Revised: February 5, 2024
November 17, 2023
TPD# BLC.00127

Est. 1989

TRAFFIC PLANNING AND DESIGN, INC.

Transportation Impact Study

Genius Kids Child Development Center

Upper Allen Township, Cumberland County

For Submission To:

Upper Allen Township

GENIUS KIDS CHILD DEVELOPMENT CENTER
TRANSPORTATION IMPACT STUDY

FOR SUBMISSION TO:

Upper Allen Township, Cumberland County, PA

Prepared For:
BL Companies
2601 Market Place, Suite 360
Harrisburg, PA 17110

Revised: February 5, 2024
November 17, 2023

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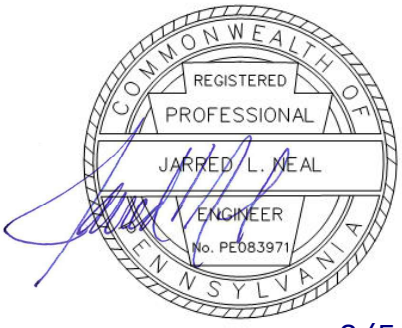

2/5/2024

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EXECUTIVE SUMMARY

The purpose of this study is to examine the potential traffic impact associated with the proposed Genius Kids Child Development Center along Old Schoolhouse Lane in Upper Allen Township, Cumberland County, PA. Based on this evaluation, the following conclusions were reached:

1. This report has been prepared in accordance with PennDOT's *Policies and Procedures for Transportation Impact Studies*, found in PennDOT's *Publication 282*, *Appendix A*, dated September 2022 and with Upper Allen Township's Subdivision and Land Development Ordinance § 220-3.7.F.
2. The project scope and the extent of the study area were based on the contents of the TIS Scoping Memo and the associated feedback from representatives of Upper Allen Township. The approved study area intersections included in this TIA are as follows:
    - Cumberland Parkway & Old Schoolhouse Lane (West);
    - Cumberland Parkway & Old Schoolhouse Lane (East);
    - Old Schoolhouse Lane & Proposed Site Driveways.
3. The proposed development is located on the northern side of Old Schoolhouse Lane, in the vacant parcel east of the Wylie Dental Group building. The project involves construction of an 8,500 square foot Genius Kids Child Development Center.
4. Access to the development is proposed via two (2) full-movement driveway connections to Old Schoolhouse Lane.
5. The available sight distances at the proposed site driveways to Old Schoolhouse Lane exceed PennDOT's sight distance criteria.
6. Based on ITE trip generation data, the proposed development is anticipated to generate **53 new vehicle-trips** during the weekday A.M. peak hour and **53 new vehicle-trips** during the weekday P.M. peak hour.
7. Capacity analyses were conducted to determine the quality of operation (LOS) at the study area intersections for the 2023 existing, 2025 and 2035 base (no-build), and 2025 and 2035 projected (build) conditions. The capacity analyses were conducted in accordance with the standards contained in Appendix A - Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permits of PennDOT *Publication 282,* dated September 2022.
8. 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
OVERALL INTERSECTION LEVEL OF SERVICE SUMMARY

Intersection	Time Period	Overall Intersection Level of Service (ILOS)					Meets LOS Requirements?
		Existing	2025 Buildout Year		2035 Horizon Year		
			Base	Projected	Base	Projected	
Cumberland Parkway & Old Schoolhouse Lane (West)	A.M.	A (0.3)	A (0.3)	A (0.7)	A (0.3)	A (0.7)	YES
	P.M.	A (0.3)	A (0.3)	A (0.7)	A (0.3)	A (0.7)	YES
Cumberland Parkway & Old Schoolhouse Lane (East)	A.M.	A (0.3)	A (0.3)	A (0.8)	A (0.3)	A (0.8)	YES
	P.M.	A (0.4)	A (0.4)	A (0.8)	A (0.4)	A (0.8)	YES
Old Schoolhouse Lane & Proposed Site Driveway (West)	A.M.	--	--	A (4.0)	--	A (3.9)	YES
	P.M.	--	--	A (3.8)	--	A (3.8)	YES
Old Schoolhouse Lane & Proposed Site Driveway (East)	A.M.	--	--	A (1.3)	--	A (1.3)	YES
	P.M.	--	--	A (1.4)	--	A (1.3)	YES

Base = No-Build scenario *Projected = Build scenario with development*

9. Under 2025 and 2035 projected (build) conditions, the study intersection will operate in accordance with the standards contained in Appendix A - Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permits of PennDOT *Publication 282,* dated September 2022.

10. Traffic Planning and Design Inc. (TPD) recommends the following roadway improvements as outlined at the study area intersections:

Cumberland Parkway & Old Schoolhouse Lane (West)

- No improvements are necessary.

Cumberland Parkway & Old Schoolhouse Lane (East)

- No improvements are necessary.

Old Schoolhouse Lane & Proposed Site Driveways

- Design the site driveways as full-movement driveways in accordance with Township standards.
- Provide one entering lane and one exiting lane.
- Provide a "Stop" sign, (PennDOT designation R1-1) on exiting driveway approaches.
- Provide and perpetually maintain required sight lines per Township standards.
- Provide sidewalk along the property frontage to Old Schoolhouse Lane and provide crosswalks and ADA ramps at the proposed site driveways.

As part of the Township's Land Development process, the applicant will coordinate and fund the implementation of the recommended roadway improvements. Additionally, all improvements will be constructed to accommodate non-motorized access/circulation and be ADA-compliant unless otherwise approved by the Township.

INTRODUCTION

Traffic Planning and Design, Inc. (TPD) has completed a Transportation Impact Study (TIS) for the proposed Genius Kids Child Development Center in Upper Allen Township, Cumberland County, Pennsylvania. As shown in **Figure 1**, the proposed development is located on the northern side of Old Schoolhouse Lane, in the vacant parcel east of the Wylie Dental Group building. As shown in **Figure 2**, the project involves construction of an 8,500 square foot Genius Kids Child Development Center. Access to the development is proposed via two (2) full movement driveways to Old Schoolhouse Lane.

This report has been prepared in accordance with PennDOT's *Policies and Procedures for Transportation Impact Studies*, found in PennDOT's Publication 282, Appendix A, dated September 2022 and in accordance with Upper Allen Township Subdivision and Land Development Ordinance § 220-3.7.F. The project scope and the extent of the study area were based on the contents of the TIS Scoping Memo and the associated feedback from representatives of Upper Allen Township during the scoping process. All relevant correspondence pertaining to this project has been included in **Appendix A**.

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**.

TABLE 1
ROADWAY CHARACTERISTICS WITHIN STUDY AREA

Roadway	Ownership	Functional Classification/ Roadway Type	Predominant Directional Orientation	Posted Speed Limit
Cumberland Parkway	Township	Minor Collector	East-West	35 mph
Old Schoolhouse Lane	Township	Local Road	East-West	25 mph

Details of the existing intersection controls, lane configurations, lane widths, and approach grades, as well as photographs of the study area intersections are included in **Appendix B**.

Land Use Context

In Publication 10X (Design Manual Part IX, Appendix B), there is guidance pertaining to defining the land use context(s) for a given area. Based upon review of this information, the land uses surrounding the proposed site best fits the **Suburban Neighborhood** designation, as described below:

> ***Suburban Neighborhood***, *"Predominantly low-density residential communities with houses typically arranged along a curvilinear system of streets with limited connectivity to regional road networks. Neighborhoods can include community facilities (schools, churches, recreation) and some small businesses or offices."*

Roadway Type

In Section 1.2 of the Design Manual, Part 2, there is guidance pertaining to defining the transportation context(s) for a given area. Comparing the existing condition roadway characteristics to the various options presented in Table 1.2 of the Design Manual, Part 2, the study area roadways best fit the following categories, as described below:

Neighborhood Collector, traffic volumes of 6,000 or less vehicles per day, intersection spacing of 300 to 660 feet, a desired operating speed of 25-35 mph, and a description as follows: "*Often similar in appearance to local roadways. Typically classified as "Minor Collector".*""

- Cumberland Parkway

Local Road, traffic volumes of 3,000 or less vehicles per day, intersection spacing of 200 to 660 feet, and a desired operating speed of 20-30 mph.

- Old Schoolhouse Lane

Bicycle and Pedestrian Facilities

Based on observations during field visits at the study area, paved shoulders and/or travel lanes currently accommodate pedestrian and bicycle traffic in the vicinity of the development. As part of the proposed development, sidewalks are to be provided along the property frontage of Old Schoolhouse Lane and crosswalks and ADA ramps are to be provided at the proposed site driveways.

Mass Transit Facilities

Bus service in Cumberland County is provided via Rabit Transit, there are no bus stops in the study area. However, Winding Hill Park and Ride, served by route 15N, exists within a mile to the east of the proposed site and provides service between Harrisburg and Gettysburg.

EXISTING TRAFFIC CONDITIONS

Manual Turning Movement Counts

Manual traffic counts were conducted on 15-minute intervals during the weekday morning (6:00 to 9:00 A.M.) and weekday evening (3:00 to 6:00 P.M.) peak periods. Data pertaining to heavy vehicles, pedestrians and transit vehicles were observed during the manual counts. Peak hours and count dates for the study area intersections are identified in **Table 2**.

TABLE 2
MANUAL TRAFFIC COUNT INFORMATION

Intersection	Date of Traffic Counts	Time Period	Intersection Peak Hour[1]
Cumberland Parkway & Old Schoolhouse Lane (West)	Thursday October 12, 2023	Weekday A.M.	7:30 to 8:30 A.M.
		Weekday P.M.	4:15 to 5:15 P.M.
Cumberland Parkway & Old Schoolhouse Lane (East)	Thursday October 12, 2023	Weekday A.M.	7:30 to 8:30 A.M.
		Weekday P.M.	4:30 to 5:30 P.M.
Old Schoolhouse Lane & Proposed Site Driveways	Thursday October 12, 2023	Weekday A.M.	7:45 to 8:45 A.M.
		Weekday P.M.	4:30 to 5:30 P.M.

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

The existing condition traffic volumes for the weekday A.M. and weekday P.M. peak hours are illustrated in **Figure 3**. Manual traffic count data sheets are contained in **Appendix C**.

BASE (NO-BUILD) CONDITIONS

Annual Background Growth

A background growth factor for the roadways in the study area was developed based on growth factors obtained from the PennDOT Bureau of Planning and Research (BPR) for September 2023 to July 2024. The PennDOT BPR suggests using a background growth trend factor of 0.54% per year in Cumberland County for urban non-interstate roadways. As such, the background growth factor was applied annually to yield an overall growth percentage of 1.01% (0.54 per year for 2 years) for 2025 opening year and of 1.07% (0.54 per year for 12 years) for 2035 horizon year.

Nearby Proposed Developments

No background developments were identified during the scoping process.

Base condition traffic volumes for the opening year 2025 and horizon year 2035 conditions for the weekday A.M. and P.M. peak hours are shown in **Figures 4 and 5**, respectively. Traffic volume development worksheets are contained in **Appendix D**.

SCHEDULED ROADWAY IMPROVEMENTS

Programmed Improvements

There are no proposed improvement projects at the study intersection.

Nearby Development Improvements

No background developments and/or improvements were identified during the scoping process.

PROPOSED SITE ACCESS

Access to the development is proposed via two (2) full-movement driveway connections to Old Schoolhouse Lane.

Sight Distance Analysis

A sight distance analysis was prepared for the proposed site driveway locations. In general, recommended safe sight distances depend upon the posted speed limit and roadway grades. The existing sight distances at the proposed driveway were measured in accordance with PennDOT Publication 282 Highway Occupancy Permit Guidelines and compared to PennDOT's and the Township'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 3 shows the measured and PennDOT's/Township's acceptable sight distances (SSSD) for vehicles entering and exiting the site.

TABLE 3
SIGHT DISTANCE ANALYSIS

Movement	Direction	Posted Speed (mph)	Grade[1]	Sight Distances (feet)	
				SSSD	EXIST
Old Schoolhouse Lane & Proposed Site Access (West)					
Exiting Movements	To the left	25	-1%	148′	**250′**
	To the right	25	+1%	145′	**500′+**
Entering Left Turns	Approaching same direction	25	+1%	145′	**500′+**
	Approaching opposite direction	25	-1%	148′	**280′**
Old Schoolhouse Lane & Proposed Site Access (East)					
Exiting Movements	To the left	25	-1%	148′	**165′**
	To the right	25	+1%	145′	**500′+**
Entering Left Turns	Approaching same direction	25	+1%	145′	**500′+**
	Approaching opposite direction	25	-1%	148′	**165′**

EXIST = Existing (measured) Sight Distance SSSD = PennDOT & Township Safe Stopping Sight Distance
1 = Roadway Grade Approaching Access

As shown in **Table 3**, the measured sight distances at the study intersection exceed applicable PennDOT and Township safe stopping sight distance (SSSD). Sight distance measurements are provided in **Appendix B**.

TRIP GENERATION

The trip generation rates for the proposed development were obtained from the manual *Trip Generation*, 11th Edition, an Institute of Transportation Engineers (ITE) Informational Report. 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.

The data for Land Use Code 565 (Day Care Center) 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.

The following should be noted with respect to the trip generation methodology:

- Based on the information provided in the manual *Trip Generation*, not all of the trips generated by the site will be "new" to the nearby roadway system. In addition to the "new trips" generated by the development, there will be "pass-by trips", which are trips that are drawn from the passing traffic stream and do not add trips to the adjacent roadways. Pass-by trip percentages were utilized as specified in the appendices of the manual *Trip Generation*, Eleventh Edition, 2021.
- Published data related to pass-by percentages are not available for Land Use Code #565 (Day Care Center) during the weekday A.M. peak hour. However, given the trip characteristics of a typical Day Care Center with parent drop-off/pick-up to and from there place of employment, etc. it is reasonable to assume that pass-by trips will occur during the weekday A.M. peak hour as well. Since ITE provides a weekday P.M. pass-by rate of 44% it is reasonable to assume that pass-by trips occur at the same rate during the weekday A.M. peak hour.

Table 4 shows the trip generation rates and directional split for the analyzed time periods.

TABLE 4
ITE TRIP GENERATION DATA

Land Use	ITE #	Time Period	Equation	Entering %	Exiting %	Pass-By %
Day Care Center	565	Average Weekday	T = 47.62*(X)	50%	50%	--
		Weekday A.M. Peak Hour	T = 11.00*(X)	53%	47%	44%[1]
		Weekday P.M. Peak Hour	T = 11.12*(X)	47%	53%	44%

T = number of site-generated vehicular trips
X = independent variable (ksf of Gross Floor Area)
1 = ITE pass-by rates not published. See TPD justification above.

The calculated trip generation for the proposed development for the full build-out year is shown in **Table 5**.

TABLE 5
TRIP GENERATION SUMMARY

Time Period	Total Trips			Pass-by Trips			New Trips		
	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Average Weekday	405	202	203	--	--	--	--	--	--
Weekday A.M. Peak Hour	94	50	44	41	22	19	53	28	25
Weekday P.M. Peak Hour	95	44	51	42	20	22	53	24	29

Based on the trip generation analysis summarized in **Table 5**, the proposed development will generate approximately 53 new trips during the weekday A.M. peak hour and 53 new trips during the weekday P.M. peak hour at full build-out. Detailed trip generation calculations are contained in the approved scoping application provided in **Appendix A**.

TRIP DISTRIBUTION

New Trips

Trip distributions were determined based on existing traffic patterns within the study area, the most logical route of travel, and the location/configuration of the proposed site driveways. The new trips for the proposed development were distributed to the local roadway network based on the percentages shown in **Table 6** and presented graphically in **Figure 6A**.

TABLE 6
TRIP DISTRIBUTION PERCENTAGES

Direction - To/From	Assignment (To/From)	Distribution Percentage
East	via Cumberland Parkway	51%
West	via Cumberland Parkway	49%

Pass-By Trips

Pass-by trips for the /retail component of the proposed development were based on the existing traffic patterns in the vicinity of the site and the location and configuration of the site driveways. The pass-by trips for the proposed development were distributed to the local roadway network based on the percentages illustrated in **Figure 7A**.

Calculations for the proposed site trips are provided within the approved scoping memo and associated attachments in **Appendix A**. The distribution and assignment of site-generated trips for the proposed development during the weekday A.M. and weekday P.M. peak hours are shown in **Figures 6B, 7B,** and **8** for primary (new) trips, pass-by trips, and total development trips, respectively.

PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES

The site-generated trips for the proposed development were added to the 2025 and 2035 base (no-build) condition traffic volumes to develop 2025 and 2035 projected (build) condition traffic volumes. Projected condition traffic volumes for full build-out opening year 2025 and horizon year 2035 for the weekday A.M. and weekday P.M. peak hours are shown in **Figures 9** and **10**. Traffic volume development worksheets are contained in **Appendix D**.

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 7**. Delay, as it relates to level of service, is a complex measure and is dependent upon several 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 7
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 or v/c > 1.0	> 50 or v/c > 1.0

1 = Obtained from Exhibits 19-8 and 20-2 of the Transportation Research Board's Highway Capacity Manual 6th Edition

CAPACITY ANALYSIS METHODOLOGY

Capacity analyses were conducted for the weekday A.M. and P.M. peak hours at the study area intersections. These analyses were conducted according to the methodologies contained in the 6th edition *Highway Capacity Manual* (HCM) using *Synchro 11* software (Version 11.1, Build 2, Revision 9), a CUBIC/Trafficware product.

The following conditions were analyzed, as applicable:

- Existing conditions;
- 2025 Base conditions (Build-out year without development);
- 2025 Projected conditions (Build-out year with development);
- 2035 Base conditions (Analysis year without development);
- 2035 Projected conditions (Analysis year with development);

The following should be noted with respect to the capacity analyses:

- The Pennsylvania default values for two-way stop controlled intersections in a suburban land use context contained in Chapter 10 of PennDOT's *Publication 46* were utilized for the base critical headway and base follow-up headways. Worksheets related to the calculated critical and follow-up headways are included at the beginning of **Appendix E**.
- Per PennDOT standards, a heavy vehicle percentage of 2% was utilized for all turning movements to/from the proposed site access locations.

The capacity analysis worksheets are included in **Appendix E**.

PennDOT Standards

PennDOT's Transportation Impact Study Guidelines outlined in PennDOT's *Policies and Procedures for Transportation Impact Studies*, found in PennDOT's Publication 282, Appendix A, dated September 2022 contain the following criteria regarding levels of service:

- Page 32 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. If the intersection level of service meets the level of service requirements, applicants may still be required to provide mitigation to address critical lanes or approaches. For locations where the level of service of the design horizon year without the development is LOS F and with development, the delay increases more than 10 seconds, the remedies shall provide an estimated delay which will be no worse than the delay for the design year without the development.
- Page 33 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 34 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 35 of the Guidelines states new signalized or unsignalized intersections 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.

Upper Allen Township Standards

Upper Allen Township's Transportation Impact Study Guidelines outlined in Upper Allen Township's Subdivision and Land Development Ordinance § 220-3.7.F contain the following criteria regarding levels of service:

» Section (2)[c] of the Guidelines state that the study should assess impacts to adjacent roadways and identify improvements that may be required to maintain a level of service rating of D on the affected roadway network. Level of service E or F indicate the study should identify specific improvements to restore LOS to a rating of D or better.

LEVELS OF SERVICE IN THE STUDY AREA

Level of service (LOS) matrices for the study area intersections are shown in **Table 8** for the weekday A.M. and **Table 9** for the weekday P.M. peak hours.

TABLE 8
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY – AM PEAK HOUR

Intersection	Movement	2023 Existing	2025 Opening Year		2035 Horizon Year	
			Base	Projected	Base	Projected
Cumberland Parkway & Old Schoolhouse Lane (West)	WB L/T	A	A	A	A	A
	NB L/R	B	B	B	B	B
	ILOS	**A (0.3)**	**A (0.3)**	**A (0.7)**	**A (0.3)**	**A (0.7)**
Cumberland Parkway & Old Schoolhouse Lane (East)	WB L/T	A	A	A	A	A
	NB L/R	B	B	B	B	B
	ILOS	**A (0.3)**	**A (0.3)**	**A (0.8)**	**A (0.3)**	**A (0.8)**
Old Schoolhouse Lane & Proposed Site Driveway (West)	EB L/T	--	--	A	--	A
	SB L/R	--	--	A	--	A
	ILOS	**--**	**--**	**A (4.0)**	**--**	**A (3.9)**
Old Schoolhouse Lane & Proposed Site Driveway (East)	EB L/T	--	--	A	--	A
	SB L/R	--	--	A	--	A
	ILOS	**--**	**--**	**A (1.3)**	**--**	**A (1.3)**

Base = No-Build scenario, Projected = Build scenario
ILOS = Overall Intersection Level of Service; Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.

TABLE 9
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY – PM PEAK HOUR

Intersection	Movement	2023 Existing	2025 Opening Year		2035 Horizon Year	
			Base	Projected	Base	Projected
Cumberland Parkway & Old Schoolhouse Lane (West)	WB L/T	A	A	A	A	A
	NB L/R	B	B	B	B	B
	ILOS	**A (0.3)**	**A (0.3)**	**A (0.7)**	**A (0.3)**	**A (0.7)**
Cumberland Parkway & Old Schoolhouse Lane (East)	WB L/T	A	A	A	A	A
	NB L/R	B	B	B	B	B
	ILOS	**A (0.4)**	**A (0.4)**	**A (0.8)**	**A (0.4)**	**A (0.8)**
Old Schoolhouse Lane & Proposed Site Driveway (West)	EB L/T	--	--	A	--	A
	SB L/R	--	--	A	--	A
	ILOS	**--**	**--**	**A (3.8)**	**--**	**A (3.8)**
Old Schoolhouse Lane & Proposed Site Driveway (East)	EB L/T	--	--	A	--	A
	SB L/R	--	--	A	--	A
	ILOS	**--**	**--**	**A (1.4)**	**--**	**A (1.3)**

Base = No-Build scenario, Projected = Build scenario
ILOS = Overall Intersection Level of Service; Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.

As shown in **Tables 8 and 9**, under the 2025 and 2035 projected (build) conditions, the study area intersections will operate in accordance with the standards contained in Appendix A – Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permits of PennDOT Publication 282, dated September 2022 and will meet Upper Allen Township SALDO requirements.

95TH PERCENTILE QUEUE ANALYSIS

Queue analyses were conducted at the study area intersections using *Synchro 11* software and reporting the HCM 6th Edition 95th percentile queue lengths. The queue analysis results are summarized in **Table 10** for the weekday AM and weekday PM peak hours.

TABLE 10
HCM 95TH PERCENTILE QUEUE ANALYSIS

Movement	Available Storage Length[1]	2025 Base (No-Build)		2025 Projected (Build)		2035 Base (No-Build)		2035 Projected (Build)	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Cumberland Parkway & Old Schoolhouse Lane (West)									
WB L/T	300′	0′	0′	0′	0′	0′	0′	0′	0′
NB L/R	500′+	3′	5′	8′	10′	3′	5′	8′	13′
Cumberland Parkway & Old Schoolhouse Lane (East)									
WB L/T	460′	3′	3′	5′	5′	3′	3′	5′	5′
NB L/R	200′+	3′	3′	5′	5′	3′	3′	5′	5′
Old Schoolhouse Lane & Proposed Site Driveway (West)									
EB L/T	**250′+**	--	--	3′	3′	--	--	3′	3′
SB L/R	**100′+**	--	--	3′	3′	--	--	3′	3′
Old Schoolhouse Lane & Proposed Site Driveway (East)									
EB L/T	**75′+**	--	--	0′	0′	--	--	0′	0′
SB L/R	**100′+**	--	--	0′	0′	--	--	0′	0′

*Base = No-Build Scenario Projected = Build Scenario Existing Storage/**Proposed Storage***
1 =Available storage measured to nearest public intersection.

As shown in **Table 10**, the 2025 and 2035 projected (build) condition queues will be accommodated within the existing/proposed storage length. Queue analysis worksheets are included with the capacity analysis worksheets provided in **Appendix E.**

AUXILIARY TURN LANE ANALYSIS

Methodology

TPD evaluated auxiliary turn lane warrants at the site access intersection of Old Schoolhouse Lane and the Proposed Western Site Driveway. The warrant analysis methodology contained within Chapter 11 of PennDOT's *Publication 46*, Section 11.17 was utilized for this evaluation. The auxiliary turn lane warrant analysis worksheets are contained in **Appendix F**.

Findings

Table 11 summarizes the results of the auxiliary turn lane analysis at the site access intersections.

TABLE 11
AUXILIARY TURN LANE ANALYSIS SUMMARY

Intersection	Auxiliary Lane	Peak Hour	Warrant Satisfied?	Required Lane Length	Proposed Lane Length
Old Schoolhouse Lane & Proposed Site Driveway (West)	WB Right-Turn Lane	A.M.	No	--	--
		P.M.	No	--	--
	EB Left-Turn Lane	A.M.	No	--	--
		P.M.	No	--	--
Old Schoolhouse Lane & Proposed Site Driveway (East)	WB Right-Turn Lane	A.M.	No	--	--
		P.M.	No	--	--
	EB Left-Turn Lane	A.M.	No	--	--
		P.M.	No	--	--

RECOMMENDATIONS AND CONCLUSIONS

The recommendations and conclusions for this Transportation Impact Study (TIS) are listed within the Executive Summary of this report.

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FIGURE 1

LOCATION MAP

LEGEND

PROPERTY LINE
SIGN
X X 4' PERIMETER FENCING
STANDARD DUTY ASPHALT PAVEMENT
CONCRETE
CLEAR SIGHT TRIANGLE AREA
SITE LIGHTING

SIGN LEGEND

NO.	DOT NO./ SIGN SIZE	LEGEND
A	R1-1 24"X24"	STOP
B	R7-8D 12"X18"	
C	R7-8A 6"X12"	VAN ACCESSIBLE
D	R7-8F 12"X18"	
E	R7-8F 18"X12"	

ZONING INFORMATION

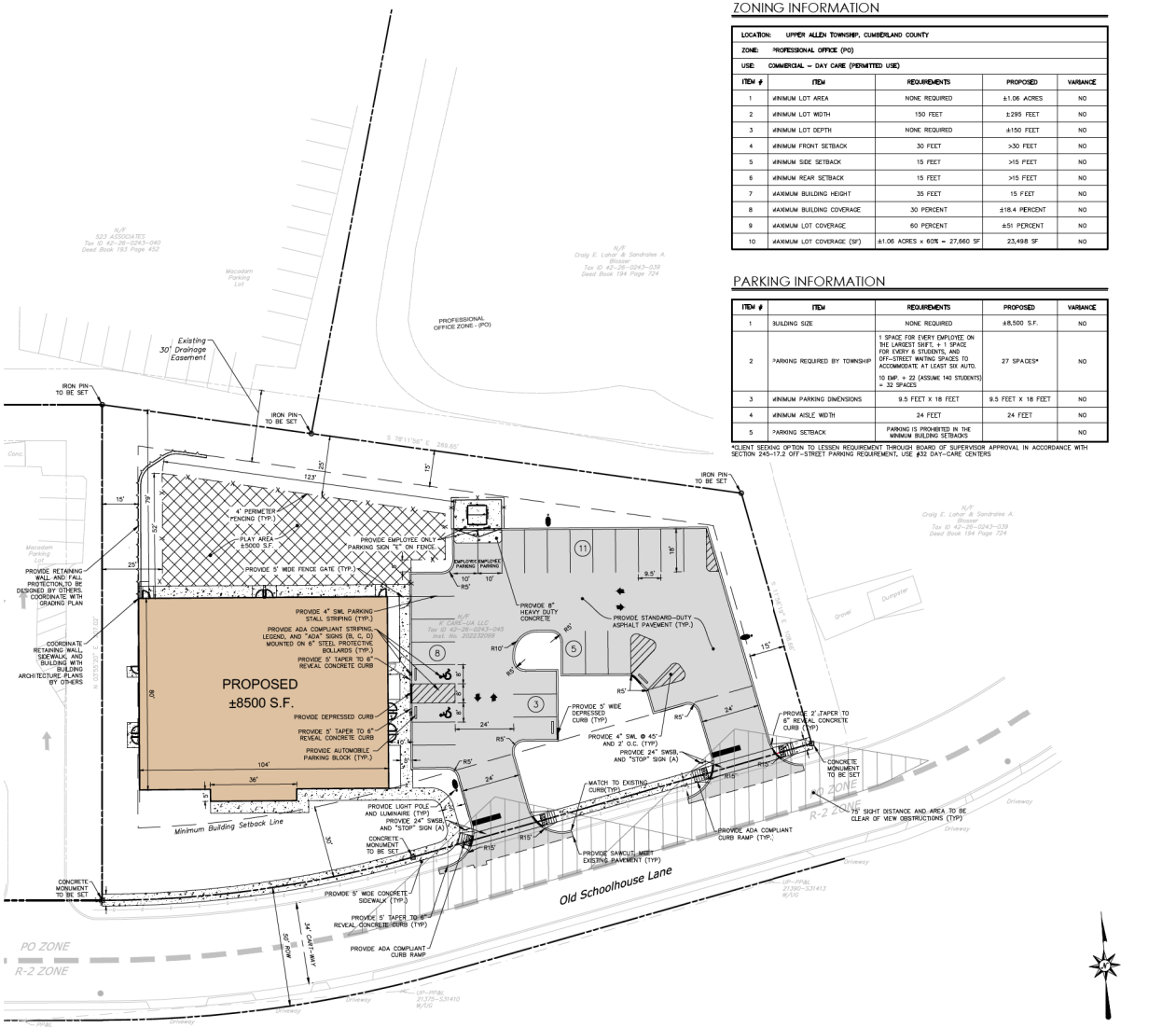
LOCATION:	UPPER ALLEN TOWNSHIP, CUMBERLAND COUNTY
ZONE:	PROFESSIONAL OFFICE (PO)
USE:	COMMERCIAL – DAY CARE (PERMITTED USE)

ITEM #	ITEM	REQUIREMENTS	PROPOSED	VARIANCE
1	MINIMUM LOT AREA	NONE REQUIRED	±1.06 ACRES	NO
2	MINIMUM LOT WIDTH	150 FEET	±295 FEET	NO
3	MINIMUM LOT DEPTH	NONE REQUIRED	±150 FEET	NO
4	MINIMUM FRONT SETBACK	30 FEET	>30 FEET	NO
5	MINIMUM SIDE SETBACK	15 FEET	>15 FEET	NO
6	MINIMUM REAR SETBACK	15 FEET	>15 FEET	NO
7	MAXIMUM BUILDING HEIGHT	35 FEET	15 FEET	NO
8	MAXIMUM BUILDING COVERAGE	30 PERCENT	±18.4 PERCENT	NO
9	MAXIMUM LOT COVERAGE	60 PERCENT	±51 PERCENT	NO
10	MAXIMUM LOT COVERAGE (SF)	±1.06 ACRES x 60% = 27,660 SF	23,498 SF	NO

PARKING INFORMATION

ITEM #	ITEM	REQUIREMENTS	PROPOSED	VARIANCE
1	BUILDING SIZE	NONE REQUIRED	±8,500 S.F.	NO
2	PARKING REQUIRED BY TOWNSHIP	1 SPACE FOR EVERY EMPLOYEE ON THE LARGEST SHIFT, + 1 SPACE FOR EVERY 6 STUDENTS, AND OFF-STREET WAITING SPACES TO ACCOMMODATE AT LEAST SIX AUTO. 10 EMP. + 22 (ASSUME 140 STUDENTS) = 32 SPACES	27 SPACES*	NO
3	MINIMUM PARKING DIMENSIONS	9.5 FEET X 18 FEET	9.5 FEET X 18 FEET	NO
4	MINIMUM AISLE WIDTH	24 FEET	24 FEET	NO
5	PARKING SETBACK	PARKING IS PROHIBITED IN THE MINIMUM BUILDING SETBACKS		NO

*CLIENT SEEKING OPTION TO LESSEN REQUIREMENT THROUGH BOARD OF SUPERVISOR APPROVAL IN ACCORDANCE WITH SECTION 245-17.2 OFF-STREET PARKING REQUIREMENT, USE #32 DAY-CARE CENTERS



811 Know what's below. Call before you dig.

PENNSYLVANIA ACT 287 (1974) AS AMENDED BY PENNSYLVANIA ACT 199 (2004) REQUIRES NO LESS THAN THREE (3) WORKING DAYS AND NO MORE THAN (10) WORKING DAYS NOTICE TO UTILITIES BEFORE YOU EXCAVATE, DRILL, BLAST OR DEMOLISH. PA ONE-CALL SERIAL NO. 20231515029

FOR PERMITTING PURPOSES ONLY NOT RELEASED FOR CONSTRUCTION

Architecture
Engineering
Environmental
Land Surveying
BL Companies
2601 Market Place
Suite 310
Harrisburg, PA 17110
(717) 763-1668

GENIUS KIDS

PRELIMINARY/FINAL LAND DEVELOPMENT PLAN
PROPOSED K CARE - UA (GENIUS KIDS)
OLD SCHOOLHOUSE LANE
UPPER ALLEN TOWNSHIP, CUMBERLAND COUNTY, PA

REVISIONS
No. Date Desc.
1 07/27/2023 PER TOWNSHIP SKETCH PLAN COMMENTS

Designed C.L.H.
Drawn N.M.
Reviewed A.J.B.
Scale 1" = 20'
Project No. 2200207
Date 07/31/23
CAD File: SP2200207.01

Title
SITE PLAN

Sheet No.
SP-1
No.04of 19

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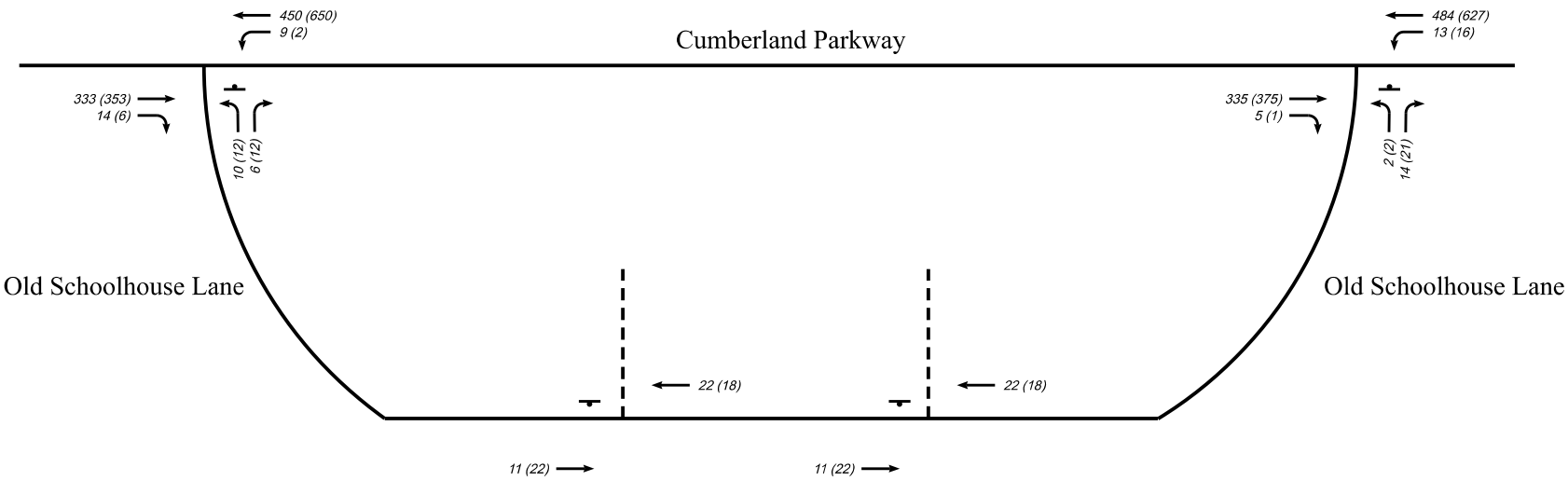
FIGURE 2

SITE PLAN



KEY:

STOP CONTROLLED

PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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FIGURE 3

2023 EXISTING TRAFFIC VOLUMES
AM (PM)

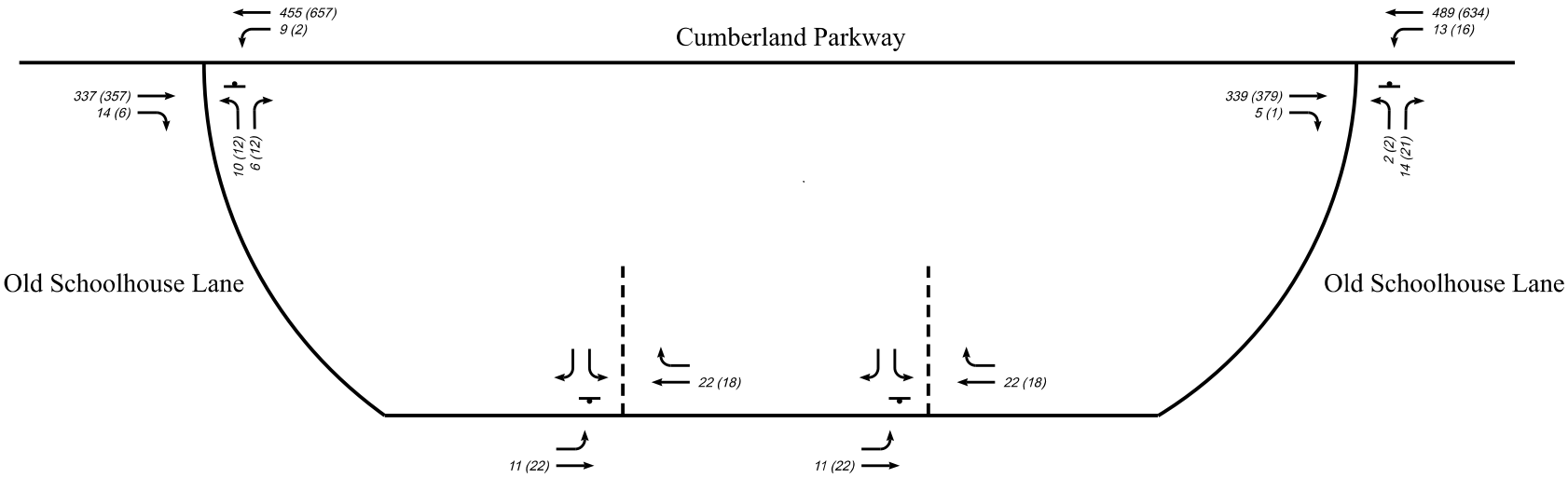

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FIGURE 4

2025 BASE (NO-BUILD) PEAK HOUR VOLUMES
AM (PM)

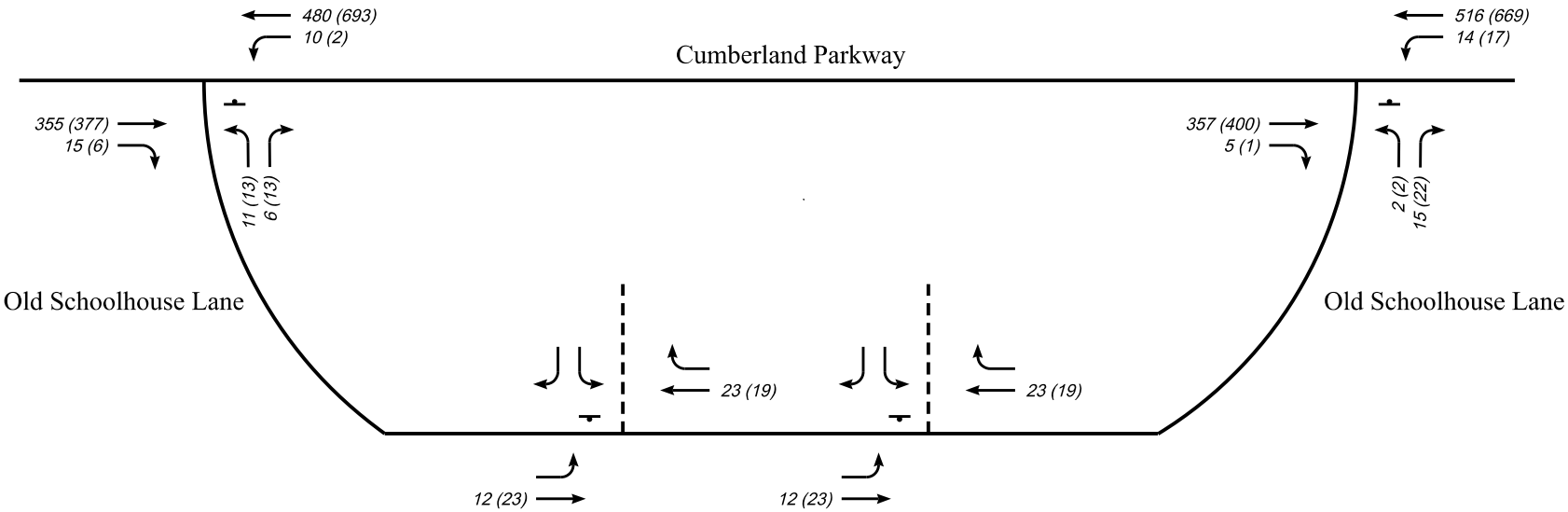

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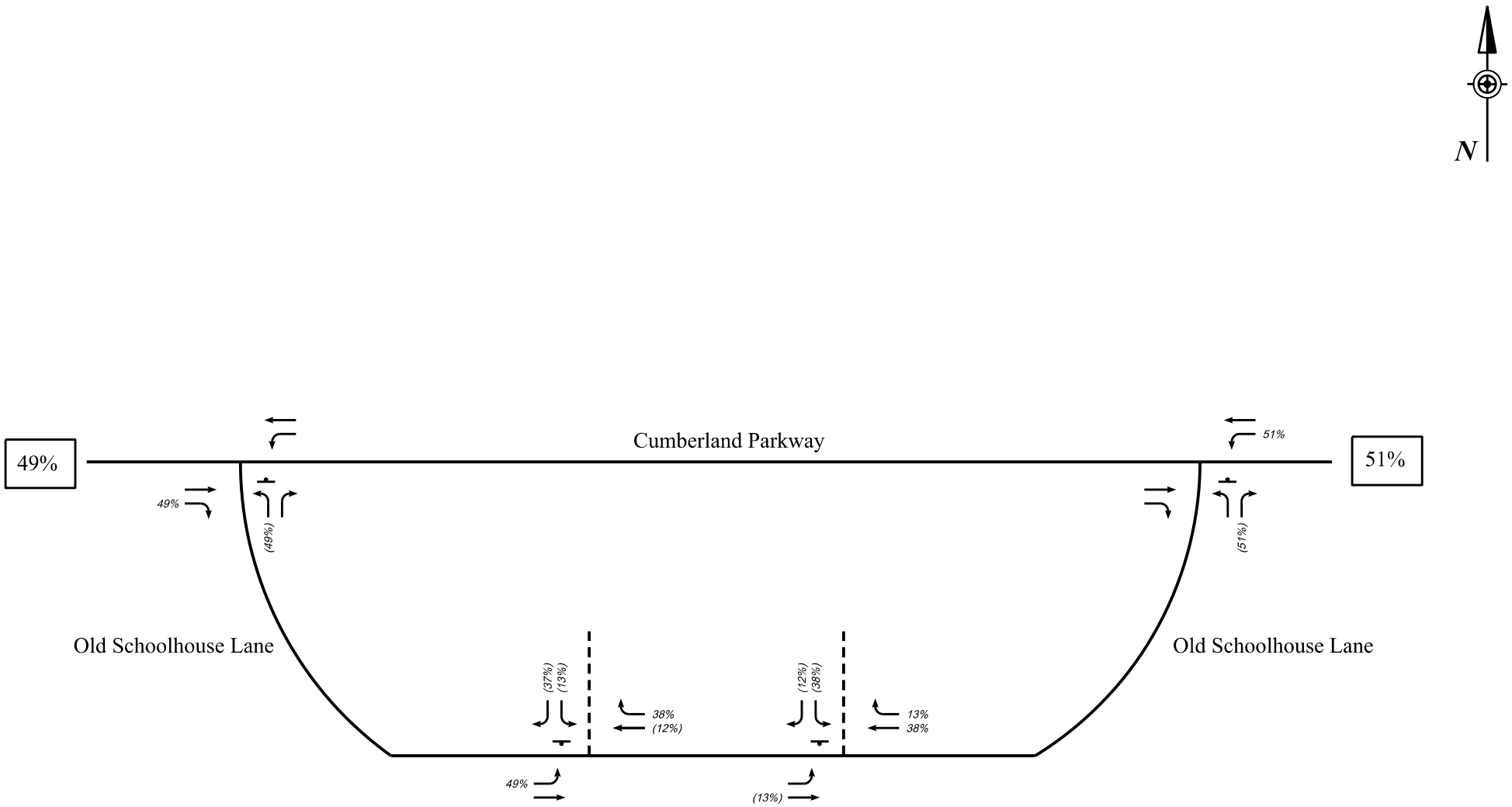
FIGURE 5

2035 BASE (NO-BUILD) PEAK HOUR VOLUMES
AM (PM)



KEY:

STOP CONTROLLED

PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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FIGURE 6A

SITE TRIP DISTRIBUTION PERCENTAGES
ENTER (EXIT)

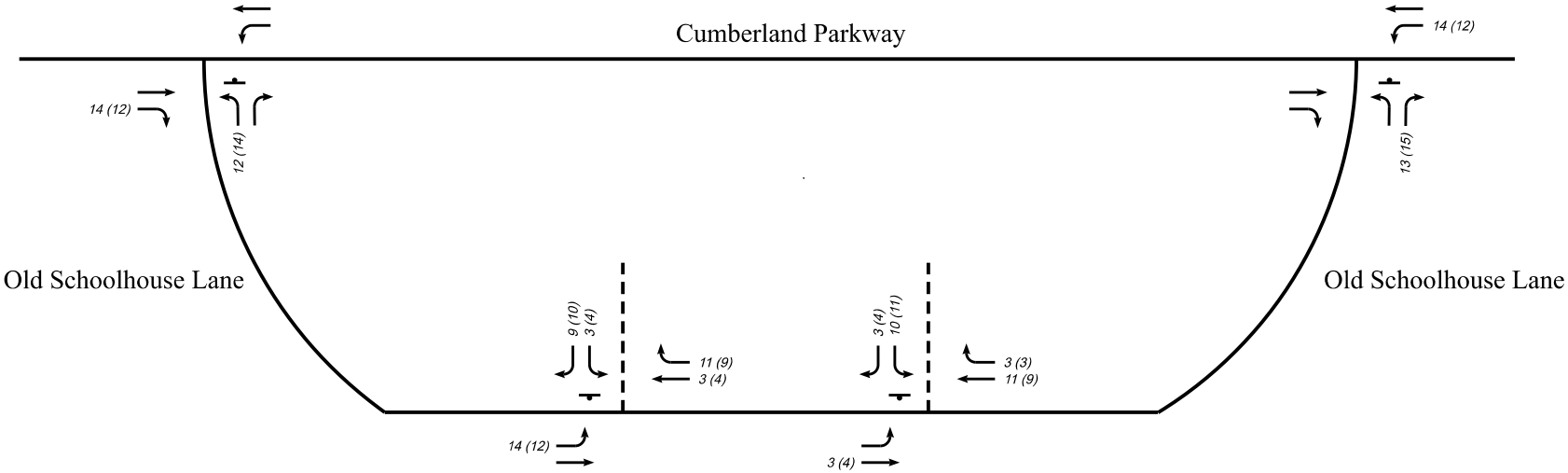

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FIGURE 6B

NEW SITE TRIPS
AM (PM)

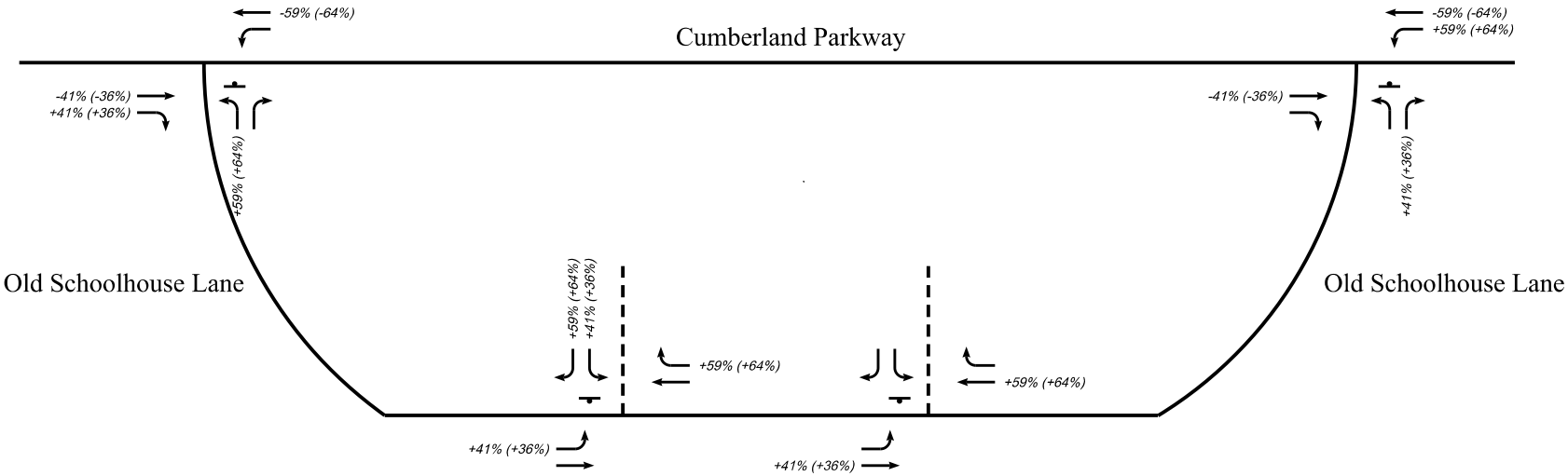

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FIGURE 7A

PASS-BY TRIP DISTRIBUTION
AM (PM)

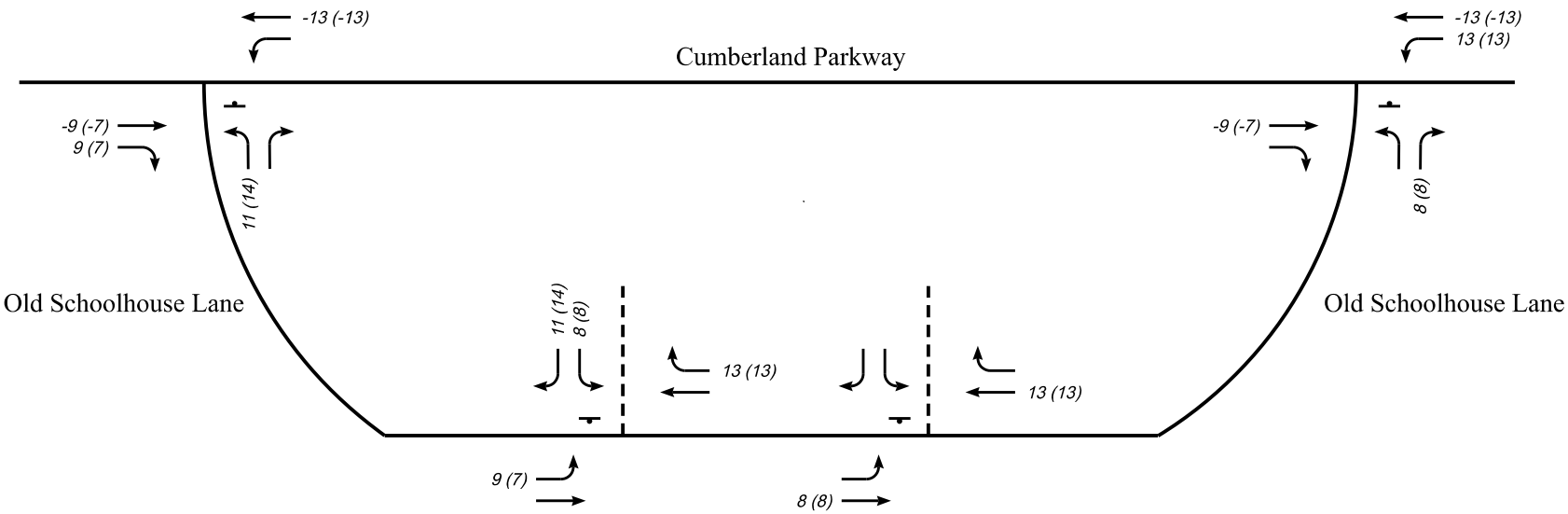

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FIGURE 7B

PASS-BY TRIPS
AM (PM)

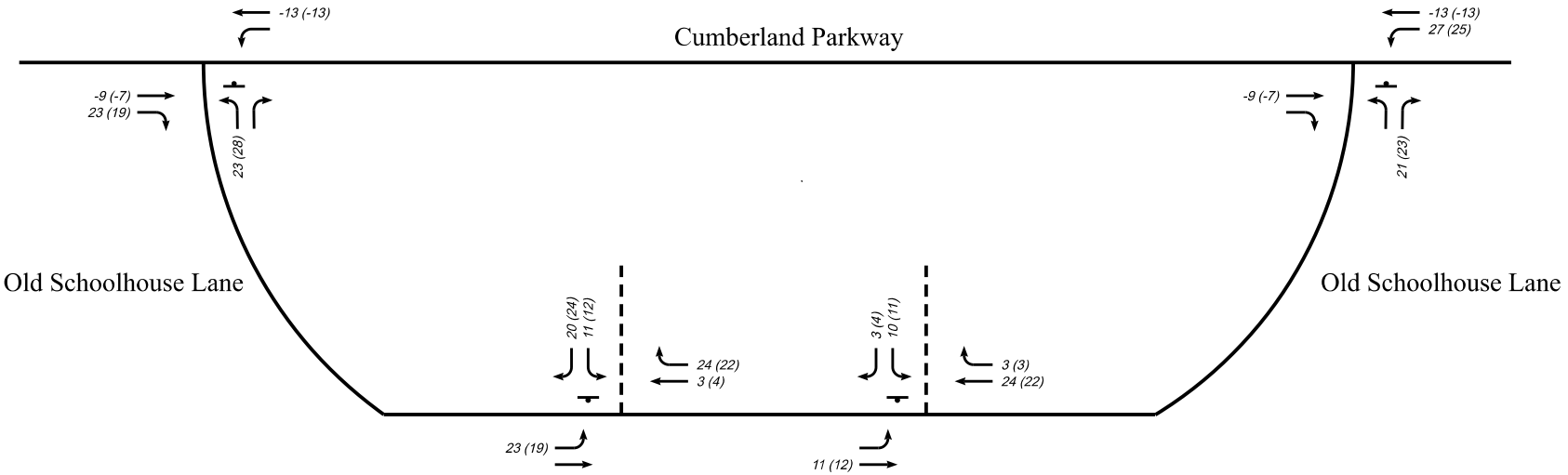

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FIGURE 8

TOTAL PEAK HOUR SITE GENERATED TRIPS
AM (PM)

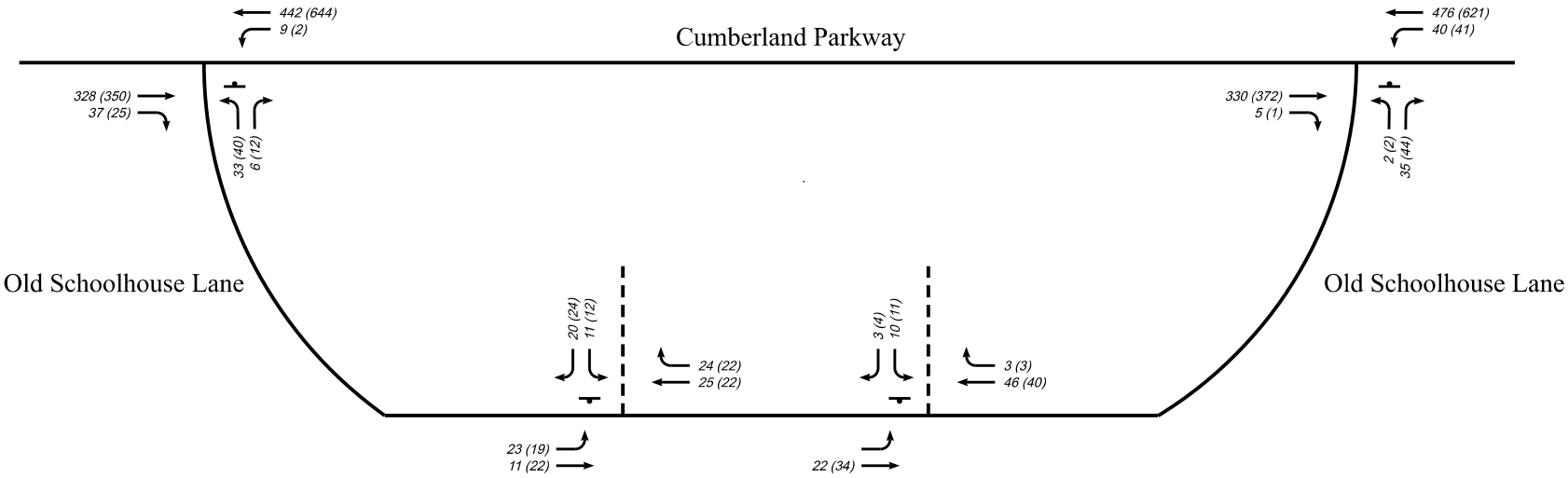

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FIGURE 9

2025 PROJECTED (WITH DEVELOPMENT)
PEAK HOUR VOLUMES
AM (PM)

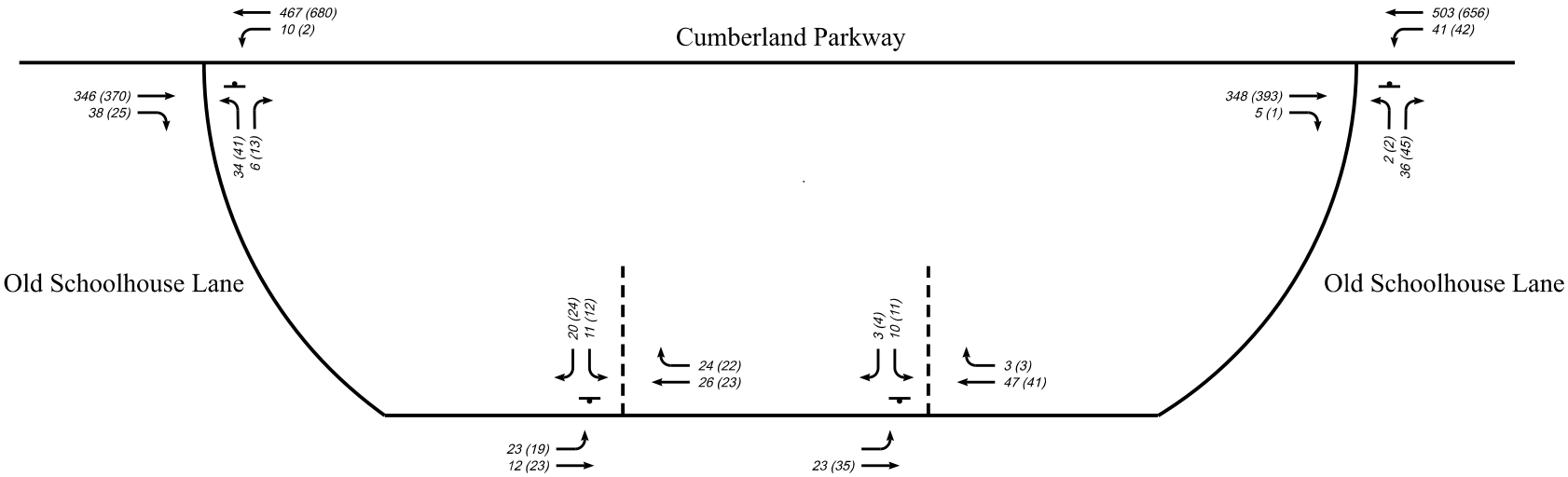

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FIGURE 10

2035 PROJECTED (WITH DEVELOPMENT)
PEAK HOUR VOLUMES
AM (PM)

Appendix A:
Project Correspondence

TRAFFIC PLANNING AND DESIGN, INC.
WWW.TRAFFICPD.COM

February 5, 2024

Ms. Jennifer Boyer, AICP – Community Development Director/Planner
Upper Allen Township
100 Gettysburg Pike
Mechanicsburg, PA 17055

Re: Response to Township's 1/19/24 Traffic Review Comments
Genius Kids Child Development Center
TPD# BLC.00127

Mrs. Boyer:

On behalf of the Applicant (Genius Kids Child Development), Traffic Planning and Design, Inc. (TPD) is resubmitting this Traffic Impact Study (TIS) package related to the proposed Genius Kids Child Development Center in Upper Allen Township.

Response to Township's January 19, 2024 review letter

For the discussion below, the Township's traffic comments from the 01/19/24 review letter are shown in italics, with the corresponding TPD responses in bold type.

Traffic

9. *The sight distance looking left from the proposed site access (east) must be verified. It appears that there are two (2) evergreen trees on the adjacent property that may impact the sight distance at this driveway.*

Sight distances were verified at the proposed site driveway intersection as applicable per Township Ordinance requirements (PennDOT's SSSD). While the evergreen trees on the adjacent property limit sight distances at the easternmost driveway, the measured available sight distances at the site driveway exceed applicable sight distance requirements.

10. *The following changes shall be made to the study for clarity and accuracy, although the changes will have no impact on the results of the traffic study.*
    a. *The P.M. peak critical headways were utilized for the A.M. Peak hour in the capacity analysis.*
    b. *The turn lane analysis worksheets show "known" for Cycles per hour (assumed) when it should show "60" per PennDOT guidelines.*

The capacity analysis has been revised as requested.

Sincerely,
TRAFFIC PLANNING AND DESIGN, INC.

Jarred Neal P.E.
Senior Project Manager
JNeal@TrafficPD.com

Memo

DATE: January 19, 2024

TO: Upper Allen Township Planning Commission
Wayne Willey, Chair

FROM: Jennifer M. Boyer, AICP
Community Development Director/Planner

RE: Plan Name: K Care – UA (Genius Kids)
Plan Type: Prelim/Final Land Development
UAT File No.: 23-08-01
Property Parcel ID: 42-26-0243-045
Property Address: 151 Old Schoolhouse Lane, Mechanicsburg, PA 17055
Zoning District: Professional Office (PO)

The proposed project is for the construction of an 8,500 square foot daycare center with a 5,000 square foot fenced-in outdoor play area within the Professional Office (PO) Zoning District. The property is a vacant parcel of land on Old Schoolhouse Lane, approximately 1.06 acres in size.

Ordinance 828 was adopted on October 4, 2023 to update various regulations for child care and daycare facilities, including permitting child care centers in the PO Zoning District. The proposed use of the subject property is consistent with the Upper Allen Township's Zoning Ordinance and its Comprehensive Plan.

The Applicant has requested the following modifications:

1. Modify the requirements of Section 220-5.3.B.(5). The Applicant is proposing a portion of the sidewalk be outside the right-of-way as there is not enough space to provide a five-foot wide sidewalk and a five-foot wide grass area from the existing curb within the right-of-way.

   Staff Comment: There is approximately 7-8 feet between the existing curb and edge of right-of-way to the property. Staff has no issues with the Applicant still providing a five-foot wide sidewalk, even if part of it does go onto private property. Staff had requested the Applicant provide a pedestrian access easement across their property wide enough to cover the sidewalk area and at least three feet of additional space alongside the sidewalk. The Applicant provided a six-foot wide access easement within their property to accommodate the sidewalk and excess area. The sidewalk must be constructed in accordance with our standards, as defined in Section 220-5.3.B.(2) and the Township's Construction and Material Specifications Manual.

2. Modify the requirements of Section 220-5.4.B.(3)(g) to provide a rounded tangential arc with a minimum radius of 15 feet instead of the required 30 feet.

   Staff Comment: A lesser amount can typically be considered unless there is heavy tractor trailer use. This access drive is not expected to have heavy tractor trailer use. The existing buildings at 101 Old Schoolhouse Lane (western intersection of Old Schoolhouse Lane and Gettysburg Pike), 176 Cumberland Parkway, and 200 Cumberland Parkway all have access drives with 15' radii and operate with no issues. The access drives for 161 and 131 Old Schoolhouse Lane also appear to have the same design.

PARKING SPACES

Per Section 245-17.2, Table XVII-1 and the latest zoning ordinance amendment adopted October 4, 2023, Ordinance 828, there is not enough parking being provided to meet the minimum off-street parking standards.

Previous Parking Regulations		**New Parking Regulations**	
1 space for every employee on largest shift	16	1 space for every employee on largest shift	16
1 space for every 6 students	23 (140 students)	1 space for every 6 students	23 (140 students)
6 waiting spaces	6		
TOTAL SPACES REQUIRED	**45**	**TOTAL SPACES REQUIRED**	**39**
TOTAL SPACES PROVIDED	**27**	**TOTAL SPACES PROVIDED**	**27**

The Applicant is proposing 27 off-street parking spaces, instead of the required 39 spaces. The Applicant may alter the design to provide for the required number of spaces, enter into a joint parking agreement with neighboring properties per Section 245-17.4, or seek authorization of a parking reduction from the Board of Commissioners per Section 245-17.5 of the Zoning Ordinance.

The Applicant is seeking approval to reduce the parking space requirement. Section 245-17.5.A. allows the Board of Commissioners, in consultation with the Township Engineer and Township Zoning Officer, to consider authorizing a reduction of minimum parking requirements for a non-residential use in the PO zoning district where the Applicant can justify a reduction and still provide adequate parking facilities to serve the use. The Applicant's attorney has provided a narrative for their request (see attached).

The Applicant references their existing daycare facility in Silver Spring Township. This facility may have a maximum of 144 students and has a peak parking demand of 23 spaces. Per Silver Spring Township's Code, one space for every six persons enrolled in the facility is required, so a maximum of 24 spaces would be required for their existing site. This facility on Old Schoolhouse

Lane would be similar in size and operation, with 27 parking spaces, which is four (4) additional spaces than the facility in Silver Spring Township.

KinderCare, located on Cumberland Parkway (near Wendy's), is an existing daycare facility that was constructed in the late 1990s/early 2000's. Parking requirements in effect at that time required one space for every ten students plus one space for every faculty/staff member. According to the land development plan, the building was designed to be certified for 179 students and 21 faculty/staff, with 80% of faculty/staff on site at any given time, thus requiring a total of 46 parking spaces. To staff's knowledge, there are no issues with on-site parking at KinderCare. The parking lot is rarely full, and the heaviest usage would be during special events. Staff also had an opportunity to speak to a parent who uses KinderCare as their daycare provider, and they said the parking lot is never full.

While the 27 parking spaces appear to be sufficient to accommodate the normal anticipated traffic for a typical day, the Applicant should provide an alternative parking plan for times when all parking spaces are filled during pick-up and/or drop-off times, and for special events such as graduation, holiday parties, etc.

TRAFFIC STUDY

Per Section 220-3.7.F. of the Subdivision Land Development Ordinance (SLDO), a traffic impact report is required for any non-residential use where the average daily traffic volume is 250 trips or more, or any mixed-use, or any building in excess of 10,000 square feet. The daycare is expected to generate approximately 405 total trips, according to the ITE Trip Generation Rates. The weekday A.M. Peak Hour total trips would be 94 (with 53 being new trips). The weekday P.M. Peak Hour total trips would be 95 (with 53 being new trips), as shown in Table 5 of the TIS. Vehicular traffic is estimated to be distributed evenly to/from the site from the east and the west side of Cumberland Parkway onto Old Schoolhouse Lane, as shown in Table 6 of the TIS.

The site will include the following improvements to accommodate the proposed daycare facility: two, full movement lanes (one in/one out of the site). A Stop Sign will be placed towards the exit of the site for movement onto Old Schoolhouse Lane. Sidewalks and appropriate ADA ramps will be constructed along the site on Old Schoolhouse Lane. As previously noted above, 53 new vehicles trips will occur during the weekday A.M. peak hours and 53 new vehicle trips will occur during the weekday P.M. peak hour. All intersections are operating at a LOS A and will continue to do so after build-out; therefore, no improvements to any of the intersections with Cumberland Parkway, Old Schoolhouse Lane, and the proposed site driveway are required beyond what the Applicant is already proposing to do.

The Township's Traffic Engineer reviewed the Applicant's traffic study. The Traffic Engineer has stated that the trip generation for the proposed 8,500 square foot building was calculated using the correct land use code. The proposed development is estimated to generate 94 total A.M.

peak hour (53 are new trips) and 95 P.M. peak hour trips (53 are new trips). There are a few comments to be addressed, which are noted below (see page 7).

TIMELINE

The following table presents the review period timeline for the above referenced application.

PLAN REVIEW PERIOD	CURRENT DATES
Application Date	09/29/23
Review Period Beginning Date	10/30/23
Time Extension Granted Until 03/29/24	11/17/23
Last Available Planning Commission Meeting	02/26/24
Last Available Board of Commissioners Meeting	03/20/24
Review Period End Date	03/29/24

RECREATION FEE/LAND DEDICATION

The Applicant shall, upon plan approval and prior to plan recording, contribute to the Township's Recreation Land Acquisition and Improvement Fund, in accordance with Section 220-5.15.D.(4) of the Codified Ordinances. The contribution amount shall be $3,400.00.

OTHER AGENCY REVIEWS

The following agencies were notified on October 6, 2023 that this plan was available for review. Their comments have been included in this report.

AGENCY	SUBMISSION OF COMMENTS
Community Development Department	10/17/23; 01/15/24
Township Engineer (C.S. Davidson, Inc.)	10/20/23; 01/19/24
Traffic Engineer (TRG, Inc.)	10/06/23; 01/17/24
Sewer Department	10/23/23
Police Department	10/09/23 No Comments
Fire Department/Fire Marshal	10/09/23; 01/16/14 No Comments
Cumberland County Planning Commission	10/24/23

PLANNING COMMISSION - SUGGESTED MOTIONS

The Planning Commission should consider recommending approval or denial of the following modifications.

MODIFICATIONS

1. Move to recommend approval/denial of the modification request for Section 220-5.3.B.(5), allowing the Applicant to provide for a five-foot wide sidewalk along their property, a portion of which will be located outside the public right-of-way. The Applicant will provide for a six-foot wide pedestrian access easement around the portion of sidewalk and adjacent property area that is located within private property. The remainder of the sidewalk will be located within the public right-of-way.

2. Move to recommend approval/denial of the modification request for Section 220-5.4.B(.3)(g) to provide a rounded tangential arc with a minimum radius of 15 feet instead of the required 30 feet.

PLAN ACTION

The Planning Commission should consider recommending approval or denial of the subdivision plan. If recommending approval, the conditions listed below should be applied. If recommending denial, the reasons for denial should be given.

It is the recommendation of staff that the Applicant address conditions 1 – 13 and revise their plans before the plan goes before the Board of Commissioners.

Move to recommend the Board of Commissioners approve/disapprove the preliminary/final land development for K Care – UA (Genius Kids), UAT File # 23-08-01, with the following conditions:

SUBDIVISION, LAND DEVELOPMENT & ZONING

1. Per Section 245-17.2, Table XVII-1 and the latest zoning ordinance amendment adopted October 2023 (Ordinance 828), there is not enough parking being provided to meet the minimum off-street parking standards. The Applicant must either obtain approval of a reduction per Section 245-17.5, enter into a joint parking agreement with neighboring properties per Section 245-17.4, or else meet the minimum standards as identified in Table XVII-1 of Codified Ordinances. If a reduction is granted, a note shall be listed on the Cover Sheet including the date granted.

a. If a parking reduction is to be granted, the Applicant should provide an alternative parking plan for times when all parking spaces are filled during pick-up and/or drop-off times, and for special events such as graduation, holiday parties, etc., and comply with any other conditions as required by the Board of Commissioners.

2. Final plan submission shall include façade drawings, to include elevations, floor plans, lighting, etc., per Section 220-3.5.C.(2)(ff) of the Codified Ordinances.

3. The landscaping plan shall be updated to address the following planting information:

   a. The total length of the property along the street right-of-way was incorrectly identified during the first review reducing the length to 173.61 feet. The length has been confirmed at 304.66 linear feet. The Buffer Yard #2 and street tree planting requirements must be based on the entire length of the property line at 304.66 feet, which would require the following additional plantings per Section 220-5.13.B.(1) of the Codified Ordinances:

      i. Buffer Yard 2. Eight (8) shade trees, 11 evergreen trees, and 16 deciduous/evergreen shrubs required.

   b. Landscape islands are to be provided at the end of each parking row, along with appropriate landscaping. The landscaping islands at the northeast corner and the west entrance area appear to not meet the minimum width, length, and/or depth requirements, per Section 220-5.13.B.(2)(a)[2]. We do note, however, that appropriate landscaping has been provided within the island areas.

   c. Section 245-14.25.E of the Zoning Ordinance states that all outdoor play areas must provide a means of shade, such as shade tree(s) or pavilion(s). It appears the Applicant is providing two Autumn Brilliance Apple Serviceberry trees alongside the outdoor play area. These are small trees that will grow to about 15-25 feet in height and are not typically classified as shade trees, but are smaller trees, per Section 220-5.13.B. More appropriate shade trees should be incorporated into the outdoor play area, or else provide for pavilion(s).

STORMWATER

4. The Applicant shall provide an alternate hatch for bituminous roadway restoration to differentiate between the pavement section being used on-site versus within the public right-of-way. The current hatch infers that roadway restoration will follow the “Bituminous Paving Detail” on Sheet DN-1, which does not meet Township Specifications. Additionally, the trench

restoration details on Sheet DN-4 need to comply with the Township Construction and Material Specifications.

5. The limits of sawcut and roadway restoration for utility installations must comply with the Township Street Cut Ordinance (Chapter 217). Curb removal and roadway restoration associated with the proposed water line connection have not been accounted for on the Plan.

6. The revised discharge point does not directly tie into the larger conveyance channel as intended. Extend the outfall pipe to the toe-of-slope at the upper limit of the conveyance channel, elevation 445.00'.

7. The Applicant shall revise discrepancies on the Plan regarding the length and slope of the BMP #2 outfall pipe.

8. Clarify the size of YD-2.0 and YD-2.1, and whether they are proposed to be Nyloplast Drain Basins as detailed on Sheet DN-6.

TRAFFIC

9. The sight distance looking left from the proposed site access (east) must be verified. It appears that there are two (2) evergreen trees on the adjacent property that may impact the sight distance at this driveway.

10. The following changes shall be made to study for clarity and accuracy, although the changes will have no impact on the results of the traffic study.

    a. The P.M. peak critical headways were utilized for the A.M. Peak hour in the capacity analysis.

    b. The turn lane analysis worksheets shown "known" for Cycles per hour (assumed) when it should show "60" per PennDOT guidelines.

GENERAL

11. On the Cover Sheet, the following shall be addressed:

    a. Cumberland County requires names of signatures to be identified on plans. Please include the printed name of the person who will sign the Certificate of Ownership and Stormwater signature areas on the Cover Sheet.

b. The waivers and modifications on the Cover Sheet do not clearly define what each request is, as they are both now modification requests. Any approved waiver or modification must clearly be noted as to what type it is, the details of the request, and the date of approval. The Cover Sheet must be updated with more appropriate language, in accordance with Section 220-3.6.B(3) of the Codified Ordinances.

12. Within the Zoning Data information on Sheet SP1, list the minimum street frontage requirement. There is currently a section that states minimum lot width, which should be street frontage, as there is no minimum lot width requirement in this district, per Section 245-6.6.D. of the Codified Ordinances.

13. Employee parking is proposed in front of the dumpster. The Applicant should demonstrate how this will not create a conflict with trash services.

ADMINISTRATIVE

14. A certified, engineered design and details of all retaining walls shall be submitted and approved by the Township prior to the issuance of any permits. The final design must be reviewed and approved prior to recording the land development plan.

15. Fence details shall be provided for the dumpster area, per Section 220-5.13.B.(1)(e) of the Codified Ordinances. The detail sheets only include information for the dumpster gate.

16. The Applicant must obtain approval of the Erosion and Sediment Control Plan from the Cumberland County Conservation District and furnish to the Township a copy of the required NPDES permit in accordance with the requirements of Section 220-3.5.C(4)(h), Section 220-5.14., and Section 214-19.C of the Codified Ordinances.

17. The Applicant shall obtain approval of the planning module for new land development or approval of an exemption from the planning requirements from the Township and PA DEP in accordance with the requirements of Section 220-5.7.A of the Codified Ordinances of Upper Allen Township and pay all applicable application and tapping fees in accordance with the requirements of Chapter 200 of the Codified Ordinances.

18. The Applicant must enter into a Reservation of Capacity (ROC) Agreement with the Township and pay the appropriate ROC fees, or, pay tapping fees for the number of approved EDUs.

19. The Applicant must enter into a Sewer Extension Agreement with the Township and furnish the required $1,000.00 escrow for plan and legal review costs, provide plats and legal descriptions for sanitary sewers to be located outside of the public rights-of-way, furnish the required escrow amount for inspection and related costs, and provide appropriate installation financial security for the sanitary sewers.

20. The Applicant must provide evidence that the storm drainage and stormwater management facilities has been reviewed and approved by the Township Engineer, in accordance with Sections 220-5.14 and 220-5.18, and Chapter 214 of the Codified Ordinances.

21. The Applicant must provide evidence that the sanitary sewer system design has been reviewed and approved by the Township Engineer, in accordance with Section 220-5.7.D(3)(b), and applicable sections of Chapters 199 and 200 of the Codified Ordinances.

22. The Applicant shall enter into a Stormwater Best Management Practices Maintenance Operation and Maintenance Agreement with the Township and pay all applicable fees, in accordance with Section 214-33. of the Codified Ordinances.

23. The Applicant must contribute to the Township Recreation Land Acquisition and Improvement Fund in the amount of $3,400.00. This contribution to the Fund shall be paid at the time of approval of the subdivision or land development plan in accordance with the requirements of Section 220-5.15.D.(4) of the Codified Ordinances.

24. The Applicant must sign the plan and have the signatures notarized according to Section 220-3.5.C(2)(dd) and 220-3.6.B(1)(a) of the Codified Ordinances.

25. The Applicant must have the plan, including any profiles or drawings required under the provisions of Chapter 220, signed and sealed by a licensed surveyor and licensed engineer certifying to the accuracy of the survey and plan and that they are in conforming with the township code and other applicable state regulations, in accordance with Sections 220-3.5.C(2)(e), 220-3.6.B(1)(b), and 220-5.2.N(3) of the Codified Ordinances.

26. The Applicant must submit a signed and sealed construction cost estimate for all public improvements, including sanitary sewer work, in accordance with Section 220-4.2. of the Codified Ordinances.

27. The Applicant must provide financial security in a form acceptable to the Township and in an amount to be estimated by the applicant and approved by the Township Engineer to ensure construction of the improvements and/or concrete monuments shown on the plan, and the applicant must enter into an agreement with the Township providing for construction and installation of all improvements shown on the plan according to Section

220-4.2. of the Codified Ordinances. The financial security shall contain the provision that the Township shall be informed in writing thirty (30) days before the expiration date of any letter of credit or bond provided as a condition of approval.

28. The Applicant must also furnish financial security to the Township in an amount equal to the required percentage of the total financial security provided to cover the cost of construction inspection, administrative, and other related costs according to Section 220-7.3.B of the Codified Ordinances.

29. The Applicant shall also comply with all fees, taxes, utility rentals, building, police or fire codes, ordinances, resolutions, and regulations as may be in effect from time to time concerning the proposed development.

30. The Applicant shall obtain final water main design approval from Veolia Water Company and furnish to the Township an updated design plan.

31. The Applicant shall pay such fees as are charged from time to time by Upper Allen Township for other further reviews or permits as may be required concerning the proposed development.

32. The Applicant must satisfy all conditions on the approval of the plan and the plan must be recorded within 180 days from the date of written conditional approval by the Board of Commissioners or the plan will be considered disapproved.

33. Upon approval of the final plan and prior to obtaining township and county signatures for final plan recording, the Applicant shall provide a CD, a flash drive, or an electronic file submission that includes a .dwg AutoCAD file that includes one drawing of all the lots on the plan, in accordance with Section 220-3.6.A.(14) of the Codified Ordinances of Upper Allen Township. The data shall include all tract and parcel boundaries, lot lines of all lots on the plan, building footprints, street rights-of-way (public and private), curbs, sidewalks, storm sewer infrastructure, sanitary sewer infrastructure, edge of pavement, hydrants, all utility or other easements (public and private), declaration of planned communities/condominium documents (including amendments), and any other data as required by the township and the county. The file shall be with a spatial projection of PA State Plan projections, PA South Zone (3702), NAD83 horizontal datum, NAVD88 vertical datum. Units shall be in US survey foot. A digital copy of the final plan in PDF shall also be submitted. The county Planning Department will not sign final plans until this file has been provided to them.

Thank you.

cc: Commissioner Ginnie M. Anderson
Commissioner Eric Fairchild
Project File

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TRAFFIC PLANNING AND DESIGN, INC.
WWW.TRAFFICPD.COM

November 17, 2023

Upper Allen Township
100 Gettysburg Pike
Mechanicsburg, PA 17055

Attention: Ms. Jennifer Boyer, AICP

Re: **Response to Upper Allen Township TIS Scope Review**
Genius Kids Child Development Center
Upper Allen Township, Cumberland County, PA
TPD# BLC.00127

Jennifer,

On behalf of the Applicant, Traffic Planning and Design, Inc. (TPD) is submitting the Transportation Impact Study (TIS) package for the proposed Genius Kids Child Development Center in Upper Allen Township, Cumberland County, PA.

Response to Upper Allen Township's TIS Scope Submission Review #1

For the discussion below, Transportation Resource Group, Inc. (TRG) comments from the 10/06/2023 TIS scope review letter are shown in *italics*, with the corresponding TPD responses in **bold** type.

1. *The trip generation for the proposed 8,500sf Day was calculated using ITE Land Use Code 565 (Day Care Center) and is acceptable for use in the study. According to ITE. The proposed Development is estimated to generate 94 total AM peak hour and 95 total PM peak hour trips. Table 2 shows the total trip generation for the entire site.*

   Noted.

2. *The use of pass-by trips for the PM (44%) for the proposed Day Care is consistent with ITE and is acceptable for use in the study. Although ITE does not have data for the AM peak hour, the use of a 44% pass-by for the AM peak hour is also acceptable for use in the study.*

   Noted.

3. *We concur with the following proposed study intersections to be included in the TIS.*
   - *Old Schoolhouse Lane/Proposed Site Driveway*

   The Study area should include the intersections.
   - *Old Schoolhouse Lane / Cumberland Parkway (East)*
   - *Old Schoolhouse Lane / Cumberland Parkway (West)*

Noted. The study evaluates all intersections identified above.

4. *We concur with study time periods:*
    - *Weekday AM from 6:00 AM to 9:00 AM*
    - *Weekday PM from 3:00 PM to 6:00 PM*

    Noted.

5. *We concur with the 0.54% yearly growth rate for use in the study, consistent with PennDOT's current Growth Factors.*

    Noted.

6. *There are no planned developments in the area to be included in the study.*

    Noted.

7. *We concur with the proposed trip distribution methodology for the use in the study.*

    Noted.

8. *We concur with the use of HCM 6 Methodology for capacity analysis in the study.*

    Noted.

9. *We concur with analysis years of existing 2023 and 2025 with and without development. In accordance with the Upper Allen Township SALDO Section 220-3.7.F(3)(c)[2], future project should consider a ten-year growth period. The study should also include a 2035 analysis year.*

    Noted. A 2025 opening year and a 2035 horizon year were evaluated as part of the study.

10. *We concur with the auxiliary turn lane warrant analysis according to PennDOT's Publication 46.*

    Noted.

If you have any questions or require additional information to process this application, please call anytime.

Sincerely,

TRAFFIC PLANNING AND DESIGN, INC.

Jarred L. Neal, P.E.
Senior Project Manager
JNeal@Trafficpd.com

From: Jennifer Boyer <jboyer@uatwp.org>
Sent: Friday, October 6, 2023 8:03 AM
To: Neal, Jarred; Wheeler, Jason
Cc: Holtzman, Greg
Subject: RE: Genius Kids (Upper Allen) - TIS Scope Memo
Attachments: Genuis Kids Scope Review (10-6-2023).pdf

Jarred, Jason –

Attached is a copy of the letter we received from our traffic engineer regarding your TIS scope.

Jen

Jennifer M. Boyer, AICP
Community Development Director
Upper Allen Township
717.766.0756
www.uatwp.org

From: Neal, Jarred <jneal@trafficpd.com>
Sent: Thursday, October 5, 2023 4:03 PM
To: Jennifer Boyer <jboyer@uatwp.org>; Wheeler, Jason <JWheeler@trafficpd.com>; 'cschwab@consulttrg.com' <cschwab@consulttrg.com>
Cc: Holtzman, Greg <gholtzman@Blcompanies.com>
Subject: RE: Genius Kids (Upper Allen) - TIS Scope Memo

Will do. Thank you Jen.

Jarred Neal, P.E., *Senior Project Manager*

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From: Jennifer Boyer <jboyer@uatwp.org>
Sent: Thursday, October 5, 2023 4:02 PM
To: Wheeler, Jason <JWheeler@trafficpd.com>; 'cschwab@consulttrg.com' <cschwab@consulttrg.com>
Cc: Neal, Jarred <jneal@trafficpd.com>; Holtzman, Greg <gholtzman@Blcompanies.com>
Subject: RE: Genius Kids (Upper Allen) - TIS Scope Memo

Jason –
Please have the scope include both intersections of Cumberland Parkway and Old Schoolhouse Lane since all vehicles entering/exiting the daycare must come out onto Cumberland Parkway via one of the two intersections.

Thank you
Jen

Jennifer M. Boyer, AICP
Community Development Director
Upper Allen Township
717.766.0756
www.uatwp.org

From: Wheeler, Jason <JWheeler@trafficpd.com>
Sent: Tuesday, September 26, 2023 11:58 AM
To: Jennifer Boyer <jboyer@uatwp.org>; 'cschwab@consulttrg.com' <cschwab@consulttrg.com>
Cc: Neal, Jarred <jneal@trafficpd.com>; Holtzman, Greg <gholtzman@Blcompanies.com>
Subject: Genius Kids (Upper Allen) - TIS Scope Memo

Jen/Chris,

TPD is pleased to submit the Transportation Impact Study (TIS) Scoping Memo for the proposed Genius Kids Child Development Center to be located along Old Schoolhouse Lane in Upper Allen Township, Cumberland County. Please review the attached at your convenience.

Thank you,
Jason

Jason Wheeler, PTP, *Project Manager*

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TRANSPORTATION RESOURCE GROUP, INC.

PA Office
2 East Market Street
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York, PA 17401-1206
T: (717) 846-4660

Consulting Engineers and Planners
www.consulttrg.com

MD Office
901 Dulaney Valley Road
Suite 805
Towson, MD 21204-2624
T: (443) 275-2344

October 6, 2023

Upper Allen Township
Attn: Jennifer Boyer, AICP
Community Development Director/Planner
100 Gettysburg Pike
Mechanicsburg, PA 17055

RE: Genuis Kids Child Development Center
Review of Proposed Traffic Impact Study Scope
Upper Allen Township, Cumberland County
TRG Project No. 517.022.23

Dear Ms. Boyer:

Transportation Resource Group, Inc. has completed the review of the TIS Scope Determination for the proposed Genuis Kids Child Development Center located at 176-198 Old Schoolhouse Ln, Mechanicsburg, PA. The submission dated September 26, 2023, was completed by Traffic Planning and Design, Inc. Based on the review, we offer the following comments:

1. The trip generation for the proposed 8,500sf Day was calculated using ITE Land Use Code 565 (Day Care Center) and is acceptable for use in the study. According to ITE, the proposed Development is estimated to generate 94 total AM peak hour and 95 total PM peak hour trips. Table 2 shows the total trip generation for the entire site.

2. The use of pass-by trips for the PM (44%) for the proposed Day Care is consistent with ITE and is acceptable for use in the study. Although ITE does not have data for the AM peak hour, the use of a 44% pass-by for the AM peak hour is also acceptable for use in the study.

3. We concur with the following proposed study intersections to be included in the TIS.
    - Old Schoolhouse Lane / Proposed Site Driveway

    The Study area should include the intersections.
    - Old Schoolhouse Lane / Cumberland Parkway (East)
    - Old Schoolhouse Lane / Cumberland Parkway (West)

4. We concur with study time periods:
    - Weekday AM from 6:00 AM to 9:00 AM
    - Weekday PM from 3:00 PM to 6:00 PM

5. We concur with the 0.54% yearly growth rate for use in the study, consistent with PennDOT's current Growth Factors.

6. There are no planned developments in the area to be included in the study.

7. We concur with the proposed trip distribution methodology for the use in the study.

8. We concur with the use of HCM 6 Methodology for capacity analysis in the study.

9. We concur with analysis years of existing 2023 and 2025 with and without development. In accordance with the Upper Allen Township SALDO Section 220-3.7.F(3)(c)[2], future project should consider a ten-year growth period. The study should also include a 2035 analysis year.

10. We concur with the auxiliary turn lane warrant analysis according to PennDOT's Publication 46.

If you have any questions regarding the above review comments, please feel free to give me a call.

Very truly yours,
Transportation Resource Group, Inc.

Christopher E. Schwab

Christopher E. Schwab, P.E.
Senior Associate

From: Wheeler, Jason
Sent: Tuesday, September 26, 2023 11:58 AM
To: AICP Jennifer Boyer (jboyer@uatwp.org); 'cschwab@consulttrg.com'
Cc: Neal, Jarred; Holtzman, Greg
Subject: Genius Kids (Upper Allen) - TIS Scope Memo
Attachments: 2023-09-26 (Genuis Kids - Upper Allen) TIS Scope Memo_attach.pdf

Jen/Chris,

TPD is pleased to submit the Transportation Impact Study (TIS) Scoping Memo for the proposed Genius Kids Child Development Center to be located along Old Schoolhouse Lane in Upper Allen Township, Cumberland County. Please review the attached at your convenience.

Thank you,
Jason

Jason Wheeler, PTP, *Project Manager*

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MEMORANDUM

To: Jennifer Boyer – Upper Allen Township (Community Development Director/Planner)

From: Jarred L. Neal, P.E., *Traffic Planning and Design, Inc. (TPD)*

Cc: Greg Holtzman – BL Companies (Project Manager)
Chris Schwab, P.E. – TRG, Inc. (Township Traffic Engineer)

Date: September 26, 2023

Re: **Transportation Impact Study (TIS) Scope Determination Request**
Genius Kids – Upper Allen
Upper Allen Township, Cumberland County, PA
TPD# BLC.00127

This memo regards a proposed Genius Kids Child Development Center within Upper Allen Township, Cumberland County, PA. The proposed development is located on the north side Old Schoolhouse Lane southwest of the Cumberland Parkway/Old Schoolhouse Lane intersection (easternmost). The project involves construction of an 8,500 s.f. Child Development Center (Infant to Pre-K). Access for the development is proposed via two (2) driveway connections to Old Schoolhouse Lane, ultimately providing connections to Cumberland Parkway.

Prior to preparing the TIS, TPD is requesting the Township's feedback on the scope of the TIS. The following scope parameters are proposed:

TIS Scope

Study Area:

» Old Schoolhouse Lane and Proposed Site Driveway intersections.

Study Time Periods:

» Weekday AM Peak Hour (6:00-9:00 A.M.);
» Weekday PM Peak Hour (3:00-6:00 P.M.).

Background Growth Factor & Nearby Developments:

A background growth factor of 0.54% compounded annually will be applied to the existing traffic volumes in accordance with the current PennDOT BPR statistics.

TPD requests that Upper Allen Township, identify any nearby planned developments that will need to be included in this study.

Trip Generation:

The trip generation rates for the proposed development were obtained from the manual *Trip Generation*, Eleventh Edition, 2021, an Institute of Transportation Engineers (ITE) Informational Report. 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.

The data for Land Use Code 565 (Day Care Center) 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.

The following should be noted with respect to the trip generation methodology:

- Based on the information provided in the manual *Trip Generation*, not all of the trips generated by the site will be "new" to the nearby roadway system. In addition to the "new trips" generated by the development, there will be "pass-by trips", which are trips that are drawn from the passing traffic stream and do not add trips to the adjacent roadways. Pass-by trip percentages were utilized as specified in the appendices of the manual *Trip Generation*, Eleventh Edition, 2021.
- Published data related to pass-by percentages are not available for Land Use Code #565 (Day Care Center) during the weekday A.M. peak hour. However, given the trip characteristics of a typical Day Care Center with parent drop-off/pick-up to and from there place of employment, etc. it is reasonable to assume that pass-by trips will occur during the weekday A.M. peak hour as well. Since ITE provides a weekday P.M. pass-by rate of 44% it is reasonable to assume that pass-by trips occur at the same rate during the weekday A.M. peak hour.

Table 1 shows the trip generation rates and directional split for the analyzed time periods.

TABLE 1
ITE TRIP GENERATION EQUATIONS

Land Use	ITE #	Time Period	Equations/Rates	Entering %	Exiting %	Pass-By %
Day Care Center	565	Average Weekday	T = 47.62*(X)	50%	50%	--
		Weekday A.M. Peak Hour	T = 11.00*(X)	53%	47%	44%[1]
		Weekday P.M. Peak Hour	T = 11.12*(X)	47%	53%	44%

T = number of site-generated vehicular trips
X = independent variable (ksf of Gross Floor Area)
1 = ITE pass-by rates not published, see TPD justification above

The calculated trip generation for the proposed development is shown in **Table 2**.

TABLE 2
TRIP GENERATION SUMMARY

Time Period	Total Trips			Pass-by Trips			New Trips		
	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Based on 8,500 s.f. of Gross Floor Area									
Average Weekday	405	202	203	--	--	--	--	--	--
Weekday A.M. Peak Hour	94	50	44	41	22	19	53	31	25
Weekday P.M. Peak Hour	95	44	51	42	20	22	53	24	29

Trip Distribution:

The distribution and assignment of new trips generated by the development will be based upon the following: (1) existing traffic patterns in the study area; (2) the most logical route of travel; (3) site driveway locations/configurations.

Capacity Analyses:

Capacity analyses will be conducted for the weekday A.M. and P.M. peak hours at the study area intersections. These analyses were conducted according to the methodologies contained in the *Highway Capacity Manual, 6th Ed.* (HCM) using *Synchro 11* software, a Trafficware product:

- 2023 Existing Conditions;
- 2025 Base Conditions (opening year without the proposed development);
- 2025 Projected Conditions (opening year with full build-out of the proposed development).

Auxiliary Turn Lane Warrants:

TPD will evaluate auxiliary turn lane warrants on Old Schoolhouse Road approaching the Site Driveway intersections. The warrant analysis was conducted according to the methodologies contained in Chapter 11 of PennDOT's *Publication 46* utilizing the posted speed limit.

We would appreciate your review of the enclosed information. If there are any questions or comments, please call any time.

Attachments:
Location Map
Site Plan

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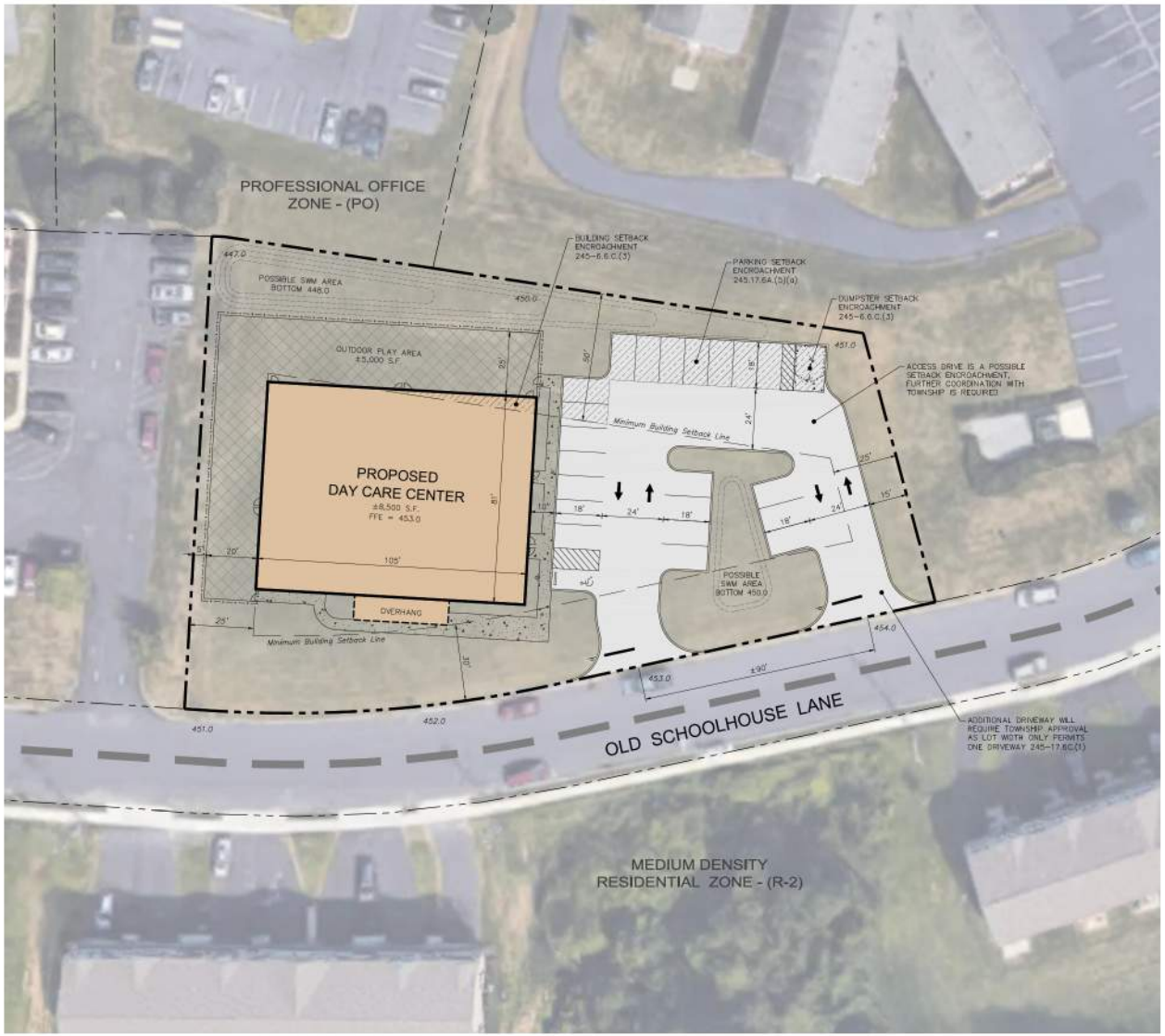
FIGURE 1

LOCATION MAP



ZONING INFORMATION

LOCATION:	UPPER ALLEN TOWNSHIP, CUMBERLAND COUNTY			
ZONE:	PROFESSIONAL OFFICE (PO)			
USE:	DAY CARE, ACCESSORY (USE 68) (PERMITTED USE)			
ITEM #	ITEM	REQUIREMENTS	PROPOSED	VARIANCE
1	MINIMUM LOT AREA	NONE REQUIRED	±1.06 ACRES	NO
2	MINIMUM LOT WIDTH	150 FEET	±295 FEET	NO
3	MINIMUM LOT DEPTH	NONE REQUIRED	±150 FEET	NO
4	MINIMUM FRONT SETBACK	30 FEET	±30 FEET	NO
5	MINIMUM SIDE SETBACK	25 FEET	<25 FEET	YES
6	MINIMUM REAR SETBACK	50 FEET	<50 FEET	YES
7	MAXIMUM BUILDING HEIGHT	35 FEET	<35 FEET	NO
8	MAXIMUM BUILDING COVERAGE	30 PERCENT	±20 PERCENT	NO
9	MAXIMUM LOT COVERAGE	60 PERCENT	±50 PERCENT	NO

PARKING INFORMATION

ITEM #	ITEM	REQUIREMENTS	PROPOSED	VARIANCE
1	BUILDING SIZE	NONE REQUIRED	8,500 S.F.	NO
2	PARKING REQUIRED BY TOWNSHIP	1 SPACE FOR EVERY EMPLOYEE ON THE LARGEST SHIFT, + 1 SPACE FOR EVERY 6 STUDENTS, AND OFF-STREET WAITING SPACES TO ACCOMMODATE AT LEAST SIX AUTO. 8 EMP. + 8 (ASSUME 48 STUDENTS) + 6 WAITING = 22 SPACES	22 SPACES	NO
3	MINIMUM PARKING DIMENSIONS	9.5 FEET X 18 FEET	9.5 FEET X 18 FEET	NO
4	MINIMUM AISLE WIDTH	24 FEET	24 FEET	NO
5	PARKING SETBACK	PARKING IS PROHIBITED IN THE MINIMUM BUILDING SETBACKS	PARKING IS SHOWN WITHIN SIDE AND REAR SETBACKS	YES

NOTE:
INFORMATION SHOWN HEREON IS CONCEPTUAL IN NATURE FOR THE PURPOSES OF EVALUATING DEVELOPMENT POTENTIAL. ADDITIONAL DUE DILIGENCE IS REQUIRED TO FINALIZE SITE DESIGN.
ADDITIONAL DUE DILIGENCE WOULD INCLUDE, BUT NOT NECESSARILY BE LIMITED TO BOUNDARY AND TOPOGRAPHIC SURVEY, ENVIRONMENTAL RESOURCE INVESTIGATIONS, ENVIRONMENTAL SITE ASSESSMENT, UTILITY INVESTIGATION, GEOTECHNICAL INVESTIGATION, AND MUNICIPAL CODE COMPLIANCE ANALYSIS.

Architecture
Engineering
Environmental
Land Surveying
BL Companies
2601 Market Place
Suite 350
Harrisburg, PA 17110
(717) 845-1895
(717) 651-9650 Fax

PROPOSED DEVELOPMENT
OLD SCHOOL HOUSE LANE
UPPER ALLEN TOWNSHIP, CUMBERLAND COUNTY, PA

No.	Date	Description

Designed	G.J.H.
Drawn	J.R.J.
Reviewed	A.J.S.
Scale	1" = 20'
Project No.	22-XXXXX
Date	09/07/2022
CAD File:	22-XXXXX CP-1

Title:
CONCEPT PLAN

Sheet No.

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FIGURE 2

SITE PLAN

Appendix B:
Existing Roadway Conditions

Job #: *BLC.00127* *Date Taken:* *10/13/2023* *Intersection Of:* *(1) Old Schoolhouse Lane West x Cumberland Pkwy*

Direction / Road: NB Old Schoolhouse Lane (West)
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: NB Old Schoolhouse Lane (West)
Approach / Departure: Approach
Distance: 200 Feet

Job #: *BLC.00127* *Date Taken:* *10/13/2023* *Intersection Of:* *(1) Old Schoolhouse Lane West x Cumberland Pkwy*

Direction / Road: EB Cumberland Pkwy
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: EB Cumberland Pkwy
Approach / Departure: Approach
Distance: 200 Feet

Job #: BLC.00127 *Date Taken:* 10/13/2023 *Intersection Of:* (1) Old Schoolhouse Lane West x Cumberland Pkwy

Direction / Road: WB Cumberland Pkwy
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: WB Cumberland Pkwy
Approach / Departure: Approach
Distance: 200 Feet

INTERSECTION WORKSHEET

Traffic Planning and Design, Inc.

TPD Project # BLC.00127
Date 10/11/23
Analyst Young

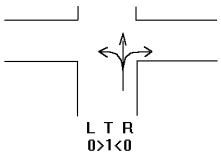
☐ Signalized ☐ Un-signalized ☐ Two-Way Stop Control ☐ All-Way Stop Control ☐ Offset ☑ Other

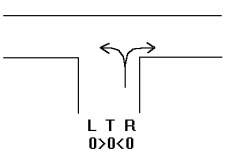
Area Type: ☐ Urban ☑ Suburban ☐ Rural ☐ CBD

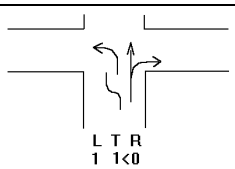
Streets: (N-S) Old Schoolhouse Lane (West) (E-W) Cumberland Parkway

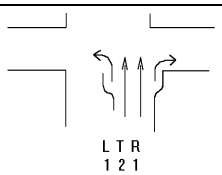
	Westbound			Eastbound						Northbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes												
Lane Width	C-16';TR-12'			C-14'; TR-12'						34' CtC		
Storage Length												
Grade (approaching intersection) + uphill, -downhill	0.8			-1.7						-1.2		
Channelized Right?												
If so, is lane > 75'?												
Shoulder width	5'			5'						0'		
Pavement condition*	Good			Good						Good		
Lane marking condition*	Good			Good						None		
Posted speed limit	35			35						25		
Driveways on approach?	N			N						N		
Bus Stops?	N		Route #: ____	N		Route #: ____			Route #: ____	N		Route #: ____
Parking?	N			N						N		
Pedestrian Curb Ramps?	N	/		N	/			/		N	/	
Sidewalk?	N	/		N	/			/		N	/	
Crosswalks?	N			N						N		
Unsignalized Intersections:												
Sign Control	None			None						Stop		
Sight Distance*	Good			Good						Good		
Signalized Intersections:												
No Turn on Red posted?												
Ped Button?												
Left Turn Phase								/				
Actuated Lanes												

Comments (please be as specific as possible): Center lane is Turning lane on Cumberland pkwy









Job #: *BLC.00127* *Date Taken:* *10/13/2023* *Intersection Of:* *(2) Old Schoolhouse Lane (East) x Cumberland Parkway*

Direction / Road: NB Old Schoolhouse Lane (East)
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: NB Old Schoolhouse Lane (East)
Approach / Departure: Approach
Distance: 200 Feet

Job #: BLC.00127 *Date Taken:* 10/13/2023 *Intersection Of:* (2) Old Schoolhouse Lane (East) x Cumberland Parkway

Direction / Road: EB Cumberland Pkwy
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: EB Cumberland Pkwy
Approach / Departure: Approach
Distance: 200 Feet

Job #: BLC.00127 *Date Taken:* 10/13/2023 *Intersection Of:* (2) Old Schoolhouse Lane (East) x Cumberland Parkway

Direction / Road: WB Cumberland Pkwy
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: WB Cumberland Pkwy
Approach / Departure: Approach
Distance: 200 Feet

INTERSECTION WORKSHEET

Traffic Planning and Design, Inc.

TPD Project # BLC.00127
Date 10/11/23
Analyst Young

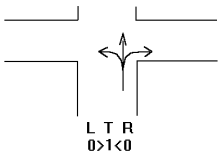
☐ Signalized ☐ Un-signalized ☐ Two-Way Stop Control ☐ All-Way Stop Control ☐ Offset ☑ Other

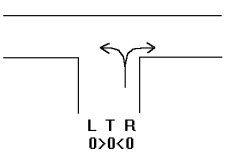
Area Type: ☐ Urban ☑ Suburban ☐ Rural ☐ CBD

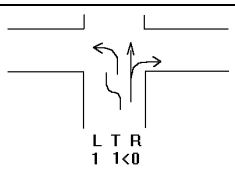
Streets: (N-S) Old Schoolhouse Lane (East) (E-W) Cumberland Parkway

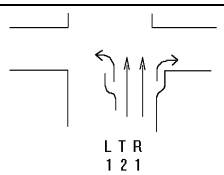
	Westbound			Eastbound						Northbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes												
Lane Width	C-16';TR-12'			C-14'; TR-12'						34' CtC		
Storage Length												
Grade (approaching intersection) + uphill, -downhill	1.6			-0.6						-3.0		
Channelized Right?												
If so, is lane > 75'?												
Shoulder width	5'			5'						0'		
Pavement condition*	Good			Good						Good		
Lane marking condition*	Good			Good						None		
Posted speed limit	35			35						25		
Driveways on approach?	N			N						N		
Bus Stops?	N	Route #: ____		N	Route #: ____			Route #: ____		N	Route #: ____	
Parking?	N			N						N		
Pedestrian Curb Ramps?	N	/		N	/			/		N	/	
Sidewalk?	N	/		N	/			/		N	/	
Crosswalks?	N			N						N		
Unsignalized Intersections:												
Sign Control	None			None						Stop		
Sight Distance*	Good			Good						Good		
Signalized Intersections:												
No Turn on Red posted?												
Ped Button?												
Left Turn Phase								/				
Actuated Lanes												

Comments (please be as specific as possible): Center lane is Turning lane on Cumberland pkwy









Job #: BLC.00127 *Date Taken:* 10/13/2023 *Intersection Of:* (3) Proposed Driveway x Old Schoolhouse Road

Direction / Road: Center Driveway - Looking Out

Approach / Departure:

Distance:

Direction / Road: Center Driveway – Looking In

Approach / Departure:

Distance:

Job #: BLC.00127 *Date Taken:* 10/13/2023 *Intersection Of:* (3) Proposed Driveway x Old Schoolhouse Road

Direction / Road: Center Driveway – Looking Right

Approach / Departure:

Distance:

Direction / Road: Center Driveway – Looking Left

Approach / Departure:

Distance:

M-950S (3-04)
PENNDOT

DRIVEWAY SIGHT DISTANCE MEASUREMENTS

(FOR LOCAL ROADS, USE PENNDOT PUB 70)

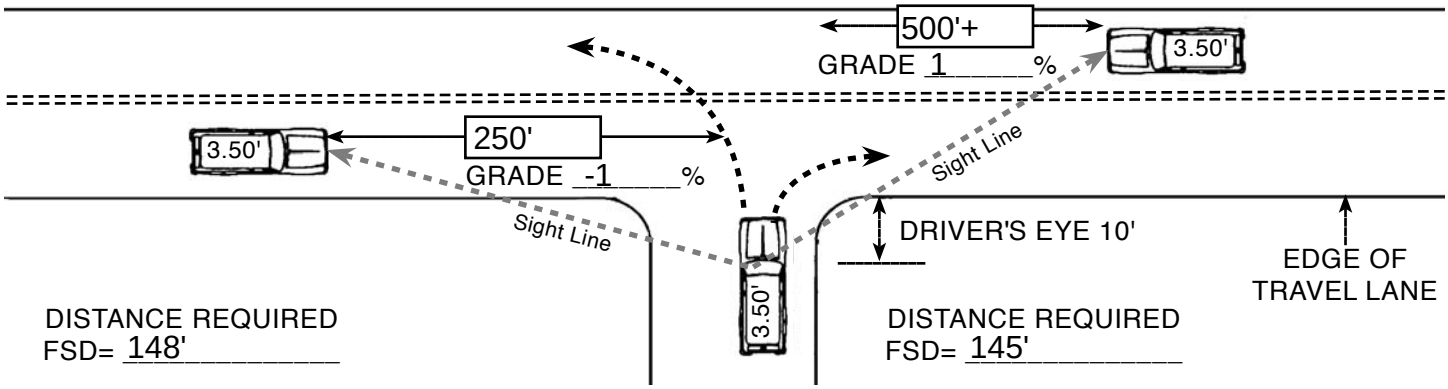
APPLICANT Proposed Driveway (West) x Old Schoolhouse Road APPLICATION NO. BLC.00127

S.R._____SEG._____OFFSET_____ LEGAL SPEED LIMIT 25

MEASURED BY Young DATE 10/13/23

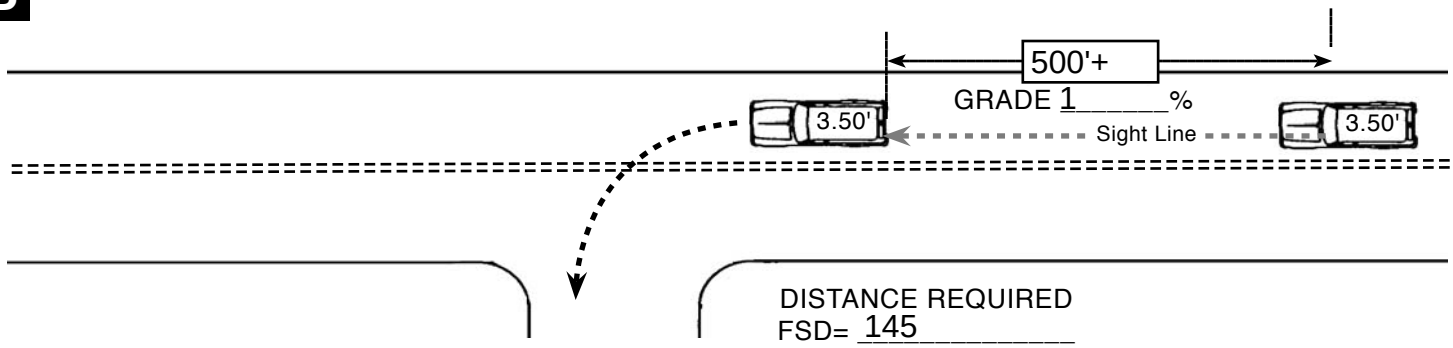
FOR DEPARTMENT USE ONLY: Safe-Running Speed _____ 85th Percentile Speed _____

A



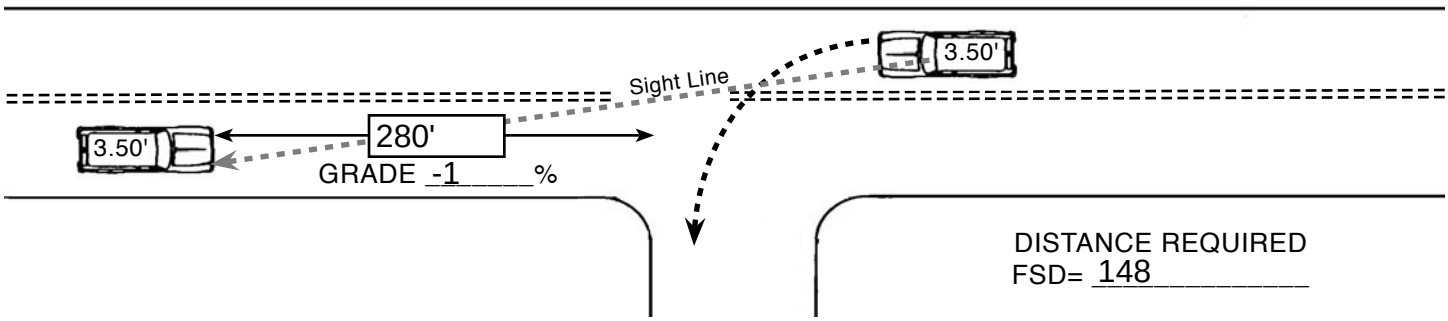
THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER AT A DRIVEWAY LOCATION CAN CONTINUOUSLY SEE ANOTHER VEHICLE APPROACHING ON THE ROADWAY.

B



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER ON THE ROADWAY CAN CONTINUOUSLY SEE THE REAR OF A VEHICLE WHICH IS LOCATED IN THE DRIVER'S TRAVEL LANE AND WHICH IS POSITIONED TO MAKE A LEFT TURN INTO A DRIVEWAY.

C



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER OF A VEHICLE INTENDING TO MAKE A LEFT TURN INTO A DRIVEWAY CAN CONTINUOUSLY SEE A VEHICLE APPROACHING FROM THE OPPOSITE DIRECTION.

Job #: BLC.00127 *Date Taken:* 01/31/2024 *Intersection Of:* Old Schoolhouse Rd & Proposed Eastern DW

Direction / Road: Center Driveway - Looking Out
Approach / Departure:
Distance:

Direction / Road: Center Driveway – Looking In
Approach / Departure:
Distance:

Job #: BLC.00127 *Date Taken:* 01/31/2024 *Intersection Of:* Old Schoolhouse Rd & Proposed Eastern DW

Direction / Road: Center Driveway – Looking Right
Approach / Departure:
Distance:

Direction / Road: Center Driveway – Looking Left
Approach / Departure:
Distance:

M-950S (3-04)
PENNDOT

DRIVEWAY SIGHT DISTANCE MEASUREMENTS

(FOR LOCAL ROADS, USE PENNDOT PUB 70)

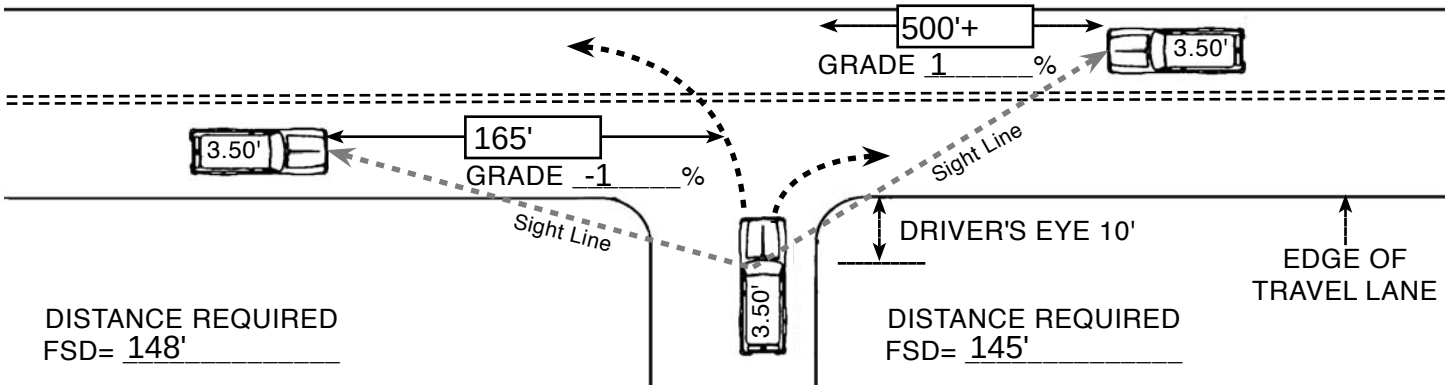
APPLICANT Old Schoolhouse Road & Proposed Driveway (East) APPLICATION NO. BLC.00127

S.R._____SEG._____OFFSET_____ LEGAL SPEED LIMIT 25

MEASURED BY D. Lenker DATE 1/31/2024

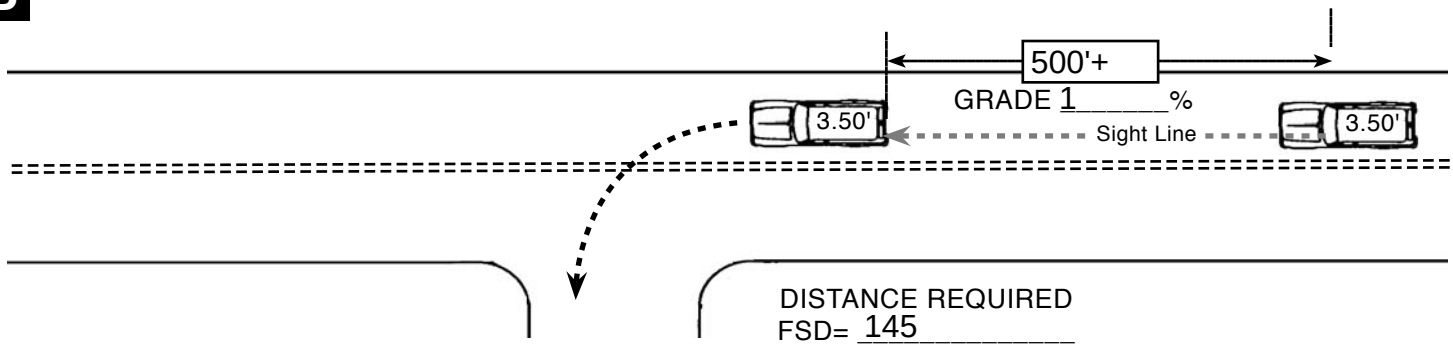
FOR DEPARTMENT USE ONLY: Safe-Running Speed _____ 85th Percentile Speed _____

A



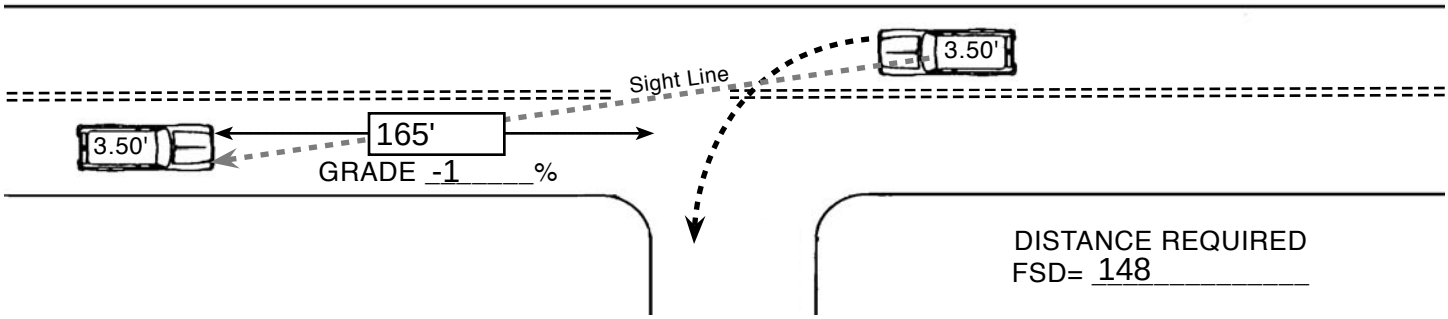
THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER AT A DRIVEWAY LOCATION CAN CONTINUOUSLY SEE ANOTHER VEHICLE APPROACHING ON THE ROADWAY.

B



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER ON THE ROADWAY CAN CONTINUOUSLY SEE THE REAR OF A VEHICLE WHICH IS LOCATED IN THE DRIVER'S TRAVEL LANE AND WHICH IS POSITIONED TO MAKE A LEFT TURN INTO A DRIVEWAY.

C



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER OF A VEHICLE INTENDING TO MAKE A LEFT TURN INTO A DRIVEWAY CAN CONTINUOUSLY SEE A VEHICLE APPROACHING FROM THE OPPOSITE DIRECTION.

Appendix C:
Manual Turning Movement Counts

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 kyoung@trafficpd.com

Counter: MIO:
Set up by: KY:

Count Name: (1) AM/PM Old Schoolhouse Lane West x Cumberland Pkwy
Site Code:
Start Date: 10/12/2023

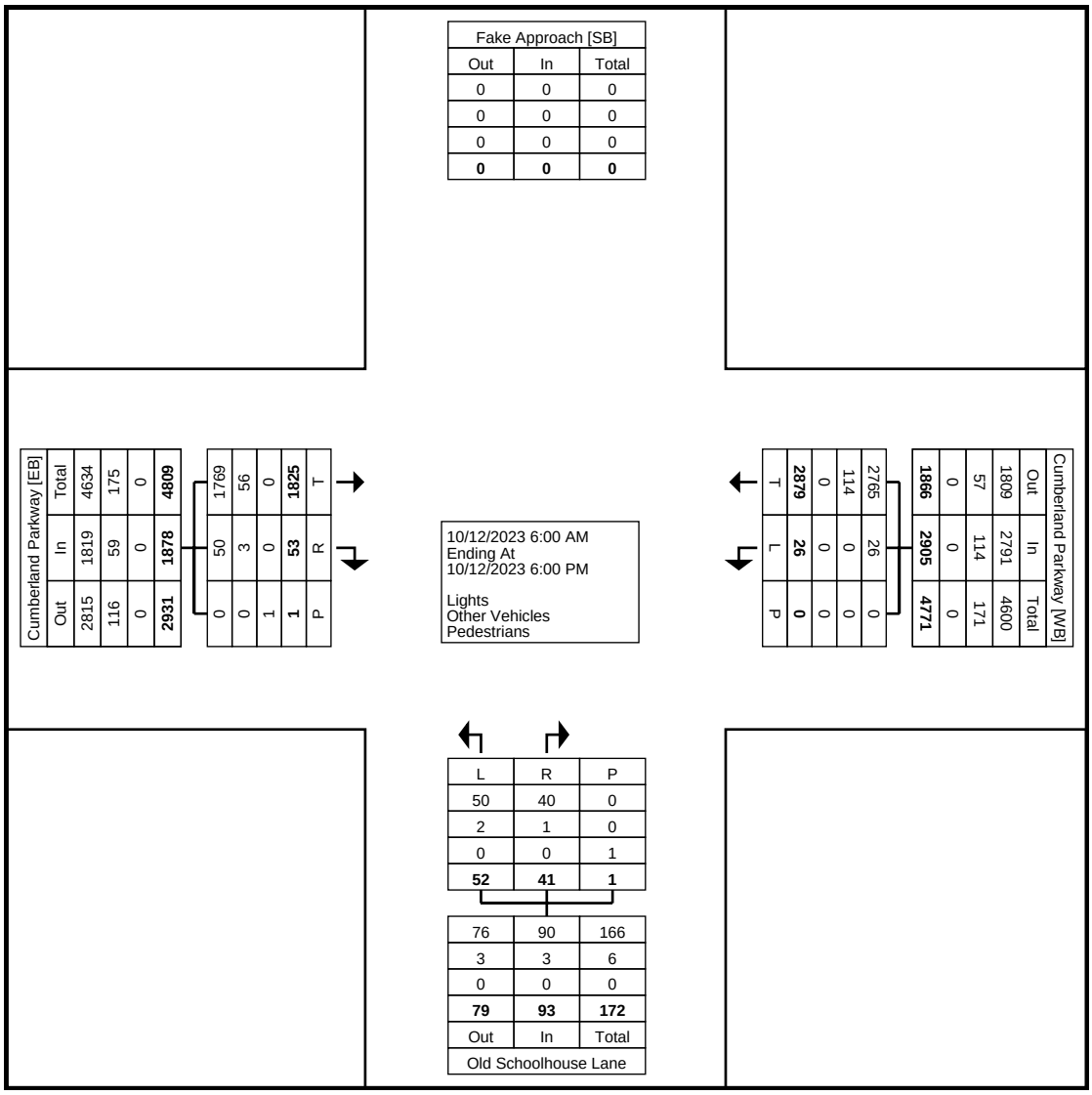
Turning Movement Data

Start Time	Cumberland Parkway Eastbound				Cumberland Parkway Westbound				Old Schoolhouse Lane (West) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
6:00 AM	37	0	0	37	1	44	0	45	0	0	0	0	82
6:15 AM	42	1	0	43	0	35	0	35	1	0	0	1	79
6:30 AM	49	1	0	50	1	59	0	60	3	0	0	3	113
6:45 AM	65	1	0	66	1	77	0	78	0	0	0	0	144
Hourly Total	193	3	0	196	3	215	0	218	4	0	0	4	418
7:00 AM	56	4	0	60	1	80	0	81	0	2	0	2	143
7:15 AM	85	5	0	90	4	105	0	109	3	1	0	4	203
7:30 AM	81	6	0	87	0	120	0	120	1	1	0	2	209
7:45 AM	103	7	0	110	4	117	0	121	4	2	0	6	237
Hourly Total	325	22	0	347	9	422	0	431	8	6	0	14	792
8:00 AM	60	0	0	60	4	102	0	106	3	1	0	4	170
8:15 AM	89	1	0	90	1	111	0	112	2	2	0	4	206
8:30 AM	80	1	0	81	0	91	0	91	1	1	0	2	174
8:45 AM	67	4	0	71	3	105	0	108	1	1	0	2	181
Hourly Total	296	6	0	302	8	409	0	417	7	5	0	12	731
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	91	3	0	94	1	143	0	144	1	4	0	5	243
3:15 PM	85	0	0	85	0	128	0	128	1	4	0	5	218
3:30 PM	76	3	0	79	1	133	0	134	7	5	0	12	225
3:45 PM	92	2	0	94	0	141	0	141	1	2	0	3	238
Hourly Total	344	8	0	352	2	545	0	547	10	15	0	25	924
4:00 PM	85	0	0	85	0	155	0	155	3	0	0	3	243
4:15 PM	79	0	1	79	1	163	0	164	1	2	1	3	246
4:30 PM	95	3	0	98	0	163	0	163	3	2	0	5	266
4:45 PM	90	1	0	91	0	178	0	178	3	5	0	8	277
Hourly Total	349	4	1	353	1	659	0	660	10	9	1	19	1032
5:00 PM	89	2	0	91	1	146	0	147	5	3	0	8	246
5:15 PM	74	1	0	75	2	155	0	157	3	1	0	4	236
5:30 PM	80	3	0	83	0	177	0	177	0	2	0	2	262
5:45 PM	75	4	0	79	0	151	0	151	5	0	0	5	235
Hourly Total	318	10	0	328	3	629	0	632	13	6	0	19	979
Grand Total	1825	53	1	1878	26	2879	0	2905	52	41	1	93	4876
Approach %	97.2	2.8	-	-	0.9	99.1	-	-	55.9	44.1	-	-	-
Total %	37.4	1.1	-	38.5	0.5	59.0	-	59.6	1.1	0.8	-	1.9	-
Lights	1769	50	-	1819	26	2765	-	2791	50	40	-	90	4700
% Lights	96.9	94.3	-	96.9	100.0	96.0	-	96.1	96.2	97.6	-	96.8	96.4
Other Vehicles	56	3	-	59	0	114	-	114	2	1	-	3	176
% Other Vehicles	3.1	5.7	-	3.1	0.0	4.0	-	3.9	3.8	2.4	-	3.2	3.6
Pedestrians	-	-	1	-	-	-	0	-	-	-	1	-	-
% Pedestrians	-	-	100.0	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 kyoung@trafficpd.com

Counter: MIO:
Set up by: KY:

Count Name: (1) AM/PM Old Schoolhouse Lane West x Cumberland Pkwy
Site Code:
Start Date: 10/12/2023



Turning Movement Data Plot

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 kyoung@trafficpd.com

Counter: MIO:
Set up by: KY:

Count Name: (1) AM/PM Old Schoolhouse Lane West x Cumberland Pkwy
Site Code:
Start Date: 10/12/2023

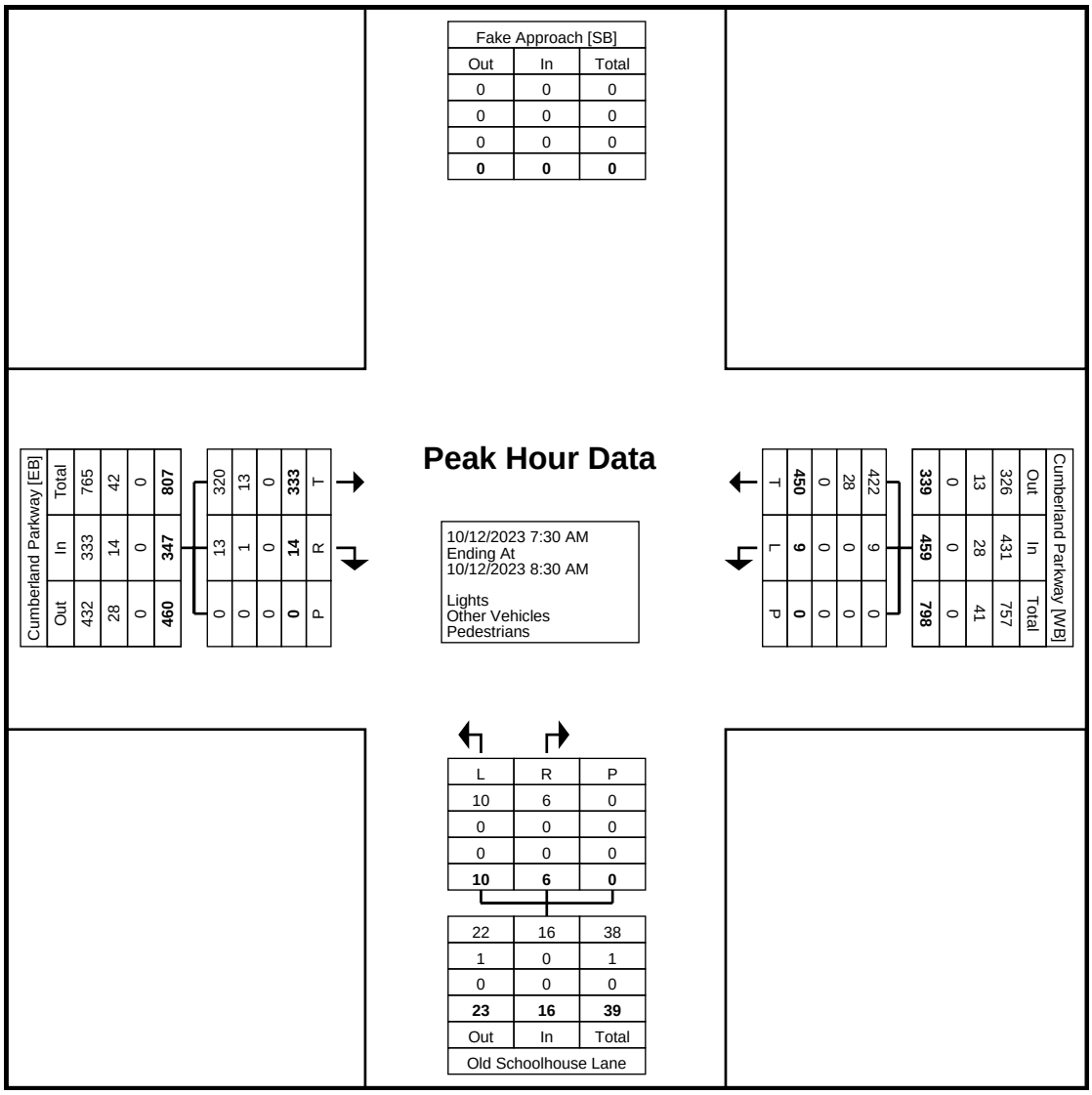
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Cumberland Parkway Eastbound				Cumberland Parkway Westbound				Old Schoolhouse Lane (West) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:30 AM	81	6	0	87	0	120	0	120	1	1	0	2	209
7:45 AM	103	7	0	110	4	117	0	121	4	2	0	6	237
8:00 AM	60	0	0	60	4	102	0	106	3	1	0	4	170
8:15 AM	89	1	0	90	1	111	0	112	2	2	0	4	206
Total	333	14	0	347	9	450	0	459	10	6	0	16	822
Approach %	96.0	4.0	-	-	2.0	98.0	-	-	62.5	37.5	-	-	-
Total %	40.5	1.7	-	42.2	1.1	54.7	-	55.8	1.2	0.7	-	1.9	-
PHF	0.808	0.500	-	0.789	0.563	0.938	-	0.948	0.625	0.750	-	0.667	0.867
Lights	320	13	-	333	9	422	-	431	10	6	-	16	780
% Lights	96.1	92.9	-	96.0	100.0	93.8	-	93.9	100.0	100.0	-	100.0	94.9
Other Vehicles	13	1	-	14	0	28	-	28	0	0	-	0	42
% Other Vehicles	3.9	7.1	-	4.0	0.0	6.2	-	6.1	0.0	0.0	-	0.0	5.1
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 kyoung@trafficpd.com

Counter: MIO:
Set up by: KY:

Count Name: (1) AM/PM Old Schoolhouse Lane West x Cumberland Pkwy
Site Code:
Start Date: 10/12/2023



Turning Movement Peak Hour Data Plot (7:30 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 kyoung@trafficpd.com

Counter: MIO:
Set up by: KY:

Count Name: (1) AM/PM Old Schoolhouse Lane West x Cumberland Pkwy
Site Code:
Start Date: 10/12/2023

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Cumberland Parkway Eastbound				Cumberland Parkway Westbound				Old Schoolhouse Lane (West) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
4:15 PM	79	0	1	79	1	163	0	164	1	2	1	3	246
4:30 PM	95	3	0	98	0	163	0	163	3	2	0	5	266
4:45 PM	90	1	0	91	0	178	0	178	3	5	0	8	277
5:00 PM	89	2	0	91	1	146	0	147	5	3	0	8	246
Total	353	6	1	359	2	650	0	652	12	12	1	24	1035
Approach %	98.3	1.7	-	-	0.3	99.7	-	-	50.0	50.0	-	-	-
Total %	34.1	0.6	-	34.7	0.2	62.8	-	63.0	1.2	1.2	-	2.3	-
PHF	0.929	0.500	-	0.916	0.500	0.913	-	0.916	0.600	0.600	-	0.750	0.934
Lights	350	5	-	355	2	639	-	641	10	12	-	22	1018
% Lights	99.2	83.3	-	98.9	100.0	98.3	-	98.3	83.3	100.0	-	91.7	98.4
Other Vehicles	3	1	-	4	0	11	-	11	2	0	-	2	17
% Other Vehicles	0.8	16.7	-	1.1	0.0	1.7	-	1.7	16.7	0.0	-	8.3	1.6
Pedestrians	-	-	1	-	-	-	0	-	-	-	1	-	-
% Pedestrians	-	-	100.0	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
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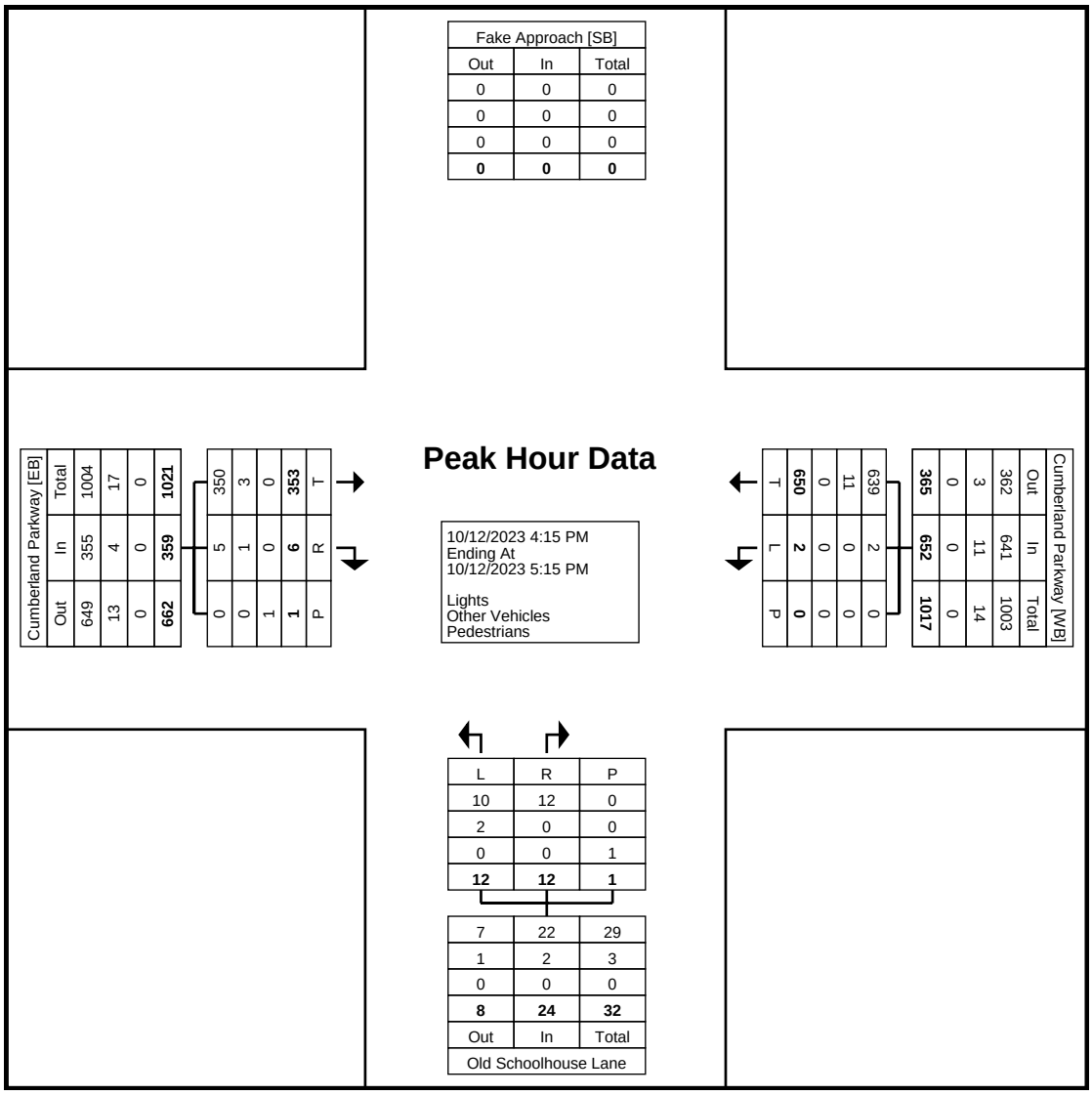
610.326.3100 kyoung@trafficpd.com

Counter: MIO:
Set up by: KY:

Count Name: (1) AM/PM Old Schoolhouse Lane West x Cumberland Pkwy
Site Code:
Start Date: 10/12/2023



Turning Movement Peak Hour Data Plot (4:15 PM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 kyoung@trafficpd.com

Counter: MIO:
Set up by: KY:

Count Name: (2) AM/PM Old Schoolhouse Lane East x Cumberland Pkwy
Site Code:
Start Date: 10/12/2023

Turning Movement Data

Start Time	Cumberland Parkway Eastbound				Cumberland Parkway Westbound				Old Schoolhouse Lane (East) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
6:00 AM	70	0	0	70	1	49	0	50	0	1	0	1	121
6:15 AM	34	0	0	34	1	55	0	56	0	1	0	1	91
6:30 AM	49	0	0	49	4	63	0	67	0	4	0	4	120
6:45 AM	60	0	0	60	0	85	0	85	0	2	0	2	147
Hourly Total	213	0	0	213	6	252	0	258	0	8	0	8	479
7:00 AM	56	1	0	57	3	92	0	95	0	3	0	3	155
7:15 AM	73	0	0	73	4	114	0	118	1	0	0	1	192
7:30 AM	81	1	0	82	3	125	0	128	0	4	0	4	214
7:45 AM	108	0	0	108	6	127	0	133	0	5	0	5	246
Hourly Total	318	2	0	320	16	458	0	474	1	12	0	13	807
8:00 AM	54	2	0	56	3	108	0	111	1	2	0	3	170
8:15 AM	92	2	0	94	1	124	0	125	1	3	0	4	223
8:30 AM	78	2	0	80	6	92	0	98	0	2	0	2	180
8:45 AM	72	0	0	72	3	114	0	117	1	3	0	4	193
Hourly Total	296	6	0	302	13	438	0	451	3	10	0	13	766
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	123	0	0	123	2	138	0	140	0	3	0	3	266
3:15 PM	90	1	0	91	2	137	0	139	0	2	0	2	232
3:30 PM	94	1	0	95	1	127	0	128	1	4	0	5	228
3:45 PM	95	0	0	95	6	139	0	145	0	3	0	3	243
Hourly Total	402	2	0	404	11	541	0	552	1	12	0	13	969
4:00 PM	94	0	0	94	2	136	0	138	0	4	0	4	236
4:15 PM	88	0	0	88	4	148	0	152	0	3	1	3	243
4:30 PM	95	0	0	95	6	163	0	169	1	2	0	3	267
4:45 PM	99	0	0	99	3	168	0	171	1	3	0	4	274
Hourly Total	376	0	0	376	15	615	0	630	2	12	1	14	1020
5:00 PM	99	0	0	99	7	141	0	148	0	9	0	9	256
5:15 PM	82	1	0	83	0	155	0	155	0	7	0	7	245
5:30 PM	82	0	0	82	2	178	0	180	0	2	0	2	264
5:45 PM	79	0	0	79	2	157	0	159	1	1	0	2	240
Hourly Total	342	1	0	343	11	631	0	642	1	19	0	20	1005
Grand Total	1947	11	0	1958	72	2935	0	3007	8	73	1	81	5046
Approach %	99.4	0.6	-	-	2.4	97.6	-	-	9.9	90.1	-	-	-
Total %	38.6	0.2	-	38.8	1.4	58.2	-	59.6	0.2	1.4	-	1.6	-
Lights	1879	11	-	1890	69	2819	-	2888	8	70	-	78	4856
% Lights	96.5	100.0	-	96.5	95.8	96.0	-	96.0	100.0	95.9	-	96.3	96.2
Other Vehicles	68	0	-	68	3	116	-	119	0	3	-	3	190
% Other Vehicles	3.5	0.0	-	3.5	4.2	4.0	-	4.0	0.0	4.1	-	3.7	3.8
Pedestrians	-	-	0	-	-	-	0	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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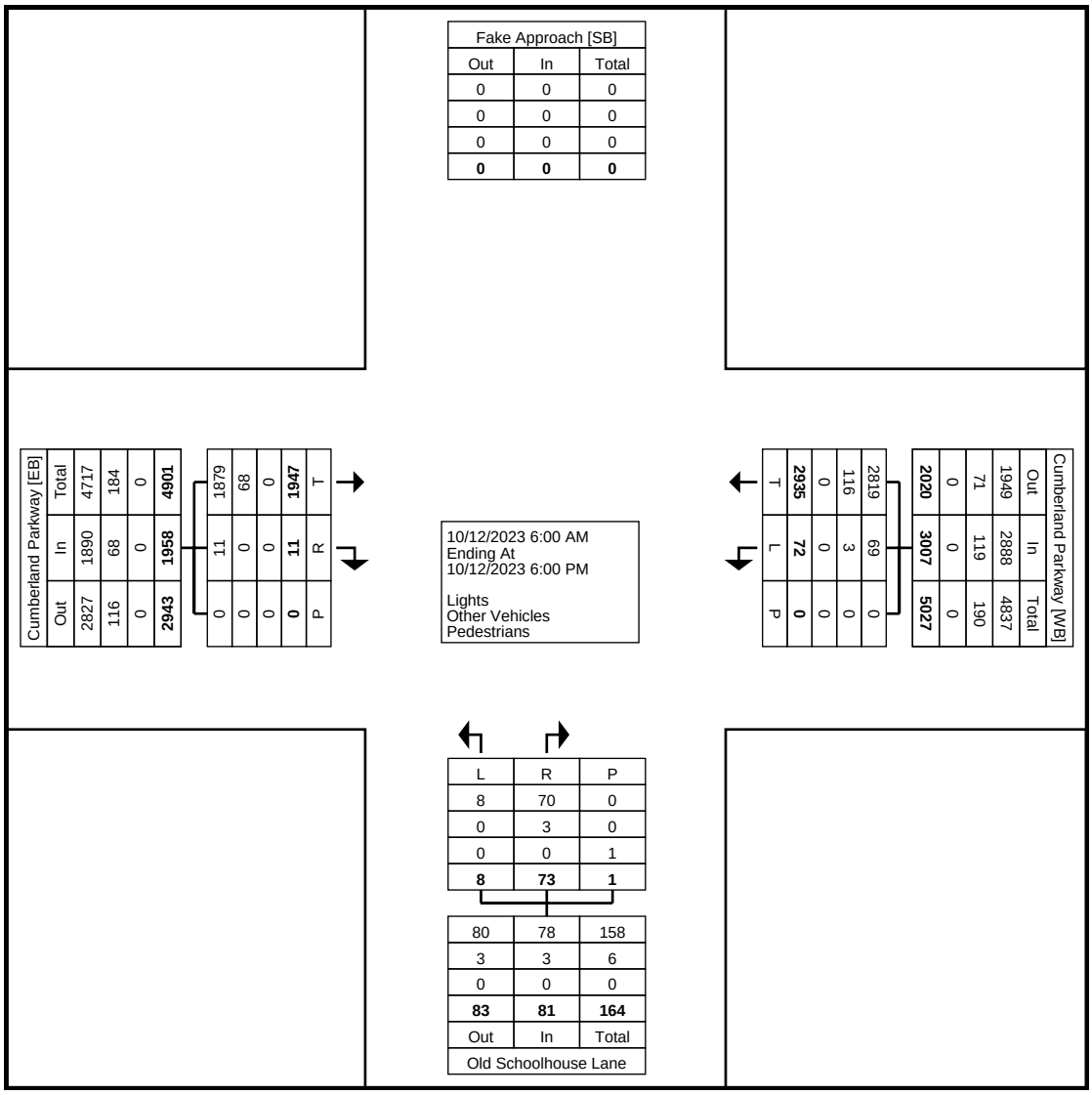
610.326.3100 kyoung@trafficpd.com

Counter: MIO:
Set up by: KY:

Count Name: (2) AM/PM Old Schoolhouse Lane East x Cumberland Pkwy
Site Code:
Start Date: 10/12/2023



Turning Movement Data Plot

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Counter: MIO:
Set up by: KY:

Count Name: (2) AM/PM Old Schoolhouse Lane East x Cumberland Pkwy
Site Code:
Start Date: 10/12/2023

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Cumberland Parkway Eastbound				Cumberland Parkway Westbound				Old Schoolhouse Lane (East) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:30 AM	81	1	0	82	3	125	0	128	0	4	0	4	214
7:45 AM	108	0	0	108	6	127	0	133	0	5	0	5	246
8:00 AM	54	2	0	56	3	108	0	111	1	2	0	3	170
8:15 AM	92	2	0	94	1	124	0	125	1	3	0	4	223
Total	335	5	0	340	13	484	0	497	2	14	0	16	853
Approach %	98.5	1.5	-	-	2.6	97.4	-	-	12.5	87.5	-	-	-
Total %	39.3	0.6	-	39.9	1.5	56.7	-	58.3	0.2	1.6	-	1.9	-
PHF	0.775	0.625	-	0.787	0.542	0.953	-	0.934	0.500	0.700	-	0.800	0.867
Lights	318	5	-	323	13	454	-	467	2	13	-	15	805
% Lights	94.9	100.0	-	95.0	100.0	93.8	-	94.0	100.0	92.9	-	93.8	94.4
Other Vehicles	17	0	-	17	0	30	-	30	0	1	-	1	48
% Other Vehicles	5.1	0.0	-	5.0	0.0	6.2	-	6.0	0.0	7.1	-	6.3	5.6
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

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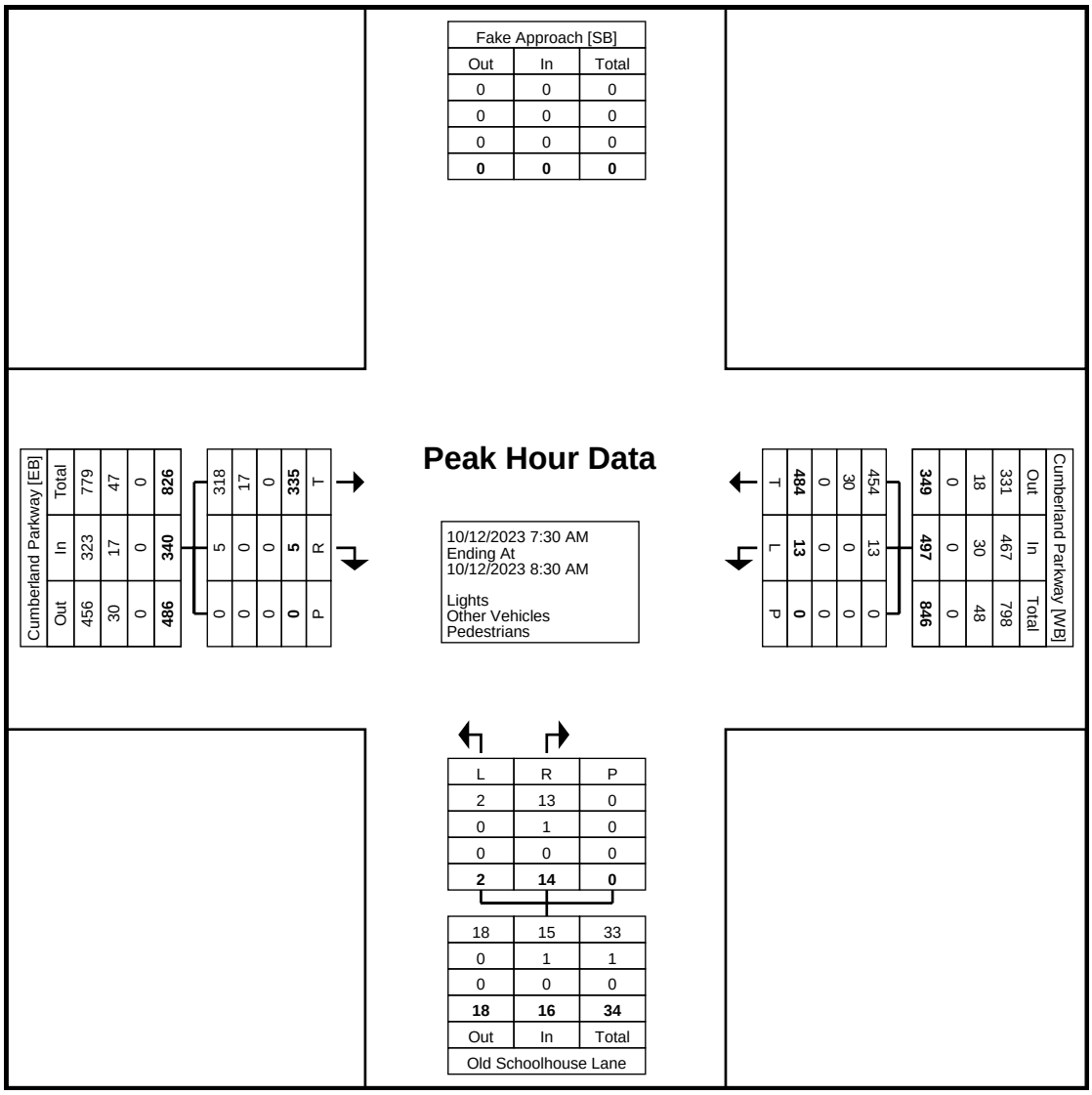
Site Code:
Start Date: 10/12/2023



Turning Movement Peak Hour Data Plot (7:30 AM)

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Counter: MIO:
Set up by: KY:

Count Name: (2) AM/PM Old Schoolhouse Lane East x Cumberland Pkwy
Site Code:
Start Date: 10/12/2023

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Cumberland Parkway Eastbound				Cumberland Parkway Westbound				Old Schoolhouse Lane (East) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
4:30 PM	95	0	0	95	6	163	0	169	1	2	0	3	267
4:45 PM	99	0	0	99	3	168	0	171	1	3	0	4	274
5:00 PM	99	0	0	99	7	141	0	148	0	9	0	9	256
5:15 PM	82	1	0	83	0	155	0	155	0	7	0	7	245
Total	375	1	0	376	16	627	0	643	2	21	0	23	1042
Approach %	99.7	0.3	-	-	2.5	97.5	-	-	8.7	91.3	-	-	-
Total %	36.0	0.1	-	36.1	1.5	60.2	-	61.7	0.2	2.0	-	2.2	-
PHF	0.947	0.250	-	0.949	0.571	0.933	-	0.940	0.500	0.583	-	0.639	0.951
Lights	369	1	-	370	14	616	-	630	2	20	-	22	1022
% Lights	98.4	100.0	-	98.4	87.5	98.2	-	98.0	100.0	95.2	-	95.7	98.1
Other Vehicles	6	0	-	6	2	11	-	13	0	1	-	1	20
% Other Vehicles	1.6	0.0	-	1.6	12.5	1.8	-	2.0	0.0	4.8	-	4.3	1.9
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

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Counter: MIO:
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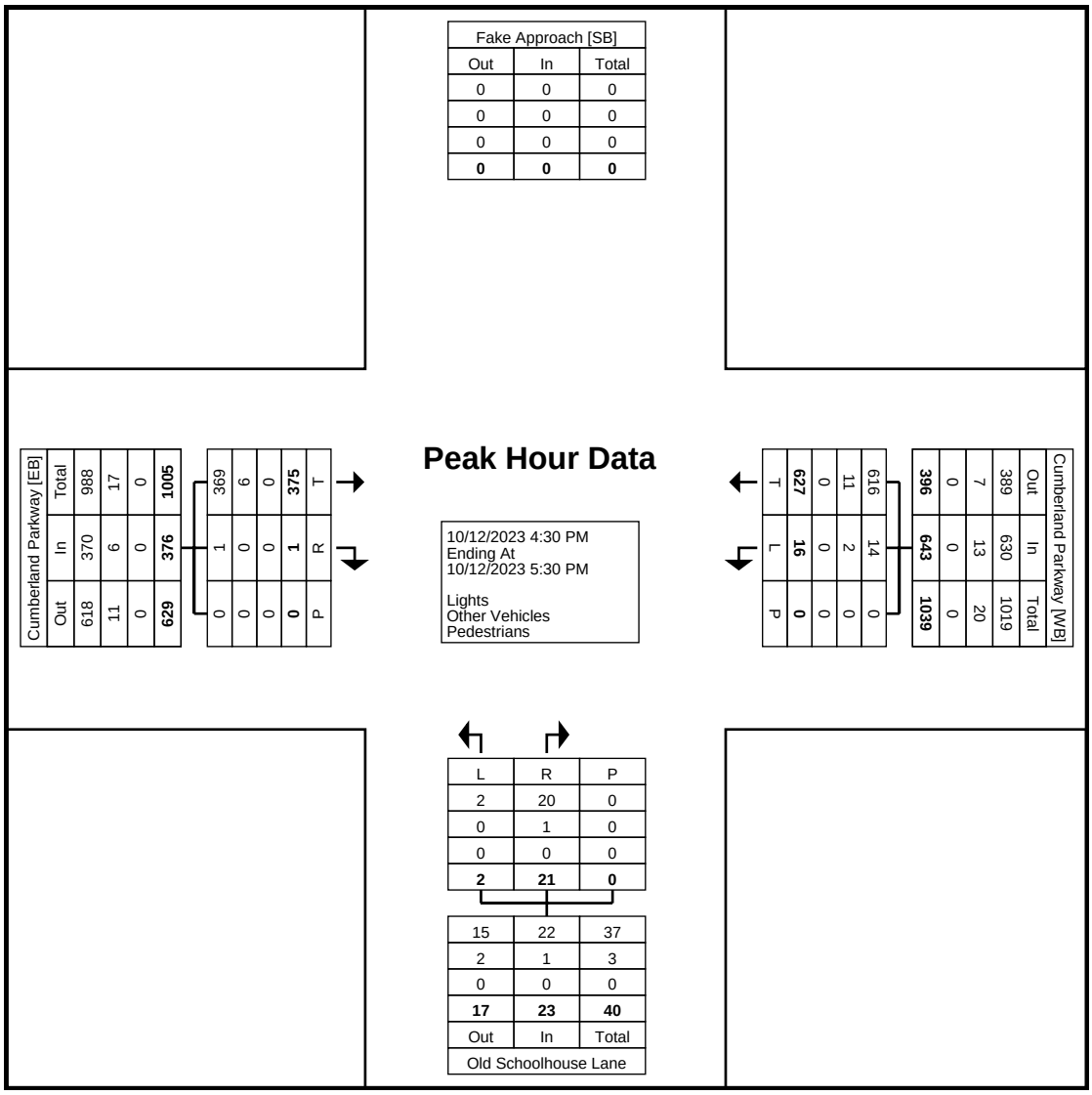
Site Code:
Start Date: 10/12/2023



Turning Movement Peak Hour Data Plot (4:30 PM)

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Counter: MIO:
Set up by: KY:

Count Name: (3) AM/PM Proposed Driveway x Old Schoolhouse Lane
Site Code:
Start Date: 10/12/2023

Turning Movement Data

Start Time	Old Schoolhouse Lane Eastbound			Old Schoolhouse Lane Westbound			
	Thru	Peds	App. Total	Thru	Peds	App. Total	Int. Total
6:00 AM	1	0	1	1	0	1	2
6:15 AM	0	0	0	1	0	1	1
6:30 AM	4	0	4	4	0	4	8
6:45 AM	2	0	2	0	0	0	2
Hourly Total	7	0	7	6	0	6	13
7:00 AM	1	0	1	3	0	3	4
7:15 AM	1	0	1	5	0	5	6
7:30 AM	5	0	5	2	0	2	7
7:45 AM	4	0	4	7	0	7	11
Hourly Total	11	0	11	17	0	17	28
8:00 AM	2	0	2	5	0	5	7
8:15 AM	2	0	2	2	0	2	4
8:30 AM	3	0	3	8	0	8	11
8:45 AM	3	0	3	3	0	3	6
Hourly Total	10	0	10	18	0	18	28
*** BREAK ***	-	-	-	-	-	-	-
3:00 PM	3	0	3	2	0	2	5
3:15 PM	1	0	1	2	0	2	3
3:30 PM	5	0	5	2	0	2	7
3:45 PM	2	0	2	2	0	2	4
Hourly Total	11	0	11	8	0	8	19
4:00 PM	2	0	2	5	0	5	7
4:15 PM	4	0	4	1	0	1	5
4:30 PM	4	0	4	6	0	6	10
4:45 PM	3	0	3	4	0	4	7
Hourly Total	13	0	13	16	0	16	29
5:00 PM	9	0	9	6	2	6	15
5:15 PM	6	0	6	2	0	2	8
5:30 PM	2	0	2	1	0	1	3
5:45 PM	3	0	3	0	0	0	3
Hourly Total	20	0	20	9	2	9	29
Grand Total	72	0	72	74	2	74	146
Approach %	100.0	-	-	100.0	-	-	-
Total %	49.3	-	49.3	50.7	-	50.7	-
Lights	69	-	69	71	-	71	140
% Lights	95.8	-	95.8	95.9	-	95.9	95.9
Other Vehicles	3	-	3	3	-	3	6
% Other Vehicles	4.2	-	4.2	4.1	-	4.1	4.1
Pedestrians	-	0	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-

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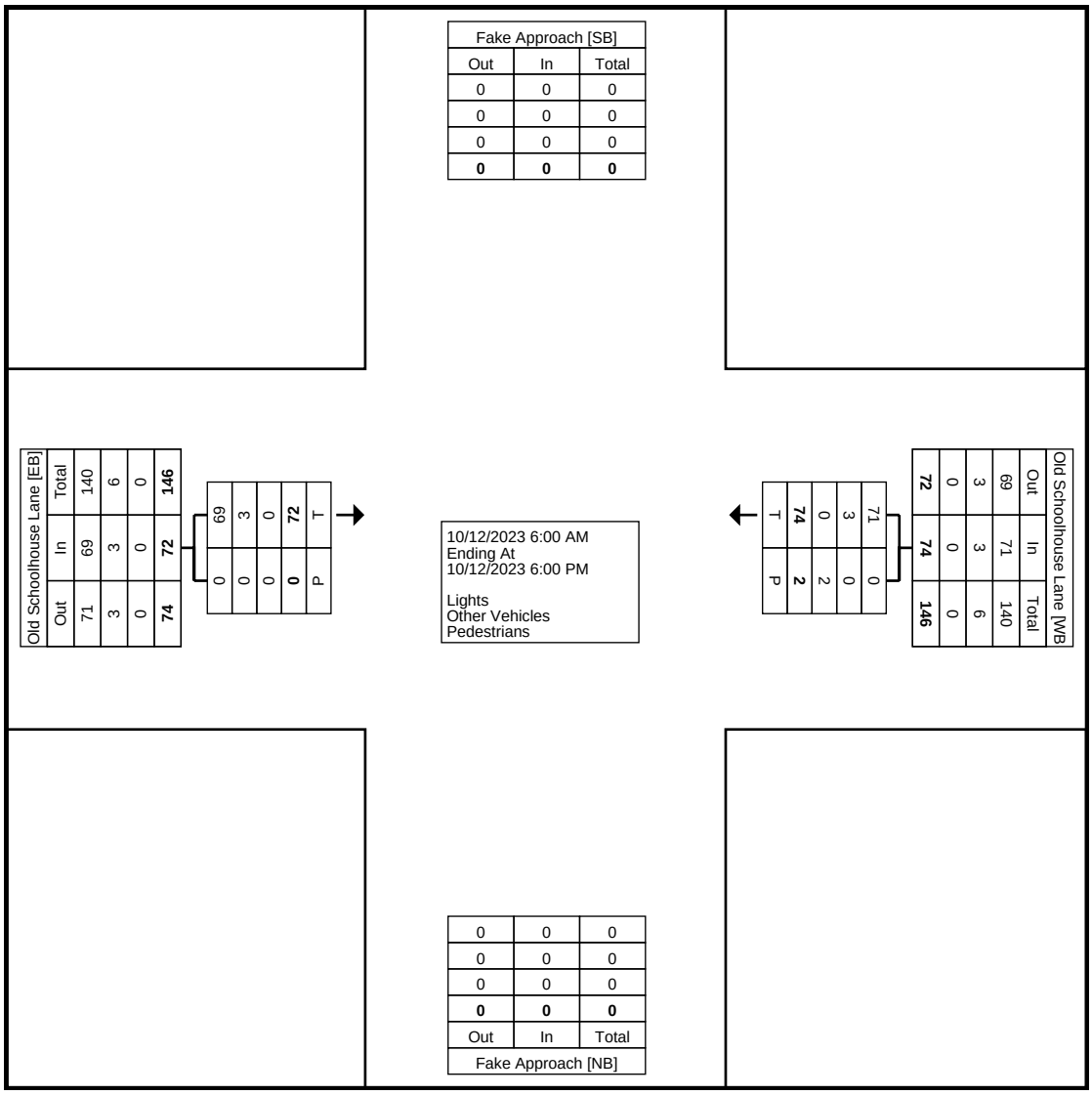
Proposed Driveway x Old Schoolhouse Lane
Site Code:
Start Date: 10/12/2023



Turning Movement Data Plot

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Counter: MIO:
Set up by: KY:

Count Name: (3) AM/PM Proposed Driveway x Old Schoolhouse Lane
Site Code:
Start Date: 10/12/2023

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Old Schoolhouse Lane Eastbound			Old Schoolhouse Lane Westbound			
	Thru	Peds	App. Total	Thru	Peds	App. Total	Int. Total
7:45 AM	4	0	4	7	0	7	11
8:00 AM	2	0	2	5	0	5	7
8:15 AM	2	0	2	2	0	2	4
8:30 AM	3	0	3	8	0	8	11
Total	11	0	11	22	0	22	33
Approach %	100.0	-	-	100.0	-	-	-
Total %	33.3	-	33.3	66.7	-	66.7	-
PHF	0.688	-	0.688	0.688	-	0.688	0.750
Lights	10	-	10	22	-	22	32
% Lights	90.9	-	90.9	100.0	-	100.0	97.0
Other Vehicles	1	-	1	0	-	0	1
% Other Vehicles	9.1	-	9.1	0.0	-	0.0	3.0
Pedestrians	-	0	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-

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Counter: MIO:
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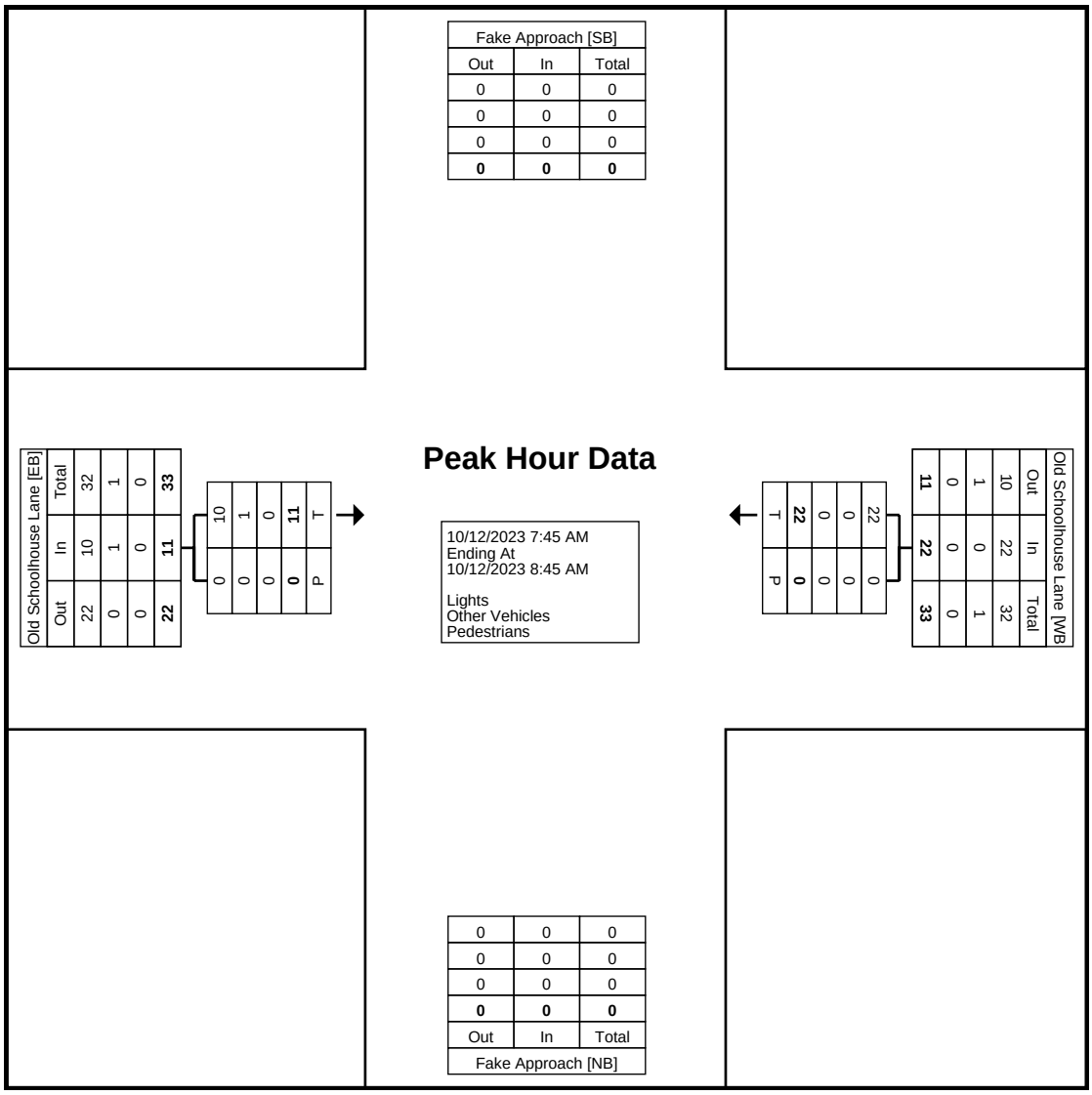
Proposed Driveway x Old Schoolhouse Lane
Site Code:
Start Date: 10/12/2023



Turning Movement Peak Hour Data Plot (7:45 AM)

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Counter: MIO:
Set up by: KY:

Count Name: (3) AM/PM Proposed Driveway x Old Schoolhouse Lane
Site Code:
Start Date: 10/12/2023

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Old Schoolhouse Lane Eastbound			Old Schoolhouse Lane Westbound			
	Thru	Peds	App. Total	Thru	Peds	App. Total	Int. Total
4:30 PM	4	0	4	6	0	6	10
4:45 PM	3	0	3	4	0	4	7
5:00 PM	9	0	9	6	2	6	15
5:15 PM	6	0	6	2	0	2	8
Total	22	0	22	18	2	18	40
Approach %	100.0	-	-	100.0	-	-	-
Total %	55.0	-	55.0	45.0	-	45.0	-
PHF	0.611	-	0.611	0.750	-	0.750	0.667
Lights	21	-	21	16	-	16	37
% Lights	95.5	-	95.5	88.9	-	88.9	92.5
Other Vehicles	1	-	1	2	-	2	3
% Other Vehicles	4.5	-	4.5	11.1	-	11.1	7.5
Pedestrians	-	0	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-

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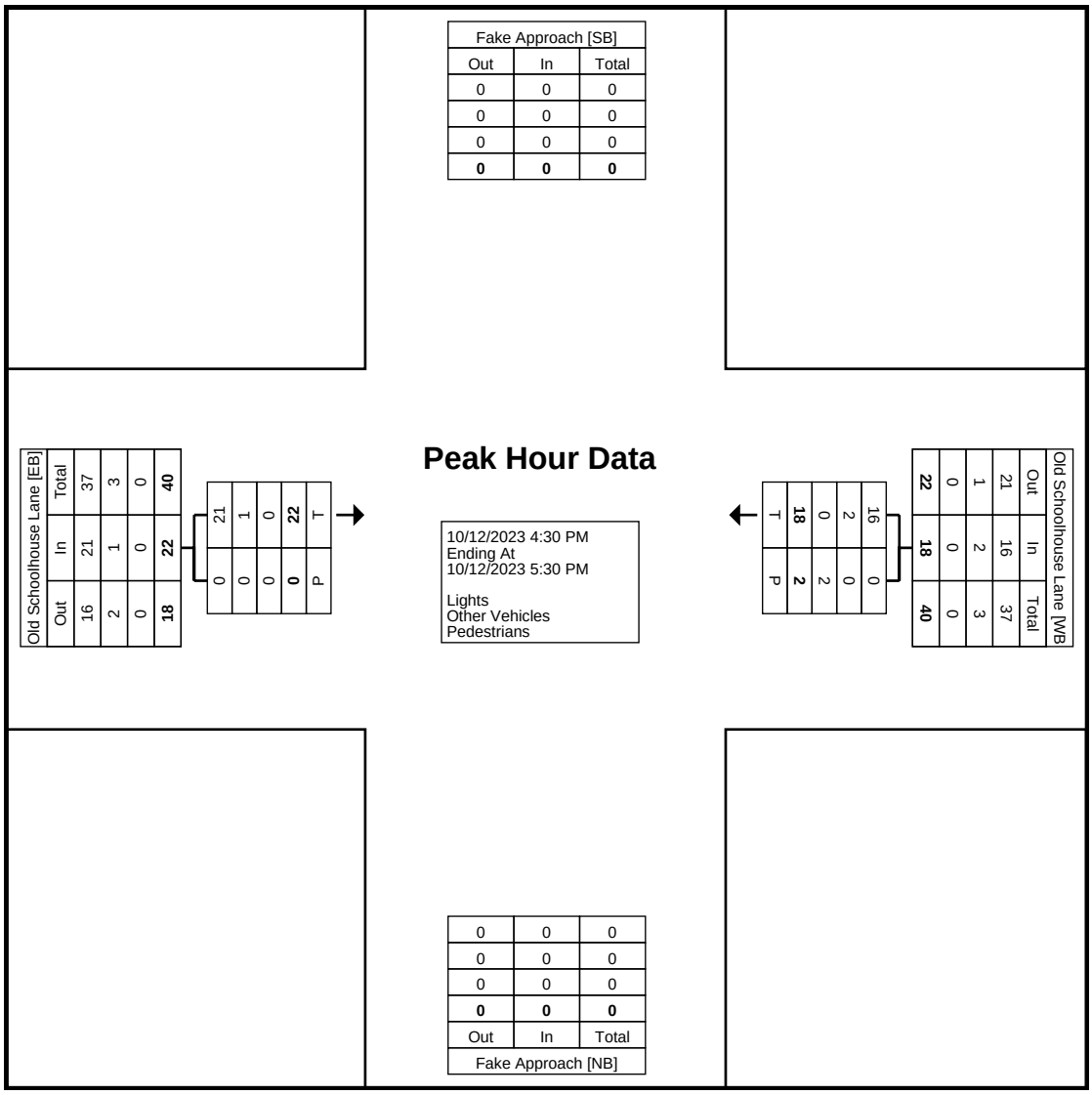
Counter: MIO:
Set up by: KY:

Count Name: (3) AM/PM
Proposed Driveway x Old Schoolhouse Lane
Site Code:
Start Date: 10/12/2023



Turning Movement Peak Hour Data Plot (4:30 PM)

Appendix D:
Traffic Volume Development Worksheets

TPD# BLC.00127
11/17/2023
Traffic Volumes Worksheet
Intersection: **Old Schoolhouse Lane & Cumberland Parkway (West)**
Synchro Node: **1** **Adjacent intersections:** **West** | **East** | **North** | **South**

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
2023 Count Volumes		**333**	**14**	**9**	**450**		**10**		**6**				**822**
2023 Count Heavy Vehicles		13	1	0	28		0		0				42
2023 Existing Volumes (Balanced)	**0**	**333**	**14**	**9**	**450**	**0**	**10**	**0**	**6**	**0**	**0**	**0**	**822**
Base Growth (0.54% compounded for 2 yrs)	0	4	0	0	5	0	0	0	0	0	0	0	9
2025 Base Volumes	**0**	**337**	**14**	**9**	**455**	**0**	**10**	**0**	**6**	**0**	**0**	**0**	**831**
New Site Trips			14				12						26
Pass-By Trips		-9	9		-13		11						-2
Total Site Trip Distribution	**0**	**-9**	**23**	**0**	**-13**	**0**	**23**	**0**	**0**	**0**	**0**	**0**	**24**
2025 Projected Volumes	**0**	**328**	**37**	**9**	**442**	**0**	**33**	**0**	**6**	**0**	**0**	**0**	**855**
Base Growth (0.54% compounded for 12 yrs)	0	22	1	1	30	0	1	0	0	0	0	0	55
2035 Base Volumes	**0**	**355**	**15**	**10**	**480**	**0**	**11**	**0**	**6**	**0**	**0**	**0**	**877**
2035 Projected Volumes	**0**	**346**	**38**	**10**	**467**	**0**	**34**	**0**	**6**	**0**	**0**	**0**	**901**
													PHF
Existing (Count) Heavy Vehicles %		4%	7%	0%	6%		0%		0%				**0.87**

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
2023 Count Volumes		**353**	**6**	**2**	**650**		**12**		**12**				**1035**
2023 Count Heavy Vehicles		3	1	0	11		2		0				17
2023 Existing Volumes (Balanced)	**0**	**353**	**6**	**2**	**650**	**0**	**12**	**0**	**12**	**0**	**0**	**0**	**1035**
Base Growth (0.54% compounded for 2 yrs)	0	4	0	0	7	0	0	0	0	0	0	0	11
2025 Base Volumes	**0**	**357**	**6**	**2**	**657**	**0**	**12**	**0**	**12**	**0**	**0**	**0**	**1046**
New Site Trips			12				14						26
Pass-By Trips		-7	7		-13		14						1
Total Site Trip Distribution	**0**	**-7**	**19**	**0**	**-13**	**0**	**28**	**0**	**0**	**0**	**0**	**0**	**27**
2025 Projected Volumes	**0**	**350**	**25**	**2**	**644**	**0**	**40**	**0**	**12**	**0**	**0**	**0**	**1073**
Base Growth (0.54% compounded for 12 yrs)	0	24	0	0	43	0	1	0	1	0	0	0	69
2035 Base Volumes	**0**	**377**	**6**	**2**	**693**	**0**	**13**	**0**	**13**	**0**	**0**	**0**	**1104**
2035 Projected Volumes	**0**	**370**	**25**	**2**	**680**	**0**	**41**	**0**	**13**	**0**	**0**	**0**	**1131**
													PHF
Existing (Count) Heavy Vehicles %		1%	17%	0%	2%		17%		0%				**0.93**

TPD# BLC.00127
11/17/2023
Traffic Volumes Worksheet
Intersection: **Old Schoolhouse Lane & Cumberland Parkway (East)**
Synchro Node: **2** **Adjacent intersections:** **West** | **East** | **North** | **South**

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
2023 Count Volumes		**335**	**5**	**13**	**484**		**2**		**14**				**853**
2023 Count Heavy Vehicles		17	0	0	30		0		1				48
2023 Existing Volumes (Balanced)	**0**	**335**	**5**	**13**	**484**	**0**	**2**	**0**	**14**	**0**	**0**	**0**	**853**
Base Growth (0.54% compounded for 2 yrs)	0	4	0	0	5	0	0	0	0	0	0	0	9
2025 Base Volumes	**0**	**339**	**5**	**13**	**489**	**0**	**2**	**0**	**14**	**0**	**0**	**0**	**862**
New Site Trips				14					13				27
Pass-By Trips		-9		13	-13				8				-1
Total Site Trip Distribution	**0**	**-9**	**0**	**27**	**-13**	**0**	**0**	**0**	**21**	**0**	**0**	**0**	**26**
2025 Projected Volumes	**0**	**330**	**5**	**40**	**476**	**0**	**2**	**0**	**35**	**0**	**0**	**0**	**888**
Base Growth (0.54% compounded for 12 yrs)	0	22	0	1	32	0	0	0	1	0	0	0	56
2035 Base Volumes	**0**	**357**	**5**	**14**	**516**	**0**	**2**	**0**	**15**	**0**	**0**	**0**	**909**
2035 Projected Volumes	**0**	**348**	**5**	**41**	**503**	**0**	**2**	**0**	**36**	**0**	**0**	**0**	**935**
													PHF
Existing (Count) Heavy Vehicles %		5%	0%	0%	6%		0%		7%				**0.87**

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
2023 Count Volumes		**375**	**1**	**16**	**627**		**2**		**21**				**1042**
2023 Count Heavy Vehicles		6	0	2	11		0		1				20
2023 Existing Volumes (Balanced)	**0**	**375**	**1**	**16**	**627**	**0**	**2**	**0**	**21**	**0**	**0**	**0**	**1042**
Base Growth (0.54% compounded for 2 yrs)	0	4	0	0	7	0	0	0	0	0	0	0	11
2025 Base Volumes	**0**	**379**	**1**	**16**	**634**	**0**	**2**	**0**	**21**	**0**	**0**	**0**	**1053**
New Site Trips				12					15				27
Pass-By Trips		-7		13	-13				8				1
Total Site Trip Distribution	**0**	**-7**	**0**	**25**	**-13**	**0**	**0**	**0**	**23**	**0**	**0**	**0**	**28**
2025 Projected Volumes	**0**	**372**	**1**	**41**	**621**	**0**	**2**	**0**	**44**	**0**	**0**	**0**	**1081**
Base Growth (0.54% compounded for 12 yrs)	0	25	0	1	42	0	0	0	1	0	0	0	69
2035 Base Volumes	**0**	**400**	**1**	**17**	**669**	**0**	**2**	**0**	**22**	**0**	**0**	**0**	**1111**
2035 Projected Volumes	**0**	**393**	**1**	**42**	**656**	**0**	**2**	**0**	**45**	**0**	**0**	**0**	**1139**
													PHF
Existing (Count) Heavy Vehicles %		2%	0%	13%	2%		0%		5%				**0.95**

TPD# BLC.00127
11/17/2023
Traffic Volumes Worksheet
Intersection: **Old Schoolhouse Lane & Proposed Driveway (West)**
Synchro Node: **3** **Adjacent intersections:** **West** | **East** | **North** | **South**

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
2023 Count Volumes		**11**			**22**								**33**
2023 Count Heavy Vehicles		1			0								1
2023 Existing Volumes (Balanced)	**0**	**11**	**0**	**0**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**33**
Base Growth (0.54% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
2025 Base Volumes	**0**	**11**	**0**	**0**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**33**
New Site Trips	14				3	11				3		9	40
Pass-By Trips	9					13				8		11	41
Total Site Trip Distribution	**23**	**0**	**0**	**0**	**3**	**24**	**0**	**0**	**0**	**11**	**0**	**20**	**81**
2025 Projected Volumes	**23**	**11**	**0**	**0**	**25**	**24**	**0**	**0**	**0**	**11**	**0**	**20**	**114**
Base Growth (0.54% compounded for 12 yrs)	0	1	0	0	1	0	0	0	0	0	0	0	2
2035 Base Volumes	**0**	**12**	**0**	**0**	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**35**
2035 Projected Volumes	**23**	**12**	**0**	**0**	**26**	**24**	**0**	**0**	**0**	**11**	**0**	**20**	**116**
													PHF
Existing (Count) Heavy Vehicles %	2%	9%			0%	2%				2%		2%	**0.90**

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
2023 Count Volumes		**22**			**18**								**40**
2023 Count Heavy Vehicles		1			2								3
2023 Existing Volumes (Balanced)	**0**	**22**	**0**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**40**
Base Growth (0.54% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
2025 Base Volumes	**0**	**22**	**0**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**40**
New Site Trips	12				4	9				4		10	39
Pass-By Trips	7					13				8		14	42
Total Site Trip Distribution	**19**	**0**	**0**	**0**	**4**	**22**	**0**	**0**	**0**	**12**	**0**	**24**	**81**
2025 Projected Volumes	**19**	**22**	**0**	**0**	**22**	**22**	**0**	**0**	**0**	**12**	**0**	**24**	**121**
Base Growth (0.54% compounded for 12 yrs)	0	1	0	0	1	0	0	0	0	0	0	0	2
2035 Base Volumes	**0**	**23**	**0**	**0**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**42**
2035 Projected Volumes	**19**	**23**	**0**	**0**	**23**	**22**	**0**	**0**	**0**	**12**	**0**	**24**	**123**
													PHF
Existing (Count) Heavy Vehicles %	2%	5%			11%	2%				2%		2%	**0.90**

TPD# BLC.00127
2/5/2024
Traffic Volumes Worksheet
Intersection: **Old Schoolhouse Lane & Proposed Driveway (East)**
Synchro Node: **4** **Adjacent intersections:** **West** | **East** | **North** | **South**

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
2023 Count Volumes		**11**			**22**								**33**
2023 Count Heavy Vehicles		1			0								1
2023 Existing Volumes (Balanced)	**0**	**11**	**0**	**0**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**33**
Base Growth (0.54% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
2025 Base Volumes	**0**	**11**	**0**	**0**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**33**
New Site Trips		3			11	3				10		3	30
Pass-By Trips		8			13								21
Total Site Trip Distribution	**0**	**11**	**0**	**0**	**24**	**3**	**0**	**0**	**0**	**10**	**0**	**3**	**51**
2025 Projected Volumes	**0**	**22**	**0**	**0**	**46**	**3**	**0**	**0**	**0**	**10**	**0**	**3**	**84**
Base Growth (0.54% compounded for 12 yrs)	0	1	0	0	1	0	0	0	0	0	0	0	2
2035 Base Volumes	**0**	**12**	**0**	**0**	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**35**
2035 Projected Volumes	**0**	**23**	**0**	**0**	**47**	**3**	**0**	**0**	**0**	**10**	**0**	**3**	**86**

Existing (Count) Heavy Vehicles %	0%	9%			0%	0%				0%		0%	**PHF**
2025 Heavy Vehicle %	2%	5%			0%	2%				2%		2%	**0.90**
2035 Heavy Vehicle %	2%	4%			0%	2%				2%		2%	

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
2023 Count Volumes		**22**			**18**								**40**
2023 Count Heavy Vehicles		1			2								3
2023 Existing Volumes (Balanced)	**0**	**22**	**0**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**40**
Base Growth (0.54% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
2025 Base Volumes	**0**	**22**	**0**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**40**
New Site Trips		4			9	3				11		4	31
Pass-By Trips		8			13								21
Total Site Trip Distribution	**0**	**12**	**0**	**0**	**22**	**3**	**0**	**0**	**0**	**11**	**0**	**4**	**52**
2025 Projected Volumes	**0**	**34**	**0**	**0**	**40**	**3**	**0**	**0**	**0**	**11**	**0**	**4**	**92**
Base Growth (0.54% compounded for 12 yrs)	0	1	0	0	1	0	0	0	0	0	0	0	2
2035 Base Volumes	**0**	**23**	**0**	**0**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**42**
2035 Projected Volumes	**0**	**35**	**0**	**0**	**41**	**3**	**0**	**0**	**0**	**11**	**0**	**4**	**94**

Existing (Count) Heavy Vehicles %	0%	5%			11%	0%				0%		0%	**PHF**
2025 Heavy Vehicle %	2%	3%			5%	2%				2%		2%	**0.90**
2035 Heavy Vehicle %	2%	3%			5%	2%				2%		2%	

Appendix E:
Capacity and Queue Analysis

Supporting Calculations

Crtical Headway and Follow-Up Headway Calculations

Source: Highway Capacity Manual, 6th Edition, Volume 3, Chapter 20

Development: Genius Kids Upper Allen

Location: Upper Allen Township, Cumberland County, PA

Intersection: Cumberland Parkway & Old Schoolhouse Lane (West)

Major Street: Cumberland Parkway

Minor Street: Old Schoolhouse Lane (West)

CRITICAL HEADWAY

Equation: $t_{c,x} = t_{c,base} + t_{C,HV} P_{HV} + t_{c,G} G - t_{3,LT}$

Where:

$t_{c,x}$ = Critical Headway for Movement X (seconds)

$t_{c,base}$ = Base Critical Headway (from PennDOT Publication 46, Exhibit 10-11)

$t_{C,HV}$ = Adjustment Factor for Heavy Vehicles
- Street with One Lane in Each Direction = 1.0 (seconds)
- Street with Two or Three Lanes in Each Direction = 2.0 (seconds)

P_{HV} = Percent of Heavy Vehicles

$t_{c,G}$ = Roadway Grade Adjustment Factor
- Minor Street Lefts and Throughs = 0.2 (seconds)
- Minor Street Rights = 0.1 (seconds)
- Major Street Lefts = 0.0 (seconds)

G = Percent Grade of Roadway Approach (Expressed as an Interger)

$t_{3,LT}$ = Intersection Geometry Adjustment Factor
(Three Leg Intersection Minor Street Left = 0.7 seconds, all others = 0.0 seconds)

FOLLOW-UP HEADWAY

Equation: $t_{f,x} = t_{f,base} + t_{f,HV} P_{HV}$

Where:

$t_{f,x}$ = Follow-up Headway for Movement X (seconds)

$t_{f,base}$ = Base Follow-up Headway (from PennDOT Pub 46, Exhibit 10-12)

$t_{f,HV}$ = Adjustment Factor for Heavy Vehicles
- Street with One Lane in Each Direction = 0.9 (seconds)
- Street with Two or Three Lanes in Each Direction = 1.0 (seconds)

P_{HV} = Percent of Heavy Vehicles

CRITICAL HEADWAY

	Major/Minor:	MINOR		MAJOR
	Street:	Old Schoolhouse Ln (West)		Cumberland Parkway
	Movement:	NB Left	NB Right	WB Left
AM Peak Hour	$t_{c,base}$	7.1	6.2	4.3
	$t_{C,HV}$	1	1	1
	P_{HV}	0	0	0
	$t_{c,G}$	0.2	0.1	0
	G	-1	-1	1
	$t_{3,LT}$	0.7	0	0
	$t_{c,x}$	**6.2**	**6.1**	**4.3**
PM Peak Hour	$t_{c,base}$	7.1	6.2	4.3
	$t_{C,HV}$	1	1	1
	P_{HV}	0.17	0	0
	$t_{c,G}$	0.2	0.1	0
	G	-1	-1	1
	$t_{3,LT}$	0.7	0	0
	$t_{c,x}$	**6.4**	**6.1**	**4.3**

FOLLOW-UP HEADWAY

	Major/Minor:	MINOR		MAJOR
	Street:	Old Schoolhouse Ln (West)		Cumberland Parkway
	Movement:	NB Left	NB Right	WB Left
AM Peak Hour	$t_{f,base}$	3.0	3.1	3.0
	$t_{f,HV}$	0.9	0.9	0.9
	P_{HV}	0	0	0
	$t_{f,x}$	**3.0**	**3.1**	**3.0**
PM Peak Hour	$t_{f,base}$	3.0	3.1	3.0
	$t_{f,HV}$	0.9	0.9	0.9
	P_{HV}	0.17	0	0
	$t_{f,x}$	**3.2**	**3.1**	**3.0**

Crtical Headway and Follow-Up Headway Calculations

Source: Highway Capacity Manual, 6th Edition, Volume 3, Chapter 20

Development: Genius Kids Upper Allen

Location: Upper Allen Township, Cumberland County, PA

Intersection: Cumberland Parkway & Old Schoolhouse Lane (East)

Major Street: Cumberland Parkway

Minor Street: Old Schoolhouse Lane (West)

CRITICAL HEADWAY

Equation: $t_{c,x} = t_{c,base} + t_{C,HV} P_{HV} + t_{c,G} G - t_{3,LT}$

Where:

$t_{c,x}$ = Critical Headway for Movement X (seconds)

$t_{c,base}$ = Base Critical Headway (from PennDOT Publication 46, Exhibit 10-11)

$t_{C,HV}$ = Adjustment Factor for Heavy Vehicles
- Street with One Lane in Each Direction = 1.0 (seconds)
- Street with Two or Three Lanes in Each Direction = 2.0 (seconds)

P_{HV} = Percent of Heavy Vehicles

$t_{c,G}$ = Roadway Grade Adjustment Factor
- Minor Street Lefts and Throughs = 0.2 (seconds)
- Minor Street Rights = 0.1 (seconds)
- Major Street Lefts = 0.0 (seconds)

G = Percent Grade of Roadway Approach (Expressed as an Interger)

$t_{3,LT}$ = Intersection Geometry Adjustment Factor
(Three Leg Intersection Minor Street Left = 0.7 seconds, all others = 0.0 seconds)

FOLLOW-UP HEADWAY

Equation: $t_{f,x} = t_{f,base} + t_{f,HV} P_{HV}$

Where:

$t_{f,x}$ = Follow-up Headway for Movement X (seconds)

$t_{f,base}$ = Base Follow-up Headway (from PennDOT Pub 46, Exhibit 10-12)

$t_{f,HV}$ = Adjustment Factor for Heavy Vehicles
- Street with One Lane in Each Direction = 0.9 (seconds)
- Street with Two or Three Lanes in Each Direction = 1.0 (seconds)

P_{HV} = Percent of Heavy Vehicles

CRITICAL HEADWAY

	Major/Minor:	MINOR		MAJOR
	Street:	Old Schoolhouse Ln (East)		Cumberland Parkway
	Movement:	NB Left	NB Right	WB Left
AM Peak Hour	$t_{c,base}$	7.1	6.2	4.3
	$t_{C,HV}$	1	1	1
	P_{HV}	0	0.07	0
	$t_{c,G}$	0.2	0.1	0
	G	-3	-3	2
	$t_{3,LT}$	0.7	0	0
	$t_{c,x}$	**5.8**	**6.0**	**4.3**
PM Peak Hour	$t_{c,base}$	7.1	6.2	4.3
	$t_{C,HV}$	1	1	1
	P_{HV}	0	0.05	0.13
	$t_{c,G}$	0.2	0.1	0
	G	-3	-3	2
	$t_{3,LT}$	0.7	0	0
	$t_{c,x}$	**5.8**	**6.0**	**4.4**

FOLLOW-UP HEADWAY

	Major/Minor:	MINOR		MAJOR
	Street:	Old Schoolhouse Ln (East)		Cumberland Parkway
	Movement:	NB Left	NB Right	WB Left
AM Peak Hour	$t_{f,base}$	3.0	3.1	3.0
	$t_{f,HV}$	0.9	0.9	0.9
	P_{HV}	0	0.07	0
	$t_{f,x}$	**3.0**	**3.2**	**3.0**
PM Peak Hour	$t_{f,base}$	3.0	3.1	3.0
	$t_{f,HV}$	0.9	0.9	0.9
	P_{HV}	0	0.05	0.13
	$t_{f,x}$	**3.0**	**3.1**	**3.1**

Crtical Headway and Follow-Up Headway Calculations

Source: Highway Capacity Manual, 6th Edition, Volume 3, Chapter 20

Development: Genius Kids Upper Allen

Location: Upper Allen Township, Cumberland County, PA

Intersection: Old Schoolhouse Lane & Proposed Driveways

Major Street: Old Schoolhouse Lane

Minor Street: Proposed Driveway

CRITICAL HEADWAY

Equation: $t_{c,x} = t_{c,base} + t_{C,HV} P_{HV} + t_{c,G} G - t_{3,LT}$

Where:

$t_{c,x}$ = Critical Headway for Movement X (seconds)

$t_{c,base}$ = Base Critical Headway (from PennDOT Publication 46, Exhibit 10-11)

$t_{C,HV}$ = Adjustment Factor for Heavy Vehicles
- Street with One Lane in Each Direction = 1.0 (seconds)
- Street with Two or Three Lanes in Each Direction = 2.0 (seconds)

P_{HV} = Percent of Heavy Vehicles

$t_{c,G}$ = Roadway Grade Adjustment Factor
- Minor Street Lefts and Throughs = 0.2 (seconds)
- Minor Street Rights = 0.1 (seconds)
- Major Street Lefts = 0.0 (seconds)

G = Percent Grade of Roadway Approach (Expressed as an Interger)

$t_{3,LT}$ = Intersection Geometry Adjustment Factor
(Three Leg Intersection Minor Street Left = 0.7 seconds, all others = 0.0 seconds)

FOLLOW-UP HEADWAY

Equation: $t_{f,x} = t_{f,base} + t_{f,HV} P_{HV}$

Where:

$t_{f,x}$ = Follow-up Headway for Movement X (seconds)

$t_{f,base}$ = Base Follow-up Headway (from PennDOT Pub 46, Exhibit 10-12)

$t_{f,HV}$ = Adjustment Factor for Heavy Vehicles
- Street with One Lane in Each Direction = 0.9 (seconds)
- Street with Two or Three Lanes in Each Direction = 1.0 (seconds)

P_{HV} = Percent of Heavy Vehicles

CRITICAL HEADWAY

	Major/Minor:	MINOR		MAJOR
	Street:	Proposed Dwy		Old Schoolhouse Lane
	Movement:	SB Left	SB Right	EB Left
AM Peak Hour	$t_{c,base}$	7.1	6.2	4.3
	$t_{C,HV}$	1	1	1
	P_{HV}	0.02	0.02	0.02
	$t_{c,G}$	0.2	0.1	0
	G	0	0	1
	$t_{3,LT}$	0.7	0	0
	$t_{c,x}$	**6.4**	**6.2**	**4.3**
PM Peak Hour	$t_{c,base}$	7.1	6.2	4.3
	$t_{C,HV}$	1	1	1
	P_{HV}	0.02	0.02	0.02
	$t_{c,G}$	0.2	0.1	0
	G	0	0	1
	$t_{3,LT}$	0.7	0	0
	$t_{c,x}$	**6.4**	**6.2**	**4.3**

FOLLOW-UP HEADWAY

	Major/Minor:	MINOR		MAJOR
	Street:	Proposed Dwy		Old Schoolhouse Lane
	Movement:	SB Left	SB Right	EB Left
AM Peak Hour	$t_{f,base}$	3.0	3.1	3.0
	$t_{f,HV}$	0.9	0.9	0.9
	P_{HV}	0.02	0.02	0.02
	$t_{f,x}$	**3.0**	**3.1**	**3.0**
PM Peak Hour	$t_{f,base}$	3.0	3.1	3.0
	$t_{f,HV}$	0.9	0.9	0.9
	P_{HV}	0.02	0.02	0.02
	$t_{f,x}$	**3.0**	**3.1**	**3.0**

2023 Existing Conditions
Synchro Reports

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	333	14	9	450	10	6
Future Volume (vph)	333	14	9	450	10	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	14	16	16
Grade (%)	-2%			1%	-1%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	307			1469	293	
Travel Time (s)	6.0			28.6	8.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	7%	0%	6%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	399	0	10	517	18	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	333	14	9	450	10	6
Future Vol, veh/h	333	14	9	450	10	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	-1	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	4	7	0	6	0	0
Mvmt Flow	383	16	10	517	11	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	399	0	928	391
Stage 1	-	-	-	-	391	-
Stage 2	-	-	-	-	537	-
Critical Hdwy	-	-	4.3	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	876	-	349	705
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	685	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	876	-	345	705
Mov Cap-2 Maneuver	-	-	-	-	490	-
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	677	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.2	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	553	-	-	876	-
HCM Lane V/C Ratio	0.033	-	-	0.012	-
HCM Control Delay (s/veh)	11.7	-	-	9.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.1	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	335	5	13	484	2	14
Future Volume (vph)	335	5	13	484	2	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	16	12	16	16
Grade (%)	-1%			2%	-3%	
Storage Length (ft)		0	225		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1469			327	476	
Travel Time (s)	28.6			6.4	13.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	0%	0%	6%	0%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	391	0	15	556	18	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	335	5	13	484	2	14
Future Vol, veh/h	335	5	13	484	2	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	225	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	2	-3	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	5	0	0	6	0	7
Mvmt Flow	385	6	15	556	2	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	391	0	974	388
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	586	-
Critical Hdwy	-	-	4.3	-	5.8	6
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	-	-	3	-	3	3.2
Pot Cap-1 Maneuver	-	-	881	-	365	697
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	694	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	881	-	359	697
Mov Cap-2 Maneuver	-	-	-	-	504	-
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	682	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.2	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	665	-	-	881	-
HCM Lane V/C Ratio	0.028	-	-	0.017	-
HCM Control Delay (s/veh)	10.6	-	-	9.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.1	-	-	0.1	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	353	6	2	650	12	12
Future Volume (vph)	353	6	2	650	12	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	14	16	16
Grade (%)	-2%			1%	-1%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	307			1469	293	
Travel Time (s)	6.0			28.6	8.0	
Confl. Peds. (#/hr)		1			1	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	17%	0%	2%	17%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	386	0	2	699	26	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	353	6	2	650	12	12
Future Vol, veh/h	353	6	2	650	12	12
Conflicting Peds, #/hr	0	1	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	-1	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	17	0	2	17	0
Mvmt Flow	380	6	2	699	13	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	387	0	1088	384
Stage 1	-	-	-	-	384	-
Stage 2	-	-	-	-	704	-
Critical Hdwy	-	-	4.3	-	6.4	6.1
Critical Hdwy Stg 1	-	-	-	-	5.37	-
Critical Hdwy Stg 2	-	-	-	-	5.37	-
Follow-up Hdwy	-	-	3	-	3.2	3.1
Pot Cap-1 Maneuver	-	-	884	-	254	712
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	530	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	883	-	253	711
Mov Cap-2 Maneuver	-	-	-	-	392	-
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	528	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	505	-	-	883	-
HCM Lane V/C Ratio	0.051	-	-	0.002	-
HCM Control Delay (s/veh)	12.5	-	-	9.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.2	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	375	1	16	627	2	21
Future Volume (vph)	375	1	16	627	2	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	16	12	16	16
Grade (%)	-1%			2%	-3%	
Storage Length (ft)		0	225		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1469			327	476	
Travel Time (s)	28.6			6.4	13.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	13%	2%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	396	0	17	660	24	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	375	1	16	627	2	21
Future Vol, veh/h	375	1	16	627	2	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	225	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	2	-3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	13	2	0	5
Mvmt Flow	395	1	17	660	2	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	396	0	1090	396
Stage 1	-	-	-	-	396	-
Stage 2	-	-	-	-	694	-
Critical Hdwy	-	-	4.4	-	5.8	6
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	-	-	3.1	-	3	3.1
Pot Cap-1 Maneuver	-	-	845	-	315	708
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	626	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	845	-	309	708
Mov Cap-2 Maneuver	-	-	-	-	457	-
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	613	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.2	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	676	-	-	845	-
HCM Lane V/C Ratio	0.036	-	-	0.02	-
HCM Control Delay (s/veh)	10.5	-	-	9.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.1	-	-	0.1	-

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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	337	14	9	455	10	6
Future Volume (vph)	337	14	9	455	10	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	14	16	16
Grade (%)	-2%			1%	-1%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	307			1469	293	
Travel Time (s)	6.0			28.6	8.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	7%	0%	6%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	403	0	10	523	18	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	337	14	9	455	10	6
Future Vol, veh/h	337	14	9	455	10	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	-1	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	4	7	0	6	0	0
Mvmt Flow	387	16	10	523	11	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	403	0	938	395
Stage 1	-	-	-	-	395	-
Stage 2	-	-	-	-	543	-
Critical Hdwy	-	-	4.3	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	873	-	344	702
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	681	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	873	-	340	702
Mov Cap-2 Maneuver	-	-	-	-	486	-
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	674	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.2	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	549	-	-	873	-
HCM Lane V/C Ratio	0.033	-	-	0.012	-
HCM Control Delay (s/veh)	11.8	-	-	9.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.1	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	339	5	13	489	2	14
Future Volume (vph)	339	5	13	489	2	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	16	12	16	16
Grade (%)	-1%			2%	-3%	
Storage Length (ft)		0	225		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1469			327	476	
Travel Time (s)	28.6			6.4	13.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	0%	0%	6%	0%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	396	0	15	562	18	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	339	5	13	489	2	14
Future Vol, veh/h	339	5	13	489	2	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	225	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	2	-3	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	5	0	0	6	0	7
Mvmt Flow	390	6	15	562	2	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	396	0	985	393
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	592	-
Critical Hdwy	-	-	4.3	-	5.8	6
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	-	-	3	-	3	3.2
Pot Cap-1 Maneuver	-	-	878	-	360	692
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	690	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	878	-	354	692
Mov Cap-2 Maneuver	-	-	-	-	500	-
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	678	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.2	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	660	-	-	878	-
HCM Lane V/C Ratio	0.028	-	-	0.017	-
HCM Control Delay (s/veh)	10.6	-	-	9.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.1	-	-	0.1	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	357	6	2	657	12	12
Future Volume (vph)	357	6	2	657	12	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	14	16	16
Grade (%)	-2%			1%	-1%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	307			1469	293	
Travel Time (s)	6.0			28.6	8.0	
Confl. Peds. (#/hr)		1			1	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	17%	0%	2%	17%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	390	0	2	706	26	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	357	6	2	657	12	12
Future Vol, veh/h	357	6	2	657	12	12
Conflicting Peds, #/hr	0	1	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	-1	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	17	0	2	17	0
Mvmt Flow	384	6	2	706	13	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	391	0	1099	388
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	711	-
Critical Hdwy	-	-	4.3	-	6.4	6.1
Critical Hdwy Stg 1	-	-	-	-	5.37	-
Critical Hdwy Stg 2	-	-	-	-	5.37	-
Follow-up Hdwy	-	-	3	-	3.2	3.1
Pot Cap-1 Maneuver	-	-	881	-	250	708
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	526	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	880	-	249	707
Mov Cap-2 Maneuver	-	-	-	-	389	-
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	524	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	502	-	-	880	-
HCM Lane V/C Ratio	0.051	-	-	0.002	-
HCM Control Delay (s/veh)	12.6	-	-	9.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.2	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	379	1	16	634	2	21
Future Volume (vph)	379	1	16	634	2	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	16	12	16	16
Grade (%)	-1%			2%	-3%	
Storage Length (ft)		0	225		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1469			327	476	
Travel Time (s)	28.6			6.4	13.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	13%	2%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	400	0	17	667	24	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	379	1	16	634	2	21
Future Vol, veh/h	379	1	16	634	2	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	225	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	2	-3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	13	2	0	5
Mvmt Flow	399	1	17	667	2	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	400	0	1101	400
Stage 1	-	-	-	-	400	-
Stage 2	-	-	-	-	701	-
Critical Hdwy	-	-	4.4	-	5.8	6
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	-	-	3.1	-	3	3.1
Pot Cap-1 Maneuver	-	-	842	-	311	705
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	622	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	842	-	305	705
Mov Cap-2 Maneuver	-	-	-	-	454	-
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	610	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.2	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	673	-	-	842	-
HCM Lane V/C Ratio	0.036	-	-	0.02	-
HCM Control Delay (s/veh)	10.5	-	-	9.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.1	-	-	0.1	-

2035 Base (No-Build) Conditions Synchro Reports

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	355	15	10	480	11	6
Future Volume (vph)	355	15	10	480	11	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	14	16	16
Grade (%)	-2%			1%	-1%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	307			1469	293	
Travel Time (s)	6.0			28.6	8.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	7%	0%	6%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	425	0	11	552	20	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	355	15	10	480	11	6
Future Vol, veh/h	355	15	10	480	11	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	-1	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	4	7	0	6	0	0
Mvmt Flow	408	17	11	552	13	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	425	0	991	417
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	574	-
Critical Hdwy	-	-	4.3	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	858	-	320	682
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	659	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	858	-	316	682
Mov Cap-2 Maneuver	-	-	-	-	465	-
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	650	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.2	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	524	-	-	858	-
HCM Lane V/C Ratio	0.037	-	-	0.013	-
HCM Control Delay (s/veh)	12.1	-	-	9.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.1	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	357	5	14	516	2	15
Future Volume (vph)	357	5	14	516	2	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	16	12	16	16
Grade (%)	-1%			2%	-3%	
Storage Length (ft)		0	225		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1469			327	476	
Travel Time (s)	28.6			6.4	13.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	0%	0%	6%	0%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	416	0	16	593	19	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	357	5	14	516	2	15
Future Vol, veh/h	357	5	14	516	2	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	225	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	2	-3	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	5	0	0	6	0	7
Mvmt Flow	410	6	16	593	2	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	416	0	1038	413
Stage 1	-	-	-	-	413	-
Stage 2	-	-	-	-	625	-
Critical Hdwy	-	-	4.3	-	5.8	6
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	-	-	3	-	3	3.2
Pot Cap-1 Maneuver	-	-	864	-	337	675
Stage 1	-	-	-	-	818	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	864	-	331	675
Mov Cap-2 Maneuver	-	-	-	-	480	-
Stage 1	-	-	-	-	818	-
Stage 2	-	-	-	-	656	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.2	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	644	-	-	864	-
HCM Lane V/C Ratio	0.03	-	-	0.019	-
HCM Control Delay (s/veh)	10.8	-	-	9.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.1	-	-	0.1	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	377	6	2	693	13	13
Future Volume (vph)	377	6	2	693	13	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	14	16	16
Grade (%)	-2%			1%	-1%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	307			1469	293	
Travel Time (s)	6.0			28.6	8.0	
Confl. Peds. (#/hr)		1			1	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	17%	0%	2%	17%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	411	0	2	745	28	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	377	6	2	693	13	13
Future Vol, veh/h	377	6	2	693	13	13
Conflicting Peds, #/hr	0	1	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	-1	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	17	0	2	17	0
Mvmt Flow	405	6	2	745	14	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	412	0	1159	409
Stage 1	-	-	-	-	409	-
Stage 2	-	-	-	-	750	-
Critical Hdwy	-	-	4.3	-	6.4	6.1
Critical Hdwy Stg 1	-	-	-	-	5.37	-
Critical Hdwy Stg 2	-	-	-	-	5.37	-
Follow-up Hdwy	-	-	3	-	3.2	3.1
Pot Cap-1 Maneuver	-	-	867	-	230	689
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	504	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	866	-	229	688
Mov Cap-2 Maneuver	-	-	-	-	370	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	502	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	481	-	-	866	-
HCM Lane V/C Ratio	0.058	-	-	0.002	-
HCM Control Delay (s/veh)	12.9	-	-	9.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.2	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	400	1	17	669	2	22
Future Volume (vph)	400	1	17	669	2	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	16	12	16	16
Grade (%)	-1%			2%	-3%	
Storage Length (ft)		0	225		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1469			327	476	
Travel Time (s)	28.6			6.4	13.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	13%	2%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	422	0	18	704	25	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	400	1	17	669	2	22
Future Vol, veh/h	400	1	17	669	2	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	225	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	2	-3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	13	2	0	5
Mvmt Flow	421	1	18	704	2	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	422	0	1162	422
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	740	-
Critical Hdwy	-	-	4.4	-	5.8	6
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	-	-	3.1	-	3	3.1
Pot Cap-1 Maneuver	-	-	827	-	288	686
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	599	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	827	-	282	686
Mov Cap-2 Maneuver	-	-	-	-	434	-
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	586	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.2	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	654	-	-	827	-
HCM Lane V/C Ratio	0.039	-	-	0.022	-
HCM Control Delay (s/veh)	10.7	-	-	9.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.1	-	-	0.1	-

2025 Projected (Build) Conditions Synchro Reports

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	328	37	9	442	33	6
Future Volume (vph)	328	37	9	442	33	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	14	16	16
Grade (%)	-2%			1%	-1%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	307			1469	293	
Travel Time (s)	6.0			28.6	8.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	7%	0%	6%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	420	0	10	508	45	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	328	37	9	442	33	6
Future Vol, veh/h	328	37	9	442	33	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	-1	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	4	7	0	6	0	0
Mvmt Flow	377	43	10	508	38	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	420	0	927	399
Stage 1	-	-	-	-	399	-
Stage 2	-	-	-	-	528	-
Critical Hdwy	-	-	4.3	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	861	-	349	698
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	692	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	861	-	345	698
Mov Cap-2 Maneuver	-	-	-	-	491	-
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	684	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.2	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	514	-	-	861	-
HCM Lane V/C Ratio	0.087	-	-	0.012	-
HCM Control Delay (s/veh)	12.7	-	-	9.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.3	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	330	5	40	476	2	35
Future Volume (vph)	330	5	40	476	2	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	16	12	16	16
Grade (%)	-1%			2%	-3%	
Storage Length (ft)		0	225		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1469			327	476	
Travel Time (s)	28.6			6.4	13.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	0%	0%	6%	0%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	385	0	46	547	42	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

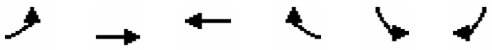
Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	330	5	40	476	2	35
Future Vol, veh/h	330	5	40	476	2	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	225	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	2	-3	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	5	0	0	6	0	7
Mvmt Flow	379	6	46	547	2	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	385	0	1021	382
Stage 1	-	-	-	-	382	-
Stage 2	-	-	-	-	639	-
Critical Hdwy	-	-	4.3	-	5.8	5.9
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	886	-	344	729
Stage 1	-	-	-	-	842	-
Stage 2	-	-	-	-	660	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	886	-	326	729
Mov Cap-2 Maneuver	-	-	-	-	471	-
Stage 1	-	-	-	-	842	-
Stage 2	-	-	-	-	626	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.7	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	708	-	-	886	-
HCM Lane V/C Ratio	0.06	-	-	0.052	-
HCM Control Delay (s/veh)	10.4	-	-	9.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.2	-	-	0.2	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	23	11	25	24	11	20
Future Volume (vph)	23	11	25	24	11	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	12	12
Grade (%)		1%	-1%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		25	30		30	
Link Distance (ft)		948	144		107	
Travel Time (s)		25.9	3.3		2.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	9%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	38	55	0	34	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

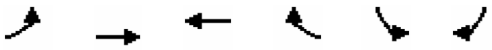
Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	11	25	24	11	20
Future Vol, veh/h	23	11	25	24	11	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	9	0	2	2	2
Mvmt Flow	26	12	28	27	12	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	55	0	-	0	106	42
Stage 1	-	-	-	-	42	-
Stage 2	-	-	-	-	64	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1150	-	-	-	1038	1100
Stage 1	-	-	-	-	1146	-
Stage 2	-	-	-	-	1119	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1150	-	-	-	1014	1100
Mov Cap-2 Maneuver	-	-	-	-	1014	-
Stage 1	-	-	-	-	1120	-
Stage 2	-	-	-	-	1119	-

Approach	EB	WB	SB
HCM Control Delay, s/v	5.5	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1150	-	-	-	1068
HCM Lane V/C Ratio	0.022	-	-	-	0.032
HCM Control Delay (s/veh)	8.2	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0.1	-	-	-	0.1



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	22	46	3	10	3
Future Volume (vph)	0	22	46	3	10	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	12	12
Grade (%)		1%	-1%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		25	25		25	
Link Distance (ft)		144	476		112	
Travel Time (s)		3.9	13.0		3.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	9%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	24	54	0	14	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	22	46	3	10	3
Future Vol, veh/h	0	22	46	3	10	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	9	0	2	2	2
Mvmt Flow	0	24	51	3	11	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	54	0	-	0	77	53
Stage 1	-	-	-	-	53	-
Stage 2	-	-	-	-	24	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1151	-	-	-	1080	1084
Stage 1	-	-	-	-	1133	-
Stage 2	-	-	-	-	1169	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1151	-	-	-	1080	1084
Mov Cap-2 Maneuver	-	-	-	-	1080	-
Stage 1	-	-	-	-	1133	-
Stage 2	-	-	-	-	1169	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	8.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1151	-	-	-	1081
HCM Lane V/C Ratio	-	-	-	-	0.013
HCM Control Delay (s/veh)	0	-	-	-	8.4
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	350	25	2	644	40	12
Future Volume (vph)	350	25	2	644	40	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	14	16	16
Grade (%)	-2%			1%	-1%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	307			1469	293	
Travel Time (s)	6.0			28.6	8.0	
Confl. Peds. (#/hr)		1			1	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	17%	0%	2%	17%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	403	0	2	692	56	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	350	25	2	644	40	12
Future Vol, veh/h	350	25	2	644	40	12
Conflicting Peds, #/hr	0	1	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	-1	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	17	0	2	17	0
Mvmt Flow	376	27	2	692	43	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	404	0	1088	391
Stage 1	-	-	-	-	391	-
Stage 2	-	-	-	-	697	-
Critical Hdwy	-	-	4.3	-	6.4	6.1
Critical Hdwy Stg 1	-	-	-	-	5.37	-
Critical Hdwy Stg 2	-	-	-	-	5.37	-
Follow-up Hdwy	-	-	3	-	3.2	3.1
Pot Cap-1 Maneuver	-	-	872	-	254	705
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	534	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	871	-	253	704
Mov Cap-2 Maneuver	-	-	-	-	393	-
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	532	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	438	-	-	871	-
HCM Lane V/C Ratio	0.128	-	-	0.002	-
HCM Control Delay (s/veh)	14.4	-	-	9.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.4	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	372	1	41	621	2	44
Future Volume (vph)	372	1	41	621	2	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	16	12	16	16
Grade (%)	-1%			2%	-3%	
Storage Length (ft)		0	225		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1469			327	476	
Travel Time (s)	28.6			6.4	13.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	13%	2%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	393	0	43	654	48	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

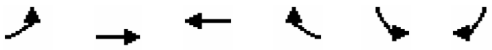
Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	372	1	41	621	2	44
Future Vol, veh/h	372	1	41	621	2	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	225	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	2	-3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	13	2	0	5
Mvmt Flow	392	1	43	654	2	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	393	0	1133	393
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	740	-
Critical Hdwy	-	-	4.4	-	5.8	6
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	-	-	3.1	-	3	3.1
Pot Cap-1 Maneuver	-	-	847	-	299	711
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	599	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	847	-	284	711
Mov Cap-2 Maneuver	-	-	-	-	430	-
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	568	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.6	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	691	-	-	847	-
HCM Lane V/C Ratio	0.07	-	-	0.051	-
HCM Control Delay (s/veh)	10.6	-	-	9.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.2	-	-	0.2	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	22	22	22	12	24
Future Volume (vph)	19	22	22	22	12	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	12	12
Grade (%)		1%	-1%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		25	30		30	
Link Distance (ft)		948	144		107	
Travel Time (s)		25.9	3.3		2.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	11%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	45	48	0	40	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

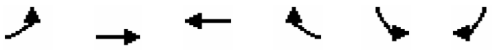
Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	22	22	22	12	24
Future Vol, veh/h	19	22	22	22	12	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	5	11	2	2	2
Mvmt Flow	21	24	24	24	13	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	48	0	-	0	102	36
Stage 1	-	-	-	-	36	-
Stage 2	-	-	-	-	66	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1156	-	-	-	1044	1108
Stage 1	-	-	-	-	1154	-
Stage 2	-	-	-	-	1117	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1156	-	-	-	1025	1108
Mov Cap-2 Maneuver	-	-	-	-	1025	-
Stage 1	-	-	-	-	1133	-
Stage 2	-	-	-	-	1117	-

Approach	EB	WB	SB
HCM Control Delay, s/v	3.8	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1156	-	-	-	1079
HCM Lane V/C Ratio	0.018	-	-	-	0.037
HCM Control Delay (s/veh)	8.2	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0.1	-	-	-	0.1



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	34	40	3	11	4
Future Volume (vph)	0	34	40	3	11	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	12	12
Grade (%)		1%	-1%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		25	25		25	
Link Distance (ft)		144	476		112	
Travel Time (s)		3.9	13.0		3.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	11%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	38	47	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	34	40	3	11	4
Future Vol, veh/h	0	34	40	3	11	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	5	11	2	2	2
Mvmt Flow	0	38	44	3	12	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	47	0	-	0	84	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	38	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1157	-	-	-	1070	1094
Stage 1	-	-	-	-	1141	-
Stage 2	-	-	-	-	1151	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1157	-	-	-	1070	1094
Mov Cap-2 Maneuver	-	-	-	-	1070	-
Stage 1	-	-	-	-	1141	-
Stage 2	-	-	-	-	1151	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	8.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1157	-	-	-	1076
HCM Lane V/C Ratio	-	-	-	-	0.015
HCM Control Delay (s/veh)	0	-	-	-	8.4
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0

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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	346	38	10	467	34	6
Future Volume (vph)	346	38	10	467	34	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	14	16	16
Grade (%)	-2%			1%	-1%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	307			1469	293	
Travel Time (s)	6.0			28.6	8.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	7%	0%	6%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	442	0	11	537	46	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	346	38	10	467	34	6
Future Vol, veh/h	346	38	10	467	34	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	-1	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	4	7	0	6	0	0
Mvmt Flow	398	44	11	537	39	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	442	0	979	420
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	559	-
Critical Hdwy	-	-	4.3	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	846	-	325	679
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	846	-	321	679
Mov Cap-2 Maneuver	-	-	-	-	470	-
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	660	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.2	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	493	-	-	846	-
HCM Lane V/C Ratio	0.093	-	-	0.014	-
HCM Control Delay (s/veh)	13.1	-	-	9.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.3	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	348	5	41	503	2	36
Future Volume (vph)	348	5	41	503	2	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	16	12	16	16
Grade (%)	-1%			2%	-3%	
Storage Length (ft)		0	225		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1469			327	476	
Travel Time (s)	28.6			6.4	13.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	0%	0%	6%	0%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	406	0	47	578	43	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

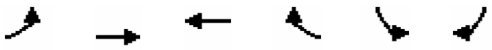
Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	348	5	41	503	2	36
Future Vol, veh/h	348	5	41	503	2	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	225	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	2	-3	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	5	0	0	6	0	7
Mvmt Flow	400	6	47	578	2	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	406	0	1075	403
Stage 1	-	-	-	-	403	-
Stage 2	-	-	-	-	672	-
Critical Hdwy	-	-	4.3	-	5.8	6
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	-	-	3	-	3	3.2
Pot Cap-1 Maneuver	-	-	871	-	321	684
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	640	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	871	-	304	684
Mov Cap-2 Maneuver	-	-	-	-	452	-
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	605	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.7	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	666	-	-	871	-
HCM Lane V/C Ratio	0.066	-	-	0.054	-
HCM Control Delay (s/veh)	10.8	-	-	9.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.2	-	-	0.2	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	23	12	26	24	11	20
Future Volume (vph)	23	12	26	24	11	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	12	12
Grade (%)		1%	-1%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		25	30		30	
Link Distance (ft)		948	144		107	
Travel Time (s)		25.9	3.3		2.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	9%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	39	56	0	34	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

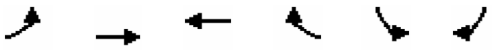
Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	12	26	24	11	20
Future Vol, veh/h	23	12	26	24	11	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	9	0	2	2	2
Mvmt Flow	26	13	29	27	12	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	56	0	-	0	108	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	65	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1149	-	-	-	1035	1098
Stage 1	-	-	-	-	1145	-
Stage 2	-	-	-	-	1118	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1149	-	-	-	1011	1098
Mov Cap-2 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	1119	-
Stage 2	-	-	-	-	1118	-

Approach	EB	WB	SB
HCM Control Delay, s/v	5.4	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1149	-	-	-	1065
HCM Lane V/C Ratio	0.022	-	-	-	0.032
HCM Control Delay (s/veh)	8.2	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0.1	-	-	-	0.1



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	23	47	3	10	3
Future Volume (vph)	0	23	47	3	10	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	12	12
Grade (%)		1%	-1%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		25	25		25	
Link Distance (ft)		144	476		112	
Travel Time (s)		3.9	13.0		3.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	9%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	26	55	0	14	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	23	47	3	10	3
Future Vol, veh/h	0	23	47	3	10	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	9	0	2	2	2
Mvmt Flow	0	26	52	3	11	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	55	0	-	0	80	54
Stage 1	-	-	-	-	54	-
Stage 2	-	-	-	-	26	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1150	-	-	-	1076	1083
Stage 1	-	-	-	-	1131	-
Stage 2	-	-	-	-	1166	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1150	-	-	-	1076	1083
Mov Cap-2 Maneuver	-	-	-	-	1076	-
Stage 1	-	-	-	-	1131	-
Stage 2	-	-	-	-	1166	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	8.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1150	-	-	-	1078
HCM Lane V/C Ratio	-	-	-	-	0.013
HCM Control Delay (s/veh)	0	-	-	-	8.4
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	370	25	2	680	41	13
Future Volume (vph)	370	25	2	680	41	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	14	16	16
Grade (%)	-2%			1%	-1%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	307			1469	293	
Travel Time (s)	6.0			28.6	8.0	
Confl. Peds. (#/hr)		1			1	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	17%	0%	2%	17%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	425	0	2	731	58	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	370	25	2	680	41	13
Future Vol, veh/h	370	25	2	680	41	13
Conflicting Peds, #/hr	0	1	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	-1	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	17	0	2	17	0
Mvmt Flow	398	27	2	731	44	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	426	0	1149	413
Stage 1	-	-	-	-	413	-
Stage 2	-	-	-	-	736	-
Critical Hdwy	-	-	4.3	-	6.4	6.1
Critical Hdwy Stg 1	-	-	-	-	5.37	-
Critical Hdwy Stg 2	-	-	-	-	5.37	-
Follow-up Hdwy	-	-	3	-	3.2	3.1
Pot Cap-1 Maneuver	-	-	857	-	233	685
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	511	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	856	-	232	684
Mov Cap-2 Maneuver	-	-	-	-	374	-
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	509	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	420	-	-	856	-
HCM Lane V/C Ratio	0.138	-	-	0.003	-
HCM Control Delay (s/veh)	14.9	-	-	9.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.5	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	393	1	42	656	2	45
Future Volume (vph)	393	1	42	656	2	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	16	12	16	16
Grade (%)	-1%			2%	-3%	
Storage Length (ft)		0	225		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1469			327	476	
Travel Time (s)	28.6			6.4	13.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	13%	2%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	415	0	44	691	49	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

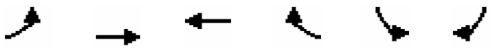
Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	393	1	42	656	2	45
Future Vol, veh/h	393	1	42	656	2	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	225	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	2	-3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	13	2	0	5
Mvmt Flow	414	1	44	691	2	47

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	415	0	1194	415
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	779	-
Critical Hdwy	-	-	4.4	-	5.8	6
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	-	-	3.1	-	3	3.1
Pot Cap-1 Maneuver	-	-	832	-	277	692
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	577	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	832	-	262	692
Mov Cap-2 Maneuver	-	-	-	-	411	-
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	546	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.6	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	672	-	-	832	-
HCM Lane V/C Ratio	0.074	-	-	0.053	-
HCM Control Delay (s/veh)	10.8	-	-	9.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q (veh)	0.2	-	-	0.2	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	23	23	22	12	24
Future Volume (vph)	19	23	23	22	12	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	12	12
Grade (%)		1%	-1%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		25	30		30	
Link Distance (ft)		948	144		107	
Travel Time (s)		25.9	3.3		2.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	11%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	47	50	0	40	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

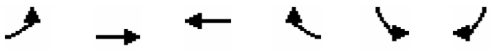
Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	23	23	22	12	24
Future Vol, veh/h	19	23	23	22	12	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	5	11	2	2	2
Mvmt Flow	21	26	26	24	13	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	50	0	-	0	106	38
Stage 1	-	-	-	-	38	-
Stage 2	-	-	-	-	68	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1154	-	-	-	1038	1105
Stage 1	-	-	-	-	1151	-
Stage 2	-	-	-	-	1114	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1154	-	-	-	1019	1105
Mov Cap-2 Maneuver	-	-	-	-	1019	-
Stage 1	-	-	-	-	1130	-
Stage 2	-	-	-	-	1114	-

Approach	EB	WB	SB
HCM Control Delay, s/v	3.7	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1154	-	-	-	1075
HCM Lane V/C Ratio	0.018	-	-	-	0.037
HCM Control Delay (s/veh)	8.2	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0.1	-	-	-	0.1



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	35	41	3	11	4
Future Volume (vph)	0	35	41	3	11	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	12	12
Grade (%)		1%	-1%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		25	25		25	
Link Distance (ft)		144	476		112	
Travel Time (s)		3.9	13.0		3.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	11%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	39	49	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	35	41	3	11	4
Future Vol, veh/h	0	35	41	3	11	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	5	11	2	2	2
Mvmt Flow	0	39	46	3	12	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	49	0	-	0	87	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	39	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1155	-	-	-	1065	1091
Stage 1	-	-	-	-	1139	-
Stage 2	-	-	-	-	1150	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1155	-	-	-	1065	1091
Mov Cap-2 Maneuver	-	-	-	-	1065	-
Stage 1	-	-	-	-	1139	-
Stage 2	-	-	-	-	1150	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	8.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1155	-	-	-	1072
HCM Lane V/C Ratio	-	-	-	-	0.016
HCM Control Delay (s/veh)	0	-	-	-	8.4
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0

Appendix F:
Auxiliary Turn Lane Warrant Analysis

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Upper Allen Township	**Analysis Date:**	2/5/2024
County:	Cumberland County	**Conducted By:**	DL
PennDOT Engineering District:	8	**Checked By:**	JW
		Agency/Company Name:	TPD

Intersection & Approach Description: Old Schoolhouse Lane & Proposed Site Driveway (West) - Eastbound Left

Analysis Period:	2035 Projected (Build)	**Number of Approach Lanes:**	1
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Rolling	**Left or Right-Turn Lane Analysis?:**	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	23	2.0%	24
	Through	-	12	9.0%	14
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	26	0.0%	26
	Right	Yes	24	2.0%	25

Advancing Volume:	38
Opposing Volume:	51
Left Turn Volume:	24
% Left Turns in Advancing Volume:	63.16%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 1

Warrant Met?: No

Right Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	24
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

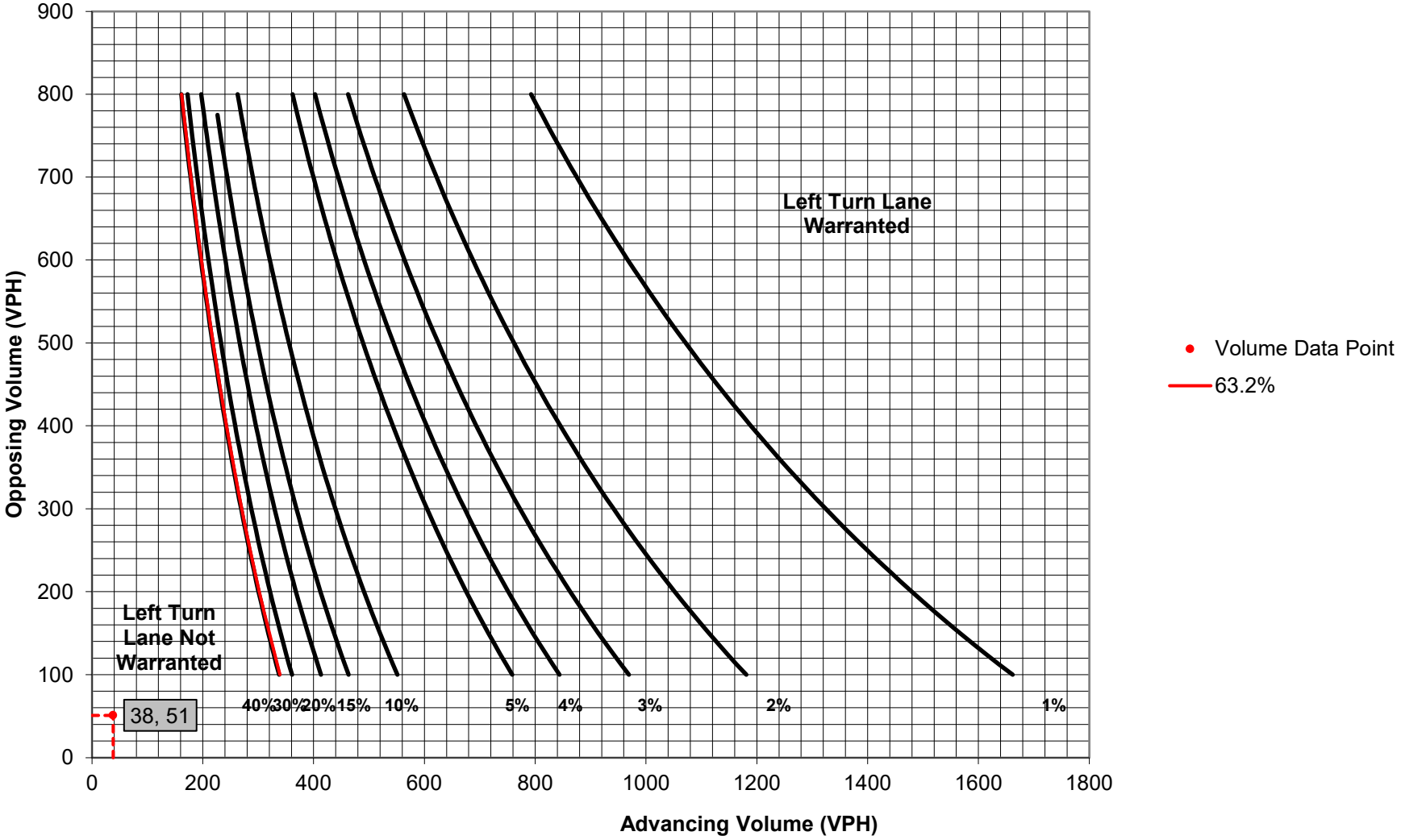
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Upper Allen Township	**Analysis Date:**	2/5/2024
County:	Cumberland County	**Conducted By:**	DL
PennDOT Engineering District:	8	**Checked By:**	JW
		Agency/Company Name:	TPD

Intersection & Approach Description: Old Schoolhouse Lane & Proposed Site Driveway (West) - Westbound Right

Analysis Period:	2035 Projected (Build)	**Number of Approach Lanes:**	1
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Rolling	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	23	2.0%	N/A
	Through	-	12	9.0%	N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	26	0.0%	N/A
	Right	Yes	24	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	26	0.0%	26
	Right	-	24	2.0%	25

Advancing Volume:	51
Right Turn Volume:	25

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 9

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	25
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

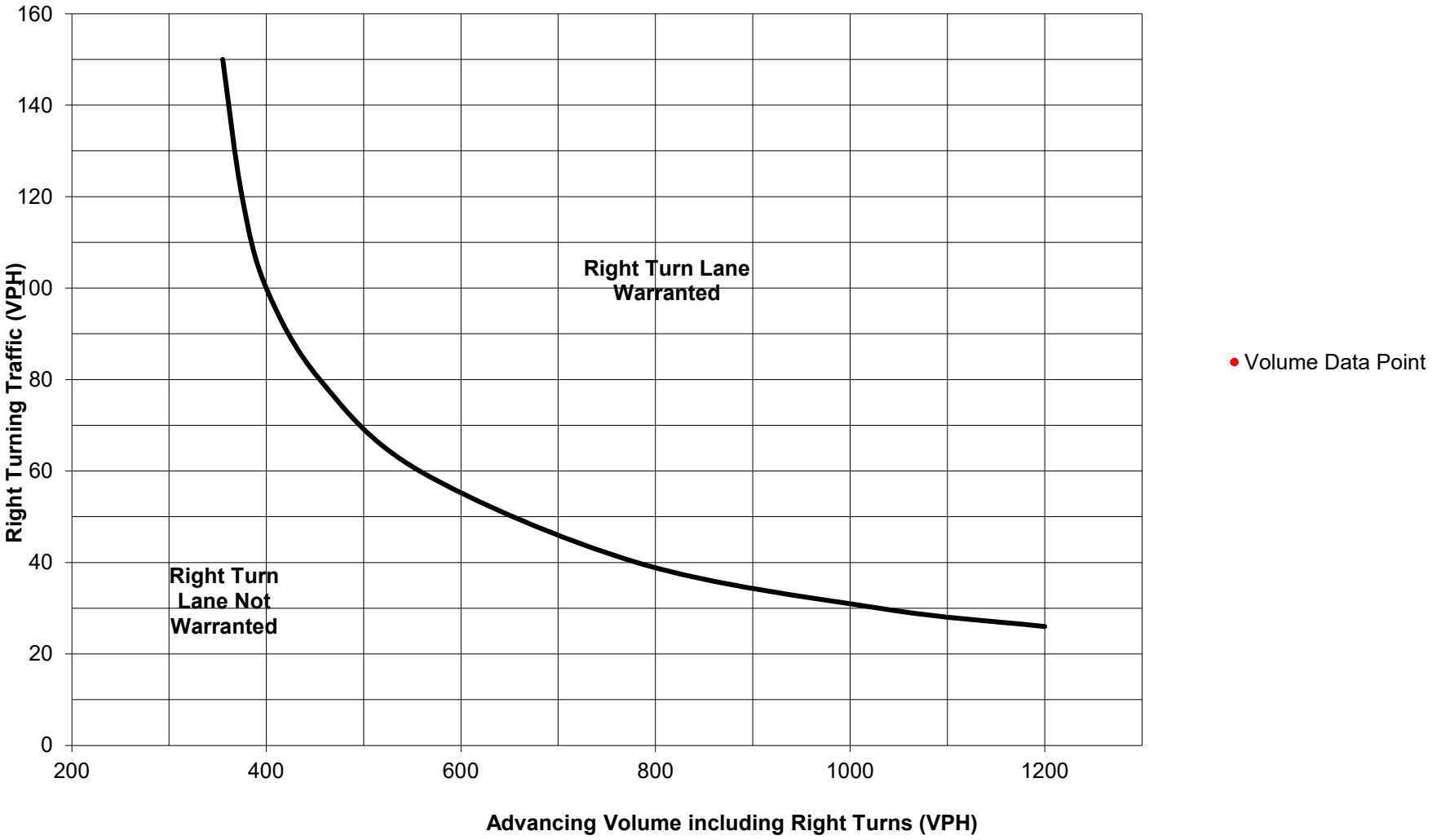
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Upper Allen Township	**Analysis Date:**	2/5/2024
County:	Cumberland County	**Conducted By:**	DL
PennDOT Engineering District:	8	**Checked By:**	JW
		Agency/Company Name:	TPD

Intersection & Approach Description: Old Schoolhouse Lane & Proposed Site Driveway (East) - Eastbound Left

Analysis Period:	2035 Projected (Build)	**Number of Approach Lanes:**	1
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Rolling	**Left or Right-Turn Lane Analysis?:**	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	1	2.0%	2
	Through	-	23	9.0%	27
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	47	0.0%	47
	Right	Yes	3	2.0%	4

Advancing Volume:	29
Opposing Volume:	51
Left Turn Volume:	2
% Left Turns in Advancing Volume:	6.90%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-	47	0.0%	N/A
	Right	-	3	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 1**

Warrant Met?: **No**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	2
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

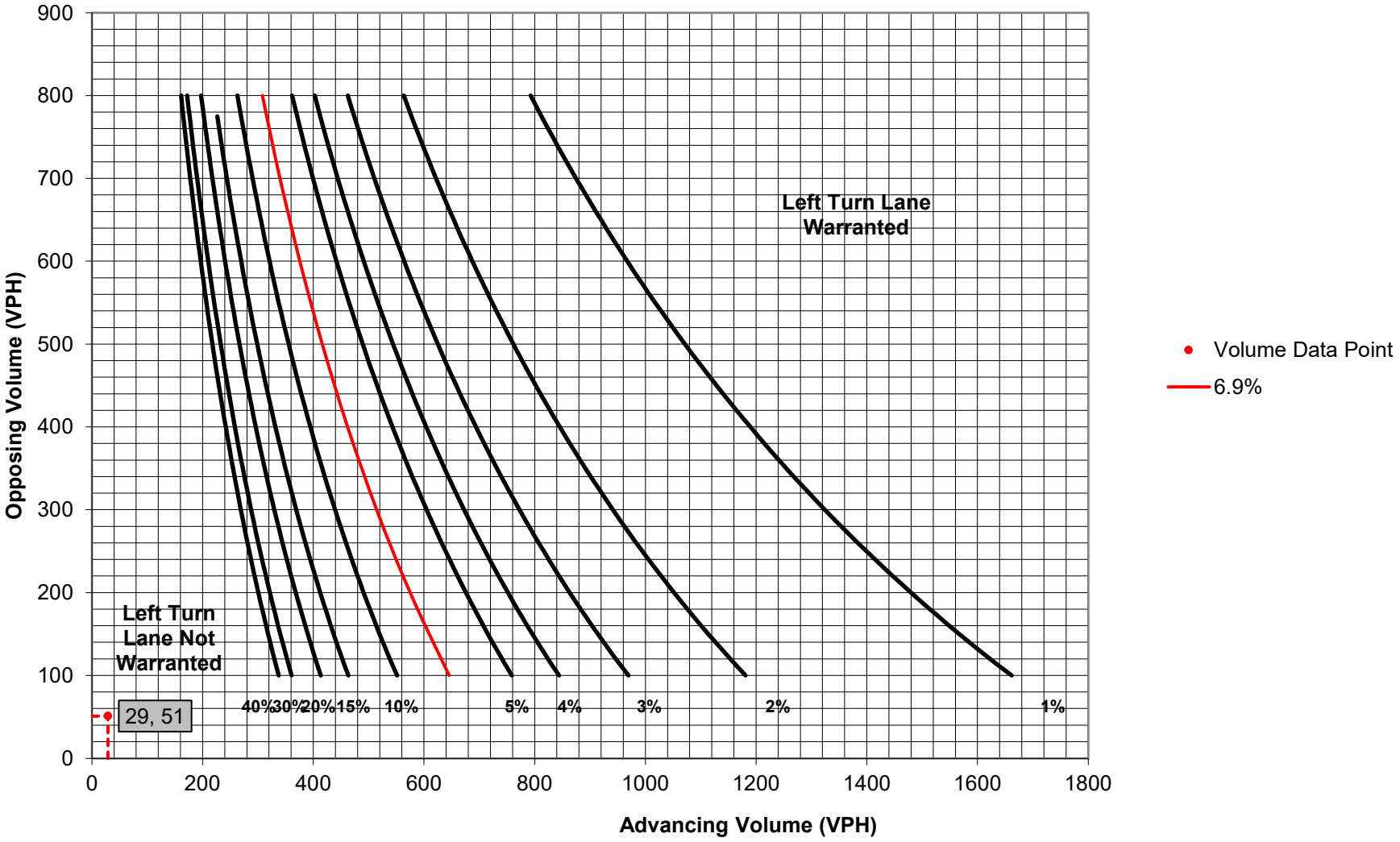
Left Turn Lane Storage Length, Condition A:	**N/A**	**Feet**
Condition B:	**N/A**	**Feet**
Condition C:	**N/A**	**Feet**
Required Left Turn Lane Storage Length:	**N/A**	**Feet**

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Upper Allen Township	**Analysis Date:**	2/5/2024
County:	Cumberland County	**Conducted By:**	DL
PennDOT Engineering District:	8	**Checked By:**	JW
		Agency/Company Name:	TPD

Intersection & Approach Description: Old Schoolhouse Lane & Proposed Site Driveway (East) - Westbound Right

Analysis Period:	2035 Projected (Build)	**Number of Approach Lanes:**	1
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Rolling	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	1	2.0%	N/A
	Through	-	23	9.0%	N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	47	0.0%	N/A
	Right	Yes	3	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	47	0.0%	47
	Right	-	3	2.0%	4

Advancing Volume:	51
Right Turn Volume:	4

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 9

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	4
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

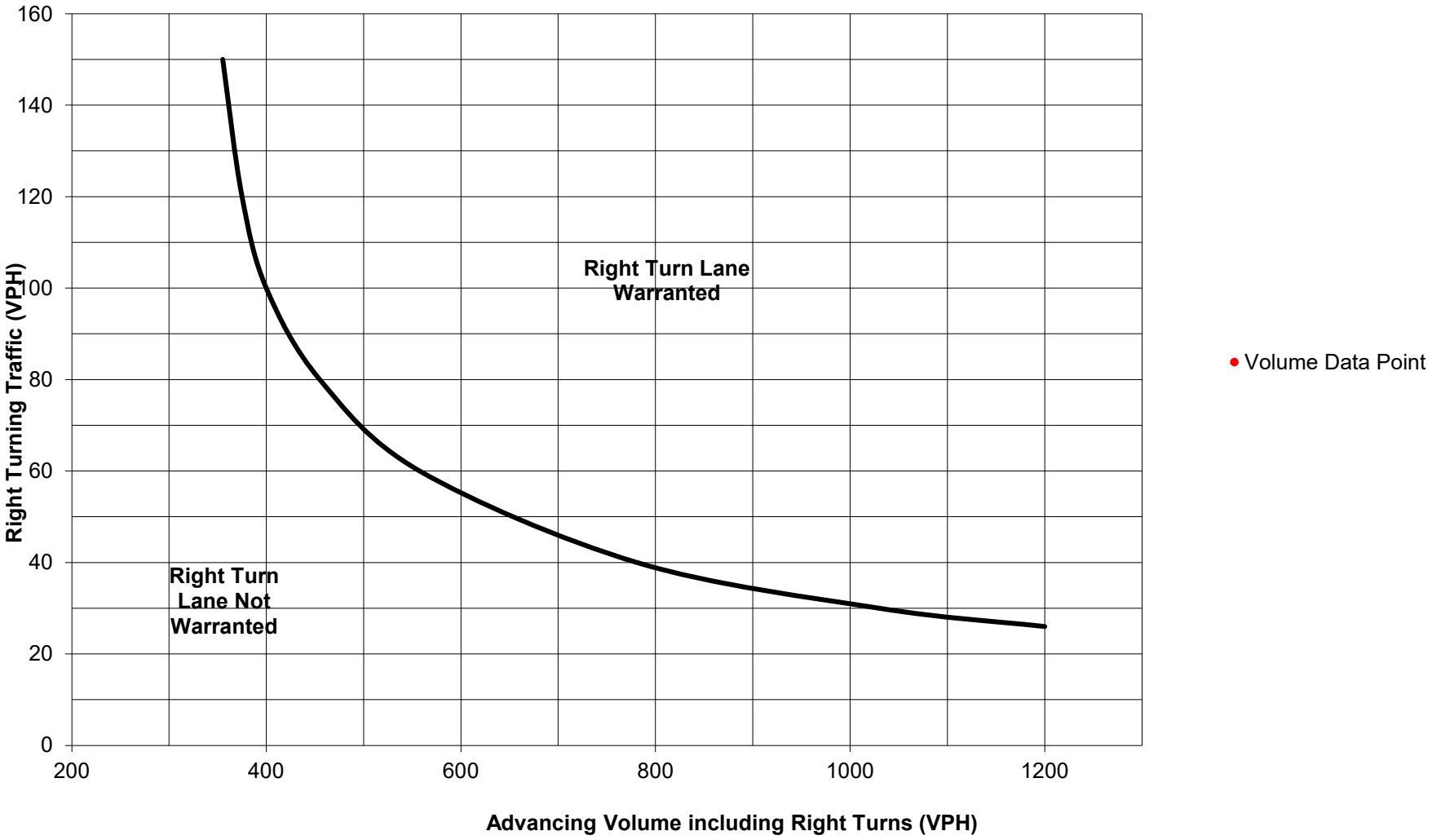
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Upper Allen Township	**Analysis Date:**	2/5/2024
County:	Cumberland County	**Conducted By:**	DL
PennDOT Engineering District:	8	**Checked By:**	JW
		Agency/Company Name:	TPD

Intersection & Approach Description: Old Schoolhouse Lane & Proposed Site Driveway (West) - Eastbound Left

Analysis Period:	2035 Projected (Build)	**Number of Approach Lanes:**	1
Design Hour:	PM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Rolling	**Left or Right-Turn Lane Analysis?:**	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	19	2.0%	20
	Through	-	23	5.0%	25
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	23	11.0%	27
	Right	Yes	22	2.0%	23

Advancing Volume:	45
Opposing Volume:	50
Left Turn Volume:	20
% Left Turns in Advancing Volume:	44.44%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-	23	11.0%	N/A
	Right	-	22	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 1

Warrant Met?: No

Right Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	20
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

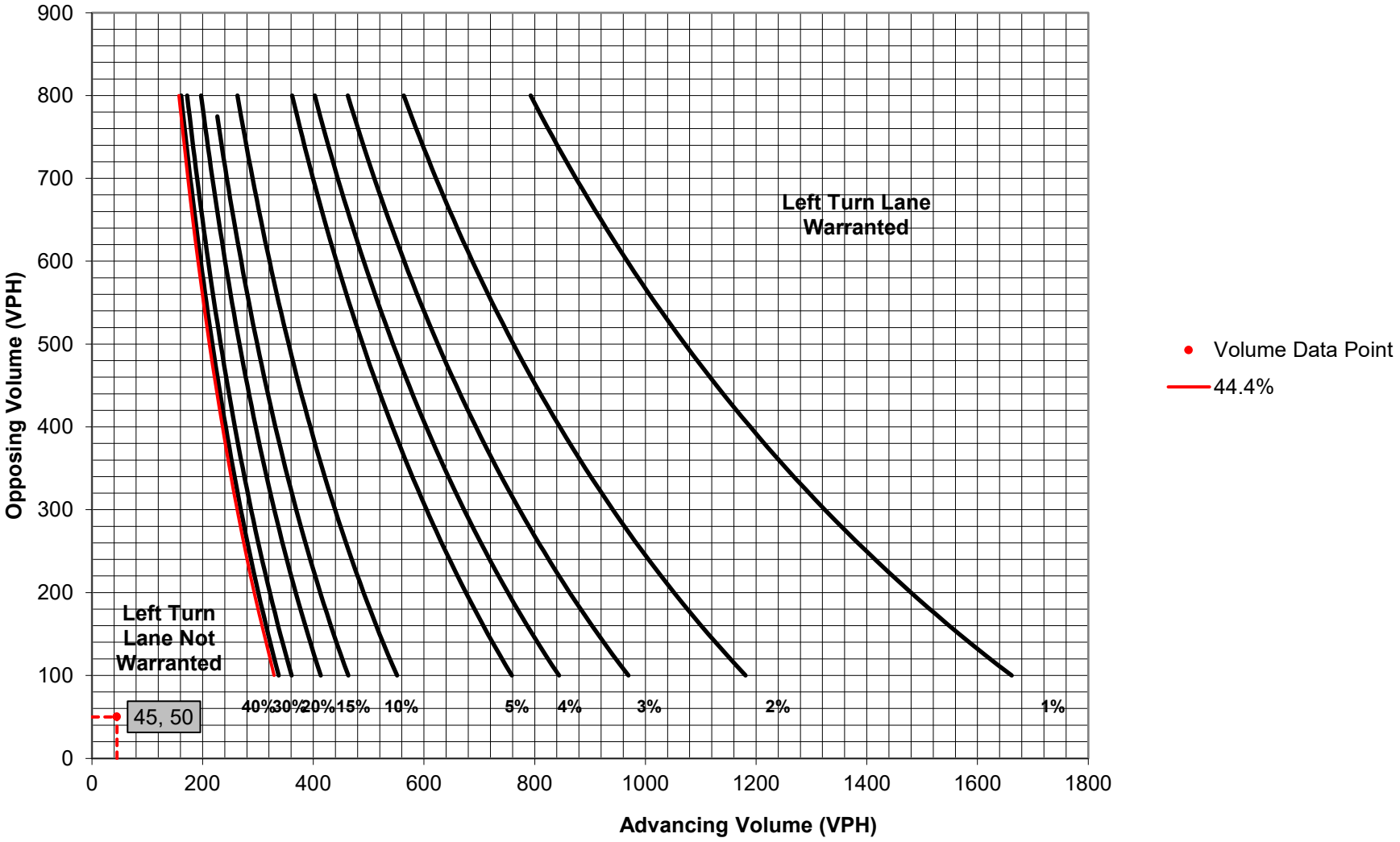
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Upper Allen Township	**Analysis Date:**	2/5/2024
County:	Cumberland County	**Conducted By:**	DL
PennDOT Engineering District:	8	**Checked By:**	JW
		Agency/Company Name:	TPD

Intersection & Approach Description: Old Schoolhouse Lane & Proposed Site Driveway (West) - Westbound Right

Analysis Period:	2035 Projected (Build)	**Number of Approach Lanes:**	1
Design Hour:	PM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Rolling	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	19	2.0%	N/A
	Through	-	23	5.0%	N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	23	11.0%	N/A
	Right	Yes	22	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	23	11.0%	27
	Right	-	22	2.0%	23

Advancing Volume:	50
Right Turn Volume:	23

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 9

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	23
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

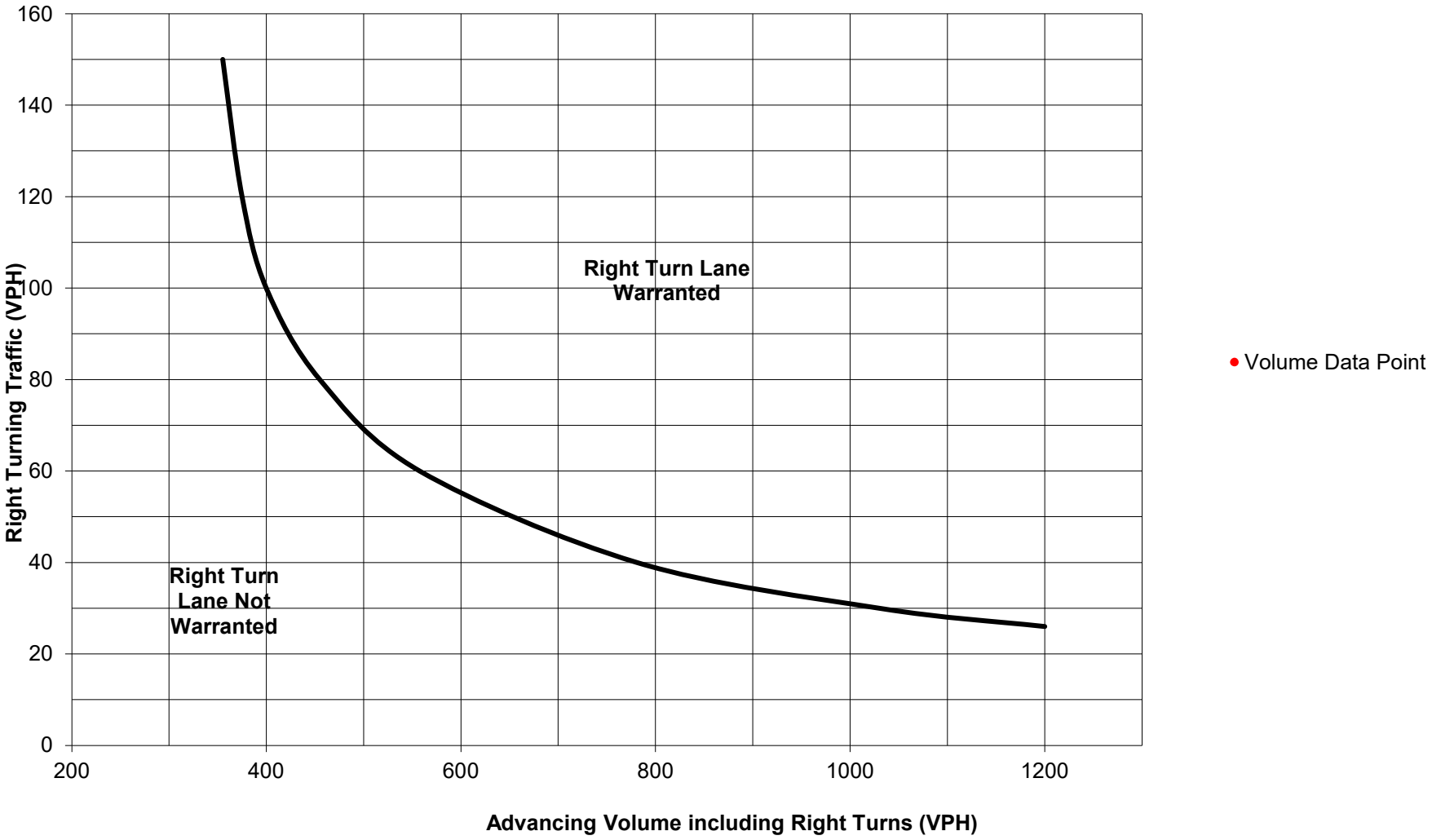
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Upper Allen Township	**Analysis Date:**	2/5/2024
County:	Cumberland County	**Conducted By:**	DL
PennDOT Engineering District:	8	**Checked By:**	JW
		Agency/Company Name:	TPD

Intersection & Approach Description: Old Schoolhouse Lane & Proposed Site Driveway (East) - Eastbound Left

Analysis Period:	2035 Projected (Build)	**Number of Approach Lanes:**	1
Design Hour:	PM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Rolling	**Left or Right-Turn Lane Analysis?:**	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	1	2.0%	2
	Through	-	35	5.0%	38
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	41	11.0%	48
	Right	Yes	3	2.0%	4

Advancing Volume:	40
Opposing Volume:	52
Left Turn Volume:	2
% Left Turns in Advancing Volume:	5.00%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 1

Warrant Met?: No

Right Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	2
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

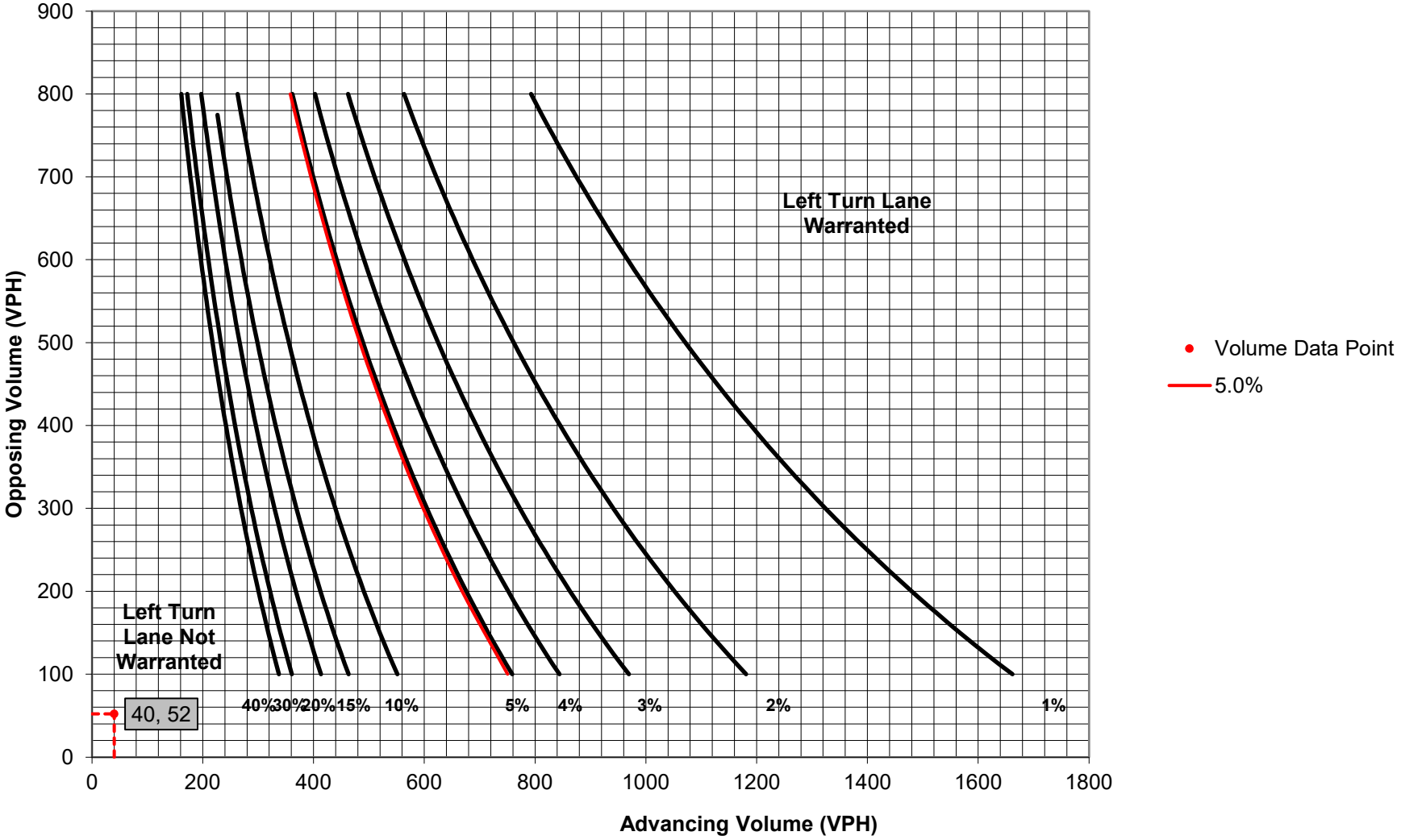
Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Upper Allen Township	**Analysis Date:**	2/5/2024
County:	Cumberland County	**Conducted By:**	DL
PennDOT Engineering District:	8	**Checked By:**	JW
		Agency/Company Name:	TPD

Intersection & Approach Description: Old Schoolhouse Lane & Proposed Site Driveway (East) - Westbound Right

Analysis Period:	2035 Projected (Build)	**Number of Approach Lanes:**	1
Design Hour:	PM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Rolling	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	1	2.0%	N/A
	Through	-	35	5.0%	N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	41	11.0%	N/A
	Right	Yes	3	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-			0
	Right	-			0

Advancing Volume:	0
Right Turn Volume:	0

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 9

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	0
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

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