

August 2014

Safe Routes to School Audit Report
Rickards High School



Leon County
Public Schools



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Chapter 1: Introduction

Project Purpose

The purpose of this Safe Routes to School (SRTS) audit report is to provide recommendations to improve student walking and bicycling rates to and from school. In addition, this report addresses other enhancements to improve the overall travel safety and convenience for students, parents and the school. Improvement recommendations are provided in the following categories: infrastructure, programs, and policies. This SRTS audit includes an array of considerations formulated from a range of research and analytical tools employed to better understand and comprehend the issues and concerns affecting current walking and bicycling rates of student to and from school. This report highlights a summary of students' school travel patterns through on-site meetings with school officials and field reviews.

School Overview

Rickards High School is located at 3013 Jim Lee Road, 32301 in Leon County, Florida. It is part of the Leon County Public Schools system. The school was established in 1963 and specializes in preparing students for the challenges of living in the 21st century. The school offers honors, Advanced Placement courses, as well as, vocational programs. In addition the school offers around 20 athletic groups and over 21 clubs. Regular school hours are from 7:30am to 1:50pm.

The number of students enrolled at the school, for the 2013 school year, was 1,261. The school has a current capacity for 1,685 students. The school includes grade levels 9th to 12th grade.

Students attending this school feed from Apalachee, Bond, Chaires, Conley, Hartsfield, Oak Ridge, Pineview, Riley, Sabal Palm, and Woodville Elementary Schools and from Cobb, Fairview, and Nims Middle Schools.

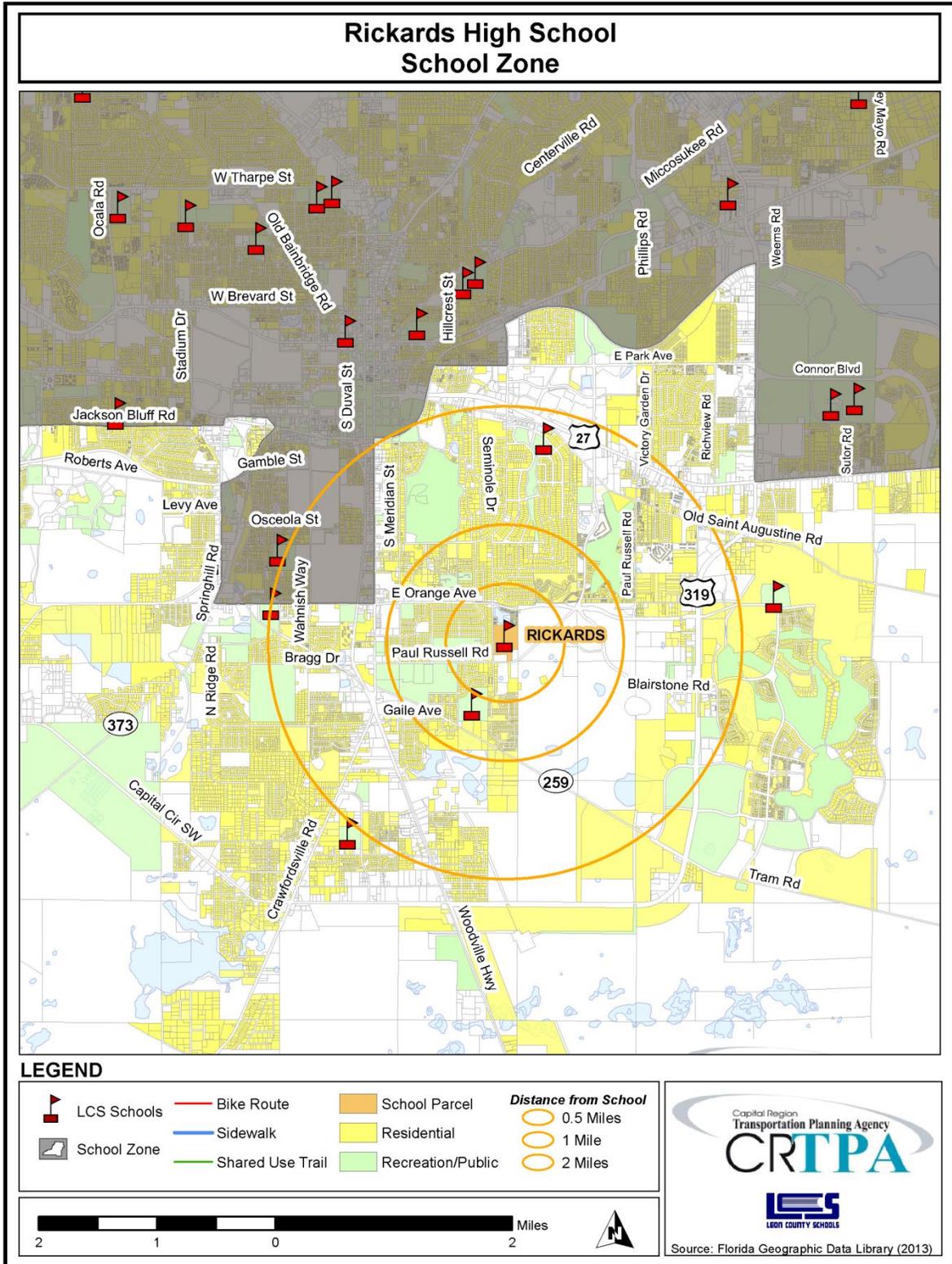
School Zone

The Rickards High school zone, located in southern Leon County, encompasses the neighborhoods of Beacon Hill, Lakewood, Apalachee Ridge Estates, Southwood, Blirstone, Oak Ridge, Lake Bradford, as well as, other neighborhoods surrounding downtown Tallahassee. Land uses within the school zone consist of mostly residential, recreational, and community service-type uses. Additionally, the Tallahassee Regional Airport and Apalachicola National Forest take up a significant portion of the Rickards school zone just south of Capital Circle.

The Rickards school zone includes six major roadways. Apalachee Parkway runs mostly east to west and borders the zone on the north. Capital Circle runs mostly east to west and bisects the zone into north and south. Woodville Highway runs mostly north to south and bisects the zone into east and west. Crawfordville Road and Springhill Road run mostly parallel southwest to northeast in the western portion of the zone. Orange Avenue runs east to west through the northern portion of the zone. There are five other Leon County schools within the Rickards school zone including Oak Ridge Elementary on Shelfer Road, Hartsfield Elementary on Chowkeebin Nene, Bond Elementary on Saxon Street, and Conley

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Elementary on East Orange Avenue, Fairview Middle on Zillah Street. Recreational facilities within the school zone include Capital Park, Indianhead Acres Park, Myers Park, Campbell Pond Park, Springsax Park, Walker Ford Center & Pool, Jack L. McLean Jr. Park, Speed Spencer Stephens Park, and golf courses such as Capital City, Southwood, Hilaman, Seminole, and Jake Gaither.



Chapter 2: On-Site Meeting and Inventory

Date and Weather Conditions

The on-site inventory meeting was conducted on May 22nd, 2013 with temperatures in the mid 80 degrees Fahrenheit.

Highlights and Key Observations of On-Site Meeting

During this visit, Rickards High School representatives provided insight about students' travel to and from school and discussed what was working, or not working well. The meeting began by discussing current policies, programs, and administration related to students' travel to and from school. Examples of safety education programs discussed include crossing guards and traffic education. Additionally, before- and after-school programs provided for students were discussed.

It was noted that flashing lights (i.e. school zone warning lights) are located along Jim Lee Road. Also, there are overhead flashing lights that designate an official school crossing area along Jim Lee Road. It was also noted that the Campbell Connector, a multi-use trail that begins at Zillah Street & Bahama Drive is located a few blocks southwest of the school. Students are permitted to arrive to school as early as 7:00am. After-school programs, clubs, and sports are available until around 6:30pm-7:00pm.

There are currently no policies or programs, in place through the school curriculum, that emphasize bicycle and pedestrian safety or activity. School representatives expressed little concern for crime in the area near the school but noted that during certain times throughout the year it tends to escalate quickly and peak. School representatives did express concern with the roundabout located at the intersection of Jim Lee Road & East Orange Avenue. While there are designated crosswalks around the roundabout, students sometimes encounter issues with crossings, likely due to high traffic volumes.

Circulation

During a tour of the school, school representatives provided explanations of school circulation patterns as to where and how children were entering and exiting school grounds via walking or bicycle and arriving and departing by automobile or school bus.

While the school is located in a mix of both older and newer neighborhoods, there are few students who walk to school either due to the distance from their homes to school, since high school zones are so large in size, or because of the dignified "rite-of-passage" of being able to drive themselves to school. Additionally, the neighborhood is demographically older resulting in fewer school-aged children in the neighborhoods. Those who do walk tend to come from the Capital City Country Club and Apalachee Ridge Estates neighborhoods as well as from near Texas Street. Approximately 50 more students walk in the afternoons than in the mornings. No students are known to commute via bicycle. This is believed to be due, in part, to parent concerns regarding safety (accidents). Walkers and bicyclist can enter campus from two points along Jim Lee Road. There is no bicycle parking provided at the school.

The school bus drop-off and pick-up zone functions adequately to handle the large number of school buses that use the zone on a daily basis. The 20 school buses using the zone are stacked in two rows to expedite the loading/unloading process. The zone for arrival and departure is covered and there is direct

access to a walking facility. Temporary traffic control devices (i.e. cones and signs) are used in the school bus zone during school commuting hours. School staff also noted that approximately 6-12 students ride Star Metro daily, with more riding in the afternoons than in the mornings.

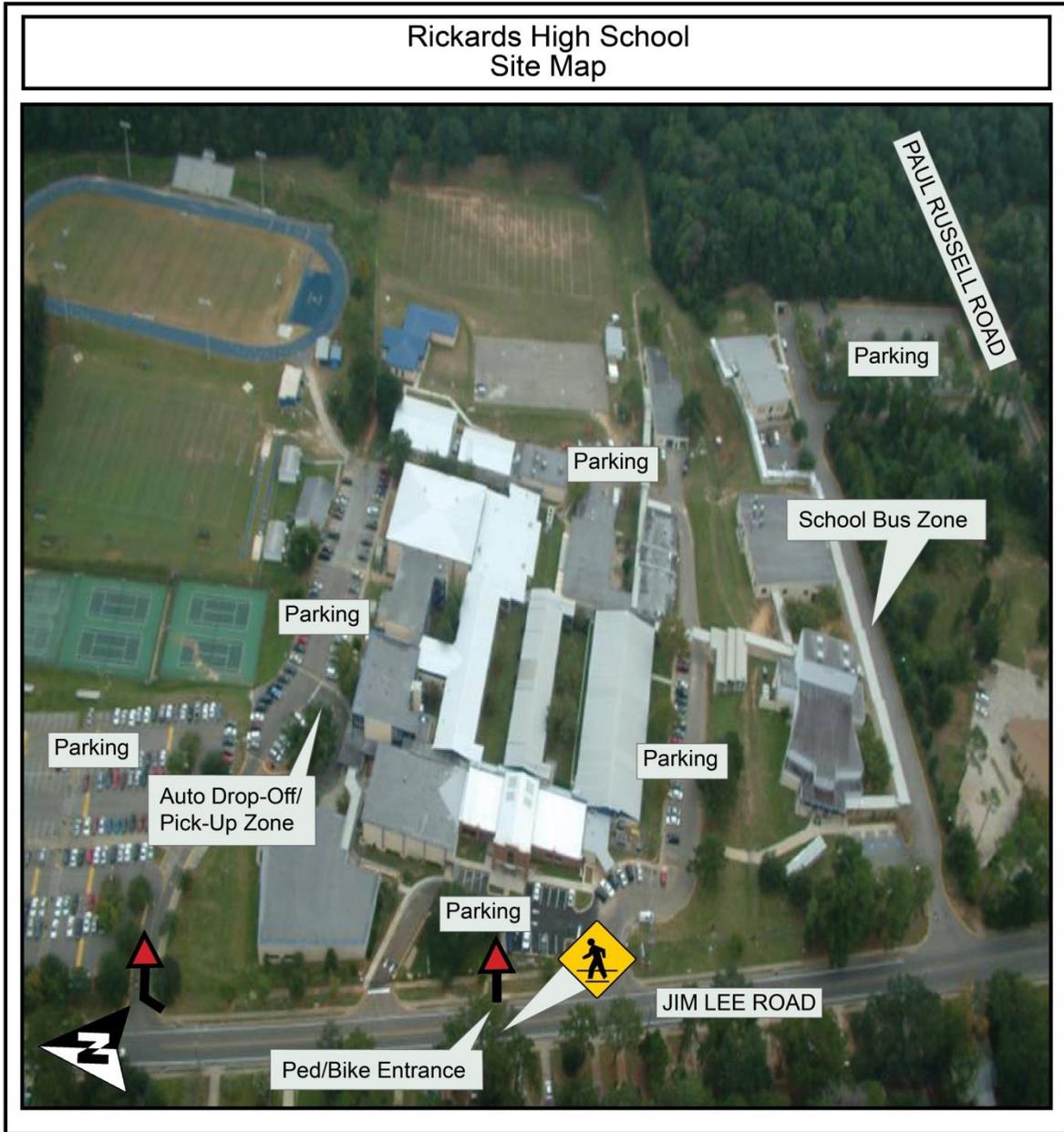
The parent drop-off and pick-up zone functions adequately to accommodate the volume of automobiles entering and exiting the site. However, the automobile storage capacity is limited due to the small size of the zone. There is a small holding area for students waiting to be picked up in the afternoons. However, the zone is only partially covered which can cause added stress during times of inclement weather. There are some reports of drivers not obeying the rules and directions for the student drop-off/pick-up. Some drivers reportedly drop-off students along the side of Jim Lee Road, leaving students to walk through the busy parking lot and circulation line. It was noted by school representatives that there are school policies that only allow certain students to drive themselves to campus. Students must be a Junior or Senior, have at least a 2.5 grade point average (GPA), have good attendance, and must exhibit good citizenship to be allowed to drive to school. It was noted that some sophomores have been allowed to drive, as long as they meet the rest of the restrictions. With this policy in place, there are only about 50 students that drive themselves to school on a daily basis.

Inventory Map

An aerial photograph showing Rickards High School is located on the following page. As shown in the photo, the school fronts Jim Lee Road. Students can access campus from two points along this street. No bicycle parking racks are located at the school.

Standard width sidewalks are available along both sides of Jim Lee Road and there is a midblock crosswalk, with overhead flashing lights, which connects directly to a sidewalk that enters onto campus. Additionally, standard width sidewalks are available along the south side of Paul Russell Road.

The automobile pick-up and drop-off zone is located along the side of the school. Automobiles both enter and exit the zone at separate driveways along Jim Lee Road. Parking spaces are located in this area as well. The bus drop-off and pick-up zone is separately located along the opposite side of the school. Buses enter the zone from Paul Russell Road and exit onto Jim Lee Road. Additional parking spaces are located north of this zone.



Issues and Opportunities

School-specific issues, opportunities, and impediments concerning the SRTS program were discussed.

Geography and a teenage “rite-of-passage” appear to be the primary issues with students’ ability to walk and bicycle to school. Since high school zones are so large in size, students often live more than two miles away from their home which can create a distance that is too long to walk or bicycle to school within a reasonable amount of time. Additionally, many students tend to enjoy being able to drive themselves to school since they have never been able to in the past and had to rely upon others. Many students also participate in after-school clubs and sports that require them to bring additional items from home. Thus, it may be harder to walk or bicycle with these extra items. These kind of external factors are often difficult to overcome, at least in the short term.

With what opportunities that do exist to increase walking and bicycling, including student safety, consideration should be given to Jim Lee Road and Paul Russell Road. School-related and –supportive committees such as the Parent/Teacher Organization (PTO) can be used to help educate parents on the opportunities and benefits to having their children walk or bicycle to school, where such options are feasible.

These groups can also help get the word out to parents concerning on-campus issues, such as appropriate protocol for dropping-off and picking-up students, as well as the importance of following speed limits especially along Jim Lee Road. Furthermore, these groups could see if students would be interested in alternative forms of transportation such as carpooling to and from school to help reduce congestion during the morning and afternoon.

Chapter 3: Neighborhood Field Review

A neighborhood field review was conducted on April 9th, 2013. The review consisted of an assessment of accessibility, connectivity and safety along neighborhood roadways within proximity to Rickards High School. On the day of the field review, temperatures were in the mid 70 degrees Fahrenheit. Following the field review, a walk/bike shed area was delineated on a map within the school zone, surrounding the school. This chapter includes a Walk/Bike Shed section describing the approach to defining the area and an associated map for Rickards High School.

Character of Neighborhood Area

Rickards High is located in a mix of established and newer neighborhoods, primarily comprised of single family homes and some areas of multifamily homes. Sidewalk and bicycle infrastructure is mostly limited to major roadways in the school zone such as East Orange Avenue, Paul Russell Road, Capital Circle and Blair Stone Road. Capital Circle could be a major bike-ped barrier due to its width and high traffic volumes. There are sidewalks present in a few neighborhoods west and south of the school. Sidewalks in these areas tend to only be present on one side of the streets. For the most part, neighborhood streets are laid out in a grid-like pattern except in the newer residential development to the south. Multi-use trail systems near the school include the Campbell Connector, St. Marks Trail, along Woodville Highway, and the Capital Circle Southeast Trail, along Capital Circle.

Major roadways in the neighborhood include:

- Paul Russell Road, a 2-3 lane roadway with a posted speed limit of 35mph or less.
- Capital Circle Southwest, a heavily traveled six lane roadway with a posted speed limit of 40-45mph.
- Apalachee Parkway, an east-west four lane roadway with a 40-45mph speed limit that transitions to 50-55 mph just east of Connor Boulevard.
- Blair Stone Road, a divided four lane roadway with a posted speed limit of 45mph.
- Woodville Highway, a north-south mostly two lane roadway, transitions briefly to a four lane roadway near Capital Circle, with a 40-45mph speed that transitions to 50-55mph south of Capital Circle.
- East Orange Avenue, a divided four lane roadway with a posted speed limit of 35mph.

Crash Data

Crash data were collected from the Florida Department of Transportation's (FDOT) State Safety Office for years 2009-2011. Crashes reported include any crashes within Leon County and on any local and major roadways. The data were collected for a typical school year, August 15th to May 30th. Additionally, only bicycle and pedestrian crashes that occurred during typical school commute hours, 7:00am to 9:30am and 1:50pm to 4:20pm, and school days, Monday to Friday, were examined.

There were a total 11 bicycle and pedestrian crashes that occurred within the theoretical two-mile walk/bike radius of Rickards High School. Of those total crashes, 9 (82%) occurred during the morning hours and 2 (18%) occurred during the afternoon hours. A vast majority of the crashes involved adult

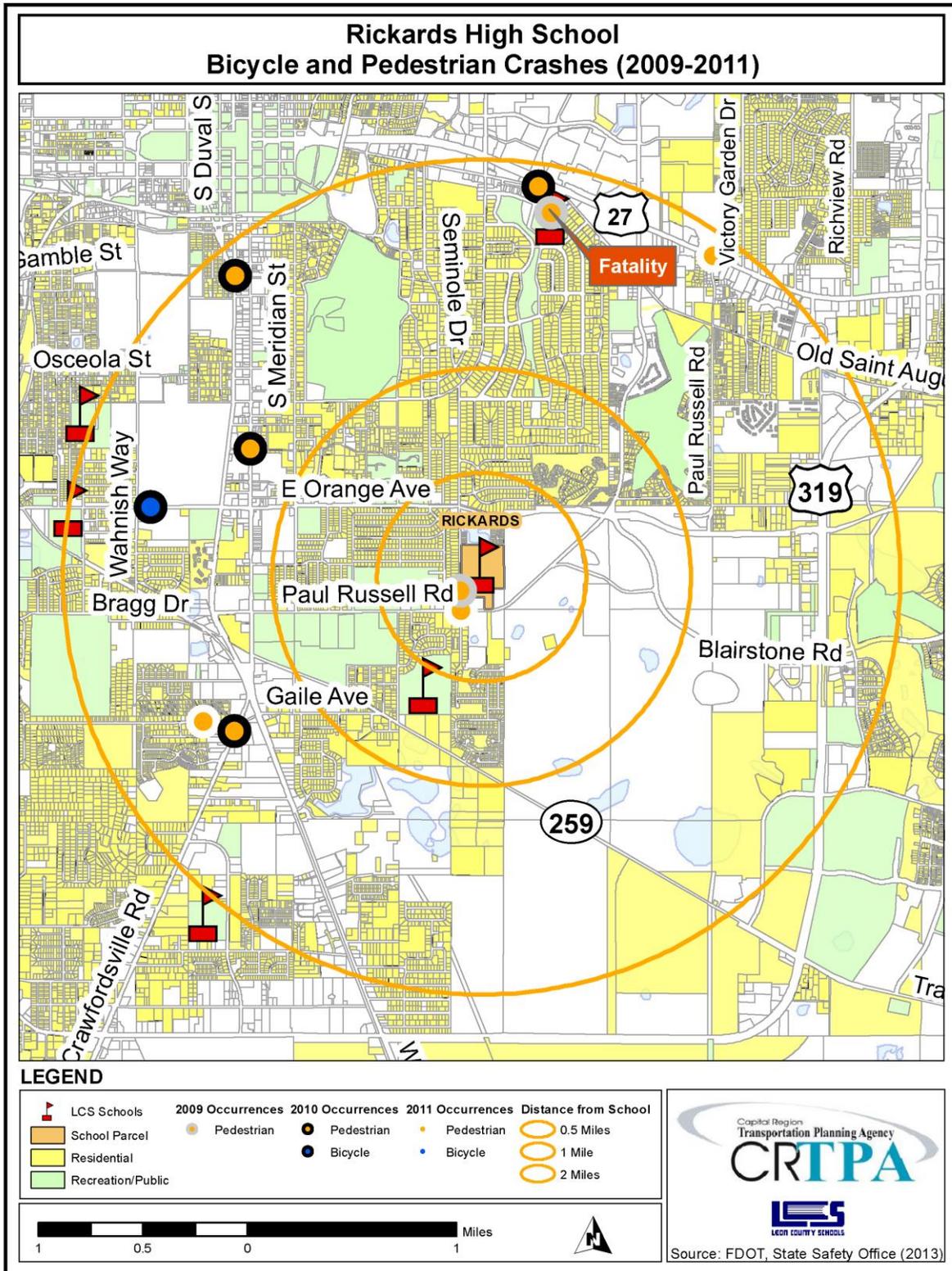
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pedestrians and bicyclists. However, there were a few incidents of crashes involving children. Injuries were reported in all crashes. Additionally, one crash resulted in a child fatality.

Most of the crashes occurred approximately one to two miles from Rickards High School, in an area mainly comprised of the Florida Agricultural and Mechanical University campus and an area near Governor's Square Mall. However, there were two crashes immediately near Rickards High School on Jim Lee Road. Streets where crashes tend to be a problem are Monroe Street, Crawfordville Road, Orange Avenue, and Ridge Road. The child fatality occurred on Chowkeebin Nene.

SUMMARY OF CRASH REPORTS (2009-2011)

Date	Time	Day	On Road	Nearest Intersection	Injury or Fatality?	Type of Crash	Person(s) Involved
01/09/09	7:06am	Friday	1414 Chowkeebin Nene	N/A	Fatality	Pedestrian	Child
04/27/09	7:48am	Monday	Jim Lee Rd.	Paul Russell Rd.	Injury	Pedestrian	Adult
01/06/10	8:09am	Wednesday	Lafayette St.	Indianhead Dr.	Injury	Pedestrian	Adult
08/26/10	8:03am	Thursday	Orange Ave.	Wahnish Way	Injury	Bicyclist	Adult
10/20/10	7:10am	Wednesday	Crawfordville Rd.	Gaile Ave.	Injury	Pedestrian	Child
12/03/10	3:32pm	Friday	Putnam Dr.	Monroe St.	Injury	Pedestrian	Adult
12/29/10	3:12pm	Wednesday	Adams St.	Jennings St.	Serious Injury	Pedestrian	Adult
03/17/11	7:24am	Thursday	Jim Lee Rd.	Paul Russell Rd.	Injury	Pedestrian	Child
08/02/11	8:25am	Tuesday	US 27	Paul Russell Rd.	Injury	Pedestrian	Adult
08/04/11	9:03am	Thursday	US 27	Paul Russell Rd.	Injury	Bicyclist	Adult
09/09/11	8:07am	Friday	Ridge Rd.	State St.	Injury	Pedestrian	Child



Neighborhood Assessment

The overall neighborhood layout surrounding Rickards High School lends itself fairly well to walkability. The grid-like street network allows for multiple route choices to access the school. In addition, there is a fairly comprehensive sidewalk and bicycle infrastructure network along major roadways in the area. Streets without sidewalks and bicycle lanes tend to be low-volume, residential streets that do not pose as a major hazard to students. Project-specific recommendations can be found in the Findings and Recommendations chapter of this report.

Walk/Bike Shed

As mentioned previously, a walk/bike shed area was delineated on a map within the school zone, surrounding the school. The Rickards High School walk/bike shed map is included on page 15.

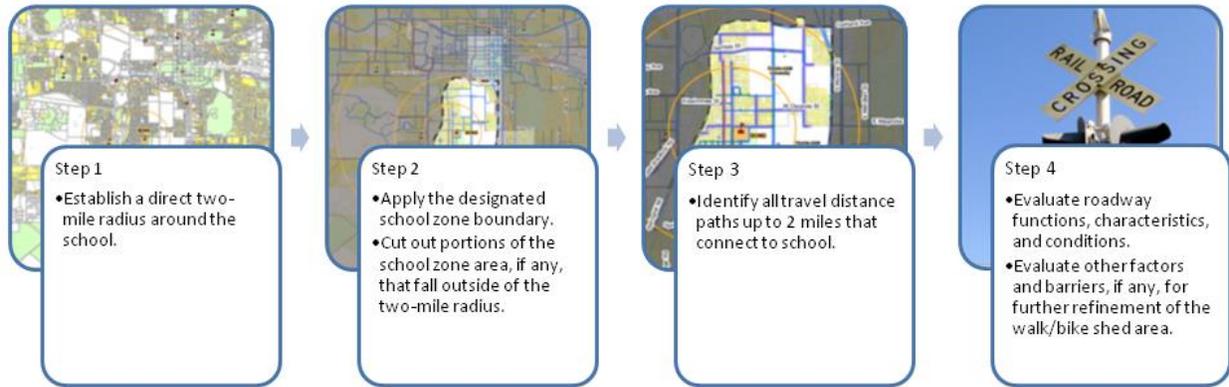
The walk/bike shed area and associated map are not meant to suggest that high school students of all ages, maturity level, and experience should commute to and/or from school within the area delineated. Certainly, all students are not expected to walk or bike to school from practically any distance. Students without the appropriate experience or maturity level will likewise be more limited in their accessibility to school. Therefore, the walk/bike shed map functions more as a guide for parents, school administrators and students to evaluate and identify areas potentially commutable and conducive to walking and bicycling to school. The final decision to walk or bicycle to school is still at the discretion of the parents.

The walk/bike shed for Rickards High School mostly extends north, west, and southwest of the school. The area immediately east of the school is excluded from the walk/bike shed due to the few residential land uses in this area. Woodville Highway with its high number of nonresidential land uses and South Monroe Street with its minimal to no separation from traffic combine to form the western limits of the walk/bike shed. Considering the typical distance a high-school-aged student can travel on foot or by bike, the northern limits of the walk/bike shed extend approximately two miles into the residential neighborhoods north of East Orange Avenue. The southern limits of the walk/bike shed extend just past Tram Road. It should be noted that certain improvement recommendations could potentially expand the potential walk/bike shed area, due to improved conditions for walking and bicycling.

Methodology

Many factors were evaluated to ultimately determine the limits of the walk/bike shed area. The general methodology for identifying the shed included the following steps:

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Evaluating Roadways

Four types of safety hazards were evaluated pertaining to roadways. They include:

- Sidewalks along roadways
- Roadways without sidewalks
- Roadway crossing points
- Railroad crossing points (along roadways)

Primary hazard conditions include, but are not necessarily limited to factors such as:

- Sidewalk width (where present)
- Separation between the walking/bicycling space and the vehicular travel space
- Intersection control measures for crossing
- Number of rail tracks (for railroad crossings)
- Traffic volume
- Traffic speed
- Roadway geometry
- Length of a hazardous condition present

Multiple factors are no doubt present for each hazard. And no two factors or situations are the same. This makes evaluation as much of an art as a science. Nonetheless, there are certain conditions in and of themselves that are considered decisive limitations to students walking and/or bicycling to school. Such conditions where walking and/or bicycling are deemed hazardous include the following. It should be noted that only one condition from either table needs to be met for a situation to be deemed hazardous.

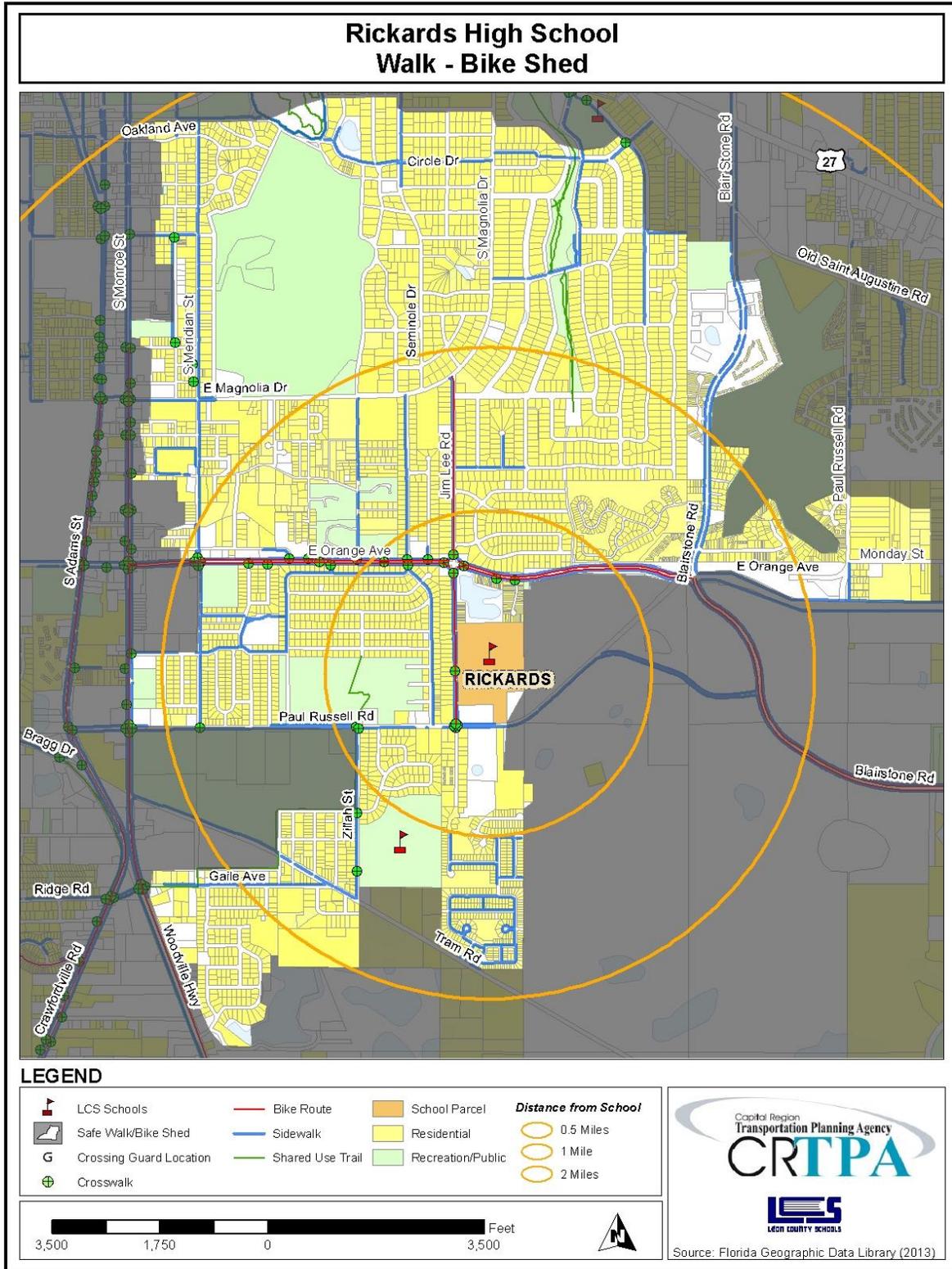
Travel Along Roadways				
Sidewalk Type	Hazardous Conditions			
	Type of Road	Posted Speed Limit	Peak Hour Traffic	Length
< 2' wide sidewalk OR without sidewalk	All roadways other than local, neighborhood streets	N/A	N/A	Exceeding 0.5 miles in length
<= 3' wide sidewalk OR <= 4' separation from traffic	More than 2 travel lanes	Greater than 35 mph	Greater than 2,000	Exceeding 1 mile in length
> 4' wide sidewalk AND >= 4' separation from traffic	More than 4 travel lanes	Greater than 45 mph	Greater than 3,500	Exceeding 2 miles in length

Roadway Crossing Points				
Crosswalk Type	Hazardous Conditions			
	Type of Road	Posted Speed Limit	Peak Hour Traffic	Length
Unmarked Crosswalk	More than 2 travel lanes	Greater than 25 mph	Greater than 1,500	N/A
Unsignalized Crosswalk				
Marked Crosswalk	Greater than 4 travel lanes	Greater than 40 mph	Greater than 2,000	N/A
Signalized Crosswalk				

Evaluating Other Factors and Barriers

In addition to that identified above, information collected from the field review, anecdotal comments from parent surveys, discussions with school administrators and staff, and general research findings were applied to determine the ultimate walk/bike shed area commuting limits for the school. Such additional information evaluated included the following:

- Barriers such as water bodies and high-speed, restricted access highways
- Historic travel accident patterns
- Poor quality pedestrian infrastructure along routes
- Pathways of excessive length through nonresidential areas as well as excessive intersecting vehicular access drives



Chapter 4: Findings and Recommendations

The existing points of access for walkers and bicyclists to Rickards High School provide efficient access onto campus. For those requiring automobile access, the current situation is adequate for the volume of automobiles that access the school on a daily basis. Some policy and programmatic recommendations that might help to increase safe walking and bicycling to and from school are also included for the school's consideration.

The neighborhood surrounding Rickards High School has a somewhat well-connected street network. Many of the streets without sidewalks and bicycle lanes are low-volume traffic resident streets that can be navigated by walkers and bicyclists with a fair amount of ease, depending in part on maturity. Still, there are some infrastructure recommendations that would provide much benefit toward improving existing conditions for students walking or bicycling to school.

Infrastructure Improvements

The following recommendations supplement the current walk/bike shed area as delineated on the map, addressing infrastructure needs and improvements that would enhance walking and bicycling safety and convenience to and from Rickards High School. They include both on- and off-site improvements as follows:

Rickards High School On- and Off-Site Recommendations

Improvement: On-Site	Location	From	To	Geography	Direction	Length	Comments	
A1	Install bicycle rack	Jim Lee Road	At Bike/Ped Entrance		Grassy Area Near Flag Pole	N/A	N/A	

Improvement: Off-Site	Location	From	To	Geography	Direction	Length	Comments	
B1	New Striped Crosswalks (4)	Jim Lee Road	See Description		N/A	N/A	N/A	
B2	Sidewalk Infill	Jim Lee Road	At Student Drop-Off/Pick-Up Entrance Driveway		Southeast corner	N/A	Approx. 6 feet	
B3	Crosswalk Pavement Treatments	Jim Lee Road	At Orange Avenue roundabout		N/A	N/A	N/A	Pavement treatments are faded.
B4	New Sidewalk	Paul Russell Road	East Orange Avenue	North of Darryl Drive	East side of Paul Russell Road	N-S	Approx. 2,310 feet	ROW may be constrained in some areas.
B5	Sidewalk Railing	Zillah Street	Tram Road	Bahama Drive	East side of sidewalk	N-S	Approx. 1,412 feet	
B6	New Sidewalk	Lakewood Drive	Gaile Avenue	Skylark Avenue	East side of Lakewood Drive	N-S	Approx. 944 feet	
B7	New Crosswalk	Gaile Avenue	At Lakewood Drive		East side of intersection	N-S	N/A	
B8	New Sidewalk	Skylark Avenue	Lakewood Drive	Falcon Drive	North side of Skylark Avenue	E-W	Approx. 538 feet	
B9	New Sidewalk	Falcon Drive	Skylark Avenue	Piney Road	West side of Falcon Drive	N-S	Approx. 641 feet	
B10	Bike Sharrow Markings	See Description	See Description		N/A	N-S	N/A	

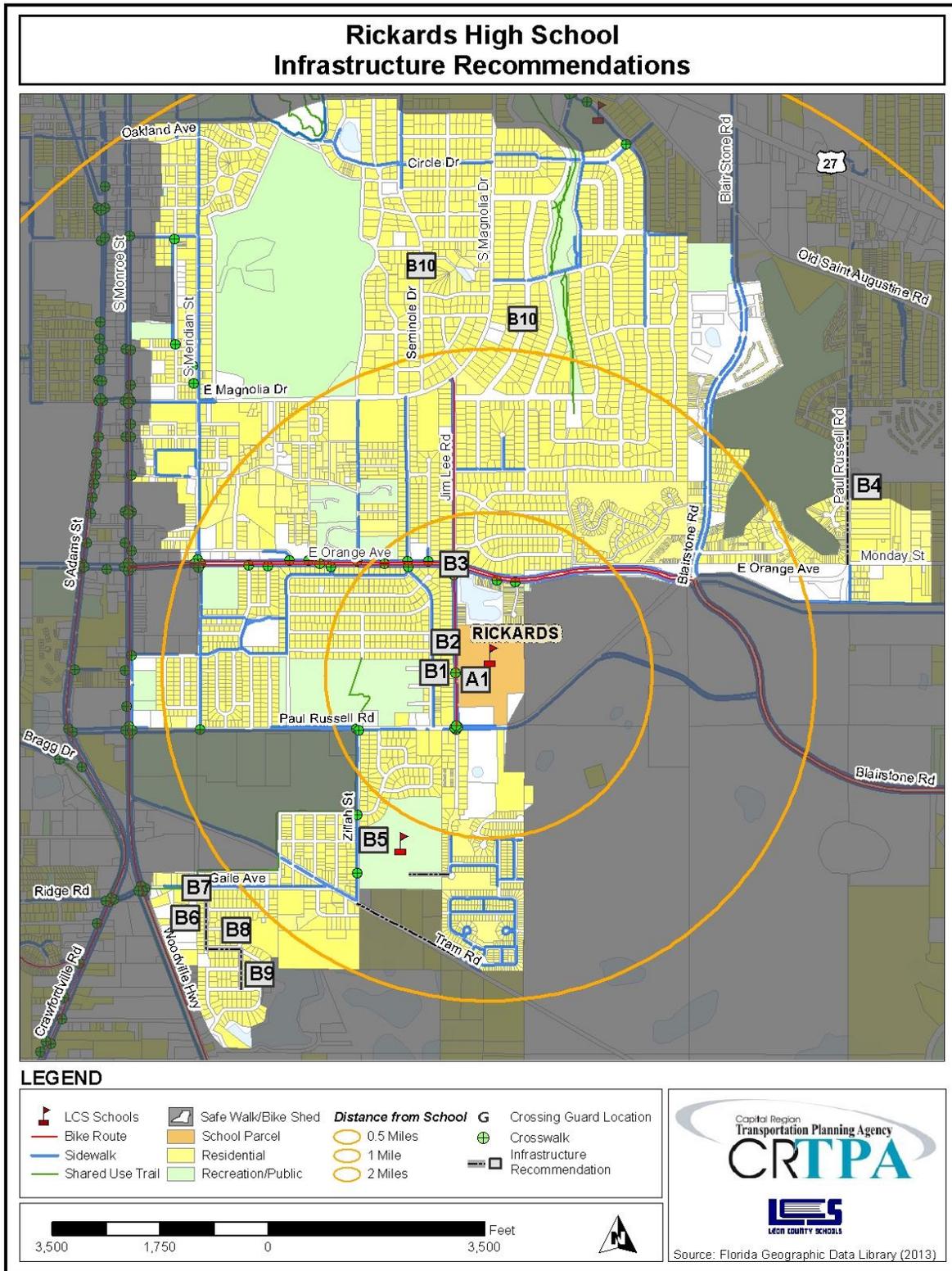
The table, above, corresponds to an infrastructure recommendations map on the following page.

On-Site Recommendations

- A1) Install a bicycle parking rack near the front bicycle/pedestrian entrance along Jim Lee Road. Currently, there is no bicycle parking available at the school and thus, no safe place for students to secure their bicycles during school hours.

Off-Site Recommendations

- B1) Add four striped crosswalks at the following school driveways along Jim Lee Road:
- At the school bus exit driveway
 - At the main school entrance/exit driveways
 - At the existing crosswalk along Jim Lee Road, in front of the school's main entrance
 - At student drop-off/pick-up driveway
- B2) Infill the gap of the existing sidewalks on the southeast corner of Jim Lee Road and the student drop-off/pick-up driveway to aid students who may be walking to/from school.
- B3) The pavement treatments at the Jim Lee Road & East Orange roundabout crosswalks need to be redone because they are beginning to fade due to wear and tear from vehicles driving over them.
- B4) Construct a new sidewalk along Paul Russell Road from Monday Street to just north of Darryl Drive. This project would help expand the existing walk/bike shed to residential areas that are currently excluded.
- B5) Install a sidewalk railing along the existing Zillah Street sidewalk from Tram Road to Bahama Drive. Large ditches next to the sidewalk make it uncomfortable for students walking/bicycling to/from school.
- B6) Construct a new sidewalk along Lakewood Drive from Gaile Avenue to Skylark Avenue
- B7) Mark a new crosswalk on the east side of the Gaile Avenue & Lakewood Drive intersection.
- B8) Construct a new sidewalk along Skylark Avenue from Lakewood Drive to Falcon Drive.
- B9) Construct a new sidewalk along Falcon Drive from Skylark Avenue to Piney Road.
- B10) Consider marking Atapha Nene from Jim Lee Road to Toochni Nene as well as Seminole Drive from East Magnolia Drive to Santa Rosa Drive, both as bike sharrows to provide additional north-south routes for bicyclists.



Programs

- C1) Walk and bicycle encouragement literature – Send home literature to parents, as well as make it available on the school website, about the benefits of children walking and bicycling to school. Information and statistics from the National Safe Routes to School organization can be used to highlight health and safety benefits. The literature provided to parents should highlight some specific examples of how parents and the community can make walking and bicycling to school safe.
- C2) Parent drop-off/pick-up zone protocol encouragement– Send home literature to parents, as well as make it available on the school website, about the proper drop-off and pick-up process for the school, particularly at the start of a new school year or after an extended school break. Maps of the student drop-off/pick-up zone, as well as, the traffic flow pattern can be very helpful to parents. The literature available to parents should clearly discourage parents from letting students out along Jim Lee Road.
- C3) Student Carpool – Send home literature to parents and students about the benefits of carpooling to and from school. Additionally, suggest that students who participate in after-school sports, clubs, or programs carpool home, if possible.
- C4) Crossing guards – While crossing guards are typically not required for high schools, it would be beneficial to have one to two crossing guards available at the Jim Lee Road & East Orange Avenue roundabout during school commuting hours. School representatives stated that they are concerned with students crossing at the roundabout due to the high volume of cars that pass through the roundabout.

Policies

- D1) Bike check and security – **(In conjunction with On-Site Recommendation A1)** School policies to discourage theft and encourage bicycle riding could include having a school official or parent volunteer at the bike rack in the morning and afternoon to monitor students parking their bikes. The school should consider investing in basic, school-owned bike locks that can be applied when students check-in. By having locks available at school, students do not need to remember to bring one each day. Basic locks can be purchased fairly cheap.
- D2) School-Specific Safe Routes Coordinator/Advisor – A school the size of Chiles High School could benefit from having a safe routes coordinator to help accomplish projects, jumpstart programs and implement policies to improve and diversify student commuting options and increase student safety. This role would not require a fulltime staff commitment to safe routes-related issues and needs and, thus, could possibly be performed by an existing school administrator or staff member. The safe routes coordinator would also advocate for improvements and changes before the School Board and other various agencies with transportation and funding responsibilities throughout the County. In addition, the safe routes coordinator could be assigned with seeking out potential funding sources and completing grant applications.

Planning-Level Cost Estimates

Planning-level cost estimates are included in the table, below. They are intended to be used as a guide. Specific, detailed cost estimates for individual projects will require closer assessment of project conditions and constructability at the time of improvement.

General Unit Cost Estimates¹

Item	Assumptions	Unit	Average Unit Cost (\$)
sidewalk	concrete sidewalk (5' wide)	linear foot	32
sidewalk	concrete sidewalk + curb (5' wide)	linear foot	150
shared-use path	multi-use trail – paved (at least 8' wide)	mile	481,140
shared-use path	multi-use trail – unpaved (at least 8' wide)	mile	121,390
pavement symbol	pedestrian crossing	Each	360
pavement symbol	shared lane/bicycle marking	each	180
pavement symbol	school crossing	each	470
paved shoulder	asphalt material	square foot	5.56
crosswalk	high visibility crosswalk (ladder or zebra striping)	each	2,540
crosswalk	standard parallel lines crosswalk	each	770
signage	bike route sign	each	160
signage	stop/yield sign	each	300
signage	no turn on red (standard metal sign)	each	220
signage	no turn on red (electronic sign)	each	3,200
signage	trail regulation sign	each	160
flashing beacon	standard beacon (system + labor/materials)	each	10,010
flashing beacon	rectangular rapid flashing beacon (system + labor/materials)	each	22,250
ped hybrid beacon	high intensity activated crosswalk (HAWK) signal	each	57,680
ped/bike detection	push button	each	350
signal	audible pedestrian signal	each	800
signal	countdown timer module	each	740

¹ Bushell, M. A., Poole, B. W., Zegeer, C. V., & Rodriuez, D. A. (2013). *Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researchers, Engineers, Planners, and the General Public*. Federal Highway Administration.

Chapter 5: Conclusion

The neighborhood immediately surrounding Rickards High School enjoys a somewhat well-connected roadway network consisting mostly of low-volume residential streets, but it doesn't correlate to high walking and bicycling commuting rates for students. There tend to be more students walking in the afternoons than in the mornings; however, the numbers are still fairly low. Additionally, no students are known to commute via bicycle to/from school. School representatives believe this to be due, in part, to parent concerns regarding safety (accidents). From 2009-2011, there were two pedestrian crashes within one mile of the school. Parents may be more inclined to allow students to walk/bike to/from school if they knew that there are relatively few crashes that have occurred in the area in the past few years. Additionally, low walking and bicycling rates to school may also be due to the expansive size of high school zones. Since high school zones encompass very large areas, many students live more than two miles away from school which can create distances that are far too great to walk or bicycle to school.

For those students within a relatively safe walking and bicycling distance to school, opportunities to improve student walking and bicycling rates are rooted primarily in infrastructure recommendation improvements including but not limited to new sidewalks improved, crosswalks, and bicycle sharrows. Additionally, informational and educational programmatic solutions as well as policies that encourage bicycle commuting have been provided. While Rickards High School has a sizeable student population outside of a safe, reasonable walking and bicycling distance, there are measures for which the school can take that will help to improve walking and bicycling safety and increase non-motorized commuting rates.