

## Mike Johnson

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**From:** Lillis, Matthew (VDOT) <Matthew.Lillis@VDOT.Virginia.gov>  
**Sent:** Tuesday, October 07, 2014 10:28 AM  
**To:** 'Beth Lewis'  
**Subject:** Ridley Road C-Store TIA  
**Attachments:** 14-1007\_Ridley Rd TIA approval.doc

Beth,  
Attached is approval for the Ridley Road C-Store TIA.

As far as the Recommended Improvements on page 15 of the study, VDOT has no means of requiring the manual traffic control during school peak traffic hours. If the developer is to bear any responsibility or cost of this traffic control, I'd recommend it be included as a condition of the rezoning.

The study also recommends that traffic signalization be evaluated in the future. VDOT can review the traffic signal again with traffic impact analyses with future developments. If the County has other expectations regarding future analysis it should also be included as a condition.

Please let me know if you have any questions.

Thanks,  
**Matt Lillis P.E.**  
Area Land Use Engineer  
Hampton Roads District  
1700 N Main St  
Suffolk, VA 23434  
757-925-1536



*COMMONWEALTH of VIRGINIA*

**DEPARTMENT OF TRANSPORTATION**

1700 North Main Street  
SUFFOLK, VIRGINIA 23434

October 7, 2014

Beth Lewis  
Southampton County  
P. O. Box 400  
Courtland, VA 23837

**RE: Ridley Road C-Store, TIA Review #2  
Meherrin Road (Route 35), Ridley Road (Route 731)  
Southampton County**

The District has completed its review of the traffic impact analysis dated September 2014 and received by the VDOT Land Development Office on October 6, 2014. We concur with the recommended improvements found in the analysis and advise that they be considered with the rezoning request.

If you have any questions, please contact me at (757) 925-1536 or [matthew.lillis@vdot.virginia.gov](mailto:matthew.lillis@vdot.virginia.gov).

Sincerely,

Matt Lillis, P.E.  
Area Land Use Engineer  
Virginia Department of Transportation  
Hampton Roads District

# **Technical Memorandum**

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## **TRAFFIC IMPACT STUDY**

### **RIDLEY ROAD CONVENIENCE STORE**

Southampton County, VA

**Prepared for:**

**Mr. David Williams**

**By:**

**Charles Smith, PE, PTOE  
EPR  
Charlottesville, VA**

**July 2014, Updated Sept 2014**

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# **I. Introduction and Summary**

## **1.1 Purpose of Report and Study Objectives**

The purpose of this document is to provide a traffic analysis study consistent with Virginia Department of Transportation (VDOT) requirements. The flow of the report is modeled after the “Organization of a Traffic Impact Analysis Report” as summarized in the Administrative Guidelines. The content, methodologies and assumptions for the analysis were agreed on at a scoping meeting with VDOT and the County in June 2014. The resulting scoping documents are provided in Appendix A.

The objective of the study is to report the existing traffic volumes in the study area, calculate new trips associated with the proposed development, and identify related traffic impacts and recommendations to mitigate the impacts.

## **1.2 Executive Summary**

### *Site Location and Study Area*

The subject parcel consists of approximately 3.2 acres of undeveloped land generally located just south of Route 58, in the southeast quadrant of Route 35 and Ridley Road. Site access is proposed via a full access on Ridley Road and a right-in / right-out access on Route 35

The study area includes three intersections along Route 35:

1. Route 35 and Ridley Road;
2. Route 35 and Route 58 EB Ramps; and
3. Route 35 and Route 58 WB Ramps.

A vicinity map (that also illustrates the study intersections) is provided in Figure 1-1.

### *Description of the Proposed Development*

The development is proposed to include a convenience store with gas pumps (ten vehicle fueling positions) and also including a fast food restaurant as part of the convenience retail area (assumed to be 3,500 square feet). The site is also proposed to include 20,000 square feet of specialty retail space. It is assumed the site will build out in 2015.

### *Principal Findings*

The following summarizes the study findings:

#### **Route 35 and Ridley Road**

- During the build scenario AM peak hour, the egress left turn movement is expected to operate unsatisfactorily.
- A roundabout does not appear to be an appropriate solution given the context (high speed facility, school access, no roundabouts in the area, and potential design issues with the approaches to the intersection).
- The MUTCD peak hour signal warrant is not met.

- Synchro analysis indicates that the intersection would operate satisfactorily with signal control.
- Since a signal is not warranted, it is recommended that manual traffic control continues during school ingress / egress.
- The existing left turn lane from Route 35 to Ridley Road has sufficient storage.
- A right turn lane from Route 35 to Ridley Road is not warranted.

#### Route 35 and Route 58 Ramp Intersections

- Both intersections are expected to operate satisfactorily in the Build 2021 scenario.
- No improvements are required.

#### Route 35 and Right-in / Right-out Access

- Provide a physical island to delineate the right-in / right-out access.
- Right turn lane is not required (standard taper is required).

#### Ridley Road Access

- Right turn lane is required (standard 200' storage).
- Left turn lane is not required.

## **II. Background Information: Proposed Development (Site and Nearby)**

### **2.1 List of All Non-Existent Transportation Improvements Assumed in the Analysis**

None.

### **2.2 Description of On-Site Development**

#### *i) Map of Parcel.*

See Figure 1-1 for an illustration of the site location.

#### *ii) Description of the Parcel*

The subject parcel consists of approximately 3.2 acres of undeveloped land generally located just south of Route 58, in the southeast quadrant of Route 35 and Ridley Road. Site access is proposed via a full access on Ridley Road and a right-in / right-out access on Route 35.

The development is proposed to include a convenience store with gas pumps (ten vehicle fueling positions) and also including a fast food restaurant as part of the convenience retail area (assumed to be 3,500 square feet). The site is also proposed to include 20,000 square feet of specialty retail space. It is assumed the site will build out in 2015.

#### *iii) General Terrain Features*

The topography is generally described as level to rolling in this area.

#### *iv) Location Within the Jurisdiction and Region*

The property is located just south of Route 58. See Figure 1-1 as well as the applicant's site plan information located in Appendix B for greater detail about vicinity.

#### *v) Comprehensive Plan Recommendations for the Subject Property*

The county is currently in the process of evaluating a comprehensive plan amendment to update the current zoning from agricultural to commercial.

#### *vi) Current or Proposed Zoning of the Subject Property*

The subject property is currently zoned agricultural and the applicant is applying for a commercial rezoning consistent with the county's current planning for the site (see the discussion for the previous item).

### **2.3 Description of Geographic Scope and Limits of Study Area**

Figure 1-1 also provides a graphical illustration of the study area. The study area includes three intersections along Route 35:

1. Route 35 and Ridley Road;
2. Route 35 and Route 58 EB Ramps; and
3. Route 35 and Route 58 WB ramps.

In addition, the study will include an evaluation of potential turn lane needs at the two proposed site entrances.

#### **2.4 Plan at an Engineering Scale of the Existing and Proposed Site Uses**

The applicant's site plan information is provided in Appendix B.

#### **2.5 Description and Map or Diagram of Existing Roadways**

The vicinity map identifies the three roadway facilities within the project area. US Route 58 is a major regional arterial in the vicinity but is not directly part of the study. However, the ramp junctions with Route 35 are both part of the study. The interchange is a typical diamond interchange with single lane, STOP controlled ramps. Route 35 is generally a high speed, two lane facility with a posted speed limit of 55 mph. Ridley Road is a rural two lane facility that connects a rural area of the county with Route 35. The current geometry along Route 35 and at the study intersections is illustrated within the existing traffic volumes graphic in the next chapter.

#### **2.6 Description and Map or Diagram of Programmed Improvements to Roadways, Intersections, and Other Transportation Facilities Within the Study Area**

None.

### III. Analysis of Existing Conditions

#### 3.1 Collected Daily and Peak Hour of the Generator Traffic Volumes, Tabulated and Presented on Diagrams with Counts Provided in an Appendix

Peak hour turning movement counts were conducted at the study intersections from 7-9 AM and from 3-6 PM. The Ridley Road intersection count was conducted on Tuesday, February 25, 2014 (while school was in session). The Route 58 ramp intersections were counted on Wednesday and Thursday, June 18-19, 2014. Note that these counts were conducted after the school term was completed for the summer. At the scoping meeting, it was agreed that these counts would be balanced with the Ridley Road intersection count to account for the school traffic. This process and methodology was approved during the study and the worksheet is provided in Appendix C.

Figure 3-1 provides an illustration of the existing traffic count data as well as the current geometry at the study intersections. Note that the Route 58 ramp intersections are technically only one lane ramp approaches, but because of the allowable roadway width, observations indicate that motorists utilize the ramp approaches as two lanes – an exclusive right turn lane and an exclusive left turn lane. Per the VDOT database, the Route 35 daily volume is 1,500 vehicles per day. The traffic count worksheets are provided in Appendix D.

#### 3.2 Analyses for Intersections and Roadways Identified by VDOT

The intersection capacity analyses were performed using Synchro (version 8) per the methodology documented in the Highway Capacity Manual (HCM) (Transportation Research Board, Special Report #209). All delay and level of service values reported are based on the HCM method as required by VDOT.

Capacity analyses are utilized to determine a Level of Service (LOS) for a given intersection operating under either signalized or unsignalized control. The LOS is based on estimated delay and range from LOS A, the best, to LOS F, the worst. In general LOS A and LOS B indicate little or no delay, LOS C indicates average delay, LOS D indicates delay is increasing and noticeable, LOS E indicates the limit of acceptable delay and LOS F is characteristic of over saturated conditions. The actual delays associated with these levels of service are identified in Table 3-1.

**TABLE 3-1  
LOS and Delay Thresholds**

<b>LOS</b>	<b>UNSIGNALIZED INT. DELAY (secs)</b>	<b>SIGNALIZED INT. DELAY (secs)</b>
A	0 – 10	< 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Table 3-2 summarizes the existing delay and LOS for each study intersection by movement. As identified in the table, all intersections currently operate satisfactorily. The analysis worksheets are provided in Appendix E. The LOS results are summarized graphically in Figure 3-2.

### **3.3 When the Type of Development Proposed Would Indicate Significant Potential for Walking, Bike or Transit Trips Either On- or Off-Site, Analyses of Pedestrian and Bicycle Facilities, and Bus Route(s) and Segment(s), Tabulated and Presented on Diagrams, if Facilities or Routes Exist**

Given the rural environment, there is not significant potential for walking, biking or transit trips in the area. There is a school site in the area; however, the students are not allowed to leave the campus which limits the potential for pedestrian activity. Before and after school, there is a police presence directing traffic.

### **3.4 Speed Study (if Requested by VDOT)**

Not requested.

### **3.5 Crash History Near Site (if Requested by VDOT)**

Not requested.

### **3.6 Sight distance (if Requested by VDOT)**

Sight distance will be evaluated as part of the site design when the access locations are designed and finalized. There is a horizontal curve along Ridley Road; however, the access location can be located along the curve to provide unobstructed sight distance to Route 35 as well as unobstructed sight distance along Ridley Road in the other direction.

## **IV. Analysis of Future Conditions Without Development**

### **4.1 Description of and the Justification for the Method and Assumptions Used to Forecast Future Traffic Volumes**

VDOT traffic data indicates no traffic growth along Route 35 in the last five years and a slight decrease in traffic over a longer term. However, to provide a conservative analysis, a small background growth rate was agreed to at the scoping meeting. A two percent growth rate was assumed for the build year 2015 and a one percent growth rate was assumed for the following six years to the year 2021 horizon planning year.

Total No Build traffic volumes are illustrated in Figures 4-1 and 4-2, representing years 2015 and 2021.

### **4.2 Analyses for Intersections and Roadways as Identified by VDOT**

*1. Delay and Level of Service (LOS) are Tabulated and LOS is Presented on Diagrams for Each Lane Group.*

Table 3-2 and Figures 4-3 and 4-4 summarize the delay and level of service of the no build analyses. The capacity analysis worksheets are provided in Appendix F. The intersection operations will be discussed in detail in the future build chapter.

### **4.3 When the Type of Development Proposed Would Indicate Significant Potential for Walking, Bike or Transit Trips Either On- or Off-Site, Analyses of Pedestrian and Bicycle Facilities, and Bus Route(s) and Segment(s), Tabulated and Presented on Diagrams, if Facilities or Routes Exist**

Given the rural environment, there is not significant potential for walking, biking or transit trips in the area. There is a school site in the area; however, the students are not allowed to leave the campus which limits the potential for pedestrian activity. Before and after school, there is a police presence directing traffic.

## **V. Trip Generation**

### **5.1 Site Trip Generation, with Tabulated Data, Broken Out by Analysis Year for Multi-Phase Developments, and Including Justification for Deviations from ITE rates, if Appropriate**

The trip generation for the proposed development as discussed and approved at the scoping meeting is summarized in Table 5-1.

### **5.2 Description and Justification of Internal Capture Reductions for Mixed Use Developments and Pass-By Trip Reductions, if Appropriate, Including Table of Calculations Used**

The allowable pass-by rates are summarized in Table 5-1.

## **VI. Site Traffic Distribution and Assignment**

1. Description of methodology used to distribute trips, with supporting data
2. Description of the direction of approach for site generated traffic and diagrams showing the traffic assignment to the road network serving the site for the appropriate time periods

The site trip distribution percentages are illustrated in Figures 6-1A and 6-1B. The percentages were approximately based on the current volume distribution in the corridor and were approved as part of the scoping process..

The resulting peak hour site related trips are illustrated in Figures 6-2A and 6-2B.

## **VII. Analysis of Future Conditions With Development**

### **7.1 Forecast Daily and Peak Hour of the Generator Traffic Volumes on the Highway Network in the Study Area, Site Entrances and Internal Roadways, Tabulated and Presented on Diagrams**

Figures 7-1A and 7-1B illustrate the total build traffic volumes (years 2015 and 2021 respectively).

### **7.2 Analyses for Intersections and Roadways Identified by VDOT**

#### *1. Delay and Level of Service (LOS) are Tabulated and LOS is Presented on Diagrams for Each Lane Group.*

The delay and LOS are summarized in Table 3-2 and Figures 7-2A and 7-2B. The capacity analysis worksheets are provided in Appendix G.

The following discussions summarize the operational analyses for each of the study intersections:

#### *Route 35 and Ridley Road*

The intersection capacity analyses indicate that the intersection currently operates at a satisfactory level of service with all movements operating at LOS C or better. Given the No Build scenarios (both 2015 and 2021) there is no significant change in operation as all movements are still projected to operate at LOS C or better. Given the build condition, it is projected that one movement (the left turn movement from the school approach) will operate at LOS F during the AM peak (but operate at LOS D during the PM peak). All other movements are projected to operate at LOS D or better during both peak periods.

Various improvement measures were tested and evaluated in an attempt to mitigate the one movement that is projected to operate unsatisfactorily.

Per the guidelines, the intersection was conceptually tested as a roundabout intersection and the analysis indicates that a one lane roundabout would work satisfactorily with volume to capacity (v/c) ratios of 0.28, 0.28, 0.27 and 0.59. While the analysis indicates that the roundabout would operate satisfactorily, there are several other engineering judgment issues to be considered. Given the horizontal curve approaching the intersection from Ridley Road and the additional intersection immediately west of the intersection on the school side, there are potential design issues with designing an appropriate roundabout. In addition, there is an engineering judgment consideration with regards to the location at a school entrance (especially considering there are no other roundabouts in the area), leading to a driver learning curve.

In addition to testing as a roundabout, consideration was given to the possibility of traffic signal control. The Build 2021 AM peak hour volumes (the scenario with the failing

movement) were evaluated against the MUTCD peak hour traffic signal warrant and the warrant was not met, primarily because of the low mainline volume along Route 35.

However, since the County currently provides traffic control at this intersection during school ingress / egress hours, the intersection was evaluated as a signalized intersection to simulate manually directing traffic. The analysis indicates that the intersection would work satisfactorily with all movements operating at LOS B or better. While traffic signal control is not exactly the same as manually directing traffic, the results indicate that the intersection can operate satisfactorily. However, since the Build Year 2021 traffic volumes do not even meet the peak hour signal warrant, it seems unlikely that this intersection will warrant a traffic signal until there is additional traffic growth in the area. Until such a time, it is recommended that the County continue to provide manual traffic control and the testing indicates that the Build 2021 scenario would work satisfactorily.

The capacity analysis worksheets for the mitigation testing are provided in Appendix H.

Additionally, turn lane analyses were conducted for the right and left turn movements from Route 35 to Ridley Road. There is currently a 250 foot exclusive left turn lane providing storage for the left turn movement from Route 35 to Ridley Road. The Build 2021 analyses (see Appendix H) indicate that the projected queue in the year 2021 for this left turn movement is only one vehicle (during both peak periods). Therefore, the existing left turn lane is sufficient. There is currently no exclusive right turn lane and was therefore tested per VDOT turn lane warrants. The current and projected year 2021 right turn volumes is very low and therefore the right turn lane warrant is not met. The turn lane worksheet is provided in Appendix I.

#### *Route 35 and Route 58 Ramps*

Both of the Route 58 ramp intersections with Route 35 currently operate satisfactorily with all movements operating at LOS C or better during both existing peak periods. The Build 2021 scenario testing indicates similar results with one movement operating at LOS D and the remaining movements operating at LOS C or better.

#### *Site Entrance*

The proposed development includes two new access locations – a right-in / right-out access on Route 35 and a full access location on Ridley Road. The entrance locations were evaluated for turn lane requirements per VDOT turn lane warrants.

The Route 35 right-in / right-out access does not meet right turn lane warrants. The Ridley Road access does meet the right turn lane warrants but does not meet the left turn lane warrants. The turn lane worksheets are provided in Appendix I.

**7.3 When the Type of Development Proposed Would Indicate Significant Potential for Walking, Bike or Transit Trips Either On- or Off-Site, Analyses of Pedestrian and Bicycle Facilities, and Bus Route(s) and Segment(s), Tabulated and Presented on Diagrams, if Facilities or Routes Exist**

Given the rural environment, there is not significant potential for walking, biking or transit trips in the area. There is a school site in the area; however, the students are not allowed to leave the campus which limits the potential for pedestrian activity. Before and after school, there is a police presence directing traffic.

## **VIII. Recommended Improvements**

### **8.1 Description and Diagram of the Location, Nature, and Extent of the Proposed Improvements**

The following improvements are recommended as a result of this study:

#### Route 35 and Ridley Road intersection

- Continue to utilize manual traffic control during school ingress / egress.
- Monitor / evaluate for the future need for traffic signalization.

#### Ridley Road Access Location

- Construct a right turn lane into the site (standard 200' storage).
- 

#### Route 35 Right-in / Right-out Access

- Construct a physical island to delineate the right-in / right-out access.
- Construct a 200' taper for the right turn egress into the site.

### **8.2 If Travel Demand Management (TDM) Measures are Proposed, Description of Methodology Used to Calculate the Effects of TDM Measures with Supporting Data**

No TDM measures have been examined or considered as part of this analysis.

## **IX. Conclusions**

### **9.1 Clear, concise description of the study findings**

The following summarizes the study findings:

#### **Route 35 and Ridley Road**

- During the build scenario AM peak hour, the egress left turn movement is expected to operate unsatisfactorily.
- A roundabout does not appear to be an appropriate solution given the context (high speed facility, school access, no roundabouts in the area, and potential design issues with the approaches to the intersection).
- The MUTCD peak hour signal warrant is not met.
- Synchro analysis indicates that the intersection would operate satisfactorily with signal control.
- Since a signal is not warranted, it is recommended that manual traffic control continues during school ingress / egress.
- The existing left turn lane from Route 35 to Ridley Road has sufficient storage.
- A right turn lane from Route 35 to Ridley Road is not warranted.

#### **Route 35 and Route 58 Ramp Intersections**

- Both intersections are expected to operate satisfactorily in the Build 2021 scenario.
- No improvements are required.

#### **Route 35 and Right-in / Right-out Access**

- Provide a physical island to delineate the right-in / right-out access.
- Right turn lane is not required (standard taper is required).

#### **Ridley Road Access**

- Right turn lane is required (standard 200' storage).
- Left turn lane is not required.

**TABLE 3-2  
Capacity Analysis Summary**

Intersection	Lane Movement	Existing				No Build 2015				No Build 2021				Build 2015				Build 2021			
		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay (sec/veh)	LOS																		
Rte 35 & Ridley - STOP Control																					
School - EB	Left-Thru	17.0	C	13.2	B	17.4	C	13.3	B	19.1	C	13.9	B	81.8	F	24.1	C	112.2	F	26.7	D
School - EB	Right	9.1	A	9.3	A	9.1	A	9.3	A	9.2	A	9.4	A	8.9	A	9.1	A	8.9	A	9.2	A
Ridley - WB	All	12.0	B	10.3	B	12.1	B	10.3	B	12.5	B	10.3	B	23.9	C	17.9	C	26.2	D	18.9	C
Rte 35 - NB	Left	8.5	A	7.7	A	8.5	A	7.7	A	8.6	A	7.8	A	8.4	A	7.6	A	8.5	A	7.7	A
Rte 35 - SB	Left	7.6	A	7.5	A	7.6	A	7.5	A	7.6	A	7.5	A	8.0	A	7.7	A	8.0	A	7.7	A
Rte 35 and Rte 58 EB Ramps - STOP Control (Since the intersection operates satisfactorily in the future build condition, the intermediate years were not reported)																					
Ramp - EB	Left	18.0	C	12.6	B													26.2	D	16.6	C
Ramp - EB	Right	11.0	B	9.6	A													12.2	B	10.3	B
Rte 35 - SB	Left	8.1	A	7.7	A													8.5	A	8.1	A
Rte 35 and Rte 58 WB Ramps - STOP Control (Since the intersection operates satisfactorily in the future build condition, the intermediate years were not reported)																					
Ramp - WB	Left	16.0	C	11.6	B													23.1	C	14.9	B
Ramp - WB	Right	9.9	A	8.9	A													10.4	B	9.1	A
Rte 35 - NB	Left	7.9	A	7.7	A													8.1	A	7.9	A

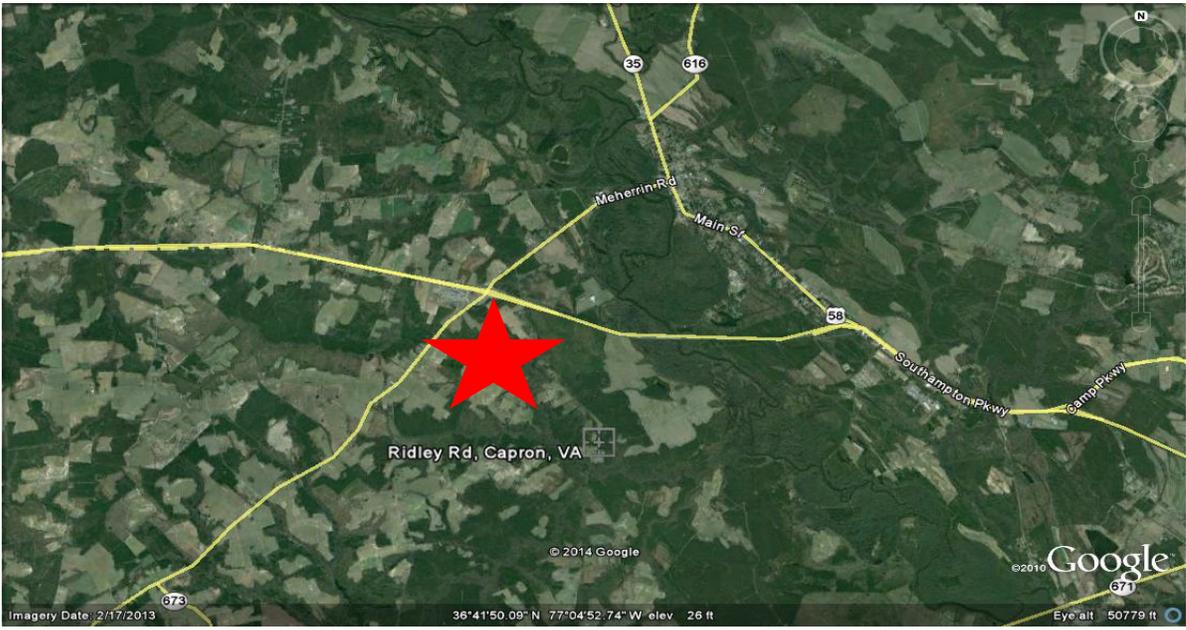
Table 5-1  
Trip Generation

Land Use Description	ITE Code	Qty	Daily Trips	AM		PM	
				In	Out	In	Out
Conv Store w Gas	853	10	5426	83	83	96	95
Fast food	934	3.5	1736	81	78	59	55
Specialty shopping	826	20	886	0	0	30	39
TOTAL DRIVEWAY TRIPS				164	161	185	189
Passby - 40% Conv Store				33	33	38	38
Passby - 25% Others				20	20	22	24
TOTAL PASSBY REDUCTION				53	53	61	62
TOTAL NEW TRIPS				111	108	124	128

Notes regarding basis for trip generation:

Conv Store                    vehicle fueling positions  
All others                    Square feet

FIGURE 1-1  
VICINITY MAP



- LEGEND
- ★ Proposed Site
  - Study Intersection

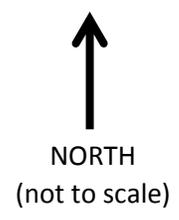
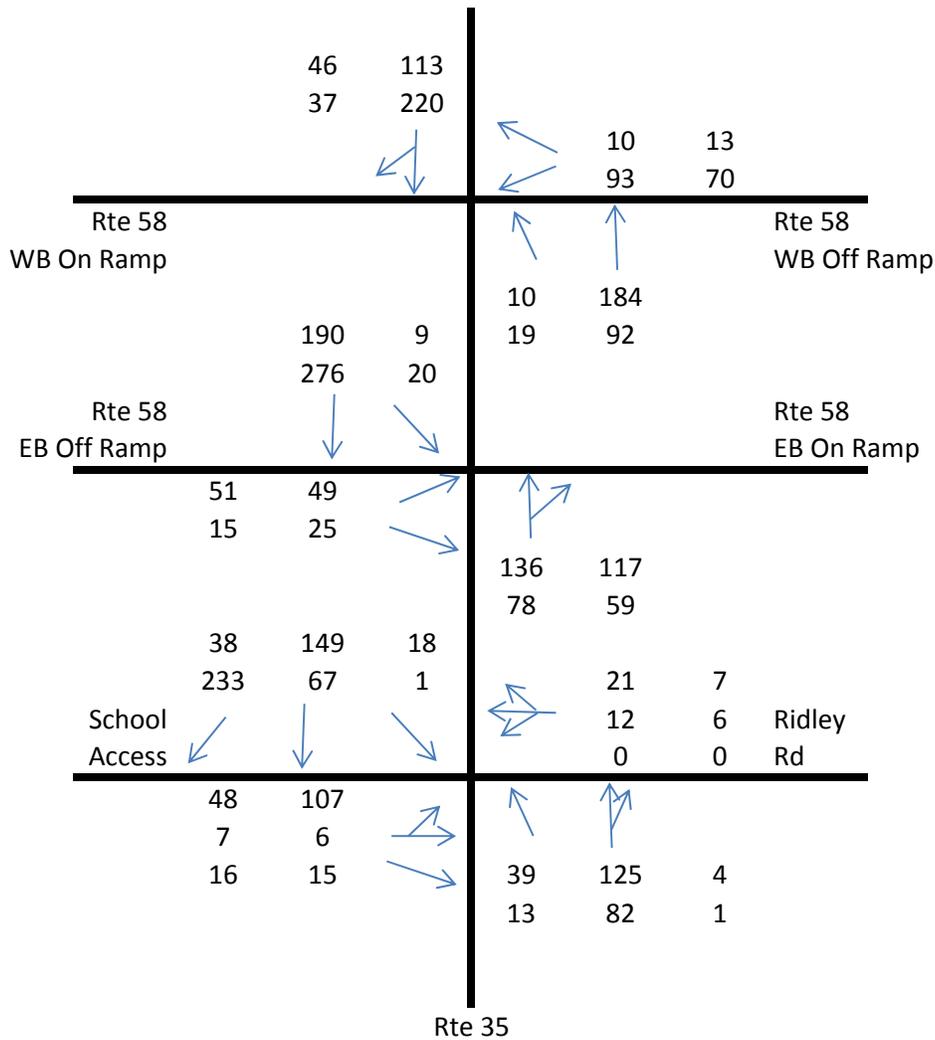


FIGURE 3-1  
 EXISTING 2014  
 PEAK HOUR VOLUMES  
 ILLUSTRATION OF LANE GEOMETRY



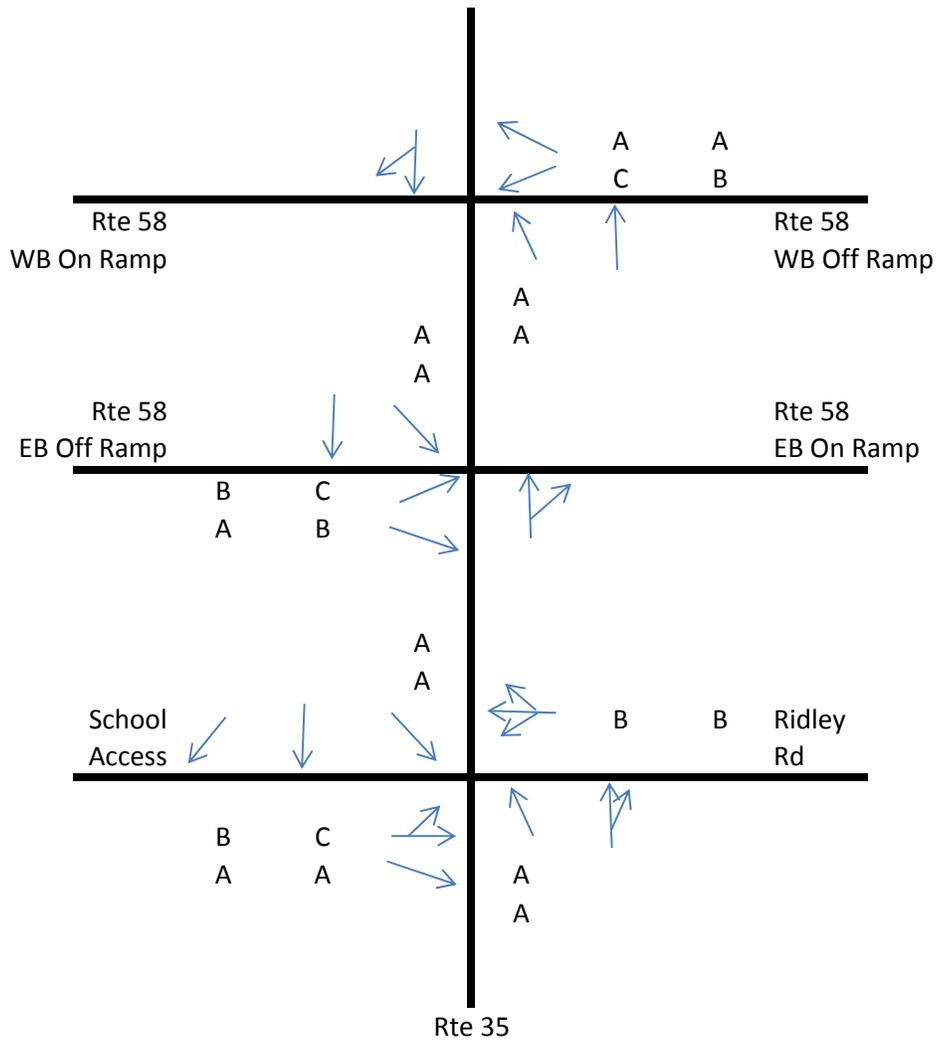
NOTE

The Route 58 Ramps are one lane ramps with technically only one outbound lane at the intersections. However, observations indicate that motorists utilize the approaches from the ramps as if there were two lanes - exclusive right and exclusive left.

LEGEND  
 123 234 →  
 PM AM  
 (closest to the arrow is AM)

↑  
 NORTH  
 (not to scale)  
 40

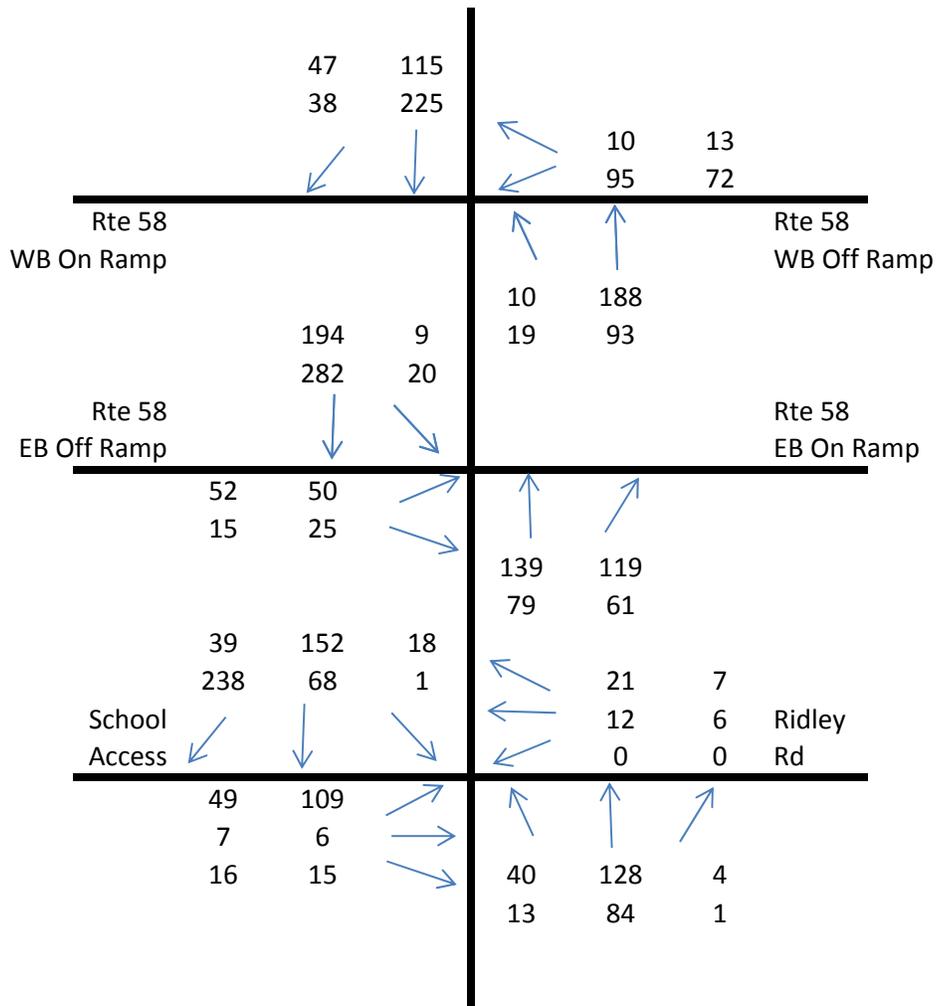
FIGURE 3-2  
 EXISTING 2014  
 Level of Service



LEGEND  
 123 234 →  
 PM AM  
 (closest to the arrow is AM)

↑  
 NORTH  
 (not to scale)  
 41

FIGURE 4-1  
 NO BUILD 2015  
 PEAK HOUR VOLUMES



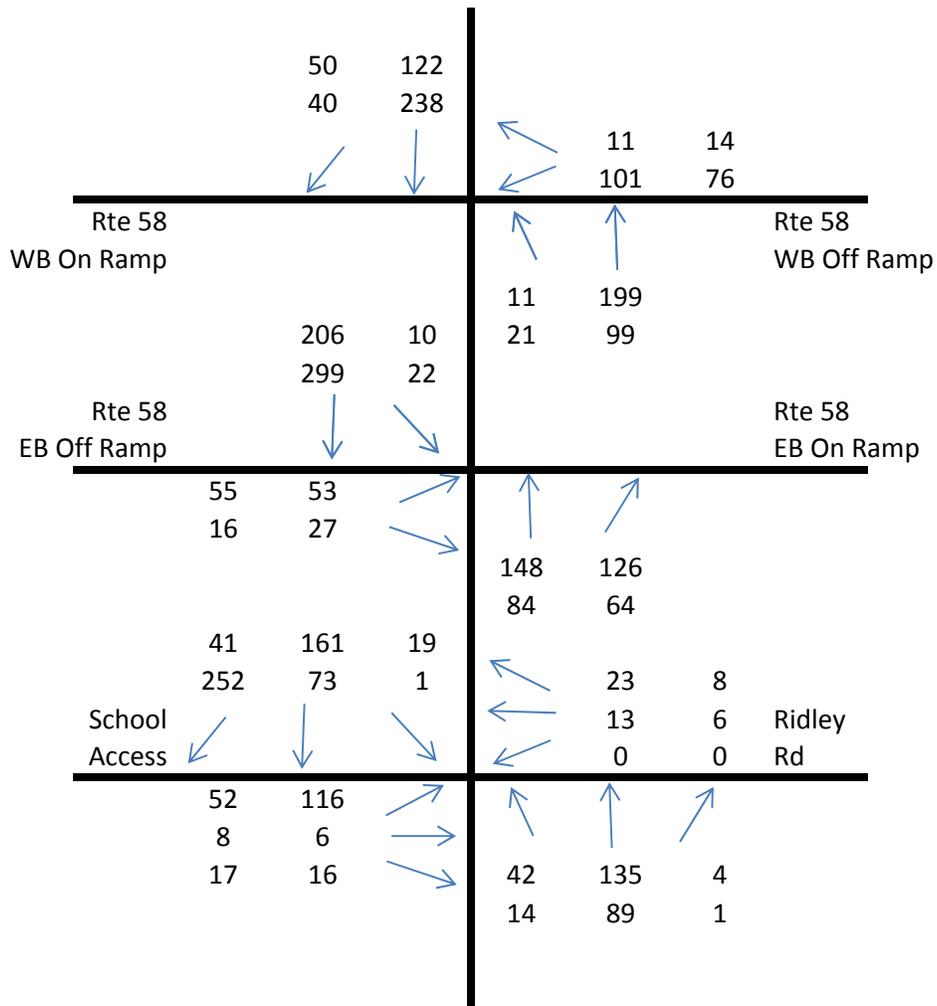
HISTORIC TRAFFIC COUNTS FROM VDOT DATABASE	
Route 35	
2012	1500
2011	1400
2010	1400
2009	1400
2008	1800
2005	1900

Growth Rate	
1	years
0.02	percent per year
1.02	total growth rate

LEGEND  
 123 234 →  
 PM AM  
 (closest to the arrow is AM)

↑  
 NORTH  
 (not to scale)  
 42

FIGURE 4-2  
NO BUILD 2021  
PEAK HOUR VOLUMES



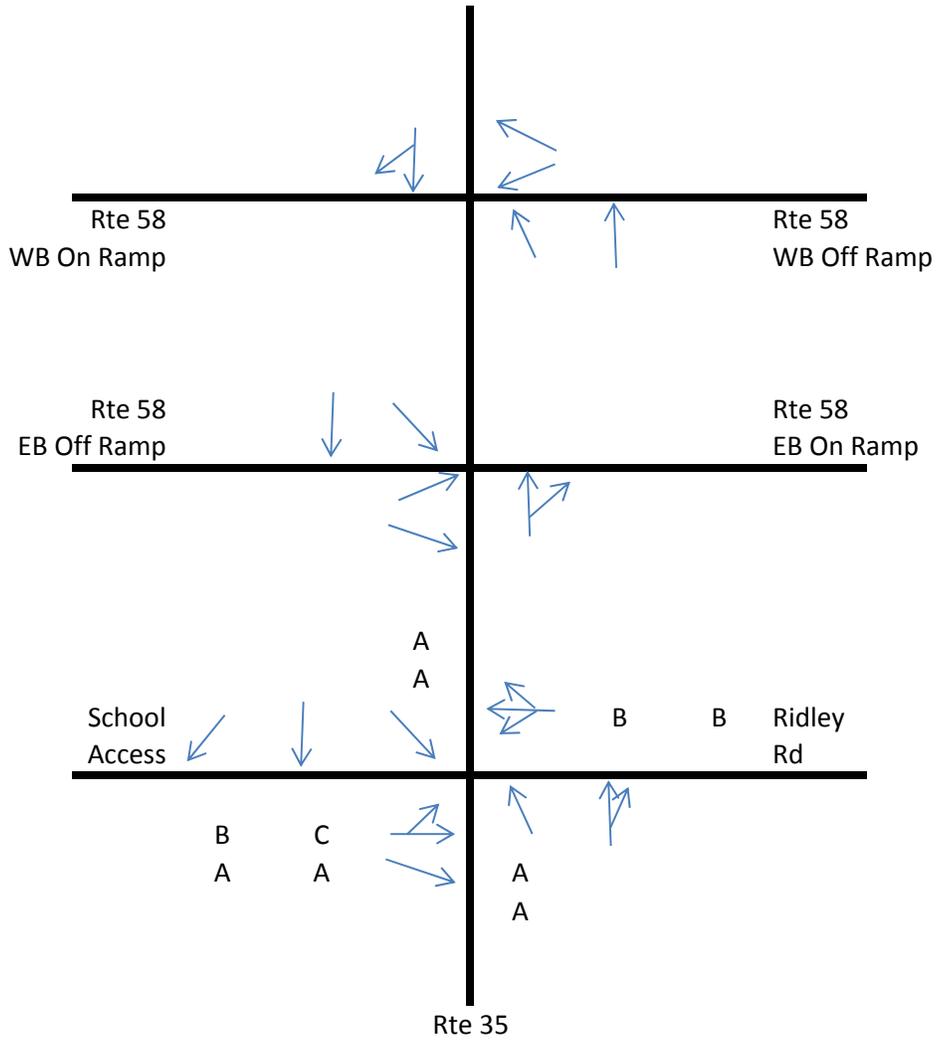
HISTORIC TRAFFIC COUNTS FROM VDOT DATABASE	
Route 35	
2012	1500
2011	1400
2010	1400
2009	1400
2008	1800
2005	1900

Growth Rate	
6	years
0.01	percent per year
1.0615	total growth rate

LEGEND  
123 234 →  
PM AM  
(closest to the arrow is AM)

↑  
NORTH  
(not to scale)  
43

FIGURE 4-3  
 NO BUILD 2015  
 Level of Service

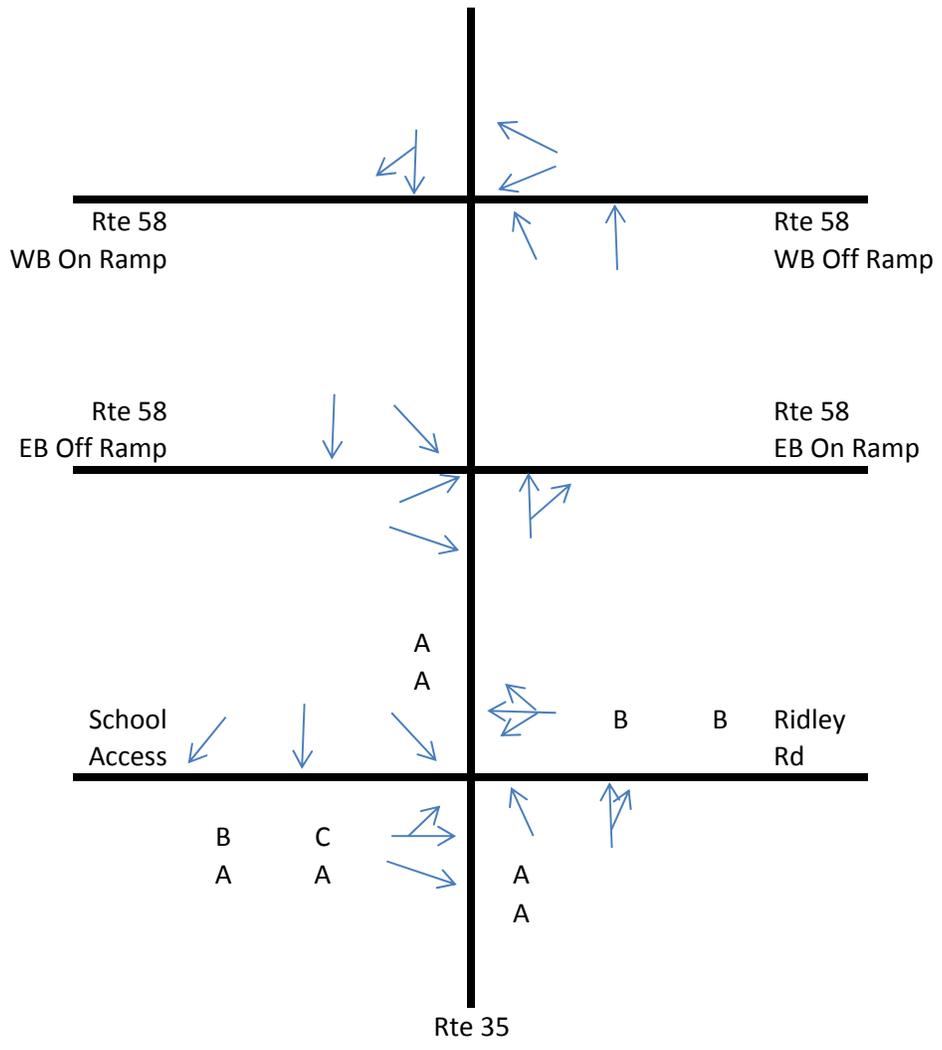


The Rte 58 Ramp intersections operate satisfactorily in the Build 2021 condition; therefore, the intermediate scenario results were not reported.

LEGEND  
 123 234 →  
 PM AM  
 (closest to the arrow is AM)

↑  
 NORTH  
 (not to scale)  
 44

FIGURE 4-4  
 NO BUILD 2021  
 Level of Service



The Rte 58 Ramp intersections operate satisfactorily in the Build 2021 condition; therefore, the intermediate scenario results were not reported.

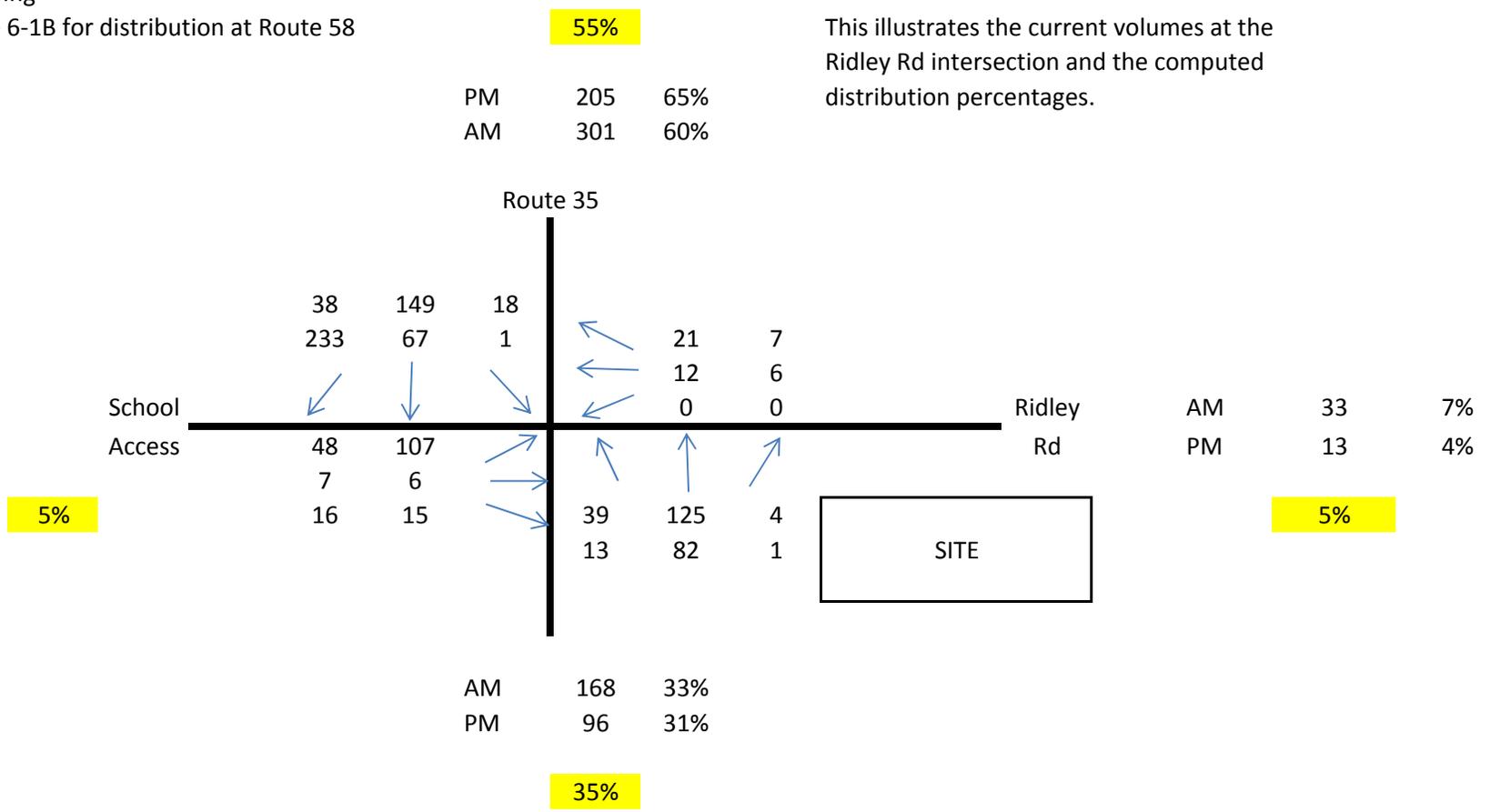
LEGEND  
 123 234 →  
 PM AM  
 (closest to the arrow is AM)

↑  
 NORTH  
 (not to scale)  
 45

FIGURE 6-1A  
SITE TRIP DISTRIBUTION PERCENTAGES

From Scoping  
See Figure 6-1B for distribution at Route 58

This illustrates the current volumes at the  
Ridley Rd intersection and the computed  
distribution percentages.

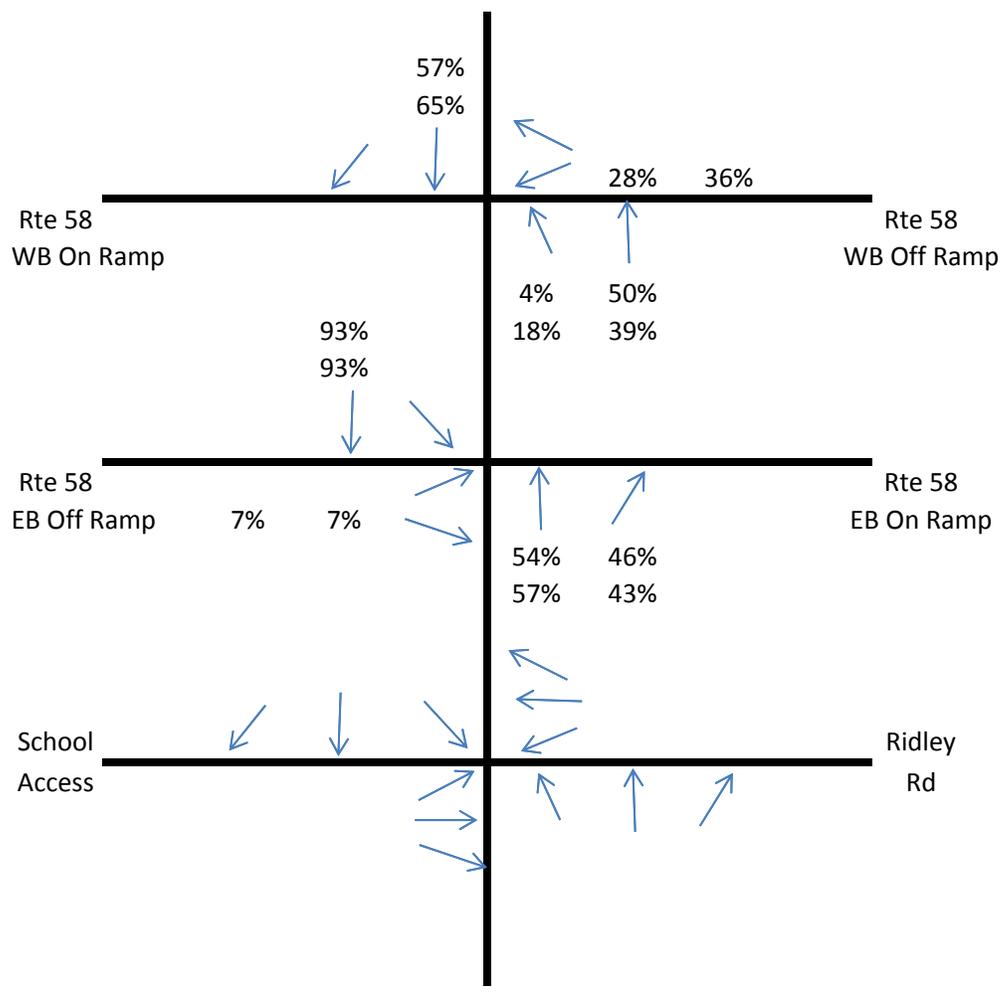


LEGEND  
123 234 →  
PM AM  
(closest to the arrow is AM)

↑  
NORTH  
(not to scale)

FIGURE 6-1B  
SITE TRIP DISTRIBUTION PERCENTAGES

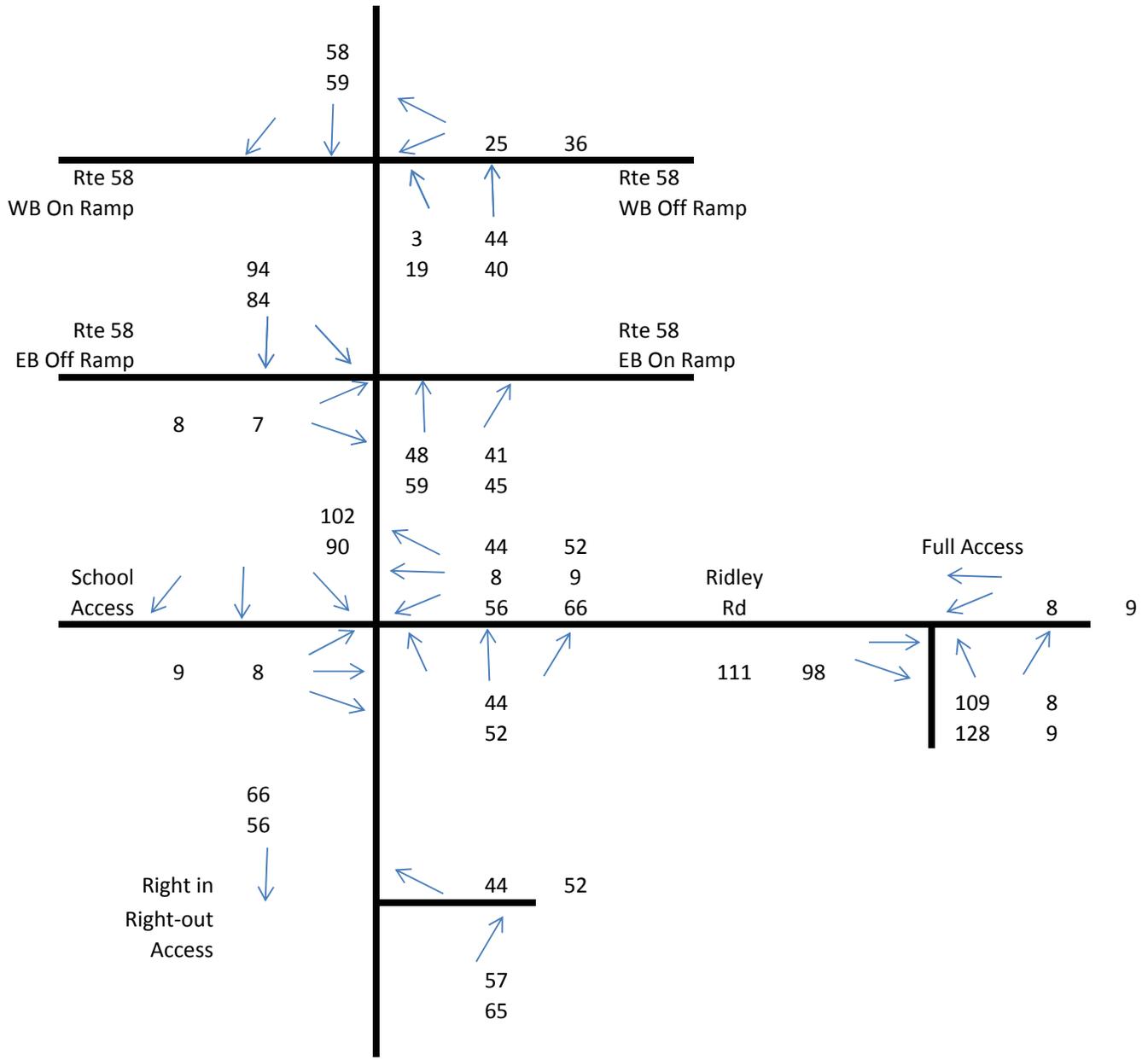
From Scoping  
See Figure 6-1A for distribution at Ridley



LEGEND  
123 234 →  
PM AM  
(closest to the arrow is AM)

↑  
NORTH  
(not to scale)

FIGURE 6-2A  
 SITE TRIPS  
 PEAK HOUR VOLUMES



From Trip Gen Table	AM		PM	
	In	Out	In	Out
Total Driveway Trips	164	161	185	189
Passby Reduction	53	53	61	62

LEGEND  
 123      234      →  
 PM      AM  
 (closest to the arrow is AM)

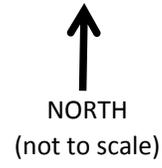
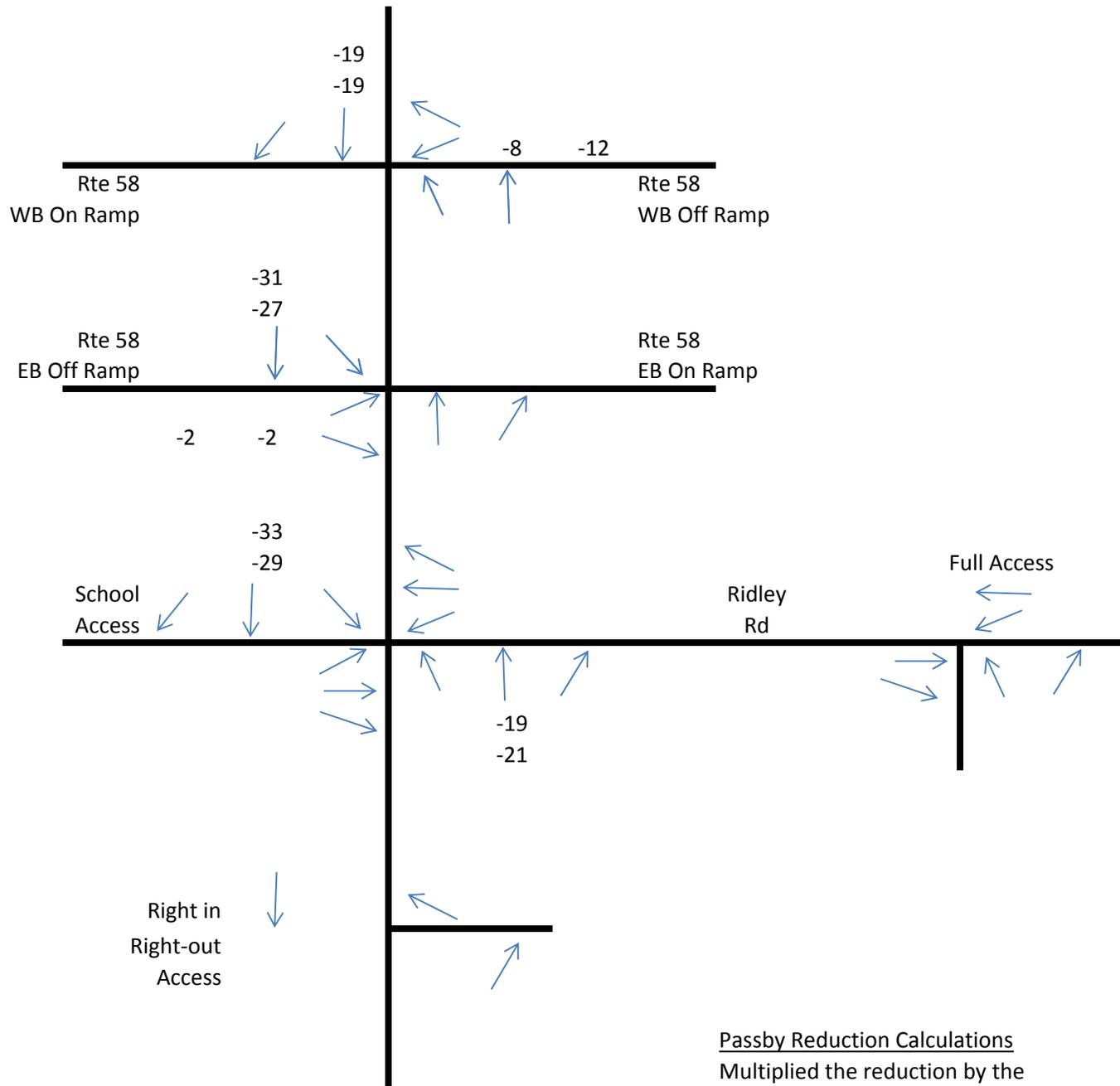


FIGURE 6-2B  
 SITE TRIPS - PASS-BY REDUCTION  
 PEAK HOUR VOLUMES



Passby Reduction Calculations  
 Multiplied the reduction by the  
 Rte 35 distribution percentages

From Trip Gen Table	AM		PM	
	In	Out	In	Out
Total Driveway Trips	164	161	185	189
Passby Reduction	53	53	61	62

LEGEND  
 123      234 →  
 PM      AM  
 (closest to the arrow is AM)

↑  
 NORTH  
 (not to scale)