



U.S. ROUTE 29  
ACCESS MANAGEMENT STUDY  
*Tightsqueeze Area*



Prepared for:



Prepared by:



Kimley-Horn  
and Associates, Inc.

# U.S. ROUTE 29 ACCESS MANAGEMENT STUDY

*Tightsqueeze Area*

## U.S. Route 29 Access Management Study Pittsylvania County *June 2009*

Prepared for:

Virginia Department of Transportation  
Chatham Residency  
19281 U.S. Highway 29  
Chatham, VA 24531



Prepared by:

Kimley-Horn and Associates, Inc.  
4500 Main Street  
Suite 500  
Virginia Beach, Virginia 23462  
Project Number: 117304008



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# U.S. ROUTE 29 ACCESS MANAGEMENT STUDY

## Tightsqueeze Area

### Chapter 1.0 Executive Summary

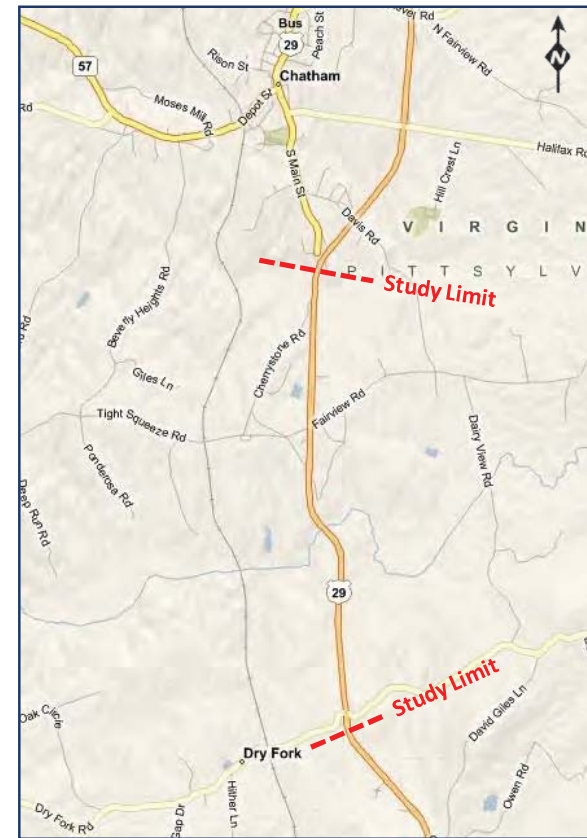
Pittsylvania County is a primarily rural county located in the south-central portion of Virginia extending south from Campbell County to the North Carolina border. U.S. Route 29 is the primary north-south highway in the County and serves local area trips as well as through traffic destined to and from Campbell County and the City of Danville. The County, particularly along the U.S. Route 29 corridor, continues to experience significant retail and commercial growth. This development correlates to increased traffic volumes, additional conflict points, and increased demand for access as vacant parcels develop and existing land uses change. This increased demand necessitates careful planning, both near and long-term, to ensure that the corridor remains a safe, efficient means of travel while still serving the needs of increased development.

In 2007 the Virginia General Assembly approved legislation authorizing VDOT to develop and publish access management regulations and standards for the Commonwealth. The goals of these regulations are to reduce traffic congestion, enhance public safety, support economic development, and maximize the performance of existing facilities. These regulations were published in December 2007 and, as of July 1, 2008, took effect for all VDOT maintained facilities functionally classified as principal arterials. The purpose of this study is to examine these new access management regulations and apply them along the study area of U.S. Route 29 within Pittsylvania County. The study will identify access management strategies along the corridor and will assist VDOT and Pittsylvania County in their discussions with developers as they convey future plans and projects for the corridor. The study will be used as a planning tool to manage access as growth continues along the corridor. The study links together the issues of surrounding traffic demand, land use, and the roadway network allowing the County and VDOT to make informed land use and economic development decisions. This study provides a graphical representation of the access management regulations specifically applied to this corridor and illustrates how access would ideally look once ultimately implemented.

This study is part of a larger effort being made by VDOT to examine access management along U.S. Route 29. An additional study is being prepared that examines the section of U.S. Route 29 immediately south of this portion. This study, therefore, will be one of a number of tools to support VDOT and the County in their application of the new access management regulations. This report will also support the goals of maintaining the quality and safety of travel on U.S. Route 29, while preserving the economic integrity and overall character of the corridor.

The study area for the project includes the “Tightsqueeze” segment of U.S. Route 29 within Pittsylvania County from the U.S. 29 Business ramps south of Chatham to the intersection of U.S. Route 29 and Realty Road (SR 894). As shown in **Figure 1-1**, this study area encompasses approximately 3.25 miles of the corridor. U.S. Route 29 is classified as a principal arterial and is a four-lane divided facility with a grassy median and 12-foot lanes within the study limits. There are currently eight intersections with public and private roads located along the study segment of U.S. Route 29. In addition to these eight intersections, U.S. Route 29 has numerous intersecting paved and unpaved public and private driveways along the study corridor, some with turn lanes. The posted speed limit within the study area ranges from 45 mph to 60 mph.

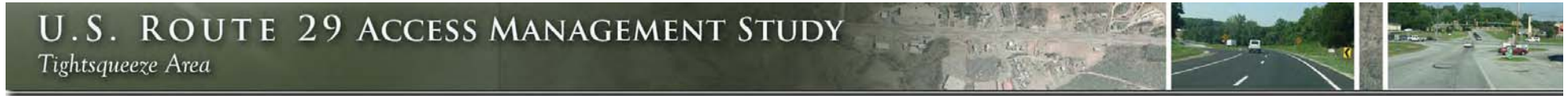
Figure 1-1: Study Area and Location



Source: KHA

# U.S. ROUTE 29 ACCESS MANAGEMENT STUDY

## Tightsqueeze Area



Intersection LOS results for existing conditions indicate that all approaches of study area intersections should operate acceptably at LOS C or better with the exception of the eastbound approach at the U.S. Route 29/Dry Fork Road/Snakepath Road intersection which operates at LOS F. However, this approach experiences very little volume during the peak period indicating that delay affects a relatively small percentage of vehicles.

### Access Strategies

Access management strategies along the U.S. Route 29 corridor have been developed in two categories—short-term and long-term—based on their scale, costs, and ease of implementation. These recommendations are intended to guide the future development and redevelopment of the corridor, ultimately helping to bring the corridor into compliance with VDOT’s newly enacted access management regulations. It is important, however, to emphasize that the following access recommendations are not intended to be carried out immediately but instead gradually as opportunities for redevelopment, capital improvement projects, or specific safety concerns arise. These access management strategies are intended to serve as a tool for VDOT and Pittsylvania County as they work with developers to control the demand for access as opportunities for improvement emerge. Furthermore, access management guidelines are applied only to street connections and commercial entrances. Access management regulations define a commercial entrance as any entrance serving land uses other than two or fewer private residences. Therefore access management standards were not examined for private entrances serving two or fewer private residences.

While numerous specific improvements are mentioned in detail, as follows, there are several overarching principles which should guide access management strategies along the U.S. Route 29 corridor. Upon development of vacant parcels or redevelopment of existing private residences, the creation of shared use right-in/right-out driveways with internal connections between parcels should be highly encouraged. Shared-use access points will limit the impact of redevelopment on the corridor and will improve efficiency while still accommodating an increasing demand for access. Adjustments to median opening spacing, driveway spacing, and turn lanes should also be considered to achieve VDOT standards as opportunities arise.

It is important to note that all turn lane recommendations contained in this report are preliminary and based upon operational and safety concerns. Turn lane warrant analyses will need to be completed to determine more precise turn lane requirements. Graphical summaries of the following strategies are provided in Chapter 5.0.

### Short-term Strategies

Short-term recommendations generally include improvements that are relatively inexpensive and easily implemented. These kinds of improvements usually do not require right-of-way acquisition and can be completed in a relatively short period of time. Some common short-term access recommendations include the addition of turn lanes or the installation of additional signage. The following short-term access management strategies are recommended for the U.S. Route 29 corridor.

#### *Segment 1: U.S. 29 Business Ramps to H.G. McGhee Drive*

Cherrystone Road (SR 1433) intersection:

- Extend the existing northbound left-turn lane to provide full taper and storage.

- Re-grade and install physical barriers to better define the median opening. Narrow opening to meet geometry standards.

Atkinson Truck Sales driveway:

- Extend the existing southbound right-turn lane to better accommodate heavy vehicles.

#### *Segment 2: H.G. McGhee Drive to Samuel Harris Lane*

Chatham Center median crossover:

- Reconfigure the west shoulder. Restripe pavement markings and install physical barrier (flexible delineators etc.) to truncate the continuous southbound right-turn lane.

Samuel Harris Lane (SR 1434) intersection:

- Extend the southbound right-turn lane.

#### *Segment 3: Samuel Harris Lane to crossover north of Meadow’s Service Center*

Crossover north of Meadow’s Service Center:

- Install southbound right-turn lane.

#### *Segment 4: Crossover north of Meadow’s Service Center to crossover south of Copart Auto Auction*

Copart Auto Auction median crossover:

- Install southbound left-turn lane.
- Install northbound left-turn lane to better accommodate left- and U-turning vehicles.

Tightsqueeze Self Storage driveway:

- Install southbound right-turn taper to accommodate heavy vehicles destined to the storage facility.

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### *Segment 5: Crossover south of Copart Auto Auction to Realty Road*

Chatham Middle School access:

- Relocate school zone signage and beacons as indicated to extend school zone farther north and farther south of existing locations.
- Install northbound left-turn lane and U-turn only median opening immediately north of Pittsylvania Career and Technical Center as indicated. To better accommodate school buses and heavy vehicles U-turning at this opening, a U-turn flare-out should be installed.

Dry Fork Road/Snakepath Road (SR 718) intersection:

- Extend existing southbound right-turn lane.

### **Long-term Strategies**

The long-term goal for this corridor is full compliance with VDOT access management regulations. To reach this goal it will be necessary to enact more significant improvements in the long term. Long-term recommendations generally include improvements that are more expensive or are more difficult to implement. These kinds of improvements also usually require right-of-way acquisition or agreements between land owners. Common long-term access recommendations include the closure or realignment of driveways and median openings. Again it is important to reiterate that this study is a tool to guide future access management improvements and does not include plans for phasing and implementation of specific construction projects to modify the corridor. While those driveways and median openings marked as nonstandard will need to be closed, relocated, or modified geometrically to meet access management standards, these improvements will be implemented over time as redevelopment or capital improvement opportunities occur. The following long-term access management strategies are recommended for the U.S. Route 29 corridor.

### *Segment 1: U.S. 29 Business Ramps to H.G. McGhee Drive*

Cherrystone Road (SR 1433) crossover:

- Upon closure of the marked nonstandard driveway, install southbound right-turn taper. Due to the bridge, there is insufficient length to install a full turn lane with taper and storage.

Fisher Auto Parts crossover:

- Upon closure of the marked nonstandard driveway, install a southbound right-turn lane.
- Reconfigure the shared driveway serving Fisher Auto Parts and the private residence to the south. This access does not meet geometry standards.
- Crossover does not meet spacing requirements for a full access crossover. Since the crossover will meet spacing standards for a partial access crossover, it should be reconfigured to accommodate northbound left- and U-turns only. A U-turn flare-out should be installed to accommodate northbound heavy vehicles destined for the Atkinson Truck Sales site south of this crossover.

### *Segment 2: H.G. McGhee Drive to Samuel Harris Lane*

Reconfigure the west shoulder at the Tightsqueeze Plaza driveway upon closure of the marked nonstandard driveways serving the McDonald's and the Hardee's. Install physical barrier (flexible delineators, etc.) to truncate the continuous southbound right-turn lane.

Tightsqueeze Road/Fairview Road (SR 703) intersection:

- Install a median on the eastbound approach to prevent westbound left-turns into the service station on the southwest corner.
- Reconfigure the eastbound approach to provide a shared through and left-turn lane and an exclusive right-turn lane.

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### *Segment 3: Samuel Harris Lane to crossover north of Meadow's Service Center*

Woodlawn Academy Road (SR 1437) intersection:

- Close existing median opening and relocate as shown. Realign Woodlawn Academy Road to new median opening as shown.
- Install northbound left- and right-turn lanes at relocated median opening.
- Install southbound left-turn lane at relocated median opening.
- Upon redevelopment of parcels to the west and construction of shared-use access, install southbound right-turn lane.

### *Segment 4: Crossover north of Meadow's Service Center to crossover south of Copart Auto Auction*

Copart Auto Auction median crossover:

- Upon closure of the marked nonstandard driveway, install northbound right-turn lane.

### *Segment 5: Crossover south of Copart Auto Auction to Realty Road*

Chatham Middle School access:

- Close the existing central school access and associated median opening.
- Relocate central school access to the existing northern driveway and create new, full access median opening at this location.
- Install northbound and southbound left-turn lanes at relocated median opening.
- Reconfigure existing northern driveway as shown to accommodate primary access:
  - Widen driveway to provide two ingress lanes and two egress lanes.

Middle School bus access:

- Install southbound left-turn lane and left-in only median opening to align with current bus access roadway.
- Reconfigure bus access roadway to accommodate two-way operation.
- Extend northbound right-turn lane from solid waste collection center to serve bus access.

Atkinson Truck Sales driveway:

- Relocate driveway to align with relocated school median opening.
- Install southbound right-turn lane to accommodate heavy vehicles entering the property.

County solid waste collection center:

- Relocate driveway to connect to bus access roadway.

Dry Fork Road (SR 718):

- Install reverse frontage road along property line shown.

# U.S. ROUTE 29 ACCESS MANAGEMENT STUDY

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## Chapter 2.0 Introduction

### Section 2.1 Background

Pittsylvania County is a primarily rural county located in the south-central portion of Virginia extending south from Campbell County to the North Carolina border. U.S. Route 29 is the primary north-south highway in the County and serves local area trips as well as through traffic destined to and from Campbell County and the City of Danville. The County, particularly along U.S. Route 29, continues to experience significant retail and commercial growth. This development correlates to increased traffic volumes, additional conflict points, and increased demand for access as vacant parcels develop and existing land uses change. This increased demand necessitates careful planning, both near and long-term to ensure that the corridor remains a safe, efficient means of travel while still serving the needs of increased development.

Kimley-Horn and Associates, Inc. (KHA) was retained by the Virginia Department of Transportation (VDOT) to assess the current conditions along the U.S. Route 29 corridor and identify access management strategies. The results of this effort will be an access management study. The study will serve as a tool to guide future development that both identifies existing access issues and suggests strategies that will maintain safe, efficient operation of the corridor in the future. The project team included VDOT TMPD staff, VDOT Lynchburg District staff, Pittsylvania County Planning Department staff, West Piedmont Planning District Commission staff, and Kimley-Horn.

### Section 2.2 Purpose and Need

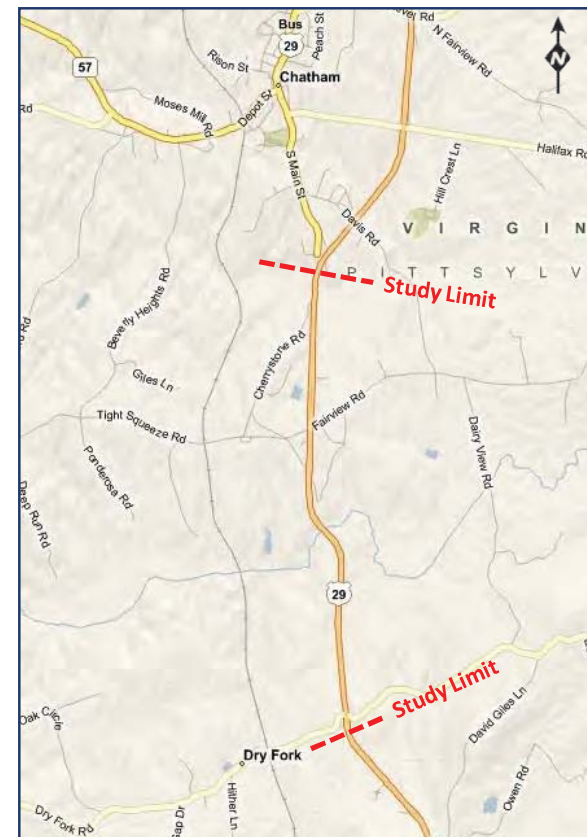
In 2007 the Virginia General Assembly approved legislation authorizing VDOT to develop and publish access management regulations and standards for the Commonwealth. The goals of these regulations are to reduce traffic congestion, enhance public safety, support economic development, and maximize the performance of existing facilities. These regulations were published in December 2007 and, as of July 1, 2008, took effect for all VDOT maintained facilities functionally classified as principal arterials. The purpose of this study is to examine these new access management regulations and apply them along the study area of U.S. Route 29 within Pittsylvania County. The study will identify access management strategies along the corridor and will assist VDOT and Pittsylvania County in their discussions with developers as they convey future plans and projects for the corridor. The study will ultimately be used as a planning tool to manage access as growth continues along the corridor. The study links together the issues of surrounding traffic demand, land use, and the roadway network allowing the County and VDOT to make informed land use and economic development decisions. This study provides a graphical representation of the access management regulations specifically applied to this corridor and illustrates how access would look once ultimately and ideally implemented.

This study is part of a larger effort being made by VDOT to examine access management along U.S. Route 29. An additional study is being prepared that examines the section of U.S. Route 29 immediately south of this portion. This study, therefore, will be one of a number of tools to support VDOT and the County in their application of the new access management regulations. This report will also support the goals of maintaining the quality and safety of travel on U.S. Route 29, while preserving the economic integrity and overall character of the corridor.

### Section 2.3 Study Area

The study area for the project includes the “Tightsqueeze” segment of U.S. Route 29 within Pittsylvania County from the U.S. 29 Business ramps south of Chatham to the intersection of U.S. Route 29 and Realty Road (SR 894). As shown in **Figure 2-1**, this study area encompasses approximately 3.25 miles of the corridor. U.S. Route 29 is classified as a principal arterial and is a four-lane divided facility with a grassy median and 12-foot lanes within the study limits. The posted speed limit within the study area ranges from 45 mph to 60 mph.

Figure 2-1: Study Area and Location



Source: KHA



# U.S. ROUTE 29 ACCESS MANAGEMENT STUDY

## *Tightsqueeze Area*



There are currently eight intersections with public and private roads located along the study segment of U.S. Route 29. These intersections are listed below in order from north to south. The intersection at Tightsqueeze Road/Fairview Road (SR 708) is signalized and runs in free operation.

- Cherrystone Road (SR 1433)
- H.G. McGhee Drive (SR 1045)
- Tightsqueeze Road/Fairview Road (SR 703)
- Samuel Harris Lane (SR 1434)
- Woodlawn Academy Road (SR 1437)
- Chatham Middle School Entrance (SR 9330)
- Dry Fork Road/Snakepath Road (SR 718)
- Realty Road (SR 894)

In addition to these intersections, U.S. Route 29 has numerous intersecting paved and unpaved public and private driveways along the study corridor, some with turn lanes.

### **Section 2.4 Project Approach**

The first step in this project was the collection of traffic volume, crash, and land use data from the project team to analyze existing conditions. These existing conditions analyses included intersection and arterial level of service analyses as well as analysis of crash data along the corridor. After preliminary capacity and crash analyses, a field review was conducted in September 2008 to examine the corridor and identify any safety or access deficiencies.

Public involvement was an important element of the approach to this project. Two public meetings were held throughout the completion of this task, one on November 10, 2008 and another on February 9, 2009. The goals of the November 2008 meeting were to first introduce the public to the project and VDOT's new access management regulations. More importantly, this meeting was used as an opportunity to receive feedback from the public on existing access and safety deficiencies along the corridor. This meeting therefore helped to validate the existing issues identified by the project team and identify other concerns from residents and stakeholders along the corridor.

After receiving input from the public at the November meeting, access strategies for the corridor were developed with input from the project team. These strategies attempted to address the issues identified by the project team and the comments from the November public meeting, as well as any capacity or safety deficiencies identified during analysis of existing conditions and the field review. After obtaining concurrence from the project team on these strategies, the strategies were presented to the public at the meeting held in February 2009. The goal of this meeting was to present the access strategies to the public and receive input from stakeholders along the corridor. Once all public comments were received from this meeting, the final strategies were developed and presented to the project team for concurrence before final inclusion in this report.

# U.S. ROUTE 29 ACCESS MANAGEMENT STUDY

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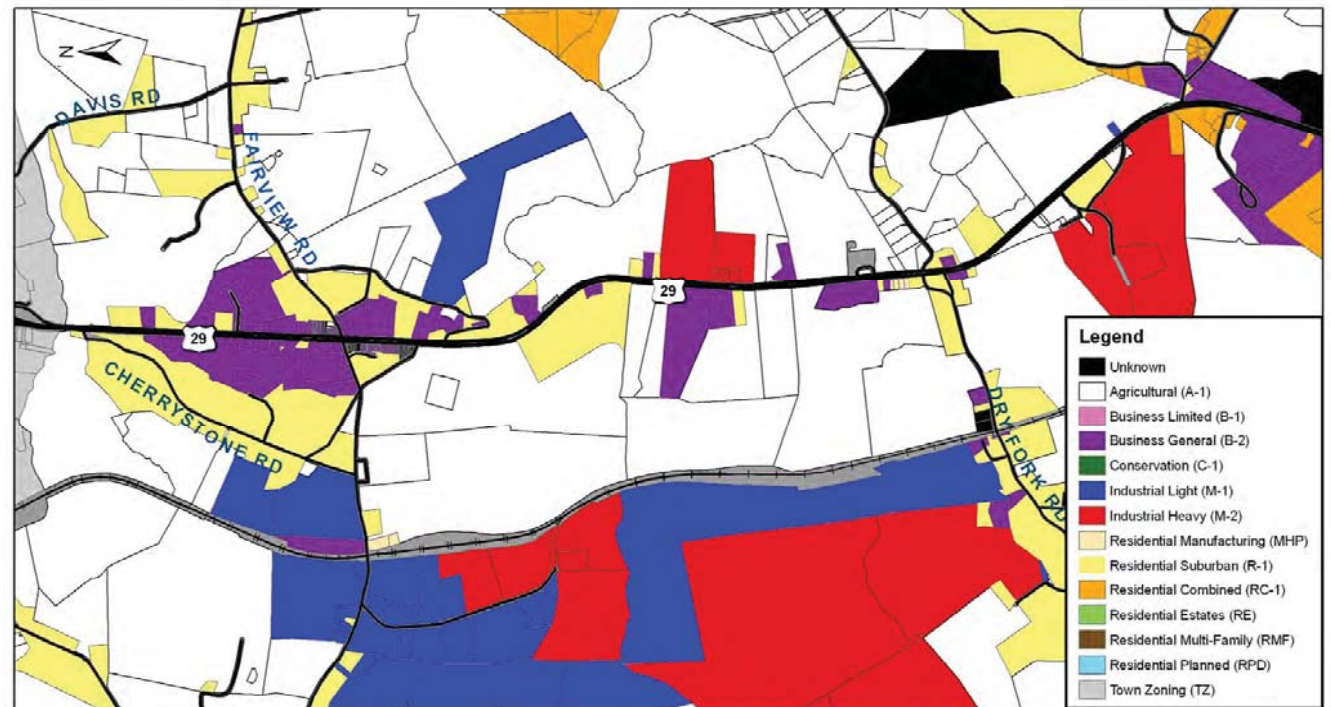
## Chapter 3.0 Existing Conditions

### Section 3.1 Existing Land Use and Zoning

Land use in Pittsylvania County is regulated through County ordinances and the County's Comprehensive Plan. Current land use is primarily commercial/retail and residential with large agricultural tracts surrounding the area. **Figure 3-1** illustrates the current zoning within the study area which includes a mix of general business, suburban residential, and agricultural uses. As illustrated in the zoning map, retail/commercial land uses are concentrated near the Tightsqueeze Road/Fairview Road intersection and include the Chatham Center and Tightsqueeze Plaza shopping centers. There are also numerous smaller retail sites adjacent to these shopping centers and dispersed along the corridor. The primary residential areas are located along Cherrystone Road, Samuel Harris Lane, and Woodlawn Academy Road; however several private residences are also fronted along U.S. Route 29.

As the primary north-south thoroughfare in Pittsylvania County, U.S. Route 29 also provides access to several public services along this segment including the Pittsylvania County Human Services Center, the Pittsylvania Career and Technical Center, Chatham Middle School, and a County solid waste collection center. Chatham High School is located to the west on Tightsqueeze Road and Pittsylvania County Animal Control, the White Oak Mountain Wildlife Management Area, and a County landfill are also accessible via Dry Fork Road/Snakepath Road.

Figure 3-1: Zoning Map



Source: Pittsylvania County

# U.S. ROUTE 29 ACCESS MANAGEMENT STUDY

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### Section 3.2 Existing Traffic Volumes and Operating Conditions

Existing traffic volumes along a highway corridor are determined by stationing people or automated counting equipment at selected points on the corridor and counting the number of vehicles that pass through that point during a given timeframe. Both automated and human counters can collect data on vehicle classification to distinguish passenger cars, small trucks, and SUVs from heavy vehicles while counting volumes. Automated counters can also collect speed data while counting volumes.

Turning movement counts (TMCs) were conducted manually by VDOT at three intersections along the U.S. Route 29 corridor in January and March 2008:

- U.S. Route 29 and Tightsqueeze Road/Fairview Road (SR 703) – January 30, 2008
- U.S. Route 29 and Dry Fork Road/Snakepath Road (SR 718) – March 4, 2008
- U.S. Route 29 and Chatham Middle School access (SR 9330) – March 4, 2008

The intersections were observed for 1.5 hours each during a typical weekday AM (7:30 to 9:00) period. The AM peak hour TMCs for each intersection are shown in **Figure 3-2**.

2006 Annual Average Daily Traffic (AADT) count data were also supplied by VDOT from a study conducted by Vanasse Hangen Brustlin, Inc. for the Danville Metropolitan Planning Organization. AADT volumes were provided at one location along U.S. Route 29 and along Tightsqueeze Road, Fairview Road, Dry Fork Road, and Snakepath Road. These AADT volumes shown in vehicles per day (vpd) are summarized in **Table 3-1**. The percentage of heavy vehicle traffic with regards to AADT was also included with the data and is summarized in the table. Detailed traffic volume data are provided in **Appendix A**.

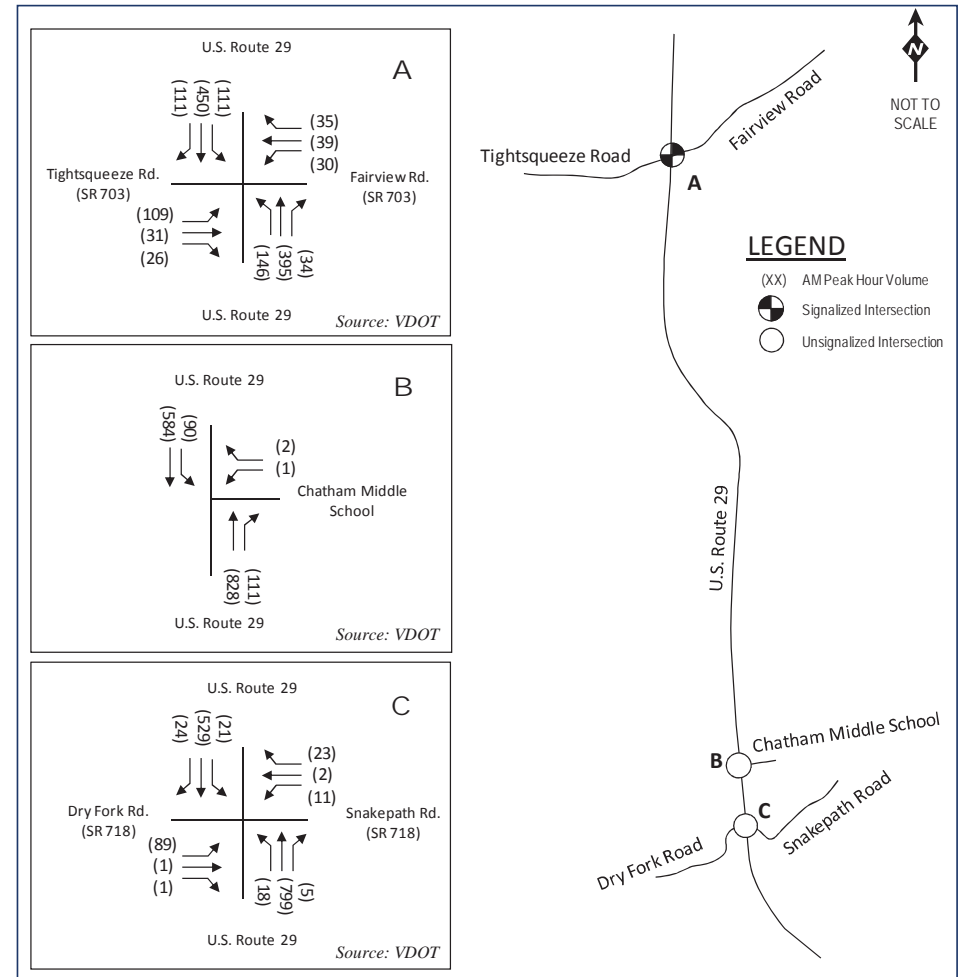
**Table 3-1: AADT and Classification Data\***

Roadway	AADT (vpd)	Percent Heavy Vehicles
U.S. Route 29 (Tightsqueeze Road to Dry Fork Road)	15,545	16%
Route 703 (Tightsqueeze Road)	2,180	6%
Route 703 (Fairview Road)	520	6%
Route 718 (Dry Fork Road)	1,640	6%
Route 718 (Snakepath Road)	530	6%

*Source: VDOT*

VDOT also provided speed data for U.S. Route 29 from a counter located approximately 0.90 miles south of Tightsqueeze Road. Data were collected on May 12, 2006 from 12:00 PM to 1:00 PM for both directions of U.S. Route 29. Data indicated that speeds ranged from 39 mph – 69 mph with an 85<sup>th</sup> percentile speed of 63 mph. Speeding concerns are typically identified when speeds exceed the posted speed limit by at least 5-6 MPH. Since the posted speed limit along this segment is 60 mph, speeding may be an issue along this segment of U.S. Route 29.

**Figure 3-2: 2008 AM Peak Hour Traffic Volumes\***



\*This data is for TRANSPORTATION PLANNING or NEPA PURPOSES ONLY and shall not be used in any manner outside that function. The accuracy, validity, or reliability of the data shown is not guaranteed or warranted in any way.

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## Tightsqueeze Area



### Section 3.3 Existing Capacity Analysis

Through methodology outlined by the Transportation Research Board's *Highway Capacity Manual (HCM)* turning movement and ADT counts were used in conjunction with Synchro 6.0 Professional software to determine levels of service for the intersections and arterial segments. Level of service (LOS) describes the quality of the driving experience using six levels designated A through F. Each LOS is defined by a range of quantitative measurements appropriate to the described facility, such as the density and speed of traffic for a highway LOS or the number of vehicles stopped and average stop duration for a traffic signal LOS. The ranges of delay for each intersection LOS are shown in **Table 3-2**.

**Table 3-2: Intersection LOS Criteria\***

LOS	Intersection Delay Per Vehicle	
	Signalized	Unsignalized
A	0.0-10	0.0-10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50

Source: Transportation Research Board, High Capacity Manual 2000

Peak hour LOS along U.S. Route 29 are summarized in **Table 3-3**. Overall intersection operation LOS is summarized as well as per movement LOS for signalized intersection and per lane LOS for unsignalized intersections. For lanes serving only through and right-turn movements on U.S. Route 29 at unsignalized intersections, no LOS were calculated as the *HCM* does not provide LOS criteria for the major street's through and right-turn movements at a two-way stop. LOS for all intersections are based on average per-vehicle seconds of delay calculated from the intersection laneage and geometry, traffic volumes and characteristics, and (for signalized intersections) the traffic signal timing.

**Table 3-3: Intersection LOS Results\***

Intersection	Level of Service per Movement by Approach (Delay in sec/veh)				Overall LOS
	Eastbound	Westbound	Northbound	Southbound	
Tightsqueeze Road/Fairview Road (Route 703)	C (28.4)	C (22.8)	B (17.9)	B (17.2)	B (19.1)
Chatham Middle School Primary Access	--	C (20.4)	A (0.0)	B (11.2)	A (0.7)
Chatham Middle School Bus Exit	--	C (17.2)	A (0.0)	A (0.0)	A (0.3)
Dry Fork Road/Snakepath Road (Route 718)	F (69.4)	C (22.5)	A (8.8)	A (9.8)	A (4.9)

Source: Kimley-Horn and Associates, Inc.

Based on the locations where the speed limit changes, the corridor was divided into three segments for peak hour arterial LOS analysis using HCS+ software: the 45 mph, 55 mph, and 60 mph posted speed limit segments. It should be noted that the segment in the immediate vicinity of the signalized Tightsqueeze Road/Fairview Road intersection (45 mph posted speed limit) was assumed to have a free flow speed of 45 mph since the HCM multilane highway methodology does not account for free flow speeds below 45 mph. The two remaining segments were analyzed by direction using the HCM multilane highway operations methodology with appropriate free flow speed reductions taken. This method uses observed traffic speed, volume, and makeup along with information regarding the highway's geometry and number of lanes to calculate a LOS based on density in passenger car equivalents per mile per lane (pc/mi/ln). The results of this analysis are summarized in **Table 3-4**.

**Table 3-4: 2008 U.S. Route 29 Arterial LOS\***

Segment	AM Peak Hour LOS	
	Northbound	Southbound
U.S. Route 29 Business Ramps to H.G. McGhee Drive (55 mph speed limit)	A 7.4 pc/mi/ln	A 9.2 pc/mi/ln
H.G. McGhee Drive to Samuel Harris Lane (45 mph speed limit)	A 8.8 pc/mi/ln	A 7.7 pc/mi/ln
Samuel Harris Lane to Dry Fork Road/Snakepath Road (60 mph speed limit)	B 11.7 pc/mi/ln	A 8.4 pc/mi/ln

Source: Kimley-Horn and Associates, Inc.

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# U.S. ROUTE 29 ACCESS MANAGEMENT STUDY

## Tightsqueeze Area



Within the LOS framework, operating conditions that achieve a LOS of A to C are generally considered acceptable for a rural principal arterial according to the American Association of State Highway and Transportation Officials *A Policy on Geometric Design of Highways and Streets*. LOS D represents moderate congestion and delays and is generally acceptable in an urban setting where greater traffic congestion is expected. LOS E and F describe more intense congestion and a break-down of the transportation system. At an intersection, a LOS E or F indicates lengthy queuing with vehicles experiencing prolonged waits. On a street or highway segment, a LOS E or F indicates dense, slow-moving, or stop-and-go traffic. Typically, LOS E indicates unstable conditions and an imminent need for improvements while LOS F indicates a failed element of the transportation network and a strong, current need for improvements.

While overall intersection LOS along U.S. Route 29 are acceptable, the eastbound approach at the Dry Fork Road/Snakepath Road unsignalized intersection experiences LOS F during the AM peak hour. Although this is a failing LOS, the volume on this approach is relatively low with a total of only 91 vehicles per hour. It is also important to note that even this relatively low volume is a peak volume, thus volumes throughout the majority of the day will be much lower than the peak. Therefore the delays associated with the peak period will only be experienced on Dry Fork Road for one or two hours of the day (i.e. the morning and evening peak traffic periods). Furthermore, that delay will only affect a small portion of the vehicles using the intersection since those traveling on U.S. Route 29 (the far heavier movements) experience no delay. Although providing a signal at this intersection would reduce delay for the few vehicles on Dry Fork Road/Snakepath Road, this solution was examined by the project team and was not recommended since VDOT has determined the intersection does not meet the necessary warrants.

It is also important to note that two-stage left-turn movements are possible for vehicles on Dry Fork Road/Snakepath Road at this intersection. A two-stage left-turn movement occurs when the vehicle crosses one direction of traffic and then waits in the median for an acceptable gap in traffic from the other direction. This phenomenon was witnessed during field observations and allows for improved operations since a driver does not need to wait for an acceptable gap to occur in both the northbound and southbound directions of travel simultaneously. Therefore, actual delay experienced on this approach is most likely less than the HCM methodology would indicate, particularly since 89 of the 91 vehicles per hour on this approach are left-turning vehicles and can make a two-stage turning maneuver.

Detailed analysis results are presented in **Appendix B**.

### Section 3.4 Existing Access Deficiencies and Public Concerns

As discussed in Chapter 2.0 of this report, two public meetings were held to receive input from citizens and other stakeholders along the U.S. Route 29 corridor. The first of these meetings was held in November 2008 and the meeting's primary goal, besides introducing the project and its objectives to the citizens, was to receive comments from the public regarding existing access issues and safety concerns along the corridor. Aerial maps of the corridor divided into three segments were provided and citizens were given green and red colored dots to place on the maps to mark locations where they felt access or safety was an issue. **Figure 3-3, Figure 3-4, Figure 3-5** on pages 12, 13, and 14 present these three segments with the citizens' markings shown. Citizens were given a chance to make verbal comments at the meeting and they also received a sheet to provide written comments to further explain why they marked locations and what issues they saw. The minutes from this meeting, as recorded by VDOT, are provided in **Appendix C**.

After receiving the verbal and written comments from the public meeting as well as anecdotal information from the project team, a final summary of existing access/safety issues was developed. The majority of issues identified by the public were concerned with safety rather than access as many citizens had anecdotal evidence of crashes and near-misses. The summary below is organized by the same three segments as the aerial maps provided at the public meeting.

#### Segment 1: U.S. 29 Business Ramps to Tightsqueeze Road



Safety concerns were raised at the Cherrystone Road intersection with regards to intersection geometry. Field observations conducted in September 2008 confirmed that this median opening is relatively poorly defined with a large opening and a worn, uneven surface. Pavement markings at this crossover are also quite faded.

Safety and access concerns were raised at the median opening immediately south of the Cherrystone Road intersection. Citizens noted that this median opening serves as a northbound U-turn point for numerous heavy vehicles destined to the Atkinson Truck Sales center south of the median opening along southbound U.S. Route 29. Concern was expressed that the current geometry of this crossover requires heavy vehicles to make a three-point turn and thus back into oncoming southbound traffic. Another individual noted that a commercial redevelopment is planned on the east side of U.S. Route 29 at this crossover which may impact traffic flow.

Several citizens expressed concerns at the Tightsqueeze Road/Fairview Road intersection. The continuous right-turn lane along southbound U.S. Route 29 approaching the intersection was one of the concerns identified. Nine access points are located within this turn lane and citizens noted that many people treat this right-turn lane as a travel lane to reach Tightsqueeze Road. Concerns were also expressed that the eastbound approach of this intersection lacks a right-turn lane. The signal timings at this intersection were also identified as a point of concern.

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### Segment 2: Tightsqueeze Road to Copart Auto Auction

Citizens expressed concern over limited sight distance at the Woodlawn Academy Road intersection for drivers turning onto U.S. Route 29. Citizens also noted the need for turn lanes from U.S. Route 29 northbound and southbound onto Woodlawn Academy Road to allow vehicles to decelerate in a dedicated turn lane rather than the through travel lanes. Field observations confirmed that this intersection lacks both a northbound right-turn lane and a southbound left-turn lane onto Woodlawn Academy Road.



The lack of a southbound left-turn lane at the Copart Auto Auction crossover was also identified as an issue. Field observations confirmed that the shoulder is quite worn in this area where drivers are using the shoulder as a turn lane in order to decelerate prior to the median opening.

### Segment 3: Copart Auto Auction to Realty Road

The two primary areas of concern along this segment are the Chatham Middle School and the Dry Fork Road/Snakepath Road intersection. At the Dry Fork Road intersection several citizens identified concerns with respect to limited sight distance on the northbound approach. The horizontal and vertical curvature of this approach makes it difficult for approaching northbound drivers to see vehicles in the intersection which creates a safety issue. Conversely, drivers in the intersection have trouble seeing approaching northbound vehicles which makes it difficult to judge gaps in traffic. This can make left-turns from Dry Fork Road and southbound U.S. Route 29 particularly challenging. Citizens also expressed concern over the lack of a southbound right-turn lane onto Dry Fork Road.



At Chatham Middle School, concerns were identified with the circulation of bus and parent/faculty/staff traffic, particularly at the start of the school day when most traffic arrives within the same 15-minute interval. One area of concern was the southbound left-turn lane entering the school and the long backup that occurs. Citizens noted that the combination of parent traffic and buses using the turn lane results in lengthy queues and long delay as buses must wait for an acceptable gap in northbound traffic to make the turn. This backup also creates an issue



with U-turning vehicles at the Dry Fork Road intersection. Several citizens noted that parents will travel south to this intersection and U-turn rather than waiting in the queue at the left-turn lane directly into the school. This was identified as a major issue given the limited sight distance at the Dry Fork Road intersection as discussed above. Several citizens also noted the speed of approaching northbound traffic as an issue with respect to school operation and the lack of adequate school zone warnings upstream of the school. During field observations it was noted that the school bus exit driveway is actually located prior to the school zone reduced speed area.



**Figure 4-4: 2004-2006 Crash Data Map**  
 VDOT Virginia Department of Transportation  
 KIMLEY-HORN and Associates, Inc.



**Legend**

● Rear end	● Angle	● Sideswipe	○ Injury Crash	● Rain	○ Snow (white ring)	↙ Turning Movement
● Animal	● Fixed Object	● Other	○ Fatal Crash	● Sleet	⊕ Number of vehicles	(###) AM Peak Hour Volume

0 100 200 400 600 Feet

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# U.S. ROUTE 29 ACCESS MANAGEMENT STUDY

## Tightsqueeze Area



## Chapter 5.0 Access Management Strategies/Recommendations

Access management strategies along the U.S. Route 29 corridor have been developed in two categories—short-term and long-term—based on their scale, costs, and ease of implementation. These recommendations are intended to guide the future development and redevelopment of the corridor, ultimately helping to bring the corridor into compliance with VDOT’s newly enacted access management regulations. It is important, however, to emphasize that the following access recommendations are not intended to be carried out immediately but instead gradually as opportunities for redevelopment, capital improvement projects, or specific safety concerns arise. These access management strategies are intended to serve as a tool for VDOT and Pittsylvania County as they work with developers to control the demand for access as opportunities for improvement emerge.

While numerous specific improvements are mentioned in detail, as follows, there are several overarching principles which should guide access management strategies along the U.S. Route 29 corridor. Upon development of vacant parcels or redevelopment of existing private residences, the creation of shared use right-in/right-out driveways with internal connections between parcels should be highly encouraged. Shared-use access points will limit the impact of redevelopment on the corridor and will improve efficiency while still accommodating an increasing demand for access. Adjustments to median opening spacing, driveway spacing, and turn lanes should also be considered to achieve VDOT standards as opportunities arise.

It is important to note that all turn lane recommendations contained in this report are preliminary and based upon operational and safety concerns. Turn lane warrant analyses will need to be completed to determine more precise turn lane requirements. As a planning level document, recommendations have not been drawn to scale and, as drawn, do not necessarily meet all design standards. All recommendations for improvements should meet minimum VDOT design standards unless otherwise noted and justified.

**Figure 5–1, Figure 5–2, and Figure 5–3** on pages 23, 24, and 25 illustrate the access management recommendations graphically in five segments. These graphics show the recommended turn lane/geometric improvements as well as indicate median crossovers and commercial entrances that do not comply with access management regulations. The new regulations define a commercial entrance as any entrance that serves a land use other than two or fewer private residences. Therefore spacing standards were not examined for private entrances serving two or fewer private residences. In instances where no existing access points serving a particular parcel meet spacing requirements (e.g. a small corner parcel at an intersection), only redundant access points were marked nonstandard. Potential locations for future shared use access points are also shown at locations that will allow compliance with spacing requirements.

### Section 5.1 Short-term Strategies

Short-term recommendations generally include improvements that are relatively inexpensive and easily implemented. These kinds of improvements usually do not require right-of-way acquisition and can be completed in a relatively short period of time. Some common short-term access recommendations include the addition of turn lanes or the installation of additional signage. The following short-term access management strategies are recommended for the U.S. Route 29 corridor.

#### *Segment 1: U.S. 29 Business Ramps to H.G. McGhee Drive*

Cherrystone Road (SR 1433) intersection:

- Extend the existing northbound left-turn lane to provide full taper and storage.
- Regrade and install physical barriers to better define the median opening. Narrow opening to meet geometry standards.

Atkinson Truck Sales driveway:

- Extend the existing southbound right-turn lane to better accommodate heavy vehicles.

#### *Segment 2: H.G. McGhee Drive to Samuel Harris Lane*

Chatham Center median crossover:

- Reconfigure the west shoulder. Restripe pavement markings and install physical barrier (flexible delineators etc.) to truncate the continuous southbound right-turn lane.

Samuel Harris Lane (SR 1434) intersection:

- Extend the southbound right-turn lane.

#### *Segment 3: Samuel Harris Lane to crossover north of Meadow’s Service Center*

Crossover north of Meadow’s Service Center:

- Install southbound right-turn lane.

#### *Segment 4: Crossover north of Meadow’s Service Center to crossover south of Copart Auto Auction*

Copart Auto Auction median crossover:

- Install southbound left-turn lane.
- Install northbound left-turn lane to better accommodate left- and U-turning vehicles.

Tightsqueeze Self Storage driveway:

- Install southbound right-turn taper to accommodate heavy vehicles destined to the storage facility.



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## Tightsqueeze Area



### *Segment 5: Crossover south of Copart Auto Auction to Realty Road*

Chatham Middle School access:

- Relocate school zone signage and beacons as indicated to extend school zone farther north and farther south of existing locations.
- Install northbound left-turn lane and U-turn only median opening immediately north of Pittsylvania Career and Technical Center as indicated. To better accommodate school buses and heavy vehicles U-turning at this opening, a U-turn flare-out should be installed.

Dry Fork Road/Snakepath Road (SR 718) intersection:

- Extend existing southbound right-turn lane.

### **Section 5.2 Long-term Strategies**

The long-term goal for this corridor is full compliance with VDOT access management regulations. To reach this goal it will be necessary to enact more significant improvements in the long term. Long-term recommendations generally include improvements that are more expensive or are more difficult to implement. These kinds of improvements also usually require right-of-way acquisition or agreements between land owners. Common long-term access recommendations include the closure or realignment of driveways and median openings. Again it is important to reiterate that this study is a tool to guide future access management improvements and does not include plans for phasing and implementation of specific construction projects to modify the corridor. While those driveways and median openings marked as nonstandard in the following figures will need to be closed, relocated, or modified geometrically to meet access management standards, these improvements will be implemented over time as redevelopment or capital improvement opportunities occur. The following long-term access management strategies are recommended for the U.S. Route 29 corridor.

#### *Segment 1: U.S. 29 Business Ramps to H.G. McGhee Drive*

Cherrystone Road (SR 1433) crossover:

- Upon closure of the marked nonstandard driveway, install southbound right-turn taper. Due to the bridge, there is insufficient length to install a full turn lane with taper and storage.

Fisher Auto Parts crossover:

- Upon closure of the marked nonstandard driveway, install a southbound right-turn lane.
- Reconfigure the shared driveway serving Fisher Auto Parts and the private residence to the south. This access does not meet geometry standards.
- Crossover does not meet spacing requirements for a full access crossover. Since the crossover will meeting spacing standards for a partial access crossover, it should be reconfigured to accommodate northbound left- and U-turns only. A U-turn flare-out should be installed to accommodate northbound heavy vehicles destined for the Atkinson Truck Sales site south of this crossover.

#### *Segment 2: H.G. McGhee Drive to Samuel Harris Lane*

Reconfigure the west shoulder at the Tightsqueeze Plaza driveway upon closure of the marked nonstandard driveways serving the McDonald's and the Hardee's. Install physical barrier (flexible delineators, etc.) to truncate the continuous southbound right-turn lane.

Tightsqueeze Road/Fairview Road (SR 703) intersection:

- Install a median on the eastbound approach to prevent westbound left-turns into the service station on the southwest corner.
- Reconfigure the eastbound approach to provide a shared through and left-turn lane and an exclusive right-turn lane.

# U.S. ROUTE 29 ACCESS MANAGEMENT STUDY

## Tightsqueeze Area



### *Segment 3: Samuel Harris Lane to crossover north of Meadow's Service Center*

Woodlawn Academy Road (SR 1437) intersection:

- Close existing median opening and relocate as shown. Realign Woodlawn Academy Road to new median opening as shown.
- Install northbound left- and right-turn lanes at relocated median opening.
- Install southbound left-turn lane at relocated median opening.
- Upon redevelopment of parcels to the west and construction of shared-use access, install southbound right-turn lane.

### *Segment 4: Crossover north of Meadow's Service Center to crossover south of Copart Auto Auction*

Copart Auto Auction median crossover:

- Upon closure of the marked nonstandard driveway, install northbound right-turn lane.

### *Segment 5: Crossover south of Copart Auto Auction to Realty Road*

Chatham Middle School access:

- Close the existing central school access and associated median opening.
- Relocate central school access to the existing northern driveway and create new, full access median opening at this location.
- Install northbound and southbound left-turn lanes at relocated median opening.
- Reconfigure existing northern driveway as shown to accommodate primary access:
  - Widen driveway to provide two ingress lanes and two egress lanes.

Middle School bus access:

- Install southbound left-turn lane and left-in only median opening to align with current bus access roadway.
- Reconfigure bus access roadway to accommodate two-way operation.
- Extend northbound right-turn lane from solid waste collection center to serve bus access.

Atkinson Truck Sales driveway:

- Relocate driveway to align with relocated school median opening.
- Install southbound right-turn lane to accommodate heavy vehicles entering the property.

County solid waste collection center:

- Relocate driveway to connect to bus access roadway.

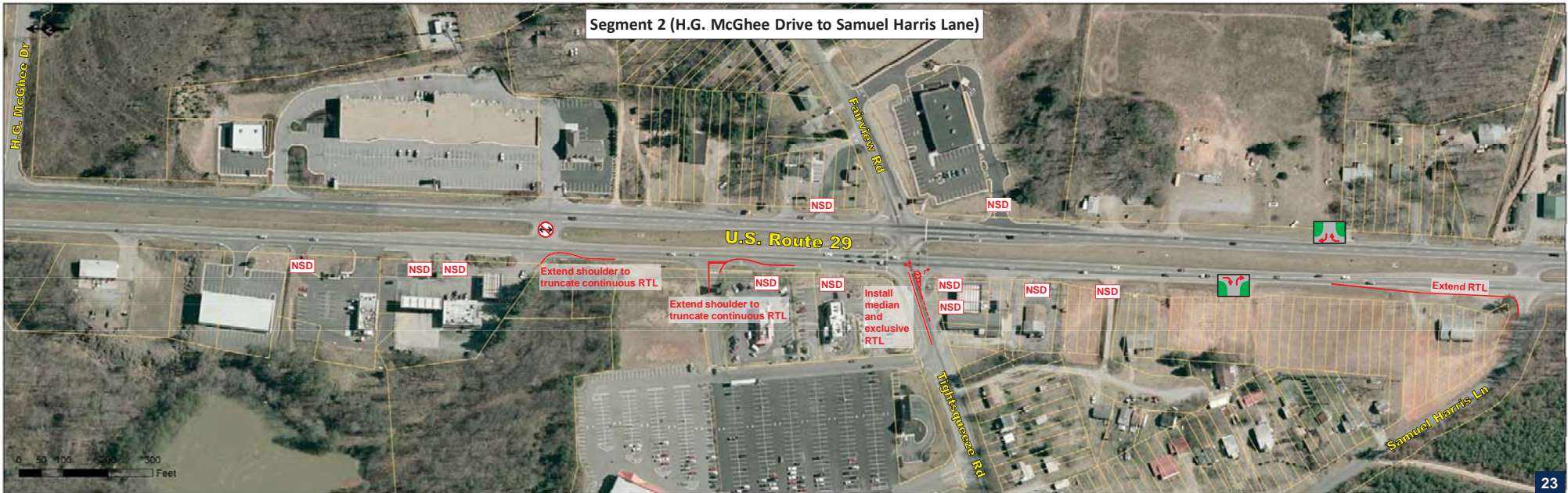
Dry Fork Road (SR 718):

- Install reverse frontage road along property line shown.

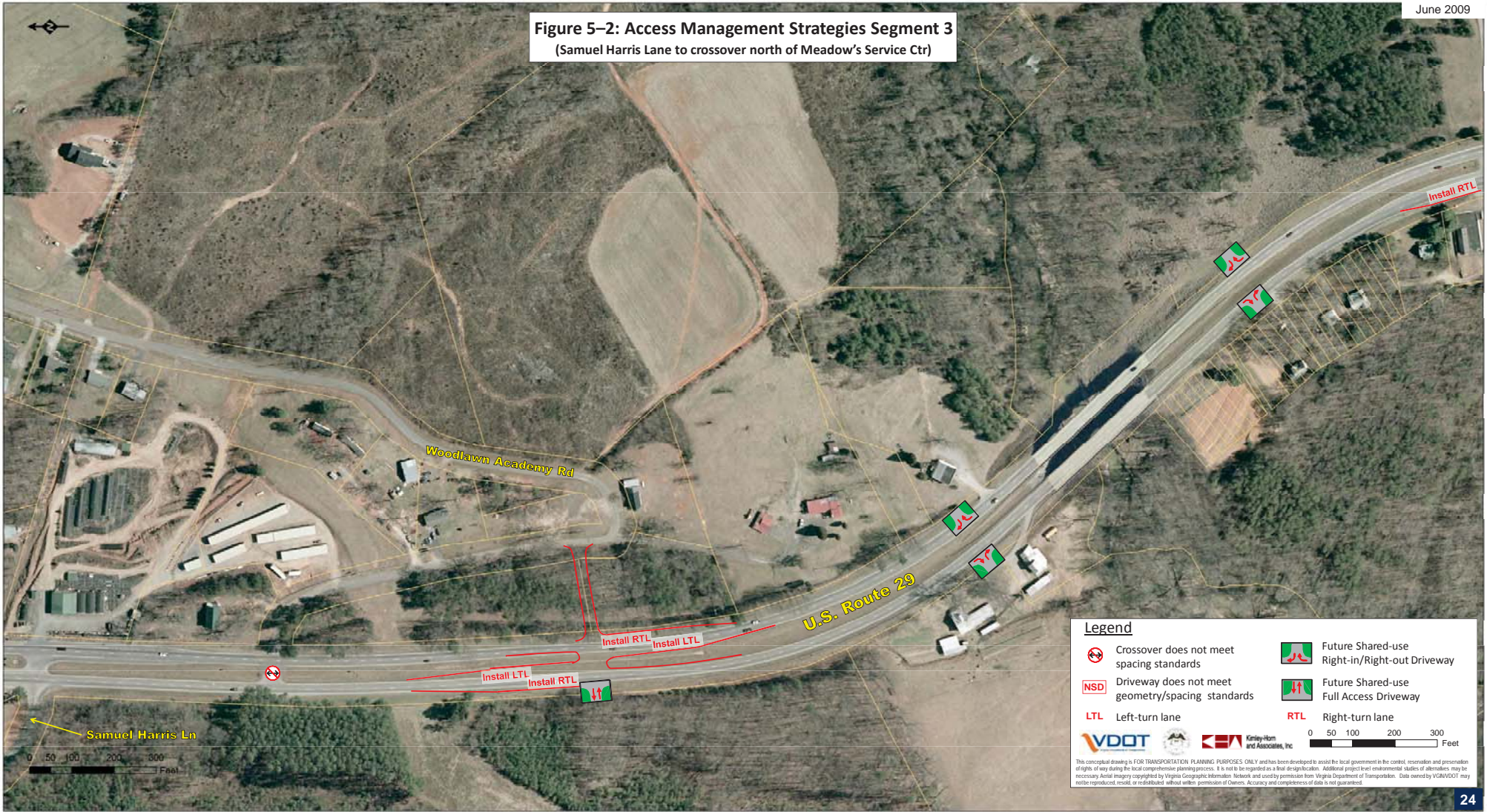
Figure 5-1: Access Management Strategies Segments 1 & 2  
Segment 1 (U.S. 29 Business Ramps to H.G. McGhee Drive)



Segment 2 (H.G. McGhee Drive to Samuel Harris Lane)



**Figure 5-2: Access Management Strategies Segment 3**  
(Samuel Harris Lane to crossover north of Meadow's Service Ctr)



**Legend**

	Crossover does not meet spacing standards		Future Shared-use Right-in/Right-out Driveway
	Driveway does not meet geometry/spacing standards		Future Shared-use Full Access Driveway
	Left-turn lane		Right-turn lane

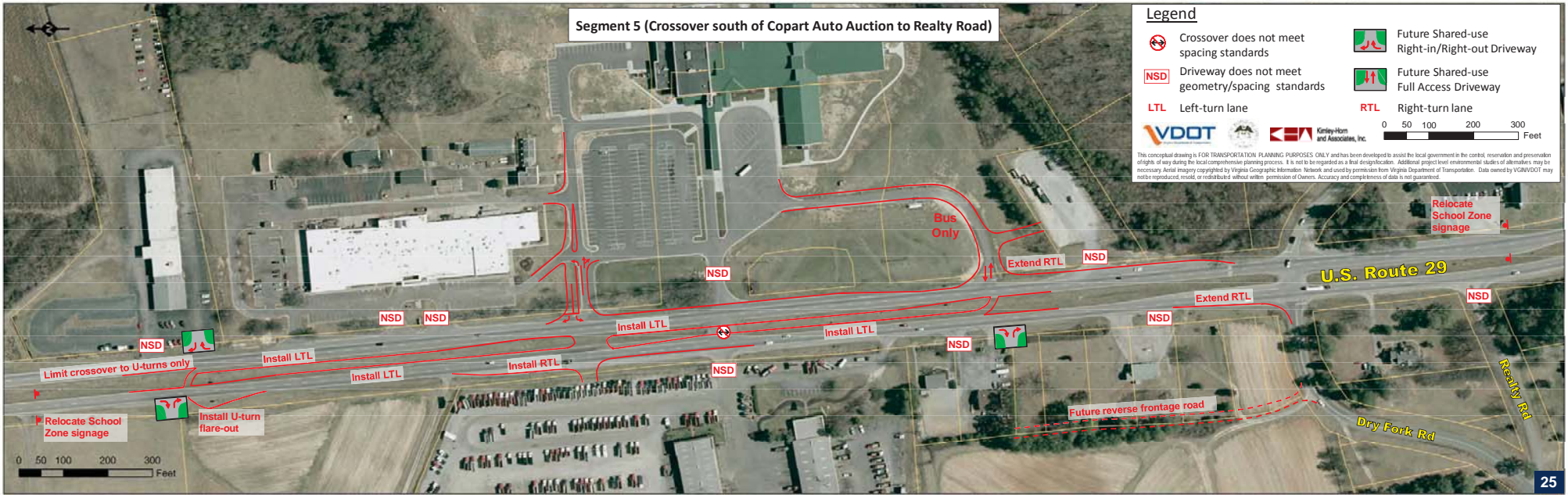
0 50 100 200 300 Feet

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Figure 5-3: Access Management Strategies Segments 4 & 5  
Segment 4 (Crossover north of Meadow's Service Ctr to crossover south of Copart Auto Auction)



Segment 5 (Crossover south of Copart Auto Auction to Realty Road)



**Legend**

- Crossover does not meet spacing standards
- Driveway does not meet geometry/spacing standards
- LTL Left-turn lane
- RTL Right-turn lane
- Future Shared-use Right-in/Right-out Driveway
- Future Shared-use Full Access Driveway

VDOT  
Kerley-Horn and Associates, Inc.

0 50 100 200 300 Feet

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