Clara Byrd Baker Elementary Walkabout Report

Introduction

On November 1, 2016 stakeholders at Clara Byrd Baker Elementary School in Williamsburg, Virginia met to examine the walking and bicycling network around the school and identify potential improvements to 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.

Figure 1 – Entrance of Clara Byrd Baker Elementary School

The stakeholders participating in the Walkabout included school administrators, county planning staff, school division personnel, the school resource officer, parents, a local VDOT engineer, and Virginia Safe Routes to School program staff. Names of the Walkabout team members are listed at the end of the report. The two-hour meeting included an observation of school dismissal and a brief walking tour of the streets around the school.

Existing Conditions

School Location and Existing Infrastructure

Clara Byrd Baker Elementary School is located at 3131 Ironbound Road, and is part of the Williamsburg-James City County school system. Ironbound Road provides the only motor vehicle access to the school property. There is an access point to the Powhatan Creek Trail system at the western edge of the school parking lot. The trail, which is paved with wooden boardwalks, provides bicycle and pedestrian access to school for students living in the Chaco's Grant subdivision south of the school, and connects further on to the Virginia Capital Trail.

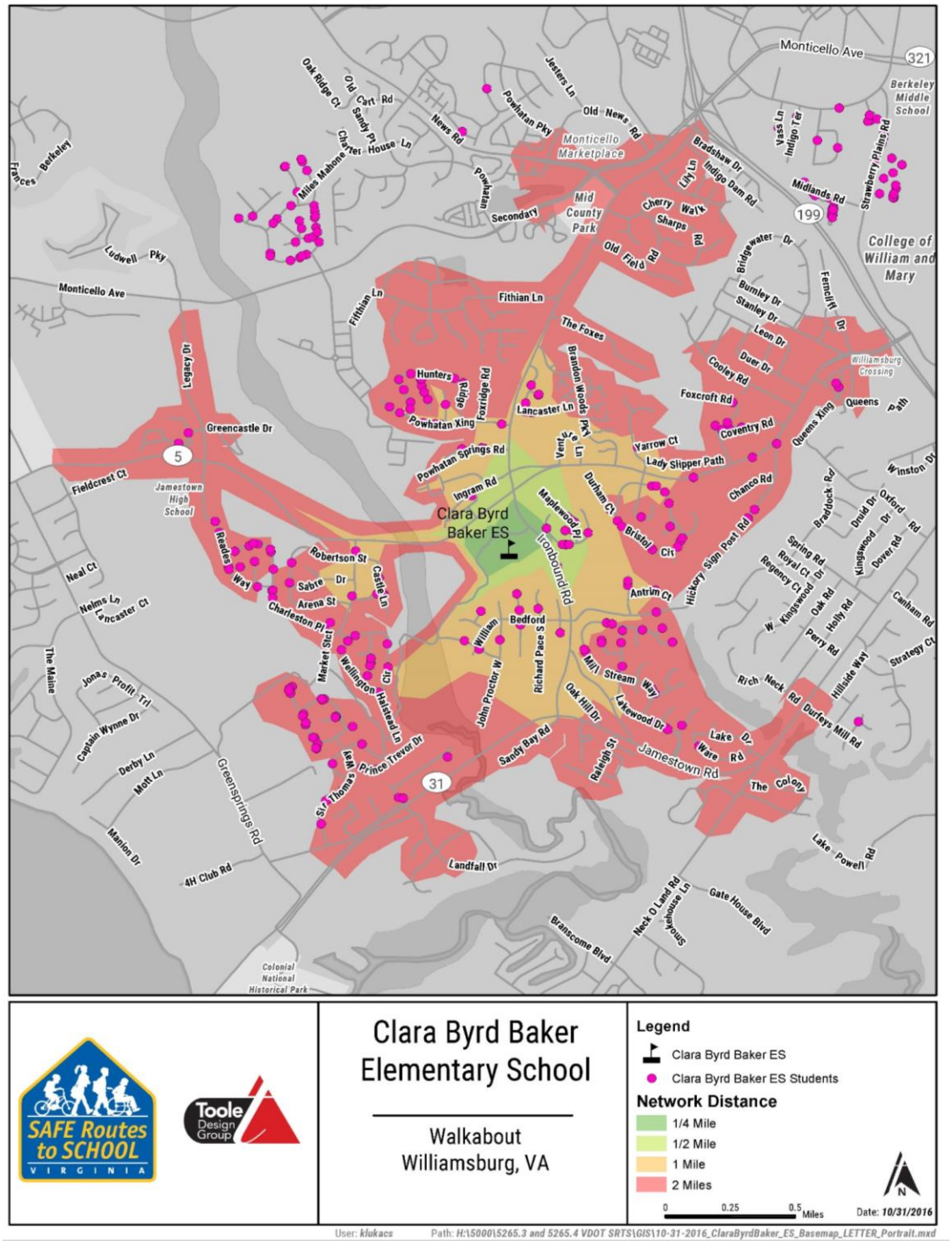

Figure 2 – Student locations and network travel distance

Student Travel Modes

There are 237 students that live within one-half mile of the school, in neighborhoods such as Village Square, Chanco's Grant, and Governor's Grove as shown in Figure 2. There are 327 total students that live within one-mile, which includes the St. George's Hundred, Westray Downs, Brandon Woods, and Graylin Woods neighborhoods. Figure 3 illustrates that despite the proximity of students' homes to the school, 97 percent are either driven or ride the school bus to and from school, owing in large part to the lack of walking and bicycling infrastructure.

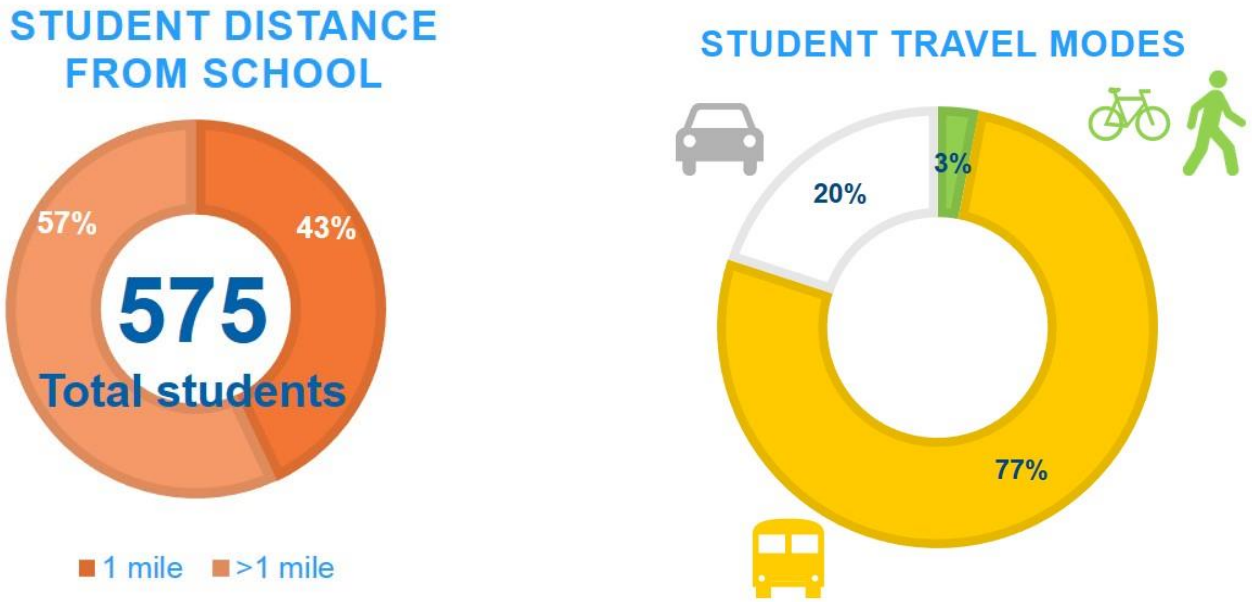

Figure 3 – Students' distance from school and travel modes

Pedestrian and Bicycle Infrastructure

The map below shows the sparse pedestrian and bicycle network around the school. The existing sidewalks do not connect with one another, nor provide connections to the neighborhoods where students live. There are neither a crossing guard nor crosswalks to facilitate crossing Ironbound Road to reach the shopping center or neighborhoods on the eastern side. There are also no bicycle facilities within the roadway right-of-way.

The Powhatan Creek Trail is a part of a robust regional trail network, but has limited value as a regular commuting route to school since there are limited access points from the residential neighborhoods and the trail lacks lighting that would make it usable in early morning and evening hours.

The incomplete sidewalk network, road widths, traffic speeds and volumes along both Ironbound Road and John Tyler Highway leave few safe options for walking or bicycling. Figure 4 shows the location of existing sidewalks and trails, and Table 1 provides more information about key streets in the transportation network.

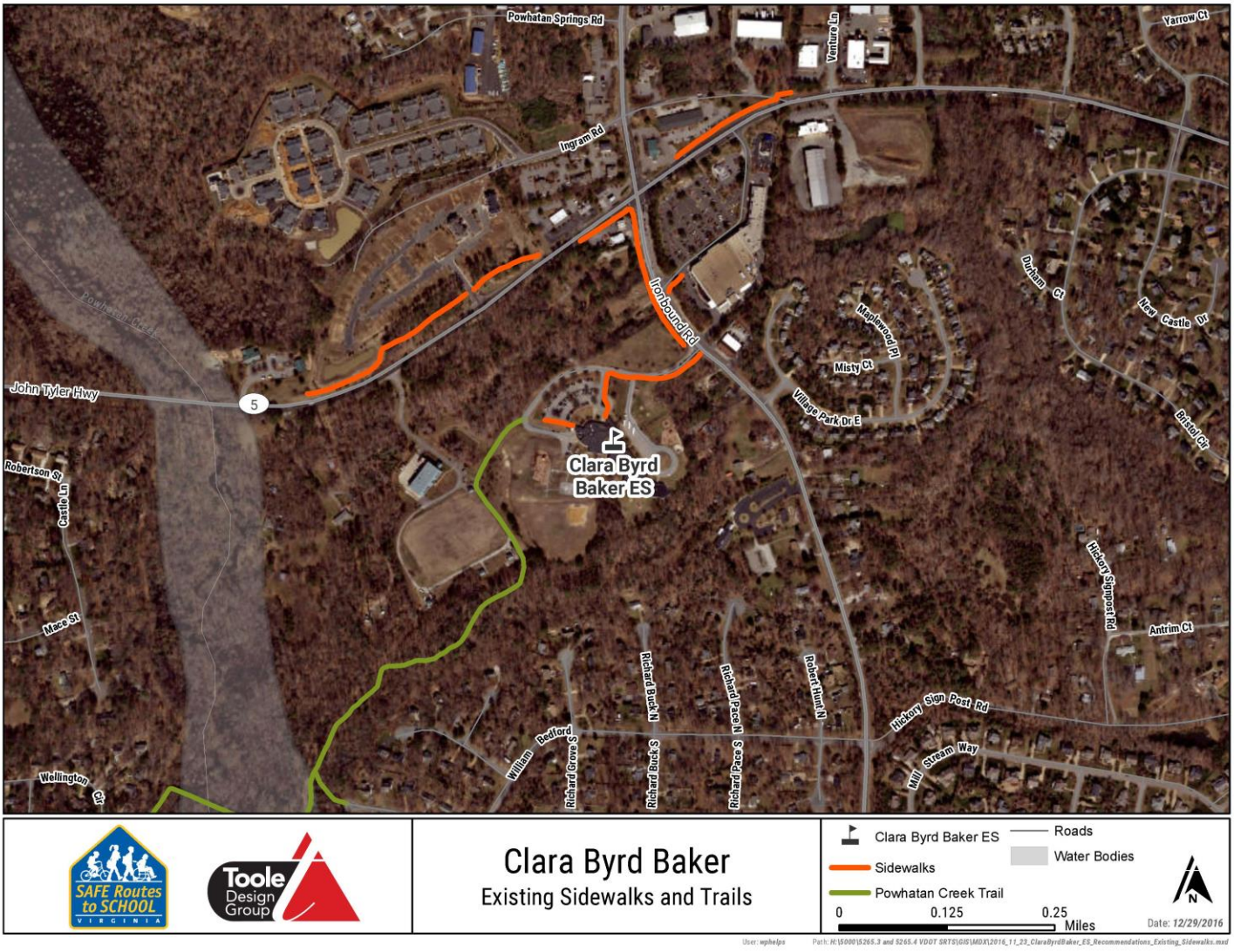

Figure 4 – Existing sidewalks and trails

Table 1 – Road information table

Street Name	Speed Limit	Road Width	No. of travel lanes in each direction	AADT[1]	Road Classification and Network Connectivity
Ironbound Rd (typical)	45 MPH	25 feet	1	7,500	Major Collector;[2] north-south connection between Monticello Ave and Jamestown Rd
Ironbound Rd (in front of school)	45 MPH; 25 MPH during school times	35-60 feet	2	7,500	Major Collector; north-south connection between Monticello Ave and Jamestown Rd
John Tyler Highway	35 MPH	25 feet	1	8,400	Minor Arterial; east-west connection between Monticello Ave and Humelsine Pkwy
Village Park Dr	25 MPH	28 feet	1	n/a	Local; residential loop in Village Square neighborhood, off of Ironbound Rd
William Bedford	25 MPH	19 feet	1	n/a	Local; residential street serving Chanco's Grant neighborhood, off of Ironbound Rd
Powhatan Crossing	25 MPH	34 feet	1	n/a	Local; residential street serving Powhatan Crossing neighborhood, off of Ironbound Rd

[1] Average Annual Daily Traffic (AADT) counts from VDOT, http://www.virginiadot.org/info/resources/Traffic_2014/AADT_047_JamesCity_2014.pdf

[2] Road classification from VDOT, http://www.virginiadot.org/projects/fxn_class/maps.asp

Walkabout Summary

Dismissal Observations

The Walkabout Team split up to observe the dismissal process in three separate locations. Group 1 was stationed at the parent pick-up and drop-off circle near the school entrance. Group 2 was stationed near the intersection of the school driveway and Ironbound Road. Group 3 observed bus boarding in the bus loop as students exited the school building, as shown in Figure 5.

Figure 5 – Dismissal observation locations

Group 1-Parent Pick-up and Drop-off Circle: At 3:55 PM, car riders are released from their classrooms and head to the art room to wait for school staff to call their names. Parents post tags with their student's name in the windshield of their vehicle and when they pull up to the top of the circle the principal or other staff member radios staff in the art room to release the student. At the peak, there were approximately 22 cars in the pick-up queue, and the last cars left the parking lot by 4:17 PM.

Group 2-School Driveway and Ironbound Road: The Walkabout Team observed two families walking and biking after school on November 1, 2016. After the students were dismissed with the car riders, one family departed school on foot via Ironbound Road towards Governor's Grove to the north, while the other rode their bikes along the Powhatan Creek Trail. The family of walkers expressed the desire for pedestrian improvements on Ironbound Road and John Tyler Highway.

Group 3-Bus Loop: Bus riders are dismissed from their classrooms to go to the bus loop at 4:05 PM. Clara Byrd Baker has 11 different bus routes. Buses are loaded concurrent to parent pick-up, and private vehicles mix with school buses in the queue waiting to exit the school driveway. All the buses had left by 4:17 PM.

Walking Audit

Following dismissal observations, the three groups compared observations and conducted a walking audit along Ironbound Road in front of the school, including the intersection of Ironbound Road and John Tyler Highway. The group also discussed conditions along potential routes to Clara Byrd Baker Elementary from the Village Square neighborhood to the east. The key issues are summarized below, and recommendations to address these issues are included in the next sections.

Key Barriers and Issues

The key barriers and issues identified by the Walkabout Team and Virginia SRTS program staff include the following:

- **Incomplete pedestrian network** – There are only a few sidewalks near Clara Byrd Baker Elementary, and those that do exist do not connect with one another. The closest major intersection, Ironbound Road and John Tyler Highway, lacks any pedestrian crossing facilities, including pedestrian signal heads, marked crosswalks and the required ADA compliant curb ramps. There is also no marked crossing on Ironbound Road directly in front of the school.
- **Limited sight distance in front of the school** – The entrance to the school is located in the middle of a gentle 'S' curve on Ironbound Road which limits the sight distance for drivers approaching the school from both directions. The location also limits the sight distance for drivers and pedestrians exiting the school driveway.
- **Number of lanes on Ironbound Road in front of the school** – For most of its length between Monticello Avenue and Jamestown Road, Ironbound Road has one travel lane in each direction. Right in front of Clara Baker Elementary School, Ironbound Road is five lanes wide, with a through lane in either direction, a dedicated right turn lane on either side and a center turn lane. These extra lanes facilitate easier motor vehicle access to the school and shopping center across the street, but dissuade pedestrians from crossing due to the increased crossing distance and exposure time to motor vehicles.
- **Speed of traffic on Ironbound Road** – The posted speed limit on Ironbound Road is 45 MPH. with an 800-foot school zone posted at 25 MPH when the signs are flashing during arrival and dismissal. Again, the sight distance is an issue, as drivers may not see the school zone in advance and have limited time to react and adjust their speed. Figure 6 below illustrates the relationship between a driver's speed, their field of vision, stopping distance and pedestrian survival rates. As speed increases, so does stopping distance while pedestrian survival rates decrease dramatically.

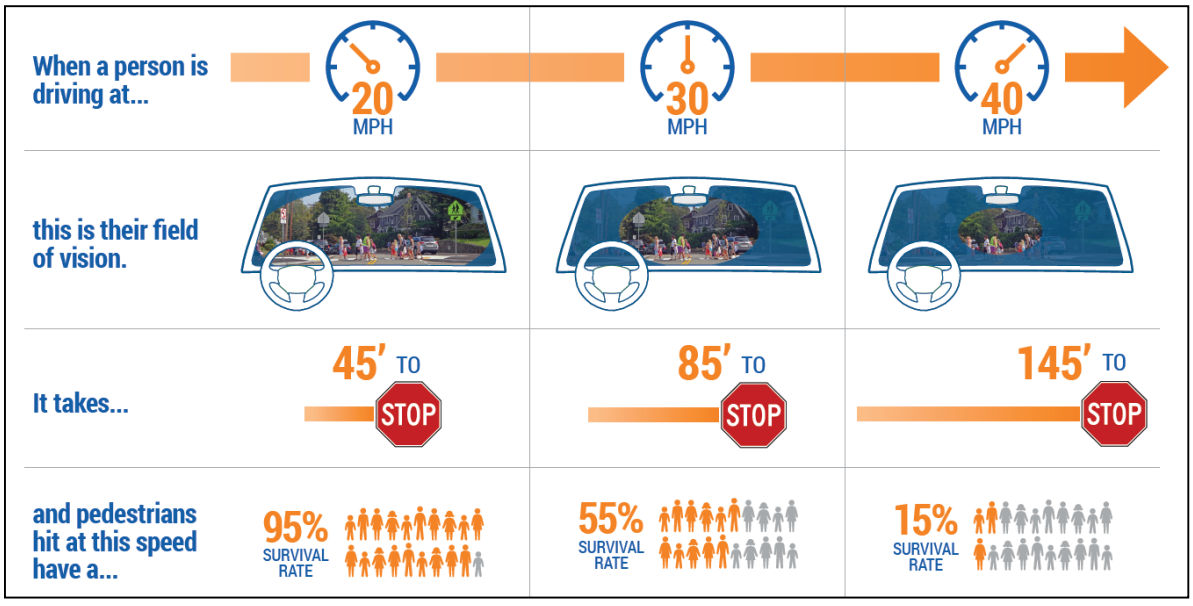

Figure 6 – Influence of speed on driver's field of vision, stopping distance and pedestrian survival rate

Infrastructure (Engineering) Recommendations

Figure 7 shows three generalized locations for infrastructure recommendations that would improve pedestrian and bicyclist access to Clara Byrd Baker Elementary School. The recommendations for each location are described in more detail after the overview map. A glossary of engineering recommendations and cost estimates for the recommendations are included as appendices at the end of this report.

Figure 7 – Walkabout Recommendations

A. Village Square

The recommendations in Table 2 and Figure 8 below create a connected pedestrian network between the Village Square neighborhood and Clara Byrd Baker Elementary School. Currently, there are no marked crossings on Ironbound Road and no sidewalks south of the school driveway.

The proposed recommendations add a sidewalk on the west side of Ironbound Road south of the school driveway that leads to a marked, mid-block crossing and sidewalk on the east side of Ironbound Road to the entrance of the Village Square neighborhood. While a sidewalk is the preferred facility type to connect Village Square to Ironbound Road, a trail connection is also shown as a lower cost alternative. Consistent with VDOT's engineering review, the crosswalk recommendation includes a median refuge island and rapid flashing beacons to alert drivers to the presence of pedestrians. The full text of VDOT's engineering review is included in the appendices of this report.

Table 2 – Village Square issues and recommendations

A. Village Square		
Map ID	**Issue** Recommendation	Timeframe[3]
1	**No formal pedestrian connection to Ironbound Road** – Construct a footpath with lighting through the woods.	Short
2	**No pedestrian facilities between neighborhood and school** – Construct a sidewalk along the north side of Village Park Drive and east side of Ironbound Road to shopping center driveway.	Medium
3	**Difficult to cross arterial** – Install crosswalk, pedestrian island, and rectangular rapid flashing beacon (RRFB), and consider hiring a crossing guard to facilitate crossings during school arrival and dismissal.	Medium

[3] Timeframe:
Short – within 1 year
Medium – between 2 and 5 years
Long – more than 5 years
Ongoing – as appropriate based on other work

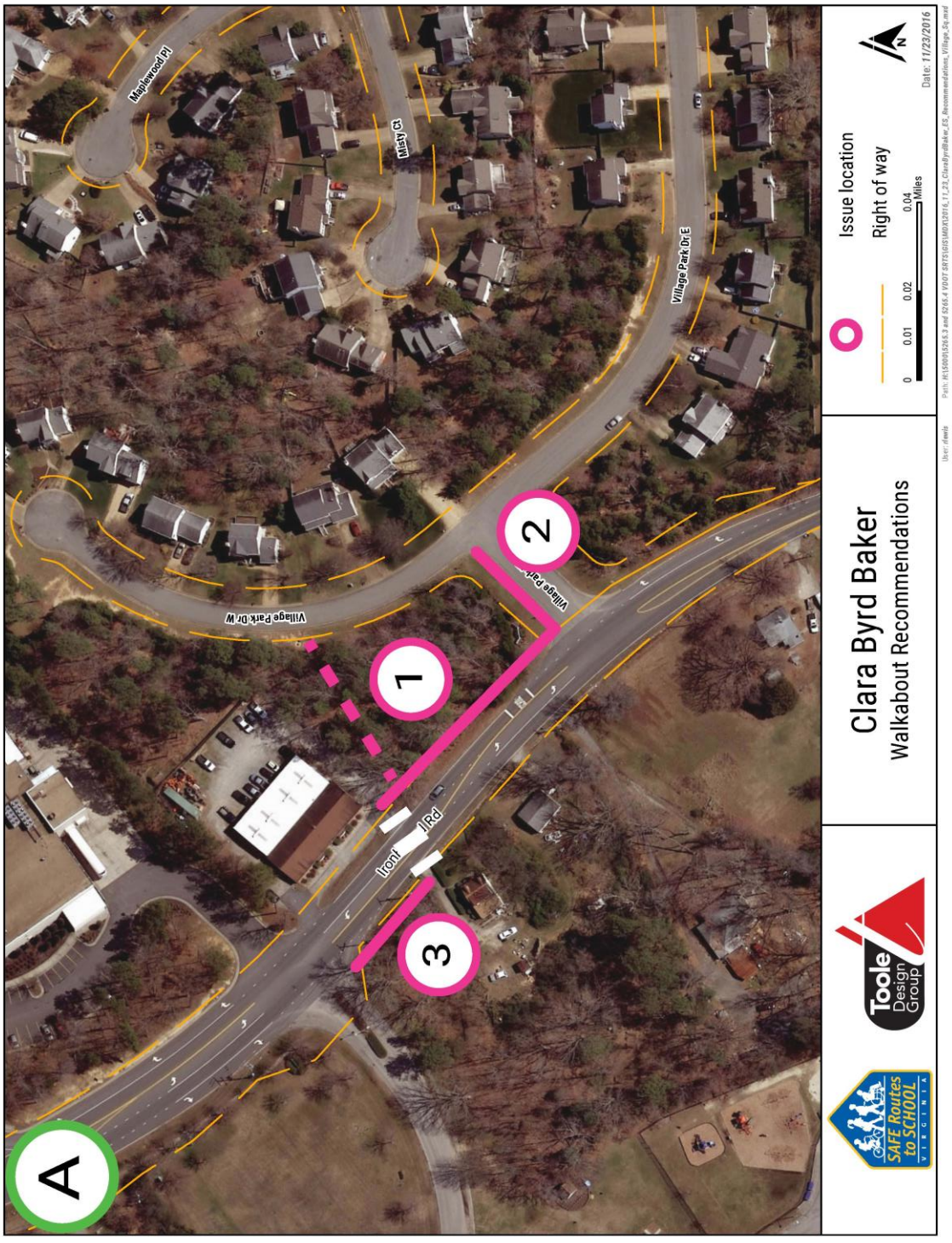

Figure 8 – Village Square Walkabout Recommendations

B. School Property

The improvements listed in Table 3 and shown in Figure 9 are needed to create a fully connected pedestrian network and improve pedestrian comfort and safety on the school campus. First, the school driveway entrance should be reconstructed with tighter curb radii and ADA compliant curb ramps that align with a new high visibility crosswalk. Second, there should be high visibility crosswalk added across the bus loop connecting the sidewalks on either side. Third, the sidewalk on the western edge of the parking lot should be extended to the edge of the grass, and a high visibility crosswalk should connect the sidewalk with the Powhatan Creek Trail.

Table 3 – School property issues and recommendations

B. School Property		
Map ID	**Issue** Recommendation	Timeframe[4]
1	**School driveway entrance difficult for pedestrians to cross –** Reconstruct curbs with aligned, ADA compliant curb ramps and narrowing the turning radii to the extent feasible. Add high visibility crosswalk markings to connect sidewalks on either side of the school driveway.	Short / Medium
2	**Unmarked crossing at bus loop** – Add high visibility crosswalk markings to connect the sidewalk segments on either side of the bus loop.	Short
3	**No pedestrian connection to Powhatan Creek Trail** – Complete sidewalk from the art room to the end of the grass, add ADA compliant curb ramp and high visibility crosswalk markings to connect to trailhead.	Short / Medium

[4] Timeframe:
Short – within 1 year
Medium – between 2 and 5 years
Long – more than 5 years
Ongoing – as appropriate based on other work

Figure 9 – School Property Walkabout Recommendations

C. John Tyler Highway

As noted in the Existing Conditions section above, the intersection of Ironbound Road and John Tyler Highway lacks pedestrian infrastructure. The recommendations in Table 4 and Figure 10 below include adding ADA compliant curb ramps, high visibility crosswalks and pedestrian signals with countdown timers on all corners. Beyond the intersection itself, gaps in the existing sidewalk network should be fixed to give pedestrians uninterrupted routes between the businesses and other destinations.

Table 4 – John Tyler Highway issues and recommendations

C. John Tyler Highway		
Map ID	Issue **Recommendation**	Timeframe[5]
1	**Missing sidewalk** – Construct sidewalk on north side of John Tyler Highway from existing pathway that ends west of Amory Music (4434 John Tyler Highway) to intersection.	Medium / Long
2	**No pedestrian accommodations at major intersection** – Construct curbs with aligned, ADA compliant curb ramps and narrowing the turning radii to the extent feasible. Add high visibility crosswalk markings to connect sidewalks on all four corners, and install pedestrian signals with countdown timers.	Medium / Long
3	**Missing sidewalk** - Construct sidewalk on north side of John Tyler Highway from existing sidewalk that ends east of Chesapeake Bank (4492 John Tyler Highway) to the intersection.	Medium / Long
4	**Missing sidewalk** - Construct sidewalk on south side of John Tyler Highway from existing sidewalk that ends west of the Roofing Supply Group (4551 John Tyler Highway) to the intersection, and along the east side of Ironbound Road to the proposed crossing shown in Map A.	Long

[5] Timeframe:
Short – within 1 year
Medium – between 2 and 5 years
Long – more than 5 years
Ongoing – as appropriate based on other work

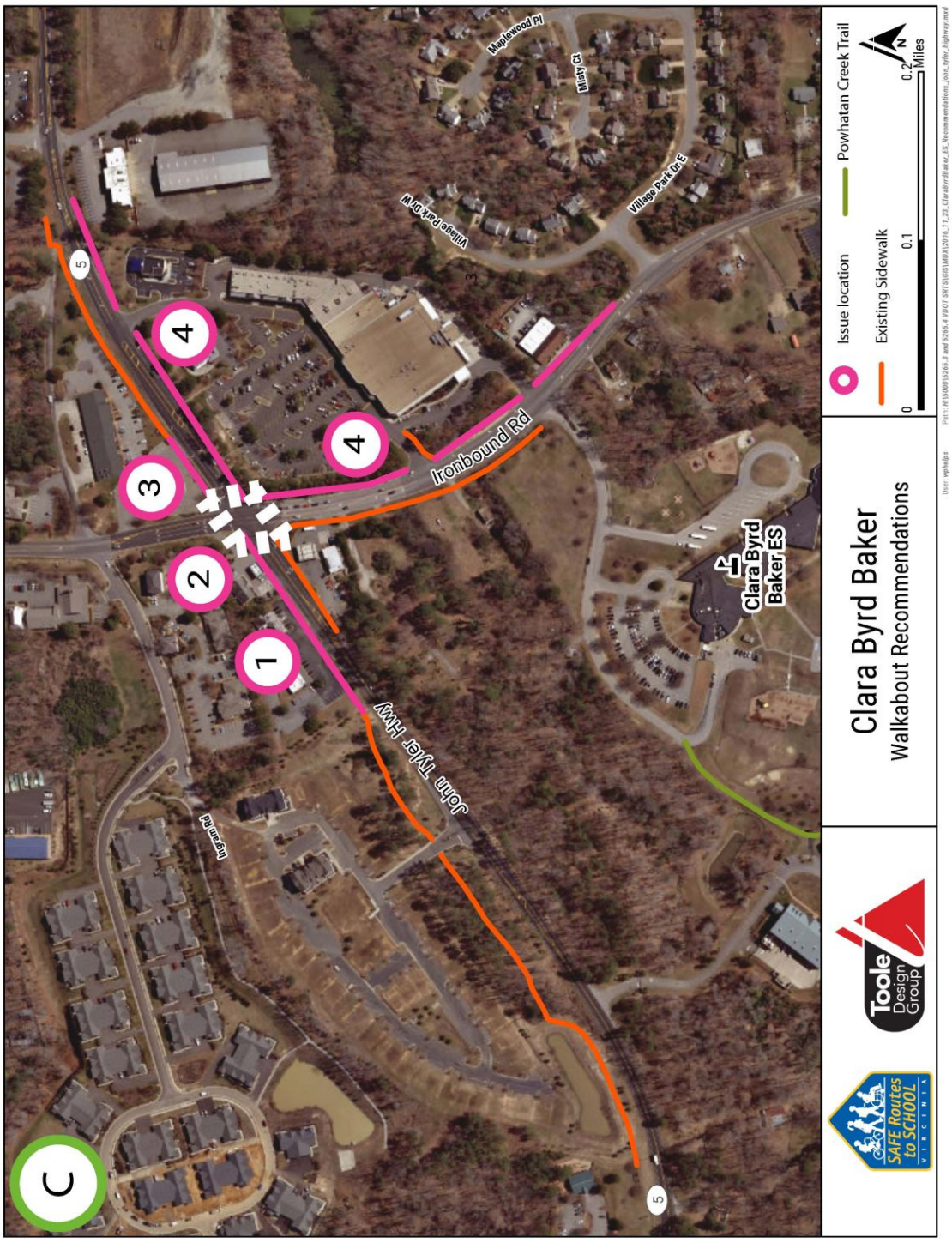

Figure 10 – John Tyler Highway Walkabout Recommendations

Programmatic Recommendations

SRTS programmatic recommendations are designed to work in conjunction with the infrastructure recommendations and each other to instill safe walking, bicycling and driving practices. The recommendations are organized according to the four "E's" of Safe Routes to School: Education, Encouragement, Enforcement, and Evaluation.[6]

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 High Traffic Safety Administration. The curriculum emphasizes skills practice and includes take home tip sheets for parents in English and Spanish. http://www.nhtsa.gov/ChildPedestrianSafetyCurriculum
- 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

Conduct a bicycle rodeo. 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. Potential partners for this event include BikeWalk Williamsburg.

Incorporate information on walking and bicycling to school in communications with parents. Inform parents that Clara Byrd Baker Elementary School supports walking and bicycling to school and educate parents about the academic and health benefits of walking and biking.

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
- 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

[6] The fifth E is Engineering, included in this report under Infrastructure Recommendations.

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. Events can take place on school property, and 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.

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. See the Virginia SRTS Program's webinar on walking school buses and bicycle trains. https://www.dropbox.com/s/7kz0q0yxc603g9k/VDOT%20SRTS%20-%20Walking%20School%20Bus%20and%20Bike%20Train%20Webinar.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

Enforcement

Establish a driver pledge program. Encourage parents and community members to sign a pledge that they will abide by traffic laws, avoid distracted driving, drive at a safe speed, and safely share the road with pedestrians and bicyclists. Download pledges and a pledge tracking form on the Virginia SRTS Program website. http://www.virginiadot.org/programs/resources/walkToSchool/2016/2016_08_24_Driver_Pledge_LDL.pdf

Celebrate Virginia Crossing Guard Appreciation Day. Virginia Crossing Guard Appreciation Day takes place every year in February. Crossing Guard Appreciation Day is an opportunity to thank and recognize the school crossing guard, and remind parents and students of the important work crossing guards do every day. See the Virginia SRTS Program website for more information. http://www.virginiadot.org/programs/srsm_crossing_guard_appreciation_day.asp

Conduct periodic speed enforcement in the school zone. Work with the James City County Police Department on enforcement activities, focusing on Ironbound Road during arrival and dismissal times.

Evaluation

Continue conducting 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 in September or 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

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/nl274zoliqe9w5t/Parent%20Survey_LDLv2.pdf?dl=0

Appendices

A. Walkabout Participants

Name	Organization
Michael Hurley	Principal, Clara Byrd Baker Elementary School
Tyler Thomson	Parent, Clara Byrd Baker Elementary School
Darlene Dockery	SRTS Coordinator, Williamsburg-James City County Schools
Janice Kailos	SHIP Wellness Outreach, Williamsburg-James City County Schools
Kelly Connors	School Resource Officer, James City County Police Department
Roberta Sulouff	Planner, James City County
Tammy Rosario	Planner, James City County
Beth Klapper	Grant Administrator, James City County
Ken Shannon	VDOT, Williamsburg resident
Wendy Phelps	Virginia SRTS Local Technical Assistance Coordinator, Toole Design Group
Scott Johnson	Engineer, Toole Design Group
Rohan Lewis	Planning Technician, Toole Design Group

B. Walkabout Photographs

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

Figure 1

The end of the Powhatan Creek Trail with the school parking lot visible in the background.

Figure 2

Typical conditions along Ironbound Road south of Clara Byrd Baker Elementary School. The posted speed limit is 45 MPH.

Figure 3

Local street in Chanco's Grant neighborhood. There is no dedicated pedestrian infrastructure, but streets are generally low speed and have low traffic volumes.

Figure 4

Looking north on Ironbound Road from the entrance of the Village Square neighborhood towards the school zone. The entrance to Clara Byrd Baker Elementary is on the left in the background of the photo.

Figure 5

This sidewalk on school property connects the school entrance to the sidewalk on Ironbound Road. There is no marked crosswalk at the entrance to bus loop.

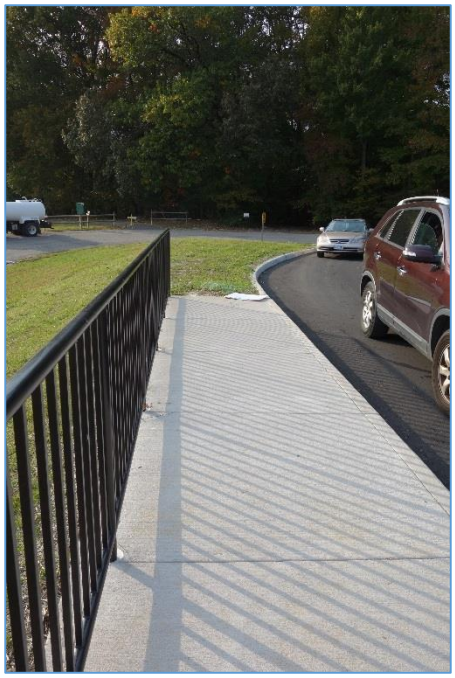

Figure 6

The school parking lot was recently redesigned to better accommodate parents dropping off and picking up their students. The new the sidewalk ends abruptly about 120 feet from the Powhatan Creek Trailhead visible in the background of the photo.

Figure 7

The school driveway entrance lacks marked crosswalks and ADA compliant curb ramps.

Figure 8

Looking west at the intersection of Ironbound Road and John Tyler Highway from the intersection's southeast corner. This major intersection is wide, making it challenging to cross and lacks pedestrian facilities such as sidewalks, curb ramps, marked crosswalks, and pedestrian signals.

C. Glossary of Infrastructure (Engineering) Recommendations

The following infrastructure treatments can be used to improve the bicycle and pedestrian environment around James K. Polk Elementary School. 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-boaRoadgov/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.

In-Street Pedestrian Crossing Signs

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

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.

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.

D. Cost Estimates

Clara Byrd Baker Walkabout Recommendations Cost Estimates

Village Square Path Through Woods

Map ID	Item	Quantity	Unit Cost	Subtotal	Total
A1	**Crushed Gravel Trail , 6' wide**	Length	$/LF		
	Village Park Dr W to Ironbound Rd through the woods	160	$ 26	$ 4,160	
					$ 4,160
	Lump Sum Items	Lump Sum	$		
	Mobilization (10% of total improvement costs)	1	$ 400	$ 400	
	Maintenance and Projection of Traffic (10% of total improvement costs)	1	$ 400	$ 400	
					$800
				Construction Subtotal	**$ 5,000**
				Contingency (20%)	$ 1,000
				Construction Total	**$ 6,000**
				Survey (10%)	$ 600
				Engineering/Design (16%)	$ 1,000
				TOTAL	**$ 7,600**

Clara Byrd Baker Walkabout Recommendations Cost Estimates

Village Park Drive Sidewalk

Map ID	Item	Quantity	Unit Cost	Subtotal	Total
A2	**Sidewalks, 6' wide**	Length	$/LF		
	Along Village Park Dr	105	$ 32	$ 3,360	
A2	**Curb Ramps**	Each	$		
	New sidewalk ramp with detectable warning surface at Village Park Dr	1	$ 1,600	$ 1,600	
					$ 4,960
	Lump Sum Items	Lump Sum	$		
	Mobilization (10% of total improvement costs)	1	$ 500	$ 500	
	Maintenance and Projection of Traffic (10% of total improvement costs)	1	$ 500	$ 500	
					$1,000
				Construction Subtotal	**$ 6,000**
				Contingency (20%)	$ 1,200
				Construction Total	**$ 7,200**
				Survey (10%)	$ 700
				Engineering/Design (16%)	$ 1,200
				TOTAL	**$ 9,100**

Clara Byrd Baker Walkabout Recommendations Cost Estimates

Midblock Crossing

Map ID	Item	Quantity	Unit Cost	Subtotal	Total
A3	**Concrete Median**	Length	$/LF		
	On Ironbound Road to provide a pedestrian refuge - 10' wide	40	$120	$4,800	
A3	**Crosswalks**	LF	$/LF		
	High visibility crosswalk markings midblock	25	$ 27	$ 675	
A3	**Rectangular Rapid Flash Beacon**				
	Flashing signage south of school on Ironbound Road	2	$ 7,500	$ 15,000	
A3	**Lane markings**	Linear Feet	$/LF		
	4" solid white turn lane markings	180	$1	$180	
	6" double solid yellow centerline	500	$4	$2,000	
					$ 22,655
	New Sidewalks				
A3	**Sidewalks, 6' wide**	Length	$/LF		
	West side of Ironbound Rd from school to proposed midblock crossing	165	$ 32	$ 5,280	
	East side of Ironbound Rd after midblock crossing to Village Park Dr	170	$ 32	$ 5,440	
A3	**Curb Ramps**	Each	$		
	New curb ramp with detectable warning surface at Village Park Dr and 2 curb ramps with detectable warnings at the midblock crossing	3	$ 1,600	$ 4,800	
					$ 15,520

Clara Byrd Baker Walkabout Recommendations Cost Estimates

School Property

Map ID	Item	Quantity	Unit Cost	Subtotal	Total
	Upgrade ADA Crossing				
B1,B2,B3	**Curb Ramps**	Each	$		
	New curb ramps with detectable warning surface	6	$ 1,600	$ 9,600	
B1	**Concrete Median**	Length	$/LF		
	On School Entrance Road to divide entering and exiting traffic and provide a pedestrian refuge - 10' wide	75	$120	$9,000	
B1,B2,B3	**Crosswalks**	LF	$/LF		
	Crosswalk crossing school entrance	145	$ 27	$ 3,915	
					$ 22,515
	New Sidewalks				
B3	**Sidewalks, 6' wide**	Length	$/LF		
	Connecting trail behind school to parking lot and front entrance	165	$ 32	$ 5,280	
					$ 5,280
				Subtotal	**$ 27,795**
	Lump Sum Items	Lump Sum	$		
	Mobilization (10% of total improvement costs)	1	$ 2,800	$ 2,800	
	Maintenance and Projection of Traffic (10% of total improvement costs)	1	$ 2,800	$ 2,800	
					$5,600
				Construction Subtotal	**$ 33,400**
				Contingency (20%)	$ 6,700
				Construction Total	**$ 40,100**
				Survey (10%)	$ 4,000
				Engineering/Design (16%)	$ 6,400
				TOTAL	**$ 50,500**

Clara Byrd Baker Walkabout Recommendations Cost Estimates

Ironbound Rd and John Tyler Hwy

Map ID	Item	Quantity	Unit Cost	Subtotal	Total
C1,C3,C4	**Sidewalks, 6' wide**	Length	$/LF		
	From intersection of John Tyler Hwy and Ironbound Rd to nearby neighborhoods and destinations.	2755	$ 32	$ 88,160	
C2	**Crosswalks**	LF	$/LF		
	Crosswalks at intersection of John Tyler Hwy and Ironbound Rd	525	$ 27	$ 14,175	
C2	**Pedestrian Signal Head Assemblies**	Each	$		
	Intersection of John Tyler Hwy and Ironbound Rd	8	$ 970	$ 7,760	
C1, C2, C3, C4	**Curb Ramps**	Each	$		
	Intersection of John Tyler Hwy and Ironbound Rd	30	$ 1,600	$ 48,000	
					$ 158,095
	Lump Sum Items	Lump Sum	$		
	Mobilization (10% of total improvement costs)	1	$ 15,800	$ 15,800	
	Maintenance and Projection of Traffic (10% of total improvement costs)	1	$ 15,800	$ 15,800	
					$31,600
				Construction Subtotal	**$ 189,700**
				Contingency (20%)	$ 37,900
				Construction Total	**$ 227,600**
				Survey (10%)	$ 22,800
				Engineering/Design (16%)	$ 36,400
				TOTAL	**$ 286,800**

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
HAMPTON ROADS DISTRICT
1700 NORTH MAIN STREET
SUFFOLK, VIRGINIA 23434

Charles A. Kilpatrick, P.E.
Commissioner

March 1, 2017

MEMORANDUM

TO: Mr. Rossie Carroll

FROM: Mr. Robert A. Weber III, P.E., PTOE RAW

SUBJECT: Crosswalk Review (JC-0681-20160927-SP)
Route 615 Ironbound Road @ Clara Byrd Baker Elementary School
James City County

This is with reference to your request for a review of a proposed crosswalk on Ironbound Road (Route 615) at Clara Byrd Baker Elementary School located in James City County.

Background

Generally speaking a crosswalk is defined as the portion of roadway designed for pedestrians to use in crossing the street. Crosswalks may be marked or unmarked. At intersections, a sidewalk or pedestrian walkway extension across a street defines a crosswalk. According to the Code of Virginia (Section 46.2-100) there is no legal difference between marked and unmarked intersection crosswalks, however, at times, markings can be used to designate a wider crosswalk or a mid-block crosswalk.

A marked crosswalk should serve two purposes: (1) they tell the pedestrian the best place to cross; and (2) they clarify that a legal crosswalk exists at a particular location. Marked crosswalks may be used to delineate preferred pedestrian paths across roadways under the following conditions:

- At locations with stop signs or traffic signals. Vehicular traffic might block pedestrian traffic when stopping for a stop sign or red light; marking crosswalks may help to reduce this occurrence.
- At non-signalized street crossing locations where an engineering study dictates that the number of motor vehicles lanes, pedestrian exposure, average daily traffic (ADT), posted speed limit, and geometry of the location would make the use of specially designated crosswalks desirable for traffic/pedestrian safety and mobility.

Furthermore, a marked crosswalk helps to create reasonable expectations for motorists with regard to where pedestrians may cross a roadway and the predictability of pedestrian actions and movement.

There are both advantages and disadvantages of marking crosswalks. Advantages include:

- Helping pedestrians find their way across complex intersections designating the shortest path.
- Directing pedestrians to a location with the best sight distance.

Disadvantages include:

- Possibly creating a "false sense of security" for pedestrians resulting in a potential greater number of pedestrian collisions at uncontrolled locations on multi-lane streets with high traffic volumes.
- Higher maintenance costs.

Existing Conditions

Route 615 Ironbound Road is a two-lane, with right and left turn lanes 60-foot wide Rural Major Collector Primary Highway, providing direct connection from Route 31 to Route 5. This segment carries an AADT of 7365 (2017). Route 615 has a 45 MPH speed limit by resolution dated November 6, 1989.

- Route 615 from Route 5 to Route 1650 has two (2) horizontal curves, 1 three (3) way intersection and 1 four (4) way intersection with 1 traffic signal.
- A review of the RNS crash database showed zero (0) reportable crashes in the most recent three years on record (10/01/2013-10/31/2016) resulting in zero (0) injuries and no fatalities.
- The results of the speed measurement are found in the table below:

Table 1 - Date of Speed Samples: 2/8/2017 to 2/10/2017

Speed Data			
Sample Location	85th Percentile Speed	Median Speed	Pace Speed
Route 615 (Station 2)	39.1	34.0	30-40
Route 615 (Station 3) Clara Byrd Baker Elementary School	34.0	28.4	23-33

Analysis

Based on Federal MUTCD requirements establishing older or slower pedestrian crossing speeds at 3.0 feet per second, it is estimated that it would take a pedestrian 20 seconds to cross the entire width of this roadway. Medians and refuge islands reduce the potential for the second threat crash by minimizing the traffic flows a pedestrian must predict. Crossing the street can be a complex task for pedestrians. Pedestrians must estimate vehicle speeds, adjust their own walking speeds, determine adequacy of gaps, predict vehicle paths, and time their crossings appropriately. Drivers must see pedestrians, estimate vehicle and pedestrian speeds, determine the need for

action, and react. Raised medians and pedestrian refuge islands allow pedestrians to cross one direction of traffic at a time. This significantly reduces the complexity of the crossing.

Recommendations

Based on the 45 mph speed limit, daily traffic of 7,365 vehicles per day, the pavement width of 60 feet and the lack of a pedestrian refuge, Traffic Engineering does not recommend a marked crosswalk for this intersection without improvements to the infrastructure. In order for a marked crosswalk to be safe at this location, the following improvements would need to be installed:

- Extend the sidewalk from the school 100' in front of the property at 3113 Ironbound Road. This will require a culvert pipe extension and possible ROW acquisition.
- Based on the traffic and vehicle speeds, install a Level 3 or Level 4 crosswalk. These types of crosswalks include refuge islands and flashing beacons.

The engineering data collected was compiled by Cary P. Mansfield, Engineering Technician. Should additional information be needed, please contact this office.