241	424	455	253	684	667	-	223	445	502	234	723	677
P.H.F.		0.861	0.883	0.868	0.866	0.966	0.937		0.785	0.943	0.996	0.836	0.918	0.900

Newtown Road WB-EB

Start Time	19-Jul-13		WB		EB		Combined		20-Jul-Sat	WB		EB		Combined	
	Fri	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.		P.M.	A.M.	P.M.	A.M.	P.M.	
12:00		5	*		1	*	6	*		*	*	*	*	*	*
12:15		4	*		2	*	6	*		*	*	*	*	*	*
12:30		3	*		3	*	6	*		*	*	*	*	*	*
12:45		1	*		1	*	2	*		*	*	*	*	*	*
01:00		3	*		0	*	3	*		*	*	*	*	*	*
01:15		1	*		1	*	2	*		*	*	*	*	*	*
01:30		1	*		0	*	1	*		*	*	*	*	*	*
01:45		2	*		2	*	4	*		*	*	*	*	*	*
02:00		1	*		1	*	2	*		*	*	*	*	*	*
02:15		2	*		0	*	2	*		*	*	*	*	*	*
02:30		1	*		1	*	2	*		*	*	*	*	*	*
02:45		0	*		1	*	1	*		*	*	*	*	*	*
03:00		1	*		0	*	1	*		*	*	*	*	*	*
03:15		0	*		1	*	1	*		*	*	*	*	*	*
03:30		0	*		0	*	0	*		*	*	*	*	*	*
03:45		1	*		0	*	1	*		*	*	*	*	*	*
04:00		0	*		0	*	0	*		*	*	*	*	*	*
04:15		1	*		0	*	1	*		*	*	*	*	*	*
04:30		2	*		0	*	2	*		*	*	*	*	*	*
04:45		1	*		3	*	4	*		*	*	*	*	*	*
05:00		2	*		1	*	3	*		*	*	*	*	*	*
05:15		2	*		3	*	5	*		*	*	*	*	*	*
05:30		5	*		6	*	11	*		*	*	*	*	*	*
05:45		4	*		16	*	20	*		*	*	*	*	*	*
06:00		6	*		12	*	18	*		*	*	*	*	*	*
06:15		9	*		19	*	28	*		*	*	*	*	*	*
06:30		11	*		20	*	31	*		*	*	*	*	*	*
06:45		19	*		42	*	61	*		*	*	*	*	*	*
07:00		20	*		37	*	57	*		*	*	*	*	*	*
07:15		21	*		65	*	86	*		*	*	*	*	*	*
07:30		32	*		85	*	117	*		*	*	*	*	*	*
07:45		47	*		96	*	143	*		*	*	*	*	*	*
08:00		43	*		88	*	131	*		*	*	*	*	*	*
08:15		45	*		131	*	176	*		*	*	*	*	*	*
08:30		54	*		105	*	159	*		*	*	*	*	*	*
08:45		62	*		110	*	172	*		*	*	*	*	*	*
09:00		47	*		92	*	139	*		*	*	*	*	*	*
09:15		39	*		58	*	97	*		*	*	*	*	*	*
09:30		25	*		65	*	90	*		*	*	*	*	*	*
09:45		26	*		53	*	79	*		*	*	*	*	*	*
10:00		29	*		50	*	79	*		*	*	*	*	*	*
10:15		32	*		39	*	71	*		*	*	*	*	*	*
10:30		34	*		42	*	76	*		*	*	*	*	*	*
10:45		41	*		43	*	84	*		*	*	*	*	*	*
11:00		37	*		35	*	72	*		*	*	*	*	*	*
11:15		29	*		34	*	63	*		*	*	*	*	*	*
11:30		34	*		35	*	69	*		*	*	*	*	*	*
11:45		*	*		*	*	*	*		*	*	*	*	*	*
Total		785	0	1399	0	2184	0		0	0	0	0	0	0	0
Day Total		785		1399		2184			0	0	0	0	0	0	0
% Total		35.9%	0.0%	64.1%	0.0%				0.0%	0.0%	0.0%	0.0%			
Peak	-	08:15	-	08:15	-	08:15	-	-	-	-	-	-	-	-	-
Vol.	-	208	-	438	-	646	-	-	-	-	-	-	-	-	-
P.H.F.		0.839		0.836		0.918									
ADT	ADT 6,401	AADT 6,401													

Darby-Paoli Road NB-SB

Start Time	15-Jul-13 Mon	NB		SB		Combined		16-Jul-Tue	NB		SB		Combined	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00		*	*	*	*	*	*		0	40	3	48	3	88
12:15		*	*	*	*	*	*		1	56	0	43	1	99
12:30		*	*	*	*	*	*		1	47	0	43	1	90
12:45		*	*	*	*	*	*		1	48	2	32	3	80
01:00		*	*	*	*	*	*		1	56	3	56	4	112
01:15		*	*	*	*	*	*		3	59	1	44	4	103
01:30		*	*	*	*	*	*		1	42	1	51	2	93
01:45		*	53	*	42	*	95		1	53	0	56	1	109
02:00		*	56	*	50	*	106		0	55	1	64	1	119
02:15		*	66	*	48	*	114		0	66	2	41	2	107
02:30		*	78	*	44	*	122		0	63	0	51	0	114
02:45		*	77	*	34	*	111		1	77	0	48	1	125
03:00		*	79	*	37	*	116		0	81	0	49	0	130
03:15		*	94	*	42	*	136		0	89	0	54	0	143
03:30		*	106	*	56	*	162		0	107	0	50	0	157
03:45		*	102	*	53	*	155		0	127	1	36	1	163
04:00		*	137	*	53	*	190		0	107	2	52	2	159
04:15		*	151	*	53	*	204		1	177	3	53	4	230
04:30		*	181	*	50	*	231		0	203	4	51	4	254
04:45		*	171	*	69	*	240		4	194	11	54	15	248
05:00		*	138	*	60	*	198		5	206	13	45	18	251
05:15		*	145	*	57	*	202		8	142	19	61	27	203
05:30		*	94	*	52	*	146		10	118	29	48	39	166
05:45		*	84	*	35	*	119		14	130	28	46	42	176
06:00		*	70	*	32	*	102		21	78	61	32	82	110
06:15		*	55	*	38	*	93		22	70	68	37	90	107
06:30		*	58	*	40	*	98		32	51	100	29	132	80
06:45		*	45	*	35	*	80		51	38	130	38	181	76
07:00		*	42	*	37	*	79		54	50	132	25	186	75
07:15		*	36	*	23	*	59		50	35	142	35	192	70
07:30		*	38	*	22	*	60		50	37	131	31	181	68
07:45		*	36	*	25	*	61		46	29	142	33	188	62
08:00		*	35	*	19	*	54		49	53	146	41	195	94
08:15		*	32	*	18	*	50		68	34	94	62	162	96
08:30		*	29	*	8	*	37		49	35	77	25	126	60
08:45		*	18	*	8	*	26		48	29	68	28	116	57
09:00		*	13	*	12	*	25		32	17	58	22	90	39
09:15		*	19	*	7	*	26		26	16	53	20	79	36
09:30		*	11	*	3	*	14		30	17	41	19	71	36
09:45		*	9	*	6	*	15		50	13	33	14	83	27
10:00		*	13	*	0	*	13		38	17	46	9	84	26
10:15		*	14	*	5	*	19		42	9	45	9	87	18
10:30		*	5	*	4	*	9		37	10	54	4	91	14
10:45		*	7	*	3	*	10		41	5	38	5	79	10
11:00		*	7	*	5	*	12		43	7	49	5	92	12
11:15		*	6	*	2	*	8		52	5	34	6	86	11
11:30		*	3	*	3	*	6		48	6	52	3	100	9
11:45		*	4	*	1	*	5		71	3	51	1	122	4
Total		0	2417	0	1191	0	3608		1102	3007	1968	1709	3070	4716
Day Total		2417		1191		3608			4109		3677		7786	
% Total		0.0%	67.0%	0.0%	33.0%				14.2%	38.6%	25.3%	21.9%		
Peak	-	-	04:15	-	04:45	-	04:15	-	08:00	04:15	07:15	01:15	07:15	04:15
Vol.	-	-	641	-	238	-	873	-	214	780	561	215	756	983
P.H.F.			0.885		0.862		0.909		0.787	0.947	0.961	0.840	0.969	0.968

Darby-Paoli Road NB-SB

Start Time	17-Jul-13 Wed	NB		SB		Combined		18-Jul- Thu	NB		SB		Combined	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00		3	61	3	52	6	113		3	49	1	39	4	88
12:15		3	55	1	53	4	108		6	61	1	36	7	97
12:30		5	49	0	42	5	91		1	45	1	46	2	91
12:45		0	50	0	37	0	87		1	53	1	34	2	87
01:00		1	40	1	54	2	94		3	43	1	39	4	82
01:15		0	40	0	48	0	88		0	43	1	47	1	90
01:30		1	57	0	35	1	92		0	48	1	33	1	81
01:45		2	72	2	45	4	117		1	50	0	50	1	100
02:00		0	61	0	38	0	99		0	47	0	46	0	93
02:15		0	78	0	47	0	125		0	63	1	40	1	103
02:30		0	67	1	46	1	113		0	63	1	42	1	105
02:45		0	69	0	48	0	117		0	74	0	37	0	111
03:00		0	87	0	61	0	148		1	70	1	67	2	137
03:15		2	88	1	52	3	140		0	93	1	60	1	153
03:30		0	112	1	48	1	160		1	120	0	45	1	165
03:45		1	130	0	41	1	171		0	113	1	48	1	161
04:00		0	145	3	68	3	213		0	154	3	51	3	205
04:15		3	188	3	64	6	252		0	170	1	47	1	217
04:30		0	199	1	48	1	247		2	181	3	55	5	236
04:45		3	175	9	71	12	246		4	152	5	61	9	213
05:00		7	144	17	80	24	224		7	156	11	78	18	234
05:15		9	139	22	66	31	205		7	138	18	51	25	189
05:30		7	122	28	91	35	213		9	123	30	57	39	180
05:45		11	90	32	57	43	147		9	93	31	58	40	151
06:00		23	60	58	44	81	104		21	69	61	49	82	118
06:15		25	52	69	46	94	98		31	73	54	28	85	101
06:30		39	57	111	41	150	98		38	50	109	42	147	92
06:45		52	45	127	20	179	65		47	45	136	34	183	79
07:00		47	42	120	27	167	69		52	31	132	27	184	58
07:15		44	54	138	12	182	66		50	48	133	25	183	73
07:30		33	42	147	18	180	60		50	41	149	16	199	57
07:45		60	28	142	31	202	59		46	44	128	38	174	82
08:00		57	41	153	21	210	62		49	40	138	21	187	61
08:15		67	27	124	12	191	39		64	35	135	16	199	51
08:30		63	32	70	12	133	44		43	32	70	20	113	52
08:45		54	37	70	20	124	57		49	31	60	20	109	51
09:00		43	30	70	15	113	45		40	24	51	16	91	40
09:15		45	25	61	12	106	37		33	20	47	8	80	28
09:30		56	17	55	13	111	30		41	19	42	13	83	32
09:45		33	17	53	9	86	26		38	13	46	20	84	33
10:00		39	11	60	6	99	17		37	16	49	10	86	26
10:15		41	13	36	8	77	21		33	15	39	3	72	18
10:30		39	10	49	8	88	18		38	7	49	5	87	12
10:45		47	7	50	1	97	8		50	4	45	3	95	7
11:00		49	5	53	4	102	9		62	6	48	1	110	7
11:15		55	8	45	3	100	11		53	3	41	2	94	5
11:30		66	2	54	1	120	3		55	2	52	2	107	4
11:45		60	6	31	3	91	9		40	1	46	2	86	3
Total		1195	2986	2071	1679	3266	4665		1115	2871	1974	1588	3089	4459
Day Total		4181		3750		7931			3986		3562		7548	
% Total		15.1%	37.6%	26.1%	21.2%				14.8%	38.0%	26.2%	21.0%		
Peak	-	07:45	04:00	07:15	04:45	07:30	04:15	-	10:45	04:15	06:45	04:45	07:30	04:15
Vol.	-	247	707	580	308	783	969	-	220	659	550	247	759	900
P.H.F.		0.922	0.888	0.948	0.846	0.932	0.961		0.859	0.910	0.923	0.792	0.954	0.953

Start Time	19-Jul-13		NB		SB		Combined		20-Jul-Sat	NB		SB		Combined	
	Fri	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.		P.M.	A.M.	P.M.	A.M.	P.M.	
12:00		1	16	2	12	3	28			*	*	*	*	*	*
12:15		3	*	0	*	3	*			*	*	*	*	*	*
12:30		0	*	1	*	1	*			*	*	*	*	*	*
12:45		2	*	2	*	4	*			*	*	*	*	*	*
01:00		1	*	1	*	2	*			*	*	*	*	*	*
01:15		0	*	2	*	2	*			*	*	*	*	*	*
01:30		3	*	1	*	4	*			*	*	*	*	*	*
01:45		1	*	1	*	2	*			*	*	*	*	*	*
02:00		1	*	0	*	1	*			*	*	*	*	*	*
02:15		1	*	0	*	1	*			*	*	*	*	*	*
02:30		0	*	1	*	1	*			*	*	*	*	*	*
02:45		0	*	0	*	0	*			*	*	*	*	*	*
03:00		0	*	0	*	0	*			*	*	*	*	*	*
03:15		0	*	0	*	0	*			*	*	*	*	*	*
03:30		1	*	1	*	2	*			*	*	*	*	*	*
03:45		1	*	0	*	1	*			*	*	*	*	*	*
04:00		0	*	1	*	1	*			*	*	*	*	*	*
04:15		1	*	1	*	2	*			*	*	*	*	*	*
04:30		0	*	0	*	0	*			*	*	*	*	*	*
04:45		2	*	8	*	10	*			*	*	*	*	*	*
05:00		5	*	8	*	13	*			*	*	*	*	*	*
05:15		4	*	19	*	23	*			*	*	*	*	*	*
05:30		7	*	23	*	30	*			*	*	*	*	*	*
05:45		12	*	32	*	44	*			*	*	*	*	*	*
06:00		25	*	58	*	83	*			*	*	*	*	*	*
06:15		22	*	55	*	77	*			*	*	*	*	*	*
06:30		18	*	87	*	105	*			*	*	*	*	*	*
06:45		34	*	122	*	156	*			*	*	*	*	*	*
07:00		42	*	120	*	162	*			*	*	*	*	*	*
07:15		50	*	121	*	171	*			*	*	*	*	*	*
07:30		51	*	153	*	204	*			*	*	*	*	*	*
07:45		51	*	130	*	181	*			*	*	*	*	*	*
08:00		47	*	145	*	192	*			*	*	*	*	*	*
08:15		51	*	95	*	146	*			*	*	*	*	*	*
08:30		53	*	79	*	132	*			*	*	*	*	*	*
08:45		43	*	67	*	110	*			*	*	*	*	*	*
09:00		25	*	61	*	86	*			*	*	*	*	*	*
09:15		31	*	45	*	76	*			*	*	*	*	*	*
09:30		33	*	43	*	76	*			*	*	*	*	*	*
09:45		40	*	38	*	78	*			*	*	*	*	*	*
10:00		46	*	44	*	90	*			*	*	*	*	*	*
10:15		40	*	57	*	97	*			*	*	*	*	*	*
10:30		45	*	45	*	90	*			*	*	*	*	*	*
10:45		43	*	42	*	85	*			*	*	*	*	*	*
11:00		55	*	34	*	89	*			*	*	*	*	*	*
11:15		56	*	50	*	106	*			*	*	*	*	*	*
11:30		61	*	43	*	104	*			*	*	*	*	*	*
11:45		57	*	47	*	104	*	</							

APPENDIX C

VOLUME DEVELOPMENT WORKSHEETS

TPD# ESII.A.00001

7/26/2013

Traffic Volumes Worksheet

Intersection:

Synchro Node:

Darby-Paoli Road & Sawmill Road

7 Adjacent intersections: West 0 East 0 North 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
Existing Counts	295	0	71	0	0	0	26	299	0	0	110	97	898
Balancing													0
Existing Volumes (Balanced)	295	0	71	0	0	0	26	299	0	0	110	97	898
Base growth (0.51% compounded for 7 yrs)	11	0	3	0	0	0	1	11	0	0	4	4	34
Ardossen Farm (East Parcel)	3						1	3			6	7	20
													0
													0
2020 Base Volumes	309	0	74	0	0	0	28	313	0	0	120	108	952
New Trips							1	2					3
Redistributed Trips													0
Total Trip Distribution	0	0	0	0	0	0	1	2	0	0	0	0	3
2020 Projected Volumes	309	0	74	0	0	0	29	315	0	0	120	108	955

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
Existing Counts	135	0	39	0	0	0	53	129	0	0	365	292	1013
Balancing													0
Existing Volumes (Balanced)	135	0	39	0	0	0	53	129	0	0	365	292	1013
Base growth (0.51% compounded for 7 yrs)	5	0	1	0	0	0	2	5	0	0	13	11	37
Ardossen Farm (East Parcel)	8		1					8			5	5	27
0													0
0													0
2020 Base Volumes	148	0	41	0	0	0	55	142	0	0	383	308	1077
New Trips			1					1			2		4
Redistributed Trips													0
Total Trip Distribution	0	0	1	0	0	0	0	1	0	0	2	0	4
2020 Projected Volumes	148	0	42	0	0	0	55	143	0	0	385	308	1081

TPD# ESII.A.00001

7/26/2013

Traffic Volumes Worksheet

Intersection:

Synchro Node:

Darby-Paoli Road & Godfrey Road												
8	Adjacent intersections:	West	0	East	0	North	0	South	0			

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
Existing Counts	0	0	0	14	0	44	0	284	44	70	106	0	562
Balancing													0
Existing Volumes (Balanced)	0	0	0	14	0	44	0	284	44	70	106	0	562
Base growth (0.51% compounded for 7 yrs)	0	0	0	1	0	2	0	10	2	3	4	0	22
Ardossen Farm (East Parcel)								1		1	4		6
													0
													0
2020 Base Volumes	0	0	0	15	0	46	0	295	46	74	114	0	590
New Trips						1				1			2
Redistributed Trips													0
Total Trip Distribution	0	0	0	0	0	1	0	0	0	1	0	0	2
2020 Projected Volumes	0	0	0	15	0	47	0	295	46	75	114	0	592

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
Existing Counts	0	0	0	81	0	54	0	121	25	55	389	0	725
Balancing													0
Existing Volumes (Balanced)	0	0	0	81	0	54	0	121	25	55	389	0	725
Base growth (0.51% compounded for 7 yrs)	0	0	0	3	0	2	0	4	1	2	14	0	26
Ardossen Farm (East Parcel)						1		5		1	3		10
0													0
0													0
2020 Base Volumes	0	0	0	84	0	57	0	130	26	58	406	0	761
New Trips						1				1			2
Redistributed Trips													0
Total Trip Distribution	0	0	0	0	0	1	0	0	0	1	0	0	2
2020 Projected Volumes	0	0	0	84	0	58	0	130	26	59	406	0	763

TPD# ESII.A.00001
 7/26/2013
 Traffic Volumes Worksheet
 Intersection:
 Synchro Node:

Darby-Paoli Road & Site Driveway (Wheeler Field)													
16	Adjacent intersections:	West	0	East	0	North	0	South	0				

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
Existing Counts	0	0	0	0	0	0	0	325	0	0	181	0	506
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	325	0	0	181	0	506
Base growth (0.51% compounded for 7 yrs)	0	0	0	0	0	0	0	12	0	0	7	0	19
Ardossen Farm (East Parcel)								1			5		6
													0
													0
2020 Base Volumes	0	0	0	0	0	0	0	338	0	0	193	0	531
New Trips	3		1				1						5
Redistributed Trips													0
Total Trip Distribution	3	0	1	0	0	0	1	0	0	0	0	0	5
2020 Projected Volumes	3	0	1	0	0	0	1	338	0	0	193	0	536

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
Existing Counts	0	0	0	0	0	0	0	182	0	0	404	0	586
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	182	0	0	404	0	586
Base growth (0.51% compounded for 7 yrs)	0	0	0	0	0	0	0	7	0	0	14	0	21
Ardossen Farm (East Parcel)								6			4		10
0													0
0													0
2020 Base Volumes	0	0	0	0	0	0	0	195	0	0	422	0	617
New Trips	1		1				1					3	6
Redistributed Trips													0
Total Trip Distribution	1	0	1	0	0	0	1	0	0	0	0	3	6
2020 Projected Volumes	1	0	1	0	0	0	1	195	0	0	422	3	623

APPENDIX D










CAPACITY ANALYSES

EXISTING CONDITIONS

7: Darby-Paoli Road & Sawmill Road

Existing Conditions

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	295	71	26	299	110	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	10	12
Grade (%)	0%			-1%	0%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	649			119	180	
Travel Time (s)	17.7			2.3	3.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	4%	2%	3%	1%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

7: Darby-Paoli Road & Sawmill Road

Existing Conditions

Timing Plan: AM Peak Hour

Intersection

Intersection Delay, s/veh 12.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	295	71	26	299	110	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-1	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	0	4	2	3	1
Mvmt Flow	324	78	29	329	121	107

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	560	174	227	0	-	0
Stage 1	174	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Follow-up Headway	3.509	3.3	2.236	-	-	-
Pot Capacity-1 Maneuver	491	875	1330	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	478	875	1330	-	-	-
Mov Capacity-2 Maneuver	478	-	-	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	670	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31	0.6	0
HCM LOS	D		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1330	-	524	-	-
HCM Lane V/C Ratio	0.021	-	0.768	-	-
HCM Control Delay (s)	7.766	0	31	-	-
HCM Lane LOS	A	A	D		
HCM 95th %tile Q(veh)	0.066	-	6.836	-	-










Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

8: Darby-Paoli Road & Godfrey Road

Existing Conditions

Timing Plan: AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	14	44	284	44	70	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	10	12	12	10
Grade (%)	3%		6%			-7%
Link Speed (mph)	35		35			35
Link Distance (ft)	1916		1868			763
Travel Time (s)	37.3		36.4			14.9
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	7%	0%	3%	5%	3%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

8: Darby-Paoli Road & Godfrey Road

Existing Conditions

Timing Plan: AM Peak Hour

Intersection

Intersection Delay, s/veh 2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	14	44	284	44	70	106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	6	-	-	-7
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	7	0	3	5	3	2
Mvmt Flow	16	52	334	52	82	125

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	649	360	0
Stage 1	360	-	-
Stage 2	289	-	-
Follow-up Headway	3.563	3.3	-
Pot Capacity-1 Maneuver	383	669	-
Stage 1	655	-	-
Stage 2	714	-	-
Time blocked-Platoon, %		-	-
Mov Capacity-1 Maneuver	354	669	-
Mov Capacity-2 Maneuver	354	-	-
Stage 1	655	-	-
Stage 2	660	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	3.3
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	551	1167	-
HCM Lane V/C Ratio	-	-	0.124	0.071	-
HCM Control Delay (s)	-	-	12.5	8.319	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.421	0.227	-










Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

7: Darby-Paoli Road & Sawmill Road

Existing Conditions

Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	135	39	53	129	365	292
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	10	12
Grade (%)	0%			-1%	0%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	649			119	180	
Travel Time (s)	17.7			2.3	3.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

7: Darby-Paoli Road & Sawmill Road

Existing Conditions

Timing Plan: PM Peak Hour

Intersection

Intersection Delay, s/veh 4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	135	39	53	129	365	292
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-1	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	139	40	55	133	376	301

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	769	527	677	0	-	0
Stage 1	527	-	-	-	-	-
Stage 2	242	-	-	-	-	-
Follow-up Headway	3.509	3.309	2.209	-	-	-
Pot Capacity-1 Maneuver	371	553	919	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	801	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	347	553	919	-	-	-
Mov Capacity-2 Maneuver	347	-	-	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	749	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.7	2.7	0
HCM LOS	C		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	919	-	379	-	-
HCM Lane V/C Ratio	0.059	-	0.473	-	-
HCM Control Delay (s)	9.165	0	22.7	-	-
HCM Lane LOS	A	A	C		
HCM 95th %tile Q(veh)	0.189	-	2.454	-	-










Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

8: Darby-Paoli Road & Godfrey Road

Existing Conditions

Timing Plan: PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	81	54	121	25	55	389
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	10	12	12	10
Grade (%)	3%		6%			-7%
Link Speed (mph)	35		35			35
Link Distance (ft)	1916		1868			763
Travel Time (s)	37.3		36.4			14.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	2%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

8: Darby-Paoli Road & Godfrey Road

Existing Conditions

Timing Plan: PM Peak Hour










Intersection						
Intersection Delay, s/veh	3.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	81	54	121	25	55	389
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	6	-	-	-7
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	2	1
Mvmt Flow	88	59	132	27	60	423
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	687	145	0	0	159	0
Stage 1	145	-	-	-	-	-
Stage 2	542	-	-	-	-	-
Follow-up Headway	3.5	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	371	891	-	-	1420	-
Stage 1	866	-	-	-	-	-
Stage 2	536	-	-	-	-	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	351	891	-	-	1420	-
Mov Capacity-2 Maneuver	351	-	-	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	507	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	16.3	0		0.9		
HCM LOS	C					
Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	463	1420	-	
HCM Lane V/C Ratio	-	-	0.317	0.042	-	
HCM Control Delay (s)	-	-	16.3	7.647	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	1.346	0.132	-	
Notes						
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

2020 BASE CONDITIONS

7: Darby-Paoli Road & Sawmill Road

2020 Base (No-Build) Conditions

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	309	74	28	313	120	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	10	12
Grade (%)	0%			-1%	0%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	649			119	180	
Travel Time (s)	17.7			2.3	3.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	4%	2%	3%	1%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

7: Darby-Paoli Road & Sawmill Road

2020 Base (No-Build) Conditions










Timing Plan: AM Peak Hour

Intersection						
Intersection Delay, s/veh	16.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	309	74	28	313	120	108
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-1	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	0	4	2	3	1
Mvmt Flow	340	81	31	344	132	119
Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	596	191	251	0	-	0
Stage 1	191	-	-	-	-	-
Stage 2	405	-	-	-	-	-
Follow-up Headway	3.509	3.3	2.236	-	-	-
Pot Capacity-1 Maneuver	468	856	1303	-	-	-
Stage 1	844	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	454	856	1303	-	-	-
Mov Capacity-2 Maneuver	454	-	-	-	-	-
Stage 1	844	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Approach	EB	NB			SB	
HCM Control Delay, s	40.1	0.6			0	
HCM LOS	E					
Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1303	-	499	-	-	
HCM Lane V/C Ratio	0.024	-	0.843	-	-	
HCM Control Delay (s)	7.83	0	40.1	-	-	
HCM Lane LOS	A	A	E			
HCM 95th %tile Q(veh)	0.073	-	8.596	-	-	
Notes						
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

8: Darby-Paoli Road & Godfrey Road

2020 Base (No-Build) Conditions

Timing Plan: AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	15	46	295	46	74	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	10	12	12	10
Grade (%)	3%		6%			-7%
Link Speed (mph)	35		35			35
Link Distance (ft)	1916		1868			763
Travel Time (s)	37.3		36.4			14.9
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	7%	0%	3%	5%	3%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

8: Darby-Paoli Road & Godfrey Road

2020 Base (No-Build) Conditions










Timing Plan: AM Peak Hour

Intersection						
Intersection Delay, s/veh	2.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	15	46	295	46	74	114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	6	-	-	-7
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	7	0	3	5	3	2
Mvmt Flow	18	54	347	54	87	134
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	682	374	0	0	401	0
Stage 1	374	-	-	-	-	-
Stage 2	308	-	-	-	-	-
Follow-up Headway	3.563	3.3	-	-	2.227	-
Pot Capacity-1 Maneuver	364	656	-	-	1152	-
Stage 1	643	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	334	656	-	-	1152	-
Mov Capacity-2 Maneuver	334	-	-	-	-	-
Stage 1	643	-	-	-	-	-
Stage 2	640	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	12.9		0		3.3	
HCM LOS	B					
Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	530	1152	-	
HCM Lane V/C Ratio	-	-	0.135	0.076	-	
HCM Control Delay (s)	-	-	12.9	8.38	0	
HCM Lane LOS			B	A	A	
HCM 95th %tile Q(veh)	-	-	0.466	0.245	-	
Notes						
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

7: Darby-Paoli Road & Sawmill Road

2020 Base (No-Build) Conditions

Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	148	41	55	142	383	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	10	12
Grade (%)	0%			-1%	0%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	649			119	180	
Travel Time (s)	17.7			2.3	3.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

7: Darby-Paoli Road & Sawmill Road

2020 Base (No-Build) Conditions










Timing Plan: PM Peak Hour

Intersection						
Intersection Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	148	41	55	142	383	308
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-1	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	153	42	57	146	395	318
Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	814	554	712	0	-	0
Stage 1	554	-	-	-	-	-
Stage 2	260	-	-	-	-	-
Follow-up Headway	3.509	3.309	2.209	-	-	-
Pot Capacity-1 Maneuver	349	534	892	-	-	-
Stage 1	577	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	325	534	892	-	-	-
Mov Capacity-2 Maneuver	325	-	-	-	-	-
Stage 1	577	-	-	-	-	-
Stage 2	731	-	-	-	-	-
Approach	EB	NB			SB	
HCM Control Delay, s	26.8	2.6			0	
HCM LOS	D					
Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	892	-	355	-	-	
HCM Lane V/C Ratio	0.064	-	0.549	-	-	
HCM Control Delay (s)	9.31	0	26.8	-	-	
HCM Lane LOS	A	A	D	-	-	
HCM 95th %tile Q(veh)	0.203	-	3.153	-	-	
Notes						
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

8: Darby-Paoli Road & Godfrey Road

2020 Base (No-Build) Conditions

Timing Plan: PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	84	57	130	26	58	406
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	10	12	12	10
Grade (%)	3%		6%			-7%
Link Speed (mph)	35		35			35
Link Distance (ft)	1916		1868			763
Travel Time (s)	37.3		36.4			14.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	2%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

8: Darby-Paoli Road & Godfrey Road

2020 Base (No-Build) Conditions

Timing Plan: PM Peak Hour










Intersection						
Intersection Delay, s/veh	3.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	84	57	130	26	58	406
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	6	-	-	-7
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	2	1
Mvmt Flow	91	62	141	28	63	441
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	722	155	0	0	170	0
Stage 1	155	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Follow-up Headway	3.5	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	352	879	-	-	1407	-
Stage 1	856	-	-	-	-	-
Stage 2	520	-	-	-	-	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	331	879	-	-	1407	-
Mov Capacity-2 Maneuver	331	-	-	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	17.4	0		1		
HCM LOS	C					
Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	443	1407	-	
HCM Lane V/C Ratio	-	-	0.346	0.045	-	
HCM Control Delay (s)	-	-	17.4	7.679	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	1.523	0.141	-	
Notes						
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

2020 PROJECTED CONDITIONS

7: Darby-Paoli Road & Sawmill Road

2020 Projected (Build) Conditions

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	309	74	29	315	120	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	10	12
Grade (%)	0%			-1%	0%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	649			119	180	
Travel Time (s)	17.7			2.3	3.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	4%	2%	3%	1%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

7: Darby-Paoli Road & Sawmill Road

2020 Projected (Build) Conditions










Timing Plan: AM Peak Hour

Intersection						
Intersection Delay, s/veh	16.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	309	74	29	315	120	108
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-1	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	0	4	2	3	1
Mvmt Flow	340	81	32	346	132	119
Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	601	191	251	0	-	0
Stage 1	191	-	-	-	-	-
Stage 2	410	-	-	-	-	-
Follow-up Headway	3.509	3.3	2.236	-	-	-
Pot Capacity-1 Maneuver	465	856	1303	-	-	-
Stage 1	844	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	451	856	1303	-	-	-
Mov Capacity-2 Maneuver	451	-	-	-	-	-
Stage 1	844	-	-	-	-	-
Stage 2	652	-	-	-	-	-
Approach	EB	NB			SB	
HCM Control Delay, s	40.9	0.7			0	
HCM LOS	E					
Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1303	-	496	-	-	
HCM Lane V/C Ratio	0.024	-	0.849	-	-	
HCM Control Delay (s)	7.832	0	40.9	-	-	
HCM Lane LOS	A	A	E			
HCM 95th %tile Q(veh)	0.075	-	8.717	-	-	
Notes						
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

8: Darby-Paoli Road & Godfrey Road

2020 Projected (Build) Conditions

Timing Plan: AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	15	47	295	46	75	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	10	12	12	10
Grade (%)	3%		6%			-7%
Link Speed (mph)	35		35			35
Link Distance (ft)	1916		1868			763
Travel Time (s)	37.3		36.4			14.9
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	7%	0%	3%	5%	3%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

8: Darby-Paoli Road & Godfrey Road

2020 Projected (Build) Conditions










Timing Plan: AM Peak Hour

Intersection						
Intersection Delay, s/veh	2.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	15	47	295	46	75	114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	6	-	-	-7
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	7	0	3	5	3	2
Mvmt Flow	18	55	347	54	88	134
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	685	374	0	0	401	0
Stage 1	374	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Follow-up Headway	3.563	3.3	-	-	2.227	-
Pot Capacity-1 Maneuver	362	656	-	-	1152	-
Stage 1	643	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	332	656	-	-	1152	-
Mov Capacity-2 Maneuver	332	-	-	-	-	-
Stage 1	643	-	-	-	-	-
Stage 2	637	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.9	0		3.3		
HCM LOS	B					
Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	531	1152	-	
HCM Lane V/C Ratio	-	-	0.137	0.077	-	
HCM Control Delay (s)	-	-	12.9	8.384	0	
HCM Lane LOS			B	A	A	
HCM 95th %tile Q(veh)	-	-	0.474	0.248	-	
Notes						
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

16: Darby-Paoli Road & Site Driveway

2020 Projected (Build) Conditions

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	3	1	1	338	193	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	12
Grade (%)	0%			-1%	-2%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	378			763	712	
Travel Time (s)	10.3			14.9	13.9	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

16: Darby-Paoli Road & Site Driveway

2020 Projected (Build) Conditions










Timing Plan: AM Peak Hour

Intersection						
Intersection Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	1	1	338	193	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-1	-2	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	3	2	2
Mvmt Flow	3	1	1	384	219	0
Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	605	219	219	0	-	0
Stage 1	219	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	461	821	1350	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	461	821	1350	-	-	-
Mov Capacity-2 Maneuver	461	-	-	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Approach	EB	NB			SB	
HCM Control Delay, s	12	0			0	
HCM LOS	B					
Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1350	-	518	-	-	
HCM Lane V/C Ratio	0.001	-	0.009	-	-	
HCM Control Delay (s)	7.669	0	12	-	-	
HCM Lane LOS	A	A	B			
HCM 95th %tile Q(veh)	0.003	-	0.027	-	-	
Notes						
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

7: Darby-Paoli Road & Sawmill Road

2020 Projected (Build) Conditions

Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	148	42	55	143	385	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	10	12
Grade (%)	0%			-1%	0%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	649			119	180	
Travel Time (s)	17.7			2.3	3.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

7: Darby-Paoli Road & Sawmill Road

2020 Projected (Build) Conditions










Timing Plan: PM Peak Hour

Intersection						
Intersection Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	148	42	55	143	385	308
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-1	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	153	43	57	147	397	318
Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	817	556	714	0	-	0
Stage 1	556	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Follow-up Headway	3.509	3.309	2.209	-	-	-
Pot Capacity-1 Maneuver	347	533	891	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	323	533	891	-	-	-
Mov Capacity-2 Maneuver	323	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Approach	EB	NB			SB	
HCM Control Delay, s	27.1	2.6			0	
HCM LOS	D					
Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	891	-	354	-	-	
HCM Lane V/C Ratio	0.064	-	0.553	-	-	
HCM Control Delay (s)	9.315	0	27.1	-	-	
HCM Lane LOS	A	A	D	-	-	
HCM 95th %tile Q(veh)	0.203	-	3.199	-	-	
Notes						
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

8: Darby-Paoli Road & Godfrey Road

2020 Projected (Build) Conditions

Timing Plan: PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	84	58	130	26	59	406
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	10	12	12	10
Grade (%)	3%		6%			-7%
Link Speed (mph)	35		35			35
Link Distance (ft)	1916		1868			763
Travel Time (s)	37.3		36.4			14.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	2%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

8: Darby-Paoli Road & Godfrey Road

2020 Projected (Build) Conditions

Timing Plan: PM Peak Hour

Intersection

Intersection Delay, s/veh 3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	84	58	130	26	59	406
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	6	-	-	-7
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	2	1
Mvmt Flow	91	63	141	28	64	441

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	725	155	0
Stage 1	155	-	-
Stage 2	570	-	-
Follow-up Headway	3.5	3.318	-
Pot Capacity-1 Maneuver	350	879	-
Stage 1	856	-	-
Stage 2	518	-	-
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	329	879	-
Mov Capacity-2 Maneuver	329	-	-
Stage 1	856	-	-
Stage 2	487	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.5	0	1
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	442	1407	-
HCM Lane V/C Ratio	-	-	0.349	0.046	-
HCM Control Delay (s)	-	-	17.5	7.681	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.543	0.143	-










Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

16: Darby-Paoli Road & Site Driveway

2020 Projected (Build) Conditions

Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1	1	1	195	422	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	12
Grade (%)	0%			-1%	-2%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	378			763	712	
Travel Time (s)	10.3			14.9	13.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	1%	1%	2%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

16: Darby-Paoli Road & Site Driveway

2020 Projected (Build) Conditions

Timing Plan: PM Peak Hour

Intersection

Intersection Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	1	1	1	195	422	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-1	-2	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	1	1	2
Mvmt Flow	1	1	1	214	464	3

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	681	465	467
Stage 1	465	-	-
Stage 2	216	-	-
Follow-up Headway	3.518	3.318	2.218
Pot Capacity-1 Maneuver	416	597	1094
Stage 1	632	-	-
Stage 2	820	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	416	597	1094
Mov Capacity-2 Maneuver	416	-	-
Stage 1	632	-	-
Stage 2	819	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1094	-	490	-	-
HCM Lane V/C Ratio	0.001	-	0.004	-	-
HCM Control Delay (s)	8.294	0	12.4	-	-
HCM Lane LOS	A	A	B		
HCM 95th %tile Q(veh)	0.003	-	0.014	-	-

Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

APPENDIX E

AUXILIARY TURN LANE WARRANT ANALYSES

Left-Turn Lane Warrant Analysis

Two-Lane Highways

Based on PennDOT Publication 46 (October 2010 Edition), Section 11.17,

PROJECT INFORMATION

Project Number:	ESII.A.0000
Intersection:	Darby-Paoli Road & Site Driveway
Movement:	Left Turns to Site Driveway
Analysis Period:	2020 Projected (Build) Conditions - AM Peak Hour
Analyst:	EMM

INPUTS

	Volume	Truck %	Terrain Type	T	PCE Volume
Advancing Volume (V_A) =	339	3%	Rolling	1.045	354
Opposing Volume (V_O) =	193	2%	Rolling	1.03	199
Number of Left Turns =	1	2%	Rolling	1.03	1
Speed Limit =	35		Type of Control:	Unsignalized	
Proportion of Left Turns =	0.3%		Cycle Length:	60	sec.

WARRANT CALCULATION

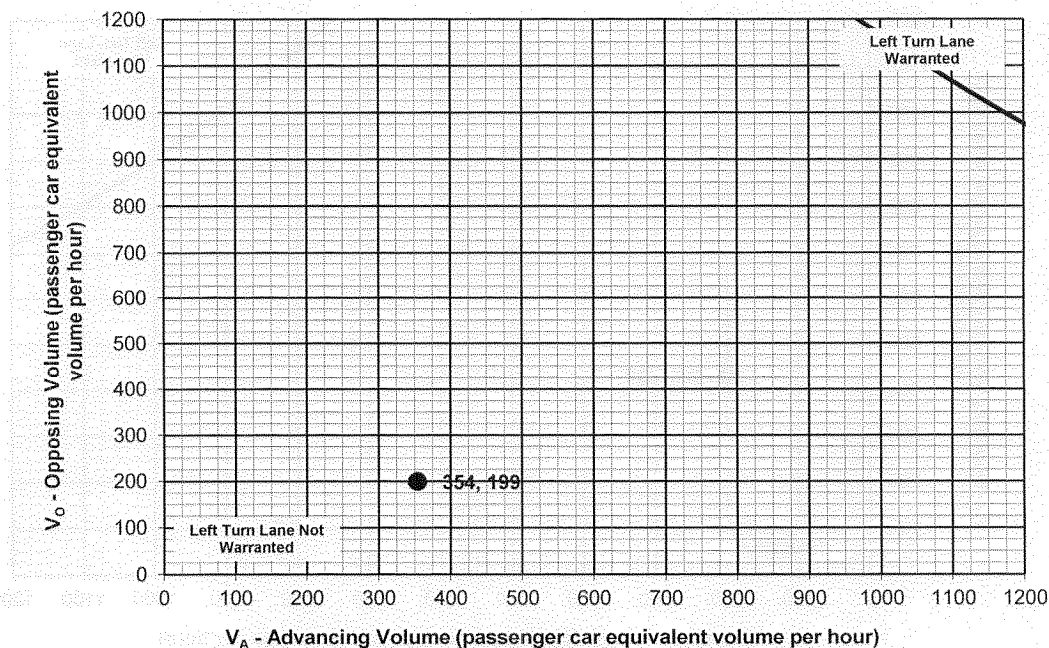
$t_w = 0.76$ sec	Limiting advancing volume =	2666
$t_A = 10.17$ sec		
$t_{\text{median}} = 6.78$ sec	Left turn lane warrants are for $\rho >$ than	
$\lambda = 0.42$ veh/hr	0.0225 for 35 mph	
$\mu = 1047$ veh/hr	$\rho =$	0.0004 not satisfied

STORAGE LENGTH CALCULATION

Turn Demand Volume:	
Table 1 Condition:	
Avg # of veh/cycle:	
Storage Length:	feet

RESULTS

A left turn lane is not required.



Left-Turn Lane Warrant Analysis

Two-Lane Highways

Based on PennDOT Publication 46 (October 2010 Edition), Section 11.17,

PROJECT INFORMATION

Project Number:	ESII.A.0000
Intersection:	Darby-Paoli Road & Site Driveway
Movement:	Left Turns to Site Driveway
Analysis Period:	2020 Projected (Build) Conditions - PM Peak Hour
Analyst:	EMM

INPUTS

	Volume	Truck %	Terrain Type	T	PCE Volume
Advancing Volume (V_A) =	196	1%	Rolling	1.015	199
Opposing Volume (V_O) =	425	1%	Rolling	1.015	431
Number of Left Turns =	1	2%	Rolling	1.03	1
Speed Limit =	35		Type of Control:	Unsignalized	
Proportion of Left Turns =	0.5%		Cycle Length:	60	sec.

WARRANT CALCULATION

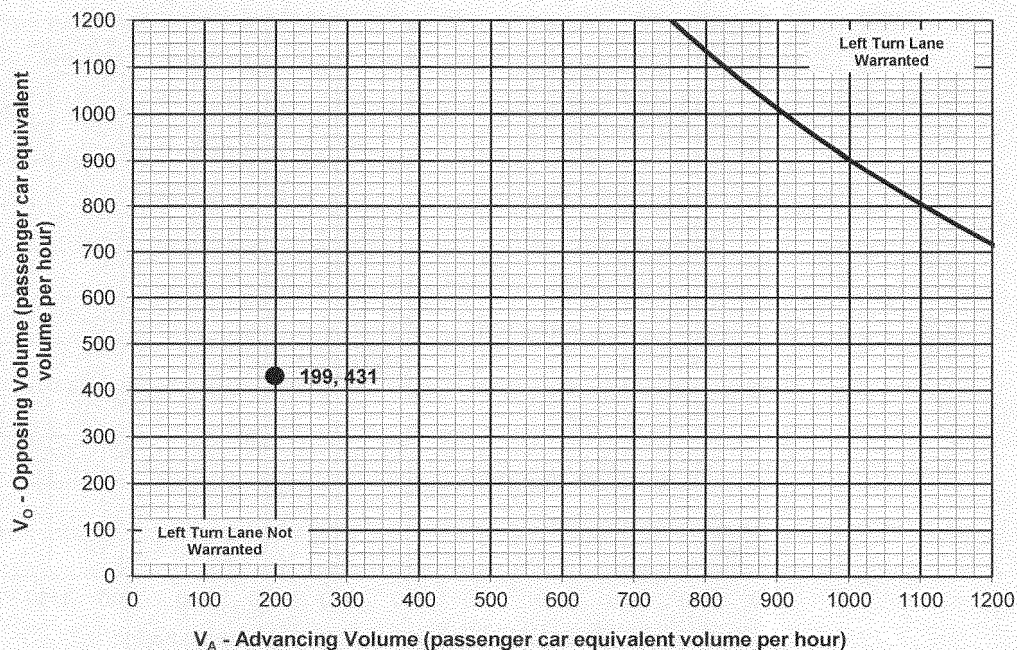
$t_w = 1.85$ sec	Limiting advancing volume =	1606
$t_A = 18.09$ sec		
$t_{\text{median}} = 12.06$ sec	Left turn lane warrants are for $p >$ than	
$\lambda = 0.31$ veh/hr	0.0225 for 35 mph	
$\mu = 890$ veh/hr	$p =$	0.0003 not satisfied

STORAGE LENGTH CALCULATION

Turn Demand Volume:
Table 1 Condition:
Avg # of veh/cycle:
Storage Length: feet

RESULTS

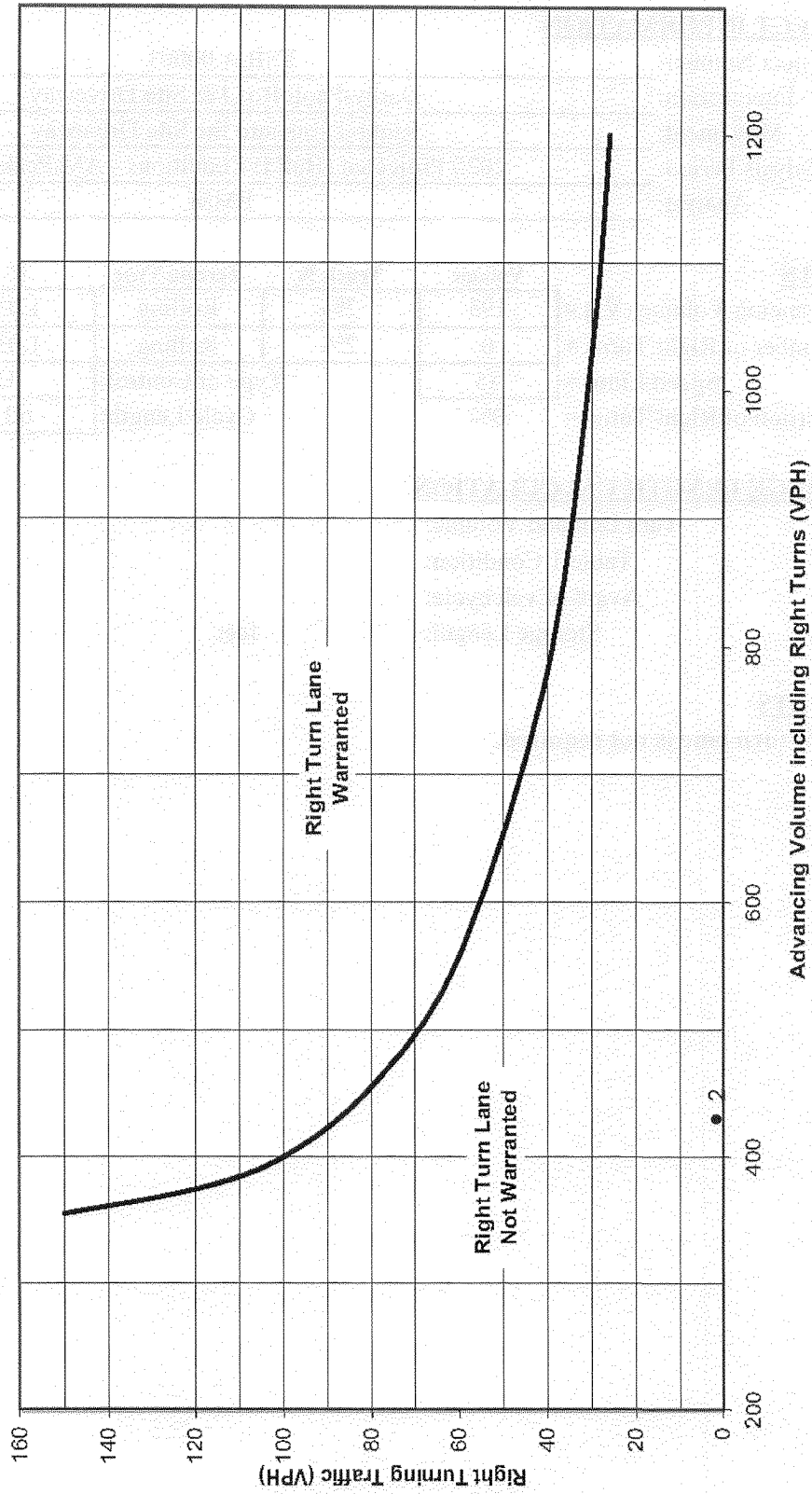
A left turn lane is not required.



Darby-Paoli Road & Site Driveway

Right-Turns into the Site Driveway

Figure 9. Warrant for right turn lanes on two-lane roadways (40 mph or lower speeds, unsignalized and signalized intersections)



1. 2020 Projected AM - 199 approach total, 0 right turns - NOT MET
2. 2020 Projected PM - 431 approach total, 3 right turns - NOT MET

Right-Turn Lane Warrant Analysis

Two-Lane Highways

Based on PennDOT Publication 46 (October 2010 Edition), Section 11.17

PROJECT INFORMATION

Project Number:	ESII.A.00001
Intersection:	Darby-Paoli Road & Site Driveway
Movement:	Right-Turns into the Site Driveway
Analysis Period:	2020 Projected (Build) Conditions - AM Peak Hour
Analyst:	EMM

INPUTS

	Volume	Truck %	Terrain Type	T	PCE Volume
Advancing Volume (V_A) =	193	2%	Rolling	1.03	199
Number of Right Turns =	0	2%	Rolling	1.03	0
Speed Limit =	35		Type of Control:	Unsignalized	
Proportion of Right Turns =	0%		Cycle Length:	60	sec.

STORAGE LENGTH CALCULATION

Turn Demand Volume:

Table 1 Condition:

Avg # of veh/cycle:

Storage Length:

feet

RESULTS

A right-turn lane is not required.

Right-Turn Lane Warrant Analysis

Two-Lane Highways

Based on PennDOT Publication 46 (October 2010 Edition), Section 11.17

PROJECT INFORMATION

Project Number: ESII.A.00001
Intersection: Darby-Paoli Road & Site Driveway
Movement: Right-Turns into the Site Driveway
Analysis Period: 2020 Projected (Build) Conditions - PM Peak Hour
Analyst: EMM

INPUTS

	Volume	Truck %	Terrain Type	T	PCE Volume
Advancing Volume (V_A) =	425	1%	Rolling	1.015	431
Number of Right Turns =	3	2%	Rolling	1.03	3
Speed Limit =	35		Type of Control:	Unsignalized	
Proportion of Right Turns =	1%		Cycle Length:	60	sec.

STORAGE LENGTH CALCULATION

Turn Demand Volume:

Table 1 Condition:

Avg # of veh/cycle:

Storage Length:

feet

RESULTS

A right-turn lane is not required.