

## BICYCLE AND PEDESTRIAN SCHOOL SAFETY REVIEW STUDY

# BUDDY TAYLOR MIDDLE SCHOOL

PALM COAST, FLAGLER COUNTY, FL

Assessment & Implementation Report | June 2017

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# **River to Sea Transportation Planning Organization Bicycle and Pedestrian School Safety Review Study**

## **Buddy Taylor Middle School Palm Coast, Flagler County, FL**

### **Assessment and Implementation Report**

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# Executive Summary

Kittelson and Associates, Inc. (KAI) was contracted by the River to Sea Transportation Planning Organization (R2CTPO) to prepare an Assessment and Implementation Report for the Bicycle and Pedestrian School Safety Review Study for seven Flagler County schools. The Assessment Report for the Bicycle and Pedestrian School Safety Review Study will enable the R2CTPO to make recommendations for projects that will improve the walkability and bikability of students living within the school walk zone. The Implementation Report for the Pedestrian and Bicycle School Safety Review Study is based on observations and recommendations of the Assessment Report and includes cost data, ranking criteria for the recommended improvements, and the best practices to follow on old and new developments. The subject of this report is Buddy Taylor Middle School located at 4500 Belle Terre Parkway, Palm Coast, FL.

## Purpose

The purpose of the Bicycle and Pedestrian School Safety Review Study is to create a safe environment for students to walk or bicycle to school. The goal for the assessment phase of this study is to provide the R2CTPO with a comprehensive study that will identify each of the listed school's concerns, document the observed pedestrian and bicycle circulation routes adjacent to the school sites, and then make recommendations for improvements. The assessment includes the walk zone surrounding the school and it will evaluate safety issues that may affect students walking or bicycling to school. Another goal of the assessment report is to continue the coordination among the stakeholders to implement the recommendations of these studies. The purpose of the Implementation Report for the Bicycle and Pedestrian School Safety Review Study is to conduct a constructibility review and develop a cost feasibility plan that is based upon the recommendations from Buddy Taylor Middle School's Assessment Report. Ultimately, the recommendations within the Implementation Report should create a safer environment for children who live within the walk zone that choose to walk or bicycle to and from the school.

To make walking and bicycling a chosen mode of transportation for students at Buddy Taylor Middle School, measures have been recommended that should make the school walk zone safer. Many local, state, and federal laws require transportation agencies to focus on walking and bicycling infrastructure as part of the overall transportation network. The Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU) of 2005 established the Safe Routes to School program that explicitly focused on funding projects to enhance pedestrian and bicycling infrastructure around schools. Fixing America's Surface Transportation Act (FAST) of 2015 reinforces the Safe Routes to School program. The goal of this report is to create a safer environment along the streets connecting students to Buddy Taylor Middle School and recommend best practices for a variety of settings.

The U.S. Department of Health and Human Services Center for Disease Control (CDC) and Prevention has determined that students are not as active as they were 10 years ago when physical activity was incorporated into each student's schedule (KidsWalk-to-School, CDC). Simultaneously, the percentage of overweight students from ages six to eleven years to double over the past 30 years. The CDC has determined that the following are benefits associated with students who walk or ride bicycle to school.

- Increased practice of safe bicycling, walking, and ability to navigate traffic
- Knowledge of their surrounding neighborhood environment
- Improved childhood health
- Improved sense of self-image and autonomy
- Reduce risk of childhood obesity
- Contributes to healthy social and emotional development
- More alert students who do better in school
- Increased likelihood that students will grow up to lead a healthy lifestyle

The Safe Routes to School (SRTS) program and the CDC went on to say that not only does a safe walking and bicycling environment benefit students, but it also benefits the community in the following ways:

- Decline in traffic congestion
- Reduce the number of traffic crashes
- Improved air quality
- Improved community security
- Reduced fuel consumption
- Enhanced community accessibility
- Increased community involvement
- Improved partnerships among schools, parents, community groups, and local government leaders

Table 1 summarizes safety concerns observed within Buddy Taylor Middle School's walk zone with recommendations documented in this report.



**Table 1: Observations and Recommendations Summary**

Location	Responsible Agency	Observation	Recommendation(s)
Belle Terre Parkway	Flagler County Schools	Drop-off and pick-up queues spilling into turn lane	Consider changes to drop-off and pick-up path to shorten queue.  Increase programming to encourage walking and biking to school to reduce number of parents/guardians driving students to and from school.
		Students cross the street at the intersection closer to Buddy Taylor Middle School instead of at Parkview Drive	Provide additional crossing guards so both intersections near the school have crossing guards
	City of Palm Coast/Flagler County Sheriff's Department	Speeding observed in school zone	Periodically place speed monitoring trailers to remind drivers that they are driving over the posted speed limit; law enforcement officers should periodically monitor the school walk zone to ensure that motorists are following the rules.
		Incomplete or nonexistent sidewalks coupled with high pedestrian demand and higher motor vehicle speeds	Perform Pedestrian Accommodation Feasibility Studies for these streets*
Whippoorwill Drive, Parkview Drive, Pritchard Drive	City of Palm Coast	Incomplete or nonexistent sidewalks coupled with high pedestrian demand and higher motor vehicle speeds	Perform Pedestrian Accommodation Feasibility Studies for these streets*
Plainview Drive and Pebble Beach Drive	City of Palm Coast	Incomplete or nonexistent sidewalks	Assess the feasibility of an advisory shoulder pilot project to increase bicycle and pedestrian safety on low speed, low volume neighborhood streets.
Belle Terre Parkway at school entrance	Flagler County Schools	Drop-off and pick-up queues spilling into turn lane	Consider changes to drop-off and pick-up path to shorten queue.  Increase programming to encourage walking and biking to school to reduce number of parents/guardians driving students to and from school.

*\*Where Pedestrian Accommodation Feasibility Studies are recommended, the goal is to identify a feasible exclusive pedestrian facility. Preferably, the facility will provide physical separation in the form of a curb, landscaped strip, or other physical element between the roadway and an ADA compliant pedestrian facility. These studies should identify the costs, right of way, and takings implications of various approaches, and may also recommend spot improvements, crossing treatments, and traffic calming. Interim solutions can be implemented as long as these do not compromise the ultimate goal of providing an exclusive pedestrian facility.*

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# Introduction

In the winter of 2016/2017, a comprehensive bicycle and pedestrian safety review was performed for Buddy Taylor Middle School in Palm Coast, Flagler County. The purpose of this study is to evaluate the walk zone of Buddy Taylor Middle School for any safety issues that students might encounter if they choose to walk or ride their bicycles to school. This review included an information-gathering and coordination meeting with the School, Flagler County School Board representatives, City of Palm Coast, Flagler County, and R2CTPO officials. The coordination meeting was followed by a field review by the consultants. The review also included analysis of mapped conditions including infrastructure mapping and crash reports. The results of this review have been synthesized into the following existing conditions and safety improvement recommendations report.

## Background on Buddy Taylor Middle School

Buddy Taylor Middle School is located at 4500 Belle Terre Parkway in Palm Coast, FL. The school currently has 911 enrolled students. The school serves suburban neighborhoods consisting of mostly single family residential houses. Figure 1 shows the school campus on an aerial; the northern campus building is shared with Wadsworth Elementary School.



Figure 1: School Location

# Assessment Report

This section of the report will document existing conditions within the Buddy Taylor Middle School walk zone, summarize the coordination meeting, and observations from the field review. The walk zone is a two mile radius around middle schools and a one mile radius around elementary schools, constrained by major obstacles such as highways. No school bus service is provided within the walk zones. In practice, most students within the walk zone are driven to and from school.

The Assessment Report for the Bicycle and Pedestrian School Safety Review Study will enable the R2CTPO to make recommendations for projects that will improve the walkability and bikability of students living within the school walk zone. The Hazardous Conditions Statutes are attached to this report as an appendix and guided field and map observations.

## Existing Conditions Analysis

The existing bicycle and pedestrian infrastructure, safety conditions, and surrounding land uses at each school were evaluated through map review, administrator and school safety officer inputs, and field visits. The field visits included observation of the drop-off and pick-up periods, and complete review of the presence, absence, and condition of bicycle and pedestrian infrastructure within the walk zone.

Figure 2 shows the walk zone for Buddy Taylor Middle School. The walk zone primarily serves residential neighborhoods accessed by Parkview Drive to the east of the School and the trail spur to the east of the school.



*Typical residential street within the walk zone*



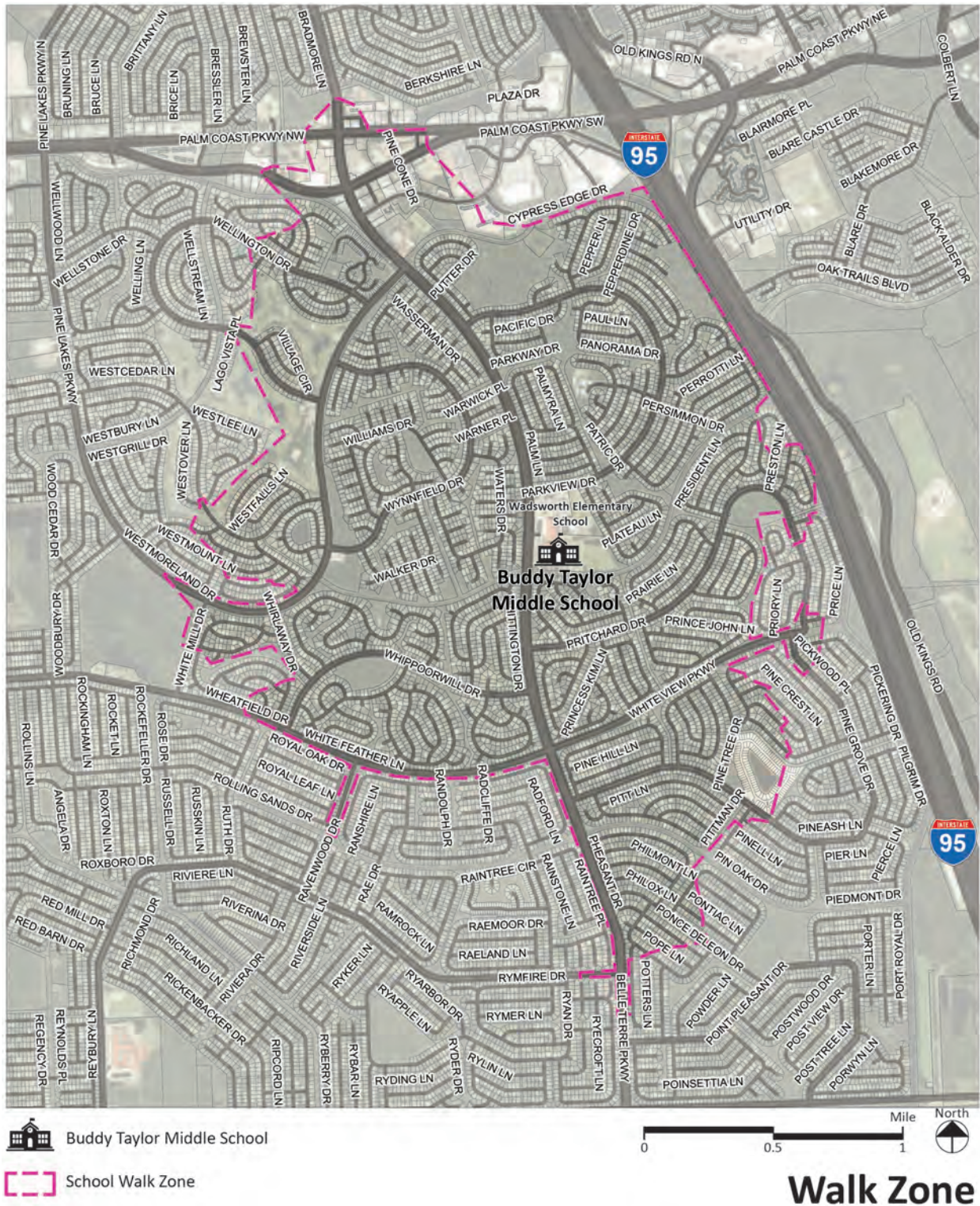


Figure 2: School walk zone

## Existing Conditions Analysis

**Pedestrian Infrastructure:** Belle Terre Parkway has an approximately 10 foot wide trail including a pedestrian bridge across the canal south of the campus on the east side of the street and an approximately eight foot wide sidewalk on the west side. Palm Coast Parkway and Cypress Point Parkway have standard width sidewalks on both sides within the school walk zone. Parkview Drive has a standard width sidewalk on its south side between Belle Terre Parkway and Persimmon Drive. Additionally, a trail spur connects Wainbush Place to Belle Terre Parkway, allowing a more direct pedestrian connection between residential neighborhoods to the west of Belle Terre Parkway and Buddy Taylor Middle School.

Most of the streets within the walk zone are two lane residential streets with open drainage ditches on each side. Students and other pedestrians would generally walk in the street. However, it was observed during the field visit that pedestrians had to move on to the grass shoulder and open drainage areas whenever cars were passing them.

Additionally, the walk zone includes local connector streets such as Whippoorwill Drive, Parkview Drive, Pritchard Drive and Wynnfield Drive. These streets have yellow painted centerlines, a 30 mile per hour speed limit, and adjacent drainage ditches. Whippoorwill Drive had a worn, unpaved pedestrian demand path on its south side.

There are marked crosswalks at the intersection of Parkview Drive and Belle Terre Parkway and at the driveway into the adjacent Buddy Taylor Middle School. During the AM and PM drop-off and pick-up periods the crossing guards are posted at the intersection of Belle Terre Parkway and Buddy Taylor Middle School driveway. This crosswalk is lightly used by the students.

**Bicycle Infrastructure:** Belle Terre Parkway has a wide trail including a pedestrian bridge across the canal south of the campus on the east side of the street and a wide sidewalk on the west side; bicyclists were observed using both the trail and the sidewalk. Additionally, a trail spur connects Wainbush Place to Belle Terre Parkway, allowing a more direct pedestrian connection between residential neighborhoods to the west of Belle Terre Parkway and Buddy Taylor Middle School. Pine Lakes Parkway has a trail on its north side. Apart from these three trails, there is no dedicated separated bicycle infrastructure within the school's walk zone.

**Crash Analysis:** There were 29 reported pedestrian and bicycle crashes within the walk zone in last six years (2010 - 2015). A crossing guard also mentioned that he had witnessed many 'near misses' at the crosswalk at Belle Terre Parkway and the school driveway due to drivers failing to yield to his directions.

Figure 3 maps the existing conditions described above.



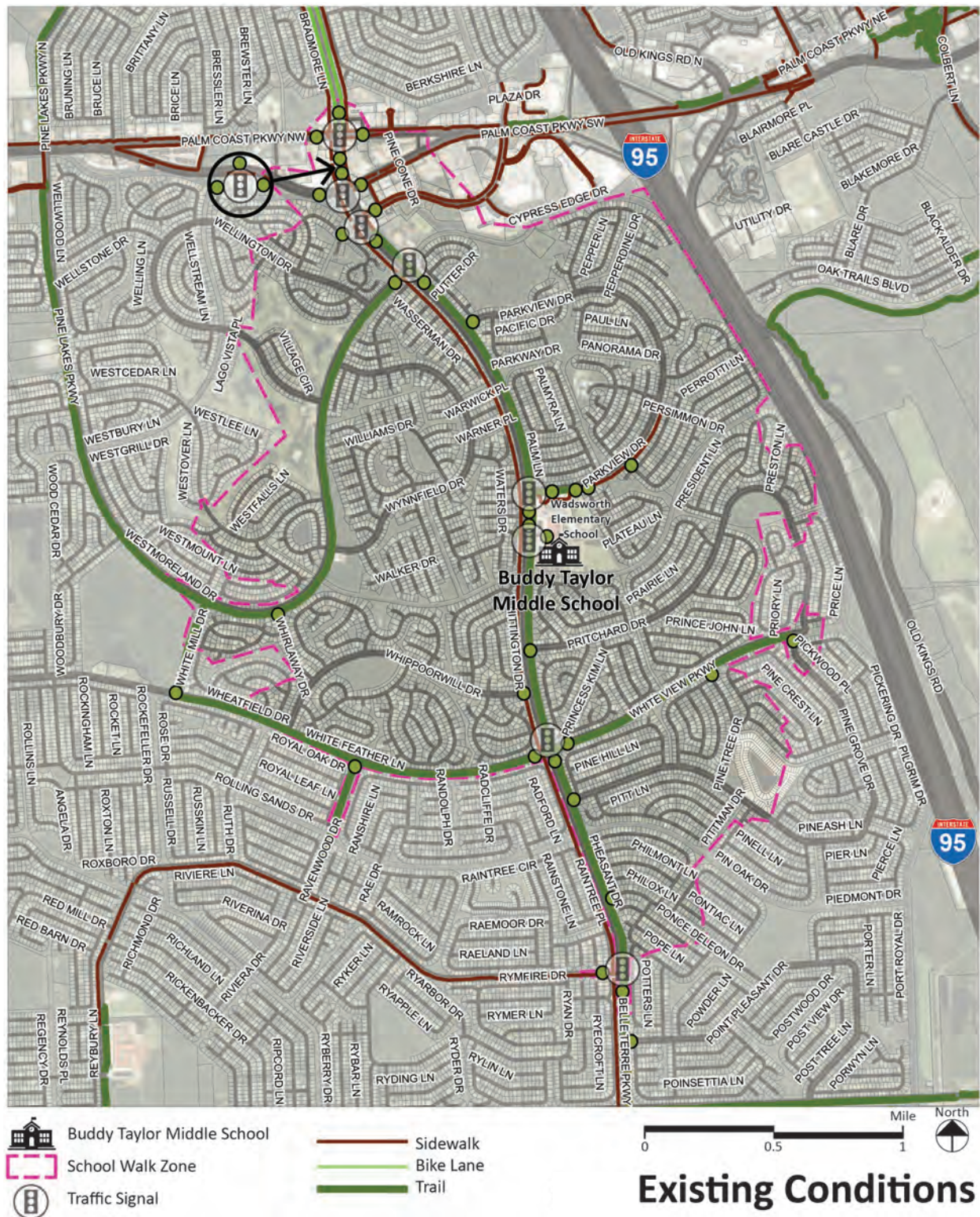


Figure 3: Existing conditions





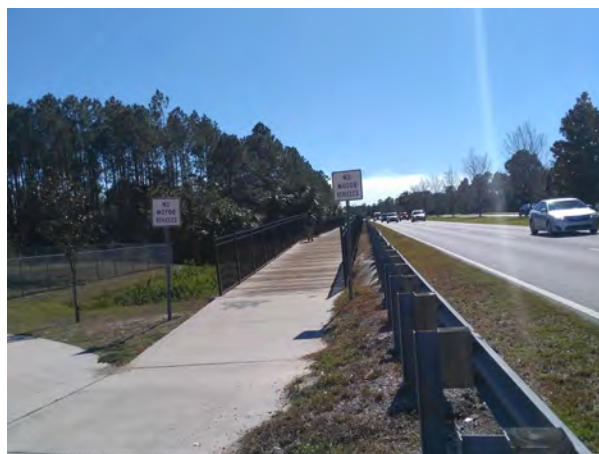
*Flashing school zone speed sign on Parkview Drive.*



*Relatively well-utilized bike parking at Buddy Taylor Middle School.*



*Buddy Taylor Middle School Students crossing the street with the aid of crossing guards.*



*Trail bridge south of campus.*

**Existing Land Use:** Most of the existing land uses within the school's walk zone consists of single family detached residential houses. A few properties in the northern portion of the walk zone are multi family residential properties, or commercial and retail centers. There is also a small concentration of multi family housing east and south of campus, and a retail center off of Wynnfield Drive and Pine Lakes Parkway. Figure 4 maps the existing land uses.





Figure 4: Existing land use



**School Campus:** The school campus has one entrance on Belle Terre Parkway; the drop-off and pick-up queue path “snakes” through the front of campus, and the exits through the same driveway. The queue path is shown in Figure 5, at right.

The pick-up and drop-off path is a single lane wide and the full queue path is approximately .5 miles in length. It was observed that some parents pulled up next to the guard rail on Belle Terre Parkway to avoid waiting in this queue. Relatively few students were observed crossing at the school driveway and Belle Terre Parkway intersection. The crossing guard noted that 12 to 15 students cross at the intersection each morning and afternoon. Given the length of the pick-up and drop-off queue, and based on anecdotal reports, parents may be dropping their kids off on Parkview Drive or further south on Belle Terre Parkway and having them walk to the campus from there. It appears that the majority of the students who walk and bike to school enter the area from the path on the east side of Belle Terre Parkway from the south.

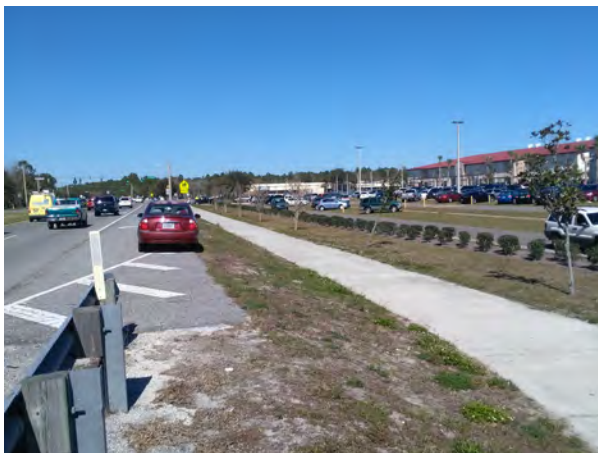
Once bicycle rack was observed on campus, holding about 15 bicycles.



*A line of cars waiting to enter the pick-up queue on Belle Terre Parkway.*



*Pedestrian and bike trail to the south of the Buddy Taylor Middle School.*



*Parents avoiding pick-up queue by pulling off of Belle Terre Parkway.*



*Students approaching bicycle and pedestrian trail south of Buddy Taylor Middle School.*



Figure 5: School campus with drop-off and pick-up queue route.



## Coordination Meeting

The coordination meeting for Buddy Taylor Middle School was held at the school on January 31st, 2017. The meeting was attended by representatives from the Flagler County School Board, Buddy Taylor Middle School, City of Palm Coast, Flagler County Sheriff's Office, River to Sea TPO, and Kittelson & Associates.

- Adam Burghdoff, Kittelson & Associates
- Sean Castello, City of Palm Coast
- John Fanelli, Buddy Taylor Middle School
- Liz Gordon, Kittelson & Associates
- Stephan Harris, River to Sea TPO
- Denise Harshberger, Buddy Taylor Middle School
- Wendy Hickey, Flagler County
- William Lowe, Sheriff's Office
- Nathan Lovelette, Buddy Taylor Middle School
- Winnie Oden, Flagler County School Board
- Jose Papa, City of Palm Coast
- Alexander Spiller, Flagler County

Stephan Harris and Adam Burghdoff introduced the purpose and explained the study background. This introduction was followed up a group discussion. Following were the main points of the follow up discussion:

- Buddy Taylor Middle School hours were confirmed to be from 7:20 AM - 1:25 PM
- Site review periods for arrival/dismissal was decided as follows:
  - Arrival field review period - 6:45 to 7:45 AM
  - Dismissal field review period- 1:00 to 2:15 PM
- Major pick-up and drop-off concerns were mostly related to parental behavior
- Many parents wait for students at various places off campus
- Some parents drop their students off near campus and have them walk, to avoid the queue
- The school enforces a single line drop-off and pick-up
- There are two crossing guards in AM and PM at the intersection of Belle Terre Parkway and the driveway of Buddy Taylor Middle School

- A queue to enter the school drop-off and pick-up line often spills into the turn lane south of the school entrance
- Approximately 25 bikes were observed in a school bike rack
- Crossing guards report 12 to 15 bicyclists and pedestrians during each drop-off and pick-up period
- There is a 20MPH school zone with flashing yellow signal on Belle Terre Parkway and on Parkview Drive
- The trail that connects neighborhoods west of the school to Belle Terre Parkway is an important bicycle and pedestrian connection for the students
- Getting parents to obey the stated pick-up and drop-off protocol is challenging for school administrators
- The gate from the school onto Parkview Drive is closed to force parents to use the drop-off queue as intended
- Some parents arrive very early to pick up students after school
- A complete trip through the pick-up or drop-off queue can take over an hour under some circumstances

## Field Review Observations

The field review for Buddy Taylor Middle School was conducted on January 31st, 2017 by Kittelson & Associates, Inc. The field review observed the drop-off activity from 6:45 to 8:15 AM and pick-up activity from 1:00 to 2:15 PM. The field review also included interacting with the crossing guards and observing and documenting conditions within the school's walk zone.

Following are the observations from the field review.

### General Observations:

#### School Entrance on Belle Terre Parkway

- There is a crossing guard posted at Belle Terre Parkway and the school driveway
- There is another legal, signalized crossing of Belle Terre Parkway at Parkview Drive
- Several students were observed using the crossing without crossing guards posted

### Drop-Off Observations:

#### School Entrance on Belle Terre Parkway

- There is no crossing guard posted at Belle Terre Parkway and Parkview Drive during the Buddy Taylor Middle School drop-off or pick-up period
- There is another legal, signalized crossing of Belle Terre Parkway to the south, and this crossing does have two crossing guards posted



*Trail spur and sidewalk on West side of Belle Terre Parkway and Parkview Drive intersection*

- The crossing guards estimated 12 to 15 students walking and biking through their intersection each day

**Pick-Up Observations:**

- Some parents picked up students at unsanctioned locations such as next to the pedestrian trail south of school, on the grass shoulder
- The queue to enter the campus spilled back into the turn lane south of the school entrance
- Large groups of students congregate at the pedestrian trail bridge south of the Buddy Taylor Middle School

**Walk Zone Observations:**

- Belle Terre Parkway and Parkview Drive have sidewalks; most local streets do not, including some streets with significant pedestrian demand such as Whippoorwill Drive
- Belle Terre Parkway also has an approximately 10 foot wide trail on the east side
- Whippoorwill Drive, Pritchard Drive, and Wynnfield Drive combine of higher speed and volume vehicle traffic with a lack of sidewalks, and are likely to carry pedestrians due to their connectivity to the broader street network
- Most local streets do not include sidewalks and have open drainage areas on each side



*Line of buses waiting to enter Buddy Taylor Middle School, yielding to students*

## Implementation Report

This section of the report will build on analysis and observations documented in the Assessment Report to make recommendations. The purpose of the Implementation Report for the Bicycle and Pedestrian School Safety Review Study is to conduct a constructibility review and develop a cost feasibility plan. While only a relatively small subset of the students living within the Buddy Taylor Middle School's walk zone walk or bike to school, there are opportunities to improve their safety, and also to make walking and biking a more inviting option for more students. Location specific recommendations are listed below.

### Walk Zone Related Recommendations:

#### Location: The east side of Belle Terre Parkway

**Observation:** Parents are parking on grass shoulders to drop-off and pick-up students to avoid waiting in the queue within the school campus.

**Recommendation:** Install no parking signs along these sections of Parkview Drive and enforce no parking regulation by periodically issuing tickets.

**Observation:** It was mentioned several times by the crossing guard, and school staff members that motorists are driving over the posted speed limit of 20 MPH during flashing yellow signal.

**Recommendation:** Periodically place speed monitoring trailers to remind drivers that they are driving over the posted speed limit; law enforcement officers should periodically monitor the school walk zone to ensure that motorists are following the rules; if it is found that motorists are driving over the posted speed limit then the Flagler County Sheriff's Office should consider issuing fines during school arrival and dismissal times.



*Students waiting to cross Belle Terre Parkway with the assistance of a crossing guard*

#### Location: Whippoorwill Drive, Parkview Drive, Pritchard Drive

**Observation:** There is limited sidewalk present on these three through streets that loop around to connect the neighborhoods. Pedestrians, including students, walk in the street, and on grass shoulders where available. The recent pedestrian fatality on Whippoorwill Drive is an indication of the safety concern in these locations.

**Recommendation:** Perform Pedestrian Accommodation Feasibility Studies for these streets. The dangerous combination of higher vehicle traffic volumes and speeds and pedestrian demand justify a detailed look at options for these locations.



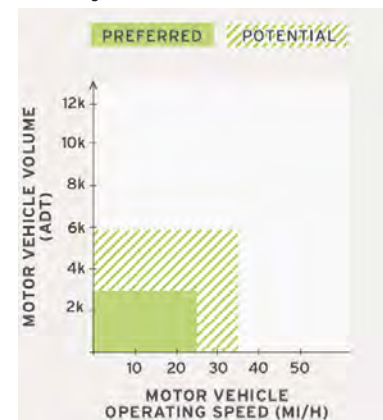
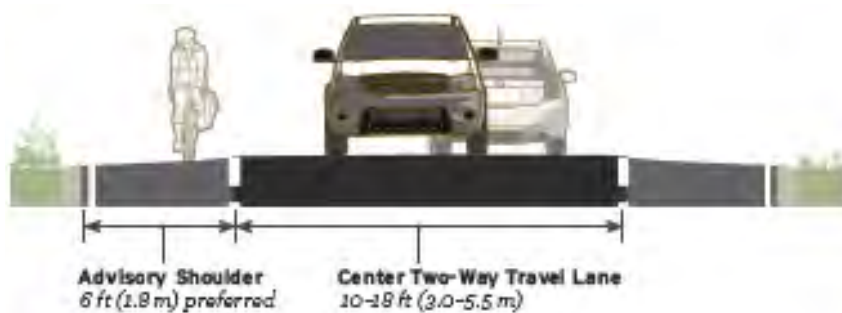
Based on the FHWA's *Small Town and Rural Multimodal Networks* report, roads with advisory shoulder accommodate low to moderate volumes of two-way motor vehicle traffic and provide a prioritized space for bicyclists and pedestrians with little or no widening of the paved roadway surface. It is recommended to use signs to warn road users of the special characteristics of the street. See the below recommendation for Plainview Drive and Pebble Beach Drive.

Potential signs include:

- A pedestrian (W11-2) warning sign with ON ROADWAY legend plaque.
- Use a Two-Way Traffic warning sign (W6-3) to clarify two-way operation of the road if any confusion exists.

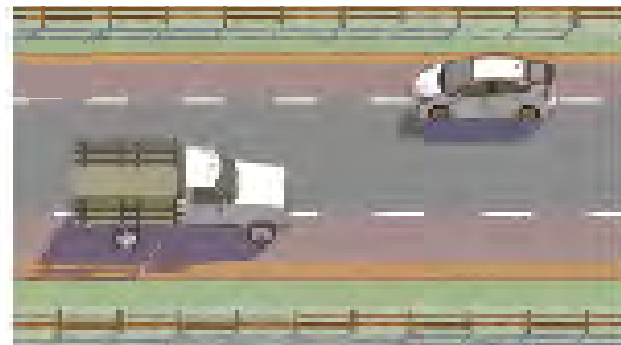
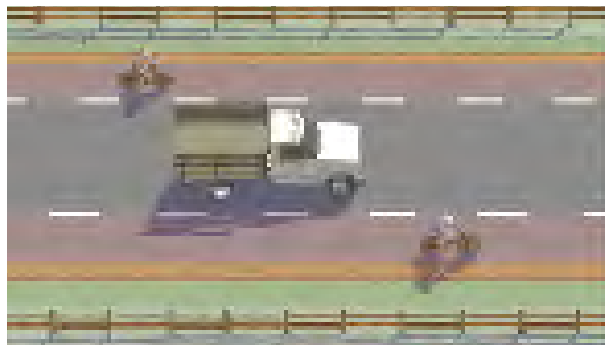


In order to install advisory shoulders, an approved request to experiment is required as detailed in the MUTCD 2009, Sec. 1A.10. FHWA is also accepting requests for experimentation with a similar treatment called "dashed bicycle lanes."



The advisory shoulder space is a visually distinct area on the edge of the roadway, offering a prioritized space for people to bicycle and walk. The preferred width of the advisory shoulder space is 6 feet. Absolute minimum width is 4 feet when no curb and gutter is present.

Preferred and potential traffic volumes and speed limits for advisory shoulder treatment.



Unlike a conventional shoulder, an advisory shoulder is a part of the traveled way, and it is expected that vehicles will regularly encounter meeting or passing situations where driving in the advisory shoulder is necessary and safe. When vehicles traveling in opposite directions meet, motorists may need to enter the advisory shoulder for clear passage.

### **Location: Plainview Drive and Pebble Beach Drive**

**Observation:** Local streets that have low vehicle volumes and speeds do not have sidewalks and drainage location will prove challenging to the construction of sidewalks, and pedestrian volumes are low.

**Recommendation:** Assess the feasibility of an advisory shoulder pilot project to increase bicycle and pedestrian safety on low speed, low volume neighborhood streets.

### **Location: Entrance to campus on Belle Terre Parkway**

**Observation:** Some cars spill onto Belle Terre Parkway when attempting to enter the school grounds. Limited capacity at traffic signals for turning cars encourages parents to break rules to avoid the queue.

**Recommendation:** Attempt to shorten the pick-up and drop-off queues. This can be done by rearranging the queue patterns (as shown at right), speeding loading and unloading, or reducing the number of students being dropped off and picked up.

### **Other Programmatic Recommendations:**

**Observation:** Based on the observation of the drop-off and pick-up periods, school officials and crossing guards proactively manage a queue of cars as well as students and adults who are walking or riding bikes to ensure the safety of all. To the extent that dangerous situations were observed during these times, they occurred at school driveways as vehicles turning into or out of the campus rushed to take advantage of a gap in traffic on Belle Terre Parkway.

**Recommendation:** Reducing the number of students dropped off and picked up each day is one way to reduce these conflicts and overall congestion during drop-off and pick-up periods.

Programs that could reduce the number of students driven to school include:



*Cars being forced to yield to pedestrians by crossing guards*



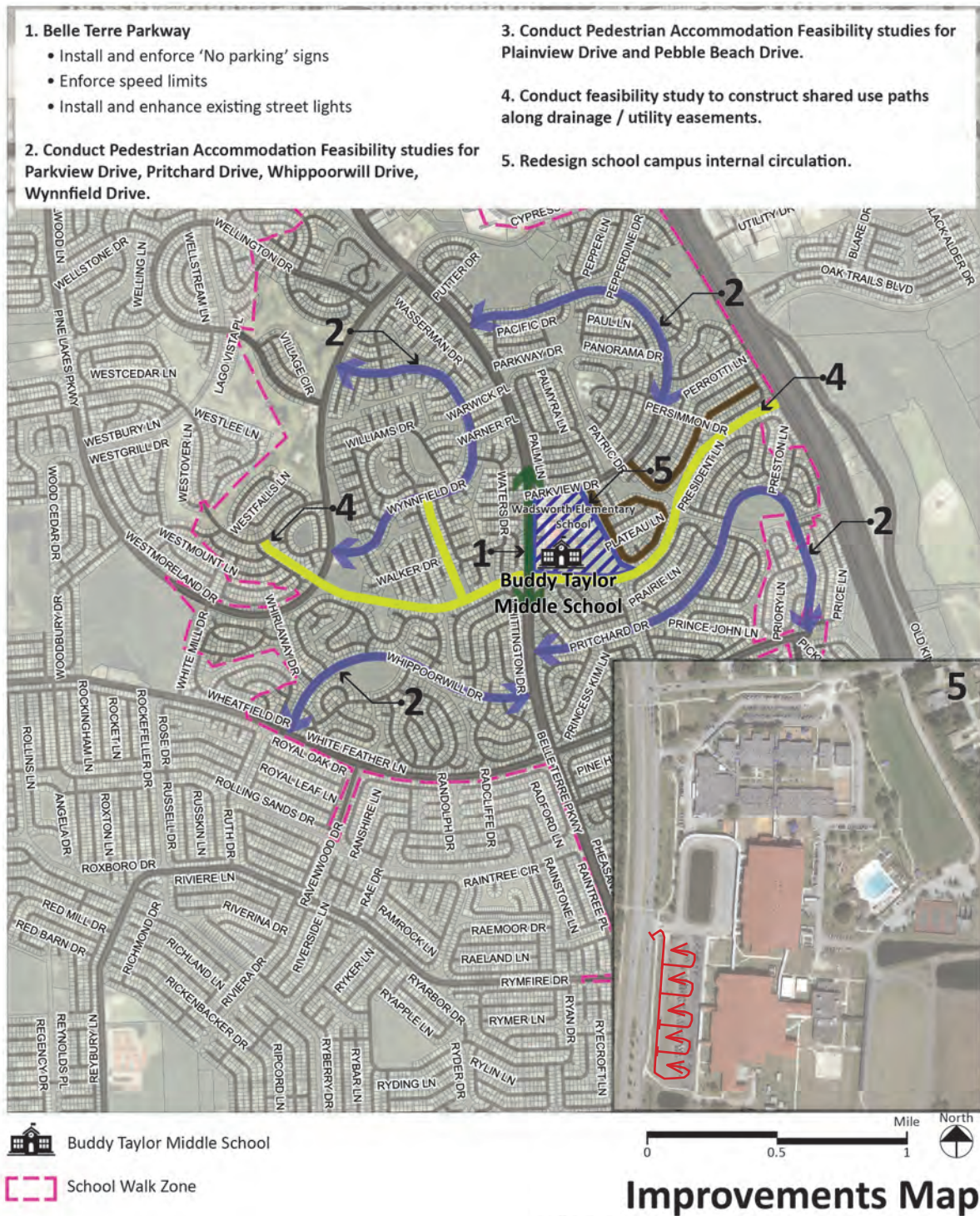


Figure 4: Improvements map

- Station additional crossing guards at the Buddy Taylor Middle School driveway. This is a legal, signalized crossing and students will continue to use it.
- A walking school bus program. Walking school buses provide some supervision and “safety in numbers” to students who choose to walk, reducing safety concerns associated with allowing students to walk by themselves. Best practices for walking school bus programs are well established, and the National Center for Safe Routes to School offers online training modules for schools seeking to start one. [http://apps.saferoutesinfo.org/training/walking\\_school\\_bus/modules.cfm](http://apps.saferoutesinfo.org/training/walking_school_bus/modules.cfm)
- Increased frequency of walk and bike to school days.



*Cars waiting in the turn lane to pick up students*



*Queue in the right turn lane of parents waiting to enter Buddy Taylor Middle School*

## **School Campus Related Recommendations:**

Look for opportunities to shorten the drop-off and pick-up queues. Some unsafe behavior is due to parents pulling up adjacent to the school campus to avoid this queue. One possibility is to use the current bus loop as the drop-off loop, with cars in a double line, operating as a right-in, right-out.

Consider posting crossing guards where the buses exit campus, due to the high pedestrian volumes that cross there.

## **Recommended Priority Projects:**

This section lists all the recommended priority engineering and construction projects that address the observations and recommendations noted in the earlier section. However, it does not list educational, enforcement, and policy changes which are also recommended in the earlier section.

The following engineering and construction projects are recommended to be implemented as part of this Buddy Taylor Middle School Bicycle and Pedestrian school Safety Review study:

### **Walk Zone Improvement Projects**

- Perform a Pedestrian Accommodation Feasibility Study for Parkview Drive, and the lengths of Whippoorwill Drive and Pritchard Drive
- Conduct an advisory shoulder feasibility study for a pilot project Plainview Drive and Pebble Beach Drive

**Campus Projects**

- Prioritize measures to shorten the drop-off and pick-up queues; many other safety concerns stem from people avoiding these queues. This includes reorganizing the queue, possibly to parallel loops in the current queue area, as shown in Figure 4, and promoting walking and biking to school
- Station crossing guards at both intersections with Belle Terre Parkway (Parkview Drive and the Buddy Taylor Middle School Driveway).

**Constructibility of Priority Projects:**

The recommended projects consist of programming, queue changes, and other non-engineering measures. Therefore, an engineering project cost matrix is not included.

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# Appendices

