

## Pearl Sample Elementary & A.G. Richardson Elementary Walkabout Report

### Introduction

On December 14, 2017, stakeholders at Pearl Sample Elementary School and A.G. Richardson Elementary School in Culpeper, Virginia met to examine the walking and bicycling networks around the school and identify potential improvements that may be included in a future Transportation Alternatives Program grant application. Their participation in a VDOT Safe Routes to School (SRTS) Walkabout shows their support for improving the walking and bicycling environment and increasing the number of students safely walking and bicycling to school.

The stakeholders participating in the Walkabout included teachers, administrators, and parents from both schools; representatives from Culpeper County, the Culpeper County Public Schools and school board; representative from the Rappahannock-Rapidan Regional Commission and representatives from the Virginia Department of Transportation. Names of the Walkabout team members are listed in Appendix A. The two-hour meeting included an observation of school dismissal and a brief walking tour of the streets around the school.



Figure 1: A.G. Richardson Elementary School – Main Entrance

This walkabout report differs from the typical report in that it is aimed at identifying future improvements which will facilitate walking and biking as residential development occurs around the school. There is strong potential for residential development along Madison Road where Phase I of the Three Flags development was recently constructed. As these areas continue to develop, it is critical to develop walking and biking paths that will enable students and parents to walk or bike to school.

### Existing Conditions

#### School Location and Demographics

A.G. Richardson Elementary School and Pearl Sample Elementary School are located at 18370 and 18480 Simms Drive, Culpeper, Virginia and are part of the Culpeper County Public School system. A.G. Richardson Elementary serves 600 students in grades Pre-K through 5, while Pearl Sample serves 630. Their attendance zones include the eastern and western portions of Culpeper County as well as portions of the Town of Culpeper (Figure 2). Student travel tally data is not available for either school, but students travel to and from school primarily by school bus or family vehicle. The attendance boundaries are so large that some students may spend as long as 40 minutes on the school bus.

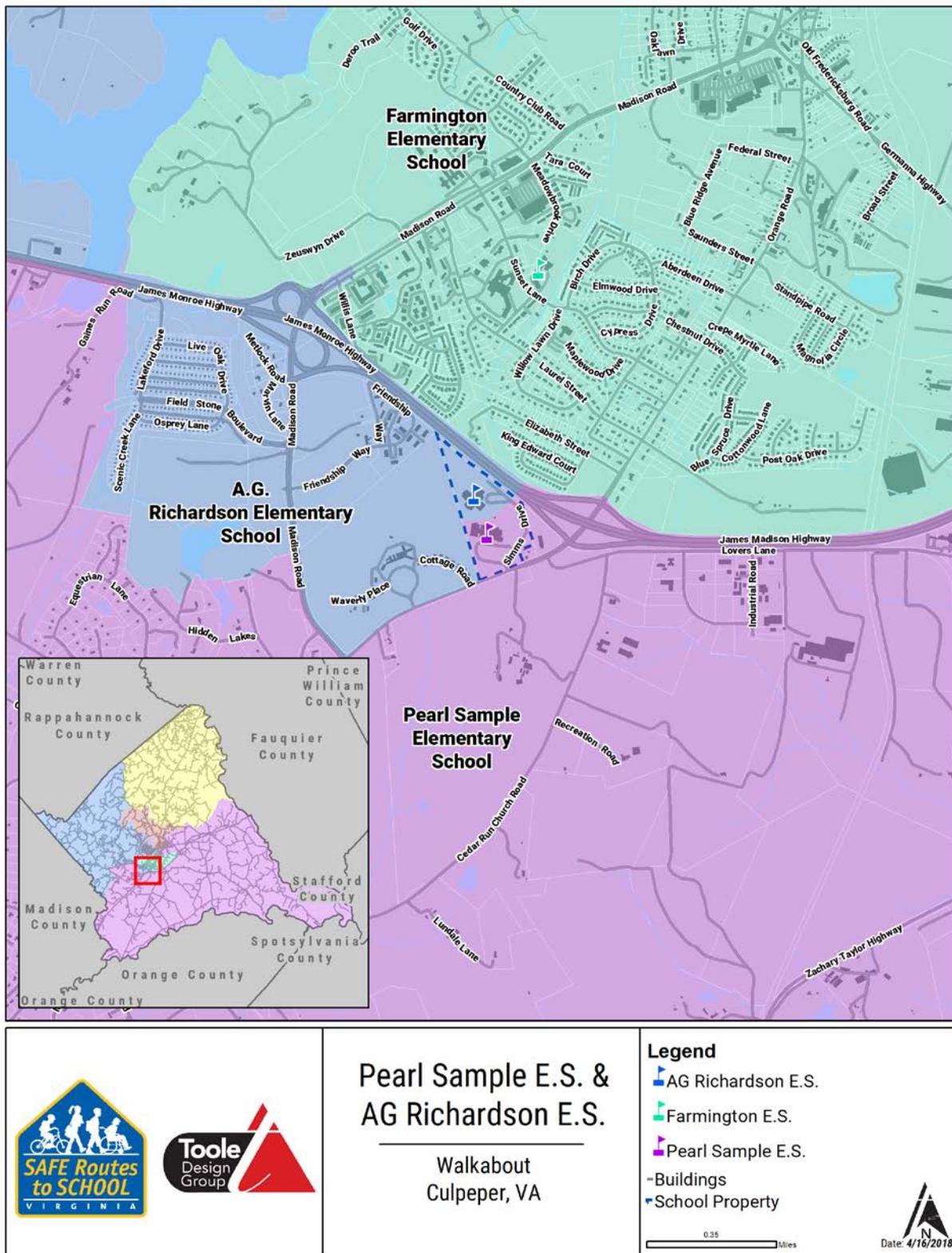


Figure 2: Pearl Sample E.S. & A.G. Richardson E.S. Attendance Boundaries



## **Context and Growth in Student Population**

Pearl Sample and A.G. Richardson Elementary Schools are mainly surrounded by residential land uses. The areas along Madison Road are primarily zoned as R2 – Single Family Residential, R3 – Multi-Family Residential, and R-4 Multi-Family Residential which offers significant development potential.

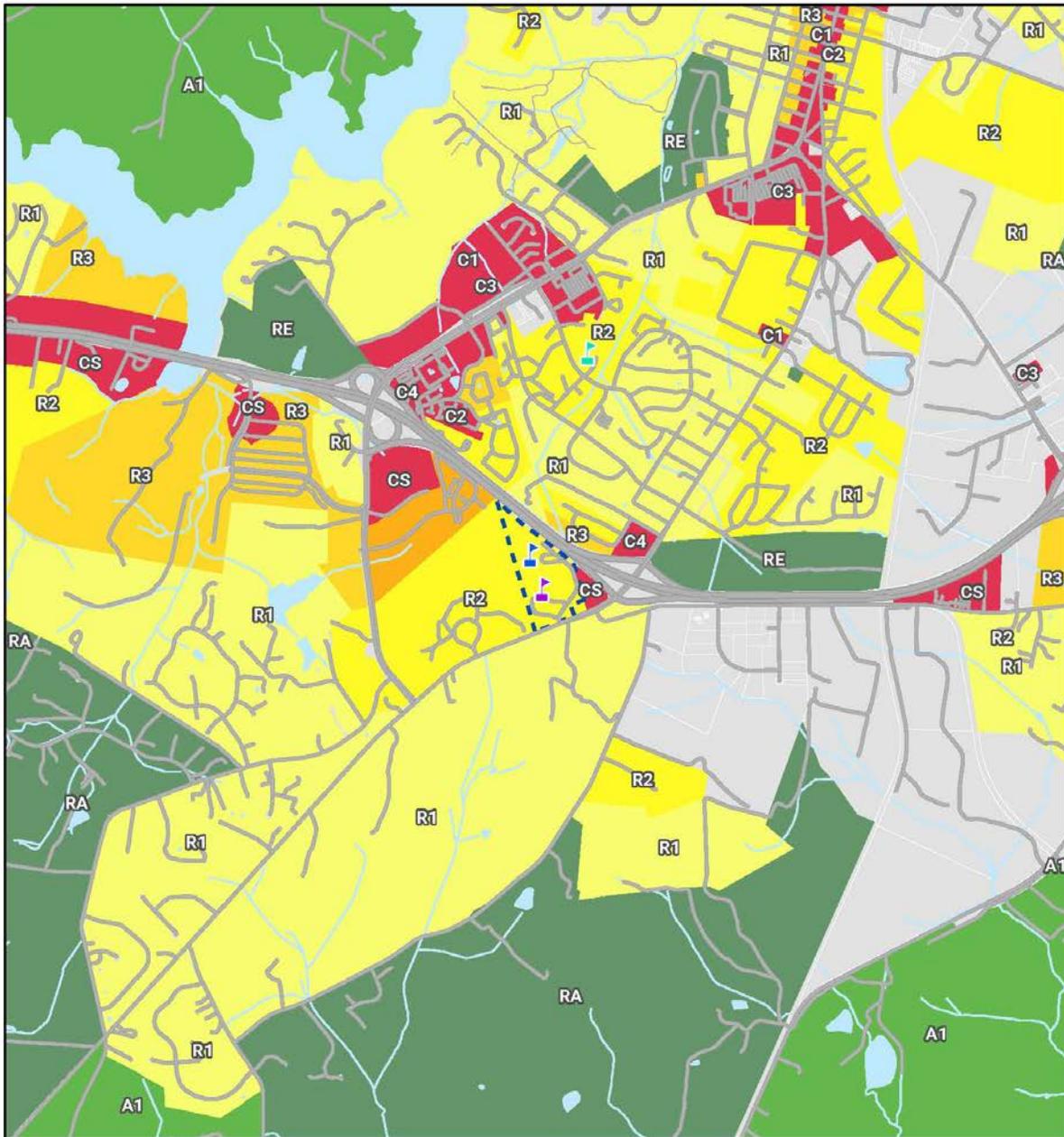
The Three Flags development is located along Field Stone Boulevard and has 327 single-family units in Phase I with plans to add an additional 454 units in Phase II. The Friendship Heights Apartments are located on Friendship Way just north of the combined elementary school campus, but the lack of a direct connection to the campus results in a minimum of a 1.5-mile walk. Town and County staff expect development in this area to continue necessitating safe walking routes (Figure 3).

## **Transportation Network and Walking Routes to School**

Figure 4 shows both Euclidian buffers as well as network walk buffers which are calculated along the road network. This map highlights the areas that can currently be reached in ¼-mile, ½-mile, ¾-mile, 1-mile, and 2-mile increments. The number of homes within the 1-mile walk buffer is extremely limited due to the lack of sidewalks and direct connections.

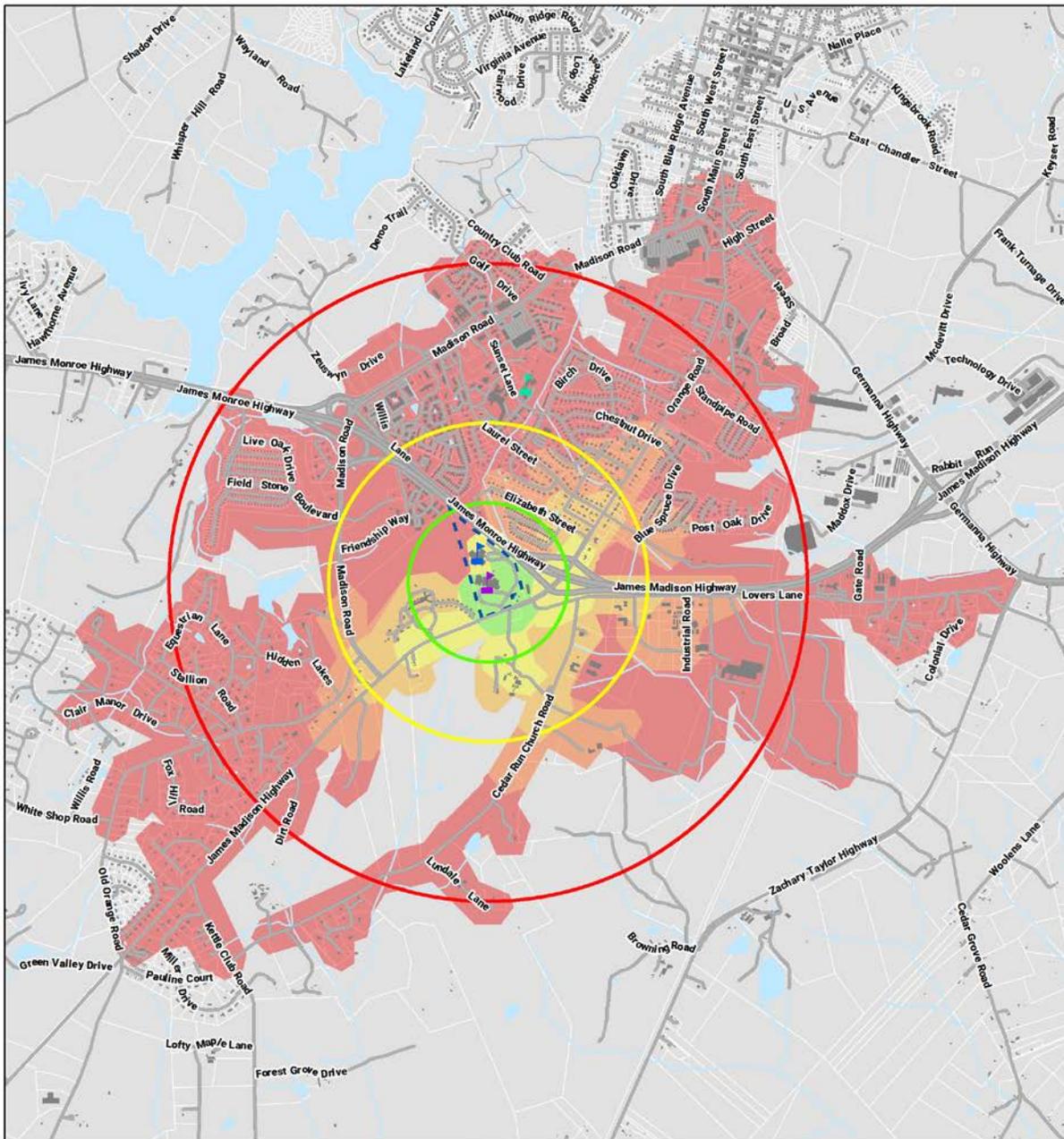
## **Bicycle and Pedestrian Infrastructure**

Figure 5 shows the scarce pedestrian and bicycle network surrounding A.G. Richardson and Pearl Sample Elementary Schools. There are no sidewalks that directly connect the schools to surrounding neighborhoods. The major sidewalk in the area runs along Madison Road from downtown Culpeper to the James Madison Highway, but the sidewalk does not connect to the schools. In addition, there are no sidewalks connecting the nearby residential complexes to the schools. These major gaps in the sidewalk network contribute to an environment that is not conducive to walking. Currently zero students walk or bike to these schools. Around 200 Pearl Sample students live within 1 mile, so expanding the sidewalk network and providing a safe crossing at James Madison Highway will enable more students to walk to school. There are also no bicycle facilities within the roadway right-of-way.



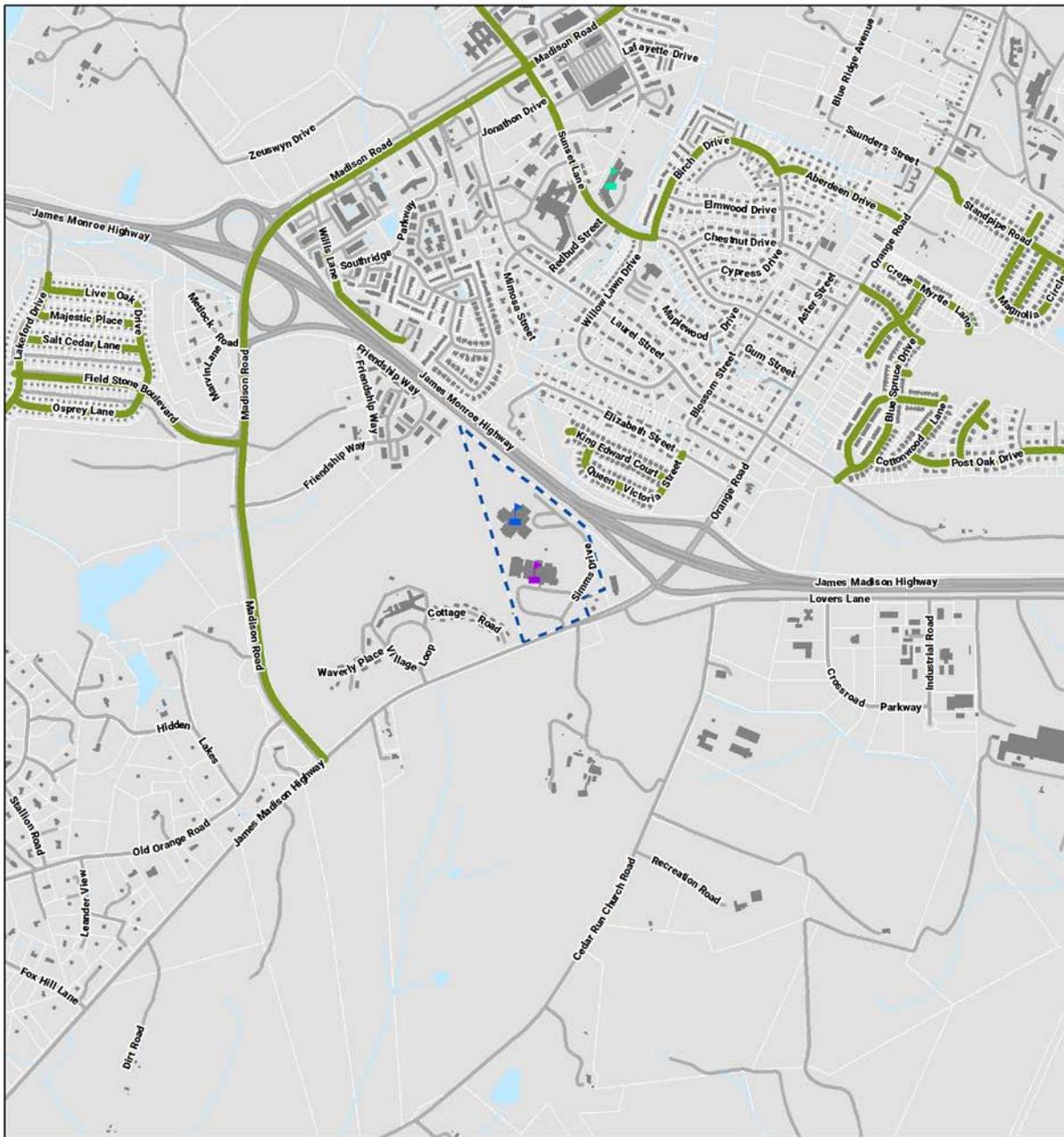
 	<h2>Pearl Sample E.S. &amp; AG Richardson E.S.</h2> <hr/> <h3>Walkabout Culpeper, VA</h3>	<p><b>Legend</b></p> <table border="0"> <tr> <td><b>County Zoning</b></td> <td><b>Town Zoning</b></td> </tr> <tr> <td>-A1 - Agricultural</td> <td>-C1-C4 - Commercial</td> </tr> <tr> <td>-CC/CS - Commercial</td> <td>-PUD - Planned Unit Development</td> </tr> <tr> <td>-PUD - Planned Unit Development</td> <td>-R1 - Residential</td> </tr> <tr> <td>-R1 - Residential</td> <td>-R2 - Residential</td> </tr> <tr> <td>-R2 - Residential</td> <td>-R3 - Residential</td> </tr> <tr> <td>-R3 - Residential</td> <td>-RE - Residential estates</td> </tr> <tr> <td>-RA - Residential</td> <td></td> </tr> <tr> <td>-RA/RR - Rural Area / Rural Residential</td> <td></td> </tr> <tr> <td>-VC - Village Center Commercial District</td> <td></td> </tr> </table> <p style="text-align: right;">Date: 6/6/2018</p>	<b>County Zoning</b>	<b>Town Zoning</b>	-A1 - Agricultural	-C1-C4 - Commercial	-CC/CS - Commercial	-PUD - Planned Unit Development	-PUD - Planned Unit Development	-R1 - Residential	-R1 - Residential	-R2 - Residential	-R2 - Residential	-R3 - Residential	-R3 - Residential	-RE - Residential estates	-RA - Residential		-RA/RR - Rural Area / Rural Residential		-VC - Village Center Commercial District	
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Figure 3: Context and Growth in Student Population



		<h2>Pearl Sample E.S. &amp; AG Richardson E.S.</h2> <p>Walkabout Culpeper, VA</p>	<p><b>Legend</b></p> <p><b>Straight Distance Buffer</b></p> <ul style="list-style-type: none"> <li><span style="color: green;">■</span> 1/4 Mile</li> <li><span style="color: yellow;">■</span> 1/2 Mile</li> <li><span style="color: red;">■</span> 1 Mile</li> </ul> <p><b>Walk Distance Buffer</b></p> <ul style="list-style-type: none"> <li><span style="color: green;">---</span> 1/4 Mile</li> <li><span style="color: yellow;">---</span> 1/2 Mile</li> <li><span style="color: orange;">---</span> 3/4 Mile</li> <li><span style="color: red;">---</span> 1 Mile</li> <li><span style="color: purple;">---</span> 2 Miles</li> </ul> <ul style="list-style-type: none"> <li><span style="color: blue;">■</span> AG Richardson E.S.</li> <li><span style="color: green;">■</span> Farmington E.S.</li> <li><span style="color: purple;">■</span> Pearl Sample E.S.</li> <li><span style="color: blue;">■</span> Buildings</li> <li><span style="color: purple;">■</span> School Property</li> </ul> <p style="text-align: right;">Date: 3/6/2018</p>
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Figure 4: Distance to School



 	<h2>Pearl Sample E.S. &amp; AG Richardson E.S.</h2> <p>Walkabout Culpeper, VA</p>	<p><b>Legend</b></p> <ul style="list-style-type: none"> <li><span style="color: blue;">■</span> AG Richardson E.S.</li> <li><span style="color: green;">■</span> Farmington E.S.</li> <li><span style="color: purple;">■</span> Pearl Sample E.S.</li> <li><span style="color: green;">—</span> Sidewalks</li> <li><span style="color: grey;">—</span> Buildings</li> <li><span style="color: blue;">—</span> School Property</li> </ul> <p style="text-align: center;">0.25 Miles</p> <p style="text-align: right;">Date: 3/6/2018</p>
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Figure 5: Bicycle and Pedestrian Infrastructure



## Walkabout Summary

After a brief meeting to review existing dismissal procedures and community concerns, the Walkabout Team walked around both school campuses to observe the dismissal preparations and then observed students' release from A.G. Richardson Elementary School at the main entrance where buses and parent vehicles line up.

### Dismissal Overview

A.G. Richardson Elementary School dismisses all students on the east side of the building onto the loop. Cars queue along Simms Drive and turn left through the parking lot where they line up to pick up students. Students wait inside the school until they are called by the school staff observing the cars arriving in the pick-up area. Buses were lined up along the Simms Drive loop by the school entrance. Students walked to the buses in organized lines under the supervision of teachers and staff. All dismissal took place simultaneously.

At Pearl Sample, cars make a left at the school and line up through the parking lot while buses line up at the curb by the school's main entrance. Team observations included:

- The bus loading process was well organized, and students seemed well aware of where to go.
- Staff were visible and in control of process.
- The recently widened access road allows cars to queue during dismissal without blocking the road for buses.
- Parents had clear expectations and were fully aware of the process.
- Signage is clear and visible.

Following the dismissal observation, the Walkabout team reconvened and evaluated surrounding infrastructure, discussed potential programs to support walking and bicycling, and plans for safe school access as the new multifamily housing comes on line. The group's observations and recommendations are presented below. See Appendix F for reference photographs.

### Key Barriers and Issues

The key barriers and issues identified by the Walkabout Team and Virginia SRTS Program staff are listed below. Location specific issues and recommendations are listed on the following pages. For additional information on key roadways mentioned in barriers and issues discussion, including speed limits and annual average daily traffic (AADT), see Appendix B.

- **Sidewalks** – There is a very limited sidewalk network in the vicinity of the schools. There are no sidewalks that connect the schools to the surrounding residential areas and there are limited sidewalks internal to the school campuses.
- **Marked Pedestrian Crossings** – There are very few marked pedestrian crossings near the schools. Almost all marked crosswalks are within the schools' property. They are placed at the building entrances connecting through the parking lots.
- **Curb Ramps** – Most curb ramps outside of the school properties lack detectable warning strips, landing pads, and other standards specified by the Public Rights-of-Way Accessibility Guidelines (PROWAG) and they do not lead to crosswalks.
- **Education and Encouragement** – Most parents and students do not see walking or biking to school as a viable option due to the safety concerns and the lack of pedestrian facilities around the schools.

## Infrastructure (Engineering) Recommendations

Figure 6 shows a map of the infrastructure recommendations for Pearl Sample Elementary School and A.G. Richardson Elementary School. This map is followed by tables detailing the issues and recommendations at each location. A glossary of engineering terms is provided in Appendix C and key policies supporting the recommendations are highlighted in Appendix D. Planning-level cost estimates for each recommendation are included in Appendix E.

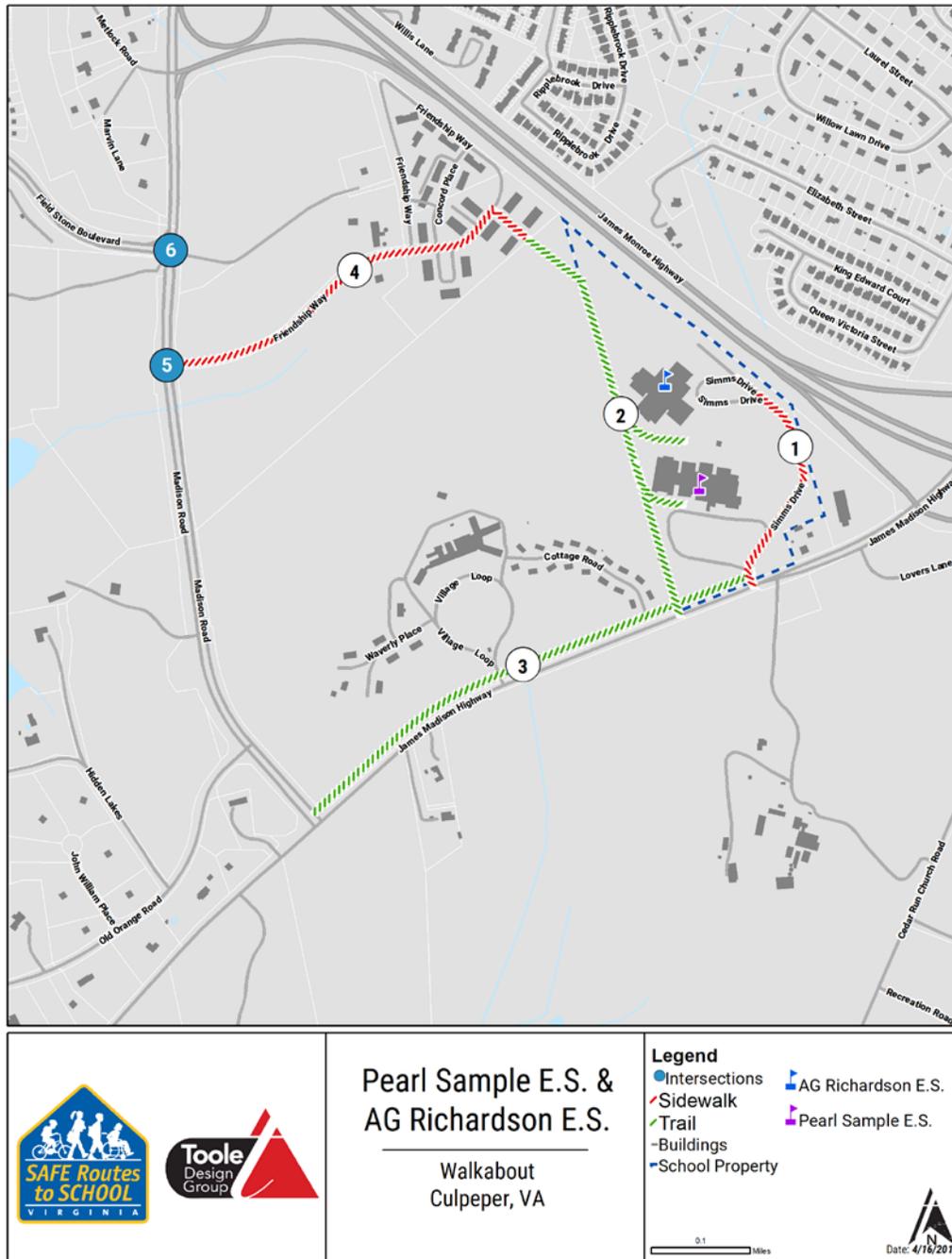


Figure 6: Infrastructure Recommendations Map



<u>Simms Drive (School Entrance)</u>			
Map ID	Issue	Recommendation	Timeframe <sup>1</sup>
1	<b>Missing Sidewalk</b> – There are large gaps in the sidewalk network connecting the school to its surrounding. The sidewalk on Simms Drive stops at the end of the A.G. Richardson Parking lot.	Install sidewalk on west side of Simms Drive leading to James Madison Highway.	Medium

<u>Trail Connection</u>			
Map ID	Issue	Recommendation	Timeframe
2	<b>No connection between School Campus and Friendship Way</b> - Despite the proximity of Friendship Way, the lack of infrastructure makes it difficult to access the school campus without driving around Madison Road.	Build trail from Friendship Way and the nearby apartment complex to James Madison Highway with a connection to the back entrances of the schools. See the impact of this trail connection on the walking distance to school in Figure 7.	Short

<u>North James Madison Highway</u>			
Map ID	Issue	Recommendation	Timeframe
3	<b>Missing Sidewalk</b> – There is no sidewalk on North James Madison Highway.	Construct shared-use path on west side of James Madison Highway from Madison Road to Simms Drive.	Medium

<u>Friendship Way</u>			
Map ID	Issue	Recommendation	Timeframe
4	<b>Missing Sidewalk</b> - There is no sidewalk on Friendship Way.	Install sidewalk or shared-use path on at least one side of Friendship Way.	Medium

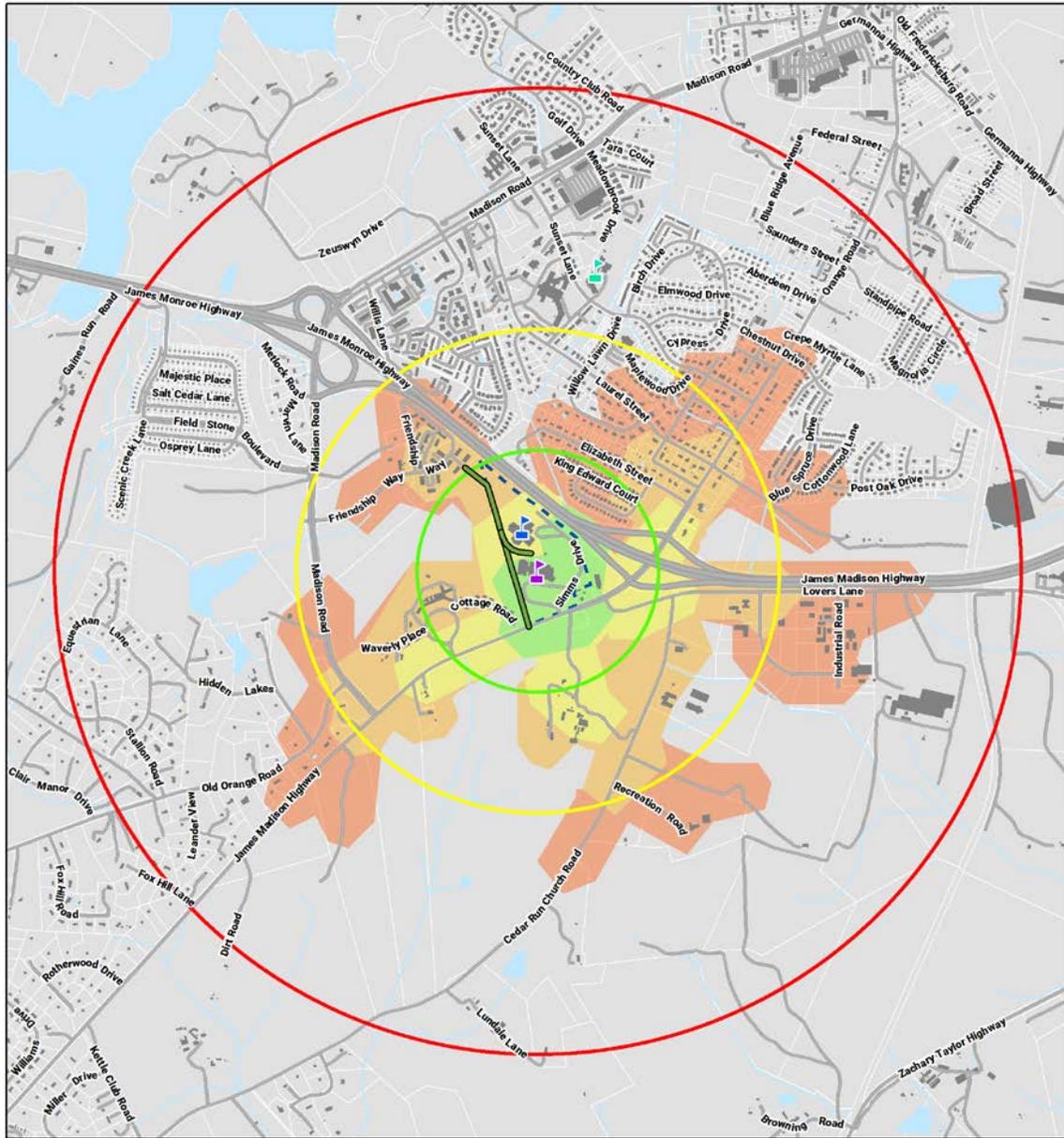
<sup>1</sup> Timeframe:

Short – within 2 years

Medium – between 2 and 5 years

Long – More than 5 years

Ongoing – as appropriate based on other work



		<h2>Pearl Sample E.S. &amp; AG Richardson E.S.</h2> <p>Walkabout Culpeper, VA</p>	<p><b>Legend</b></p> <p><b>Straight Distance Buffer</b></p> <ul style="list-style-type: none"> <li>1/4 Mile</li> <li>1/2 Mile</li> <li>1 Mile</li> </ul> <p><b>Walk Distance Buffer Trail</b></p> <ul style="list-style-type: none"> <li>1/4 Mile</li> <li>1/2 Mile</li> <li>3/4 Mile</li> <li>1 Mile</li> </ul> <p><b>New Trail Section</b></p> <ul style="list-style-type: none"> <li>AG Richardson E.S.</li> <li>Farmington E.S.</li> <li>Pearl Sample E.S.</li> </ul> <p><b>Buildings</b></p> <p><b>School Property</b></p> <p>0.35 Miles</p> <p>Date: 4/16/2018</p>
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Figure 7: Transportation Network and Walking Routes to School with New Trail Connection Included



Friendship Way & Madison Road			
Map ID	Issue	Recommendation	Timeframe
5	<b>Missing marked crosswalks</b> – There is no marked crossing across Friendship Way.	Add high visibility crosswalks across Friendship Way	Short
5	<b>Missing ADA compliant curb ramps</b> – The existing curb ramps lack detectable warning strips and landing pads, per PROWAG guidance.	Reconstruct all curb ramps to meet ADA standards.	Short

Field Stone Boulevard & Madison Road			
Map ID	Issue	Recommendation	Timeframe
6	<b>Missing ADA compliant curb ramps</b> – The existing curb ramps lack detectable warning strips and landing pads, per PROWAG guidance.	Reconstruct all curb ramps to meet ADA standards.	Short
6	<b>Missing curb ramp and pedestrian refuge</b> – The curb ramp at the southbound free right turn from Madison Road to Field Stone Boulevard leads to a landscaped median.	Install new curb ramp and paved median island to provide a refuge for pedestrians crossing Field Stone Boulevard.	Short
6	<b>Missing marked crosswalks</b> – There is no marked crossing across Madison Road or Field Stone Boulevard.	Add high visibility crosswalks across Madison Road and across Field Stone Boulevard.	Medium
6	<b>Lack of controlled crossing</b> – The lack of traffic control for this intersection makes crossing highly dangerous.	As development occurs, conduct engineering study to determine if warrants for a pedestrian hybrid beacon crossing Madison Road are met. If warrants are met on basis of vehicular or pedestrian volumes, install pedestrian hybrid beacon or other traffic control device that would allow a safe crossing opportunity for pedestrians and bicyclists. Ensure that the device also applies to vehicles in the separated right turn lane.	Medium



## Programmatic Recommendations

SRTS programmatic recommendations are designed to work in conjunction with each other and the infrastructure recommendations and to instill safe walking, bicycling, and driving practices. The recommendations are organized by the four "Is" of Safe Routes to School: Education, Encouragement, Enforcement, and Evaluation.<sup>2</sup>

### Education

Integrate pedestrian and bicycle safety education into the school curriculum. Pedestrian and bicycle safety education should occur in advance of major walk or bike to school events so students are adequately prepared and have an opportunity to practice the skills they have learned. Two pedestrian safety resources are listed below. Both are free:

- The *Child Pedestrian Safety Curriculum* was developed by the National Highway Traffic Safety Administration. The curriculum emphasizes skills practice and includes take home tip sheets for parents in English and Spanish. <https://www.nhtsa.gov/pedestrian-safety/child-pedestrian-safety-curriculum>
- The *Pedestrian Safer Journey* curriculum was developed by the Federal Highway Administration and features videos, quizzes and additional resources for educators teaching pedestrian safety. [http://www.pedbikeinfo.org/pedsaferjourney/el\\_en.html](http://www.pedbikeinfo.org/pedsaferjourney/el_en.html)

Incorporate information on walking and bicycling to school in communication with parents. Inform parents that Pearl Sample and A.G. Richardson Elementary School's supports walking and bicycling to school and educate parents about the academic and health benefits of walking and biking. Learn about their experiences walking and bicycling to school with their children and includes these in communication, as appropriate.

Provide parents and guardians with safe driving information and materials that stress the importance of driving safely in school zones and being alert for pedestrians and bicyclists during arrival and dismissal. These materials can be provided during back-to-school nights, health and safety fairs, and Safe Routes to School events. Several organizations offer free materials on their websites:

- The National Center for Safe Routes to School has a helpful list of "Driving Tips Around Schools: Keeping Children Safe." [http://apps.saferoutesinfo.org/lawenforcement/resources/driving\\_tips.cfm](http://apps.saferoutesinfo.org/lawenforcement/resources/driving_tips.cfm)
- The Federal Highway Administration has an entire website devoted to reducing distracted driving, including information and free downloadable materials. <http://www.distraction.gov/content/take-action/downloads.html>
- The National Safety Council also has a page dedicated to distracted driving resources. Find it here <http://www.nsc.org/learn/NSC-Initiatives/Pages/distracted-driving-resources.aspx>
- The Virginia Safe Routes to School Program has a Zone In, Not Out school zone safety program which includes a safe driver pledge kit and yard signs. Resources are available on the Virginia SRTS website: [http://www.virginiadot.org/programs/srsm\\_srts\\_zone\\_in\\_not\\_out.asp](http://www.virginiadot.org/programs/srsm_srts_zone_in_not_out.asp).

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<sup>2</sup> The fifth E is Engineering, included in this report under Infrastructure Recommendations.



Conduct bicycle rodeos. Bicycle rodeos include activities designed to develop bicycle safety skills. Bicycle safety education is particularly important in advance of activities that encourage biking to school, such as National Bike to School Day held in early May each year.

## **Encouragement**

Participate in International Walk to School Day. Walk to School Day is an excellent opportunity to get students walking, teach the benefits of an active lifestyle, and highlight walking and biking issues. Consider establishing a meet up location at Stonewall Memorial Park for students who cannot walk from home. Alternatively, plan a Walk at School day using Stonewall Memorial Park. Resources to help plan Walk to School Day are available on the Virginia SRTS Program website. [http://www.virginiadot.org/programs/srsm\\_srts\\_all\\_website\\_resources.asp](http://www.virginiadot.org/programs/srsm_srts_all_website_resources.asp).

Help organize and support walking school buses. A walking school bus is a group of children walking to school with one or more adults. It can be as informal as two families taking turns walking their children to school or as structured as a planned route with meeting points, a timetable and a schedule of trained volunteers. The sidewalk, trail, and intersection improvements would help to facilitate a walking school bus from the Three Flags development along Friendship Way and the new trail. See the Virginia SRTS Program's webinar on walking school buses and bicycle trains. <https://www.dropbox.com/s/7kzoqoyxc6o3ggk/VDOT%2oSRTS%2o-%2oWalking%2oSchool%2oBus%2oand%2oBike%2oTrain%2oWebinar.pdf?dl=0>

Establish a frequent walker program. Frequent walker programs encourage students to walk by offering incentives to students who walk frequently or by establishing a competition between classes. A simple record keeping system must be created to track student walking. The Virginia SRTS Program provides a punch card template that can be used for this purpose. [http://www.virginiadot.org/programs/srsm\\_marketing\\_toolkit.asp](http://www.virginiadot.org/programs/srsm_marketing_toolkit.asp)

## **Enforcement**

Implement the Zone In, Not Out school zone safety program. Resources are available on the Virginia SRTS website: [http://www.virginiadot.org/programs/srsm\\_srts\\_zone\\_in\\_not\\_out.asp](http://www.virginiadot.org/programs/srsm_srts_zone_in_not_out.asp).

## **Evaluation**

Conduct Student Travel Tallies to get baseline data for student travel patterns. In Virginia, schools across the state record how students are getting to school during Student Travel Tally Week a week of the school's choosing each September and October. This data can be used to assess progress toward increasing the number of students who walk and bike to school. For more information about Student Tally Week go to the Virginia SRTS Program website. [http://www.virginiadot.org/programs/srsm\\_student\\_travel\\_tally\\_week.asp](http://www.virginiadot.org/programs/srsm_student_travel_tally_week.asp)

Administer Parent Surveys to collect information on parents' attitudes towards walking and bicycling and reasons why they may or may not allow their children to walk or bike to school. Administering parent surveys at least once a year can help determine whether Safe Routes to School efforts are changing parents' attitudes towards walking and bicycling to school. For tips on administering Parent Surveys, see the Virginia SRTS Program's **Learn it. Do it. Live it!** tip sheet. [https://www.dropbox.com/s/nl274zoliqegw5t/Parent%2oSurvey\\_LDLv2.pdf?dl=0](https://www.dropbox.com/s/nl274zoliqegw5t/Parent%2oSurvey_LDLv2.pdf?dl=0)



## Appendices

### A. Walkabout Participants

Name	Organization
Kristin Williams	Pearl Sample Elementary School
Sue Bridges	A.G. Richardson Elementary School
Betsy Smith	Culpeper County Public Schools – School Board
Stacey Timmons	Culpeper County Public Schools
Doug Robson	Culpeper County Public Schools
Sam McLearn	Culpeper County
Laura Loveday	Culpeper County
Patrick Mauney	Rappahannock-Rapidan Regional Commission
Robert Williams	Virginia Department of Transportation
Kobina Gaituah	Virginia Department of Transportation
Terrell Hughes	Virginia Department of Transportation
Kyle Lukacs	Planner, Toole Design Group
Siba El-Samra	Designer, Toole Design Group

### B. Road Information Table

Street Name	Speed limit (mph)	Road Width	No. of travel lanes in each direction	AADT <sup>3</sup>	Road Classification <sup>4</sup>	Network Connectivity
<b>Simms Drive</b> (Peal Sample Elem. to US 15 N. James Madison Highway)	25	35'	1 (in addition to access road northbound)	1,200	Local Street	North-South connection between N. James Madison Highway and the schools
<b>Madison Road</b> (US 15 James Madison Hwy to US 29; Bus US 29 South of Culpeper)	45	71'	2	4,300	Minor Arterial	North-South connection between US 15 and US 29
<b>N. James Madison Highway</b> (SR 299 Madison Road to US 29 South of Culpeper)	45	27'	2	6,900	Minor Arterial	East-West connection between Route 649 and Old Orange Road

<sup>3</sup> Average Annual Daily Traffic (AADT) counts from VDOT, [http://www.virginiadot.org/info/resources/Traffic\\_2017/AADT\\_023\\_Culpeper\\_2017.pdf](http://www.virginiadot.org/info/resources/Traffic_2017/AADT_023_Culpeper_2017.pdf)

<sup>4</sup> Road classification from VDOT, [http://www.virginiadot.org/projects/fxn\\_class/maps.asp](http://www.virginiadot.org/projects/fxn_class/maps.asp)



## C. Glossary of Infrastructure (Engineering) Terms

The following infrastructure treatments can be used to improve the bicycle and pedestrian environment around Pearl Sample and A.G. Richardson Elementary School's. Location-specific recommendations are referenced under the section, Infrastructure (Engineering) Recommendations

### Crosswalks

Marked crosswalks highlight the portion of the right-of-way where motorists can expect pedestrians to cross and designate a stopping or yielding location. They also indicate to pedestrians the optimal or preferred locations to cross the street. At midblock or other uncontrolled locations, crosswalks should use a high-visibility pavement marking pattern and be accompanied with pedestrian crossing signs that meet current Manual on Uniform Traffic Control Devices (MUTCD) standards. In addition, crosswalks can be raised on a speed table to be level with the sidewalk. This design helps slow drivers, increase pedestrian visibility and make it easier for pedestrians with mobility limitations to cross the street.

### Curb Ramps

Curb ramps provide access between the sidewalk and roadway for people using wheelchairs, strollers, and bicycles. Curb ramps must be installed at all intersections and midblock locations where pedestrian crossings exist, as mandated by the 1990 Americans with Disabilities Act. In most cases, a separate curb ramp for each crosswalk at an intersection should be provided rather than a single ramp at the corner for both crosswalks. Current guidelines for curb ramp designs are included in the Public Right-of-Way Accessibility Guidelines, Chapter R3: Technical Requirements. (<http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines/chapter-r3-technical-requirements> )

### Crossing Islands

Crossing islands are raised median islands placed in the center of the street at intersection approaches or midblock. They allow pedestrians to cross one direction of traffic at a time by enabling them to stop partway across the street and wait for an adequate gap in traffic before crossing the second half of the street. They can reduce crashes between vehicles and pedestrians at uncontrolled crossing locations on higher volume multi-lane roadways where gaps are difficult to find, particularly for slower pedestrians, e.g. disabled, older pedestrians, and children. The application would need to be studied before implementing crossing islands on state roads.

### Curb Extensions

Curb extensions extend the curb line into the roadway. They can improve the ability of pedestrians and motorists to see each other, reduce crossing distances (and thus exposure to traffic), provide additional pedestrian queuing space, and slow motor vehicle turning speeds.

### High-Visibility Crosswalks

While standard crosswalks use transverse lines (two parallel lines), high-visibility crosswalks also use bar-pairs, ladders, longitudinal lines, or zebra patterns to improve detection of the crosswalk.



## In-Street Pedestrian Crossing Signs

In-street pedestrian crossing signs placed in the roadway at pedestrian crossing locations warn drivers and encourage yielding.

## Manual on Uniform Traffic Control Devices (MUTCD)

This document produced by the Federal Highway Administration specifies the standards that traffic signals, signs, and roadway markings must adhere to including shapes, colors, fonts, and placement. The *2011 Virginia Supplement to the MUTCD* contains standards and guidance specific to Virginia.

## Pedestrian Lighting

Lighting should be provided near transit stops, commercial areas, or other locations where night-time or pre-dawn pedestrian activity is likely. Pedestrian-scale lighting such as street lamps helps illuminate the sidewalk and improves pedestrian safety and security.

## Public Right-of-Way Accessibility Guidelines (PROWAG)

The United States Access Board produces guidelines to ensure all pedestrians have equal access to sidewalks and streets, including crosswalks, curb ramps, street furnishings, pedestrian signals, parking, and other components of public rights-of-way.

## School Speed Limit Signs

School speed limit signs alert drivers that they are entering a school zone and need to prepare to yield to students that may be crossing the street. School speed limits vary based on local laws and typically range from 15 to 25 mph. School speed limit signs with lights that flash (flashing beacons) during arrival and dismissal times can be more effective on busy streets, however, all school speed limit zones require occasional police enforcement to ensure driver compliance. Refer to the Manual on Uniform Traffic Control Devices (MUTCD) for more guidance.

## Sidewalks

Sidewalks provide pedestrians and younger bicyclists a safe place to travel that is separate from motor vehicles. It is important to provide a continuous sidewalk route, connected with high-visibility crosswalks so that pedestrians are not forced to share travel space with motor vehicles. All sidewalks should meet ADA guidelines for width and cross-slope and include curb ramps that meet ADA guidelines at street crossings.

## Traffic Calming

Traffic calming measures are designed to improve safety for motorists, pedestrians and bicyclists, usually by altering the physical design of the roadway to reduce motor vehicle speeds. Common traffic common measures include speed humps, curb extensions, chicanes, and neighborhood roundabouts.



## D. Key Policies Supporting Recommendations

### VDOT Crosswalk Policy VDOT IIM-TE-384.05

VDOT's crosswalk policy states that potential advantages of marked crosswalks include:

- Providing a visible reminder to motorists that pedestrians may be present.
- Directing pedestrians to the location of the recommended crossing path.
- Reducing the likelihood that drivers will encroach the intersection or block pedestrian traffic when stopping for a STOP or YIELD sign
- Designating the location of approved school crossings or crossings along recommend school routes

For marked crosswalks at stop-controlled intersections, relevant criteria are provided in Section 5.2 of the policy, including:

- The crossing is part of a walking route approximately ¼ mile or less between a residential development of moderate or heavy density and a school or recreational area,

For marked crosswalks at uncontrolled intersections, relevant criteria are provided in Section 5.3 of the policy, including:

- The crossing is on a direct route between significant pedestrian generator(s) and attractor(s), where engineering judgment determines that the crosswalk would likely see a minimum of 20 pedestrians/bicyclists using the crosswalk in an hour. That threshold may be reduced to 10 pedestrians per hour if the crossing is expected to be used by a high number of vulnerable pedestrians (pedestrians who are disabled, age 65 and over, 389 or age 15 and under), or if the reduced volume is met for three consecutive hours.
- The location is 300 feet or more from another marked crosswalk across the same road.
- Drivers will have an unrestricted view of the entire length of the crosswalk, including the waiting areas at either end of the crosswalk.
  - 25 mph = 155 feet on level grade
  - 35 mph = 250 feet on level grade
- The required engineering study determines that the introduction of a marked crosswalk will not produce an unacceptable safety hazard.

<sup>5</sup> [http://www.virginiadot.org/business/resources/IIM/TE-384\\_Ped\\_Xing\\_Accommodations\\_Unsignalized\\_Locs.pdf](http://www.virginiadot.org/business/resources/IIM/TE-384_Ped_Xing_Accommodations_Unsignalized_Locs.pdf)



## E. Cost Estimates

The following are planning-level cost estimates, designed to provide a “ballpark” estimate for use in preliminary decision making. They do not account for site-specific issues that may be present at project locations, nor do they include any inflation factors to account for construction cost increases that occur over time. **Any recommendations that are advanced for further consideration should have their costs further refined.**

<i>Simms Drive (School Entrance)</i>					
Map ID	Item	Quantity	Unit Cost	Subtotal	Total
1	<b>Sidewalks, 6' wide</b>	Length	\$/LF		
	Along Simms Drive (School Entrance Road)	1380	\$ 40	\$ 55,200	
1	<b>Curb Ramps</b>	Each	\$		
	New sidewalk ramp with detectable warning surface	12	\$ 1,500	\$ 18,000	
					<b>\$ 73,200</b>
	<b>Lump Sum Items</b>	Lump Sum	\$		
	Mobilization (10% of total improvement costs)	1	\$ 7,300	\$ 7,300	
	Maintenance and Projection of Traffic (10% of total improvement costs)	1	\$ 7,300	\$ 7,300	
					\$14,600
				Construction Subtotal	<b>\$ 87,800</b>
				Contingency (20%)	\$ 17,600
				Construction Total	<b>\$ 105,400</b>
				Survey (10%)	\$ 10,500
				Engineering/Design (16%)	\$ 16,900
				<b>TOTAL</b>	<b>\$ 132,800</b>





US15 James Madison Highway						
Map ID	Item	Quantity	Unit Cost	Subtotal	Total	
3	<b>Shared Use Path, 10' wide</b>	Length	\$/LF			
	New shared use path along northside of US15 from Simms Dr to Madison Rd, extra cost for additional grading related to existing drainage ditch along US 15	2600	\$ 58	\$ 150,800		
3	<b>Curb Ramps</b>	Each	\$			
	New sidewalk ramp with detectable warning surface at Village Loop, Simms Dr, and Madison Rd	2	\$ 1,600	\$ 3,200		
					<b>\$ 154,000</b>	
	<b>Lump Sum Items</b>	Lump Sum	\$			
	Mobilization (10% of total improvement costs)	1	\$ 15,400	\$ 15,400		
	Maintenance and Projection of Traffic (10% of total improvement costs)	1	\$ 15,400	\$ 15,400		
					\$30,800	
				Construction Subtotal	<b>\$ 184,800</b>	
				Contingency (20%)	\$ 37,000	
				Construction Total	<b>\$ 221,800</b>	
				Survey (10%)	\$ 22,200	
				Engineering/Design (16%)	\$ 35,500	
				<b>TOTAL</b>	<b>\$ 279,500</b>	



<i>Friendship Way</i>						
Map ID	Item	Quantity	Unit Cost	Subtotal	Total	
4	<b>Sidewalks, 6' wide</b>	Length	\$/LF			
	From intersection of Friendship Way and Madison Dr to Friendship Way and Apartment Complex.	2200	\$ 40	\$ 88,000		
5	<b>Crosswalks</b>	LF	\$/LF			
	High Visibility Crosswalk across Friendship Way.	50	\$ 27	\$ 1,350		
5	<b>Curb Ramps</b>	Each	\$			
	Intersection of Madison Rd and Friendship Way.	2	\$ 1,500	\$ 3,000		
					<b>\$ 92,350</b>	
	<b>Lump Sum Items</b>	Lump Sum	\$			
	Mobilization (10% of total improvement costs)	1	\$ 9,200	\$ 9,200		
	Maintenance and Projection of Traffic (10% of total improvement costs)	1	\$ 9,200	\$ 9,200		
					\$18,400	
				Construction Subtotal	<b>\$ 110,800</b>	
				Contingency (20%)	\$ 22,200	
				Construction Total	<b>\$ 133,000</b>	
				Survey (10%)	\$ 13,300	
				Engineering/Design (16%)	\$ 21,300	
				<b>TOTAL</b>	<b>\$ 167,600</b>	



<i>Field Stone Blvd and Madison Road</i>						
Map ID	Item	Quantity	Unit Cost	Subtotal	Total	
6	<b>Crosswalks</b>	LF	\$/LF			
	4 High Visibility Crosswalks at intersection of Fire Stone Blvd and Madison Rd	387	\$ 27	\$ 10,449		
6	<b>Controlled crossing</b>	Each	\$			
	Pedestrian Hybrid Beacon	1	\$200,000	\$ 200,000		
6	<b>Concrete Median</b>	Length	\$/LF			
	On Field Stone Boulevard at the intersection of Madison Road provide a pedestrian refuge - 10' wide	10	\$120	\$1,200		
6	<b>Curb Ramps</b>	Each	\$			
	Intersection of Fire Stone Blvd and Madison Rd	9	\$ 1,500	\$ 13,500		
					<b>\$ 225,149</b>	
	<b>Lump Sum Items</b>	Lump Sum	\$			
	Mobilization (10% of total improvement costs)	1	\$ 22,500	\$ 22,500		
	Maintenance and Projection of Traffic (10% of total improvement costs)	1	\$ 22,500	\$ 22,500		
					\$ 45,000	
				Construction Subtotal	<b>\$ 270,100</b>	
				Contingency (20%)	\$ 54,000	
				Construction Total	<b>\$ 324,100</b>	
				Survey (10%)	\$ 32,400	
				Engineering/Design (16%)	\$ 51,900	
				<b>TOTAL</b>	<b>\$ 408,400</b>	

## F. Walkabout Photographs

The following photos were taken by Walkabout participants to document the Walkabout as well as supplement the report recommendations.



Figure 8: Pick Up line at A.G. Richardson



Figure 9: Students lining up to walk to the bus at A.G. Richardson



Figure 10: Cars line up along Simms Drive before A.G. Richardson dismissal



Figure 11: Buses leaving A.G. Richardson through Simms Drive



Figure 12: Cars line up at the Pearl Sample parking lot before dismissal



Figure 13: Buses lining up by the main entrance at Pearl Sample before dismissal



Figure 14: Potential location for connecting to the trail



Figure 15: Potential location for connecting to the trail and cutting through the tree barrier



Figure 16: Lack of sidewalks on Friendship Way



Figure 17: A strip of sidewalk along N. James Madison Highway



Figure 18: Curb ramp at N. James Madison and Madison Road that lacks detectable warning



Figure 19: Missing crosswalk and curb ramp at Field Stone Boulevard