

Bicycle and Pedestrian School Safety Review Study

Assessment Report Sweetwater Elementary School *Port Orange, FL*



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**Volusia County Metropolitan Planning Organization
Bicycle and Pedestrian School Safety Review Study**

**Assessment Report
Sweetwater Elementary
*Port Orange, FL***

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EXECUTIVE SUMMARY

Lassiter Transportation Group, Inc. (LTG) was contracted by the Volusia County Metropolitan Planning Organization (MPO) to prepare an Assessment Report for the Bicycle and Pedestrian School Safety Review Study for 17 Volusia County schools. The Assessment Report for the Bicycle and Pedestrian School Safety Review Study will enable the Volusia County MPO to make recommendations for projects that will improve the walkability of students living within the school walk zone. The subject of this Assessment Report is Sweetwater Elementary School.

Purpose

The purpose of this study is to create a safe environment for students to walk or bicycle to school. The goal for the assessment phase of the Bicycle and Pedestrian School Safety Review Study is to provide the Volusia County MPO with a comprehensive study that will delineate 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 to evaluate safety issues that may affect students walking or bicycling to school.

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). This has caused 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 their bicycle to school.

- Increased practice of safe bicycle, pedestrian, and traffic skills
- Knowledge of their environment
- Improve childhood health
- Improve sense of self-image and autonomy
- Reduce childhood obesity
- Contributes to a 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 the congestion on the roads
- Decreased opportunities for traffic accidents
- Improved air quality
- Improved community security
- Reduced fuel consumption
- Enhanced community accessibility
- Increased community involvement
- Improved partnerships among schools, parents, community groups, and the local government leaders

Table 1 summarizes the recommendations documented in this report.

Table 1
Findings and Recommendations
Sweetwater Elementary School Assessment Study

Location	Observations	Recommendations
On-Campus		
East of School Campus on Victoria Gardens Boulevard	Pedestrians park in right-of-way & cross Victoria Gardens Boulevard without aid of crossing guard	Intersection should be monitored for safety concerns; crossing guard should be provided at this intersection
East of School Campus on Victoria Gardens Boulevard	Collection of vehicles in right-of-way on the east side of Victoria Gardens Boulevard	Crossing guard should be provided at this location
Entrance to Teachers' Parking Lot/Bus Loop on Victoria Gardens Boulevard	Illegal u-turns	NO U-TURN (R3-4) signs should be installed, facing northbound traffic on Victoria Gardens Boulevard
Existing Crossing Guard Location North of Applevue Way and Victoria Gardens Boulevard	Crossing guard uses hand signals to direct traffic	Crossing guards should use STOP paddles while directing traffic
Existing Crossing Guard Location North of Applevue Way and Victoria Gardens Boulevard	School crosswalk marking has faded	Repaint school crosswalk with thermoplastic paint (consider in conjunction with the next recommendation)
Existing Crossing Guard Location North of Applevue Way and Victoria Gardens Boulevard	Existing location does not provide for northbound drop-off	Relocate crossing guard to south of Applevue Way at the intersection of Victoria Gardens Boulevard and Applevue Way
Off-Campus		
Clyde Morris Boulevard and Victoria Gardens Boulevard	Three restrictive signs are being disregarded	Implement law enforcement periodically to reduce violations
Taylor Road and Clyde Morris Boulevard	High congestion during arrival and dismissal times for Spruce Creek High School Students	No walk route recommended that would cross entrances to high school students' parking lot
Southwest quadrant of Taylor Road and Boggs Ford Road	Sidewalk has no landing	Landing, along with detectable warnings, should be installed
Southwest quadrant of Taylor Road and Boggs Ford Road	Southwest quadrant sidewalks end at flume drainage feature	Curb ramp should be installed at the intersection of the two sidewalks; crosswalk markings installed to connect the ramps on either side of Boggs Ford Road; relocate STOP line; install detectable warnings
Southeast quadrant of Taylor Road and Boggs Ford Road	No detectable warnings at curb ramp	Detectable warnings should be installed at the curb ramp to meet ADA and FDOT standards
Southwest quadrant of Taylor Road and Boggs Ford Road	Damaged utility pull box cover	Damaged utility pull box cover should be replaced
Pedestrian and Bicycling Bridge on Taylor Road	No protection at drop-off gap between headwall guiderail and bridge guiderail	Aluminum guardrail (FDOT Index No. 870) should be installed to connect the headwall guiderail to the bridge guiderail

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INTRODUCTION

LTG has been given the task of conducting an Assessment Report for Sweetwater Elementary School as part of a Bicycle and Pedestrian School Safety Review Study for the Volusia County MPO. A site map that also contains the walk zone of the school is presented as Figure 1. Sweetwater Elementary School is located at 5800 Victoria Gardens Boulevard, east of Clyde Morris Boulevard, in the City of Port Orange. The purpose of this study is to evaluate the walk zone of Sweetwater Elementary School for any safety issues that students might encounter if they choose to walk or bicycle to school.

Background on Sweetwater Elementary School

Sweetwater Elementary School was built in 1993-1994 and is currently in its 16th year of operation. It originally opened with 624 students. Since that time, the school has gone through a population shift wherein the enrollment was as high as 1,050 students and has since decreased to its current enrollment of 653 students. The Principal of Sweetwater Elementary is Patricia Miller and the Vice Principal is Dr. Hollie Newnam.

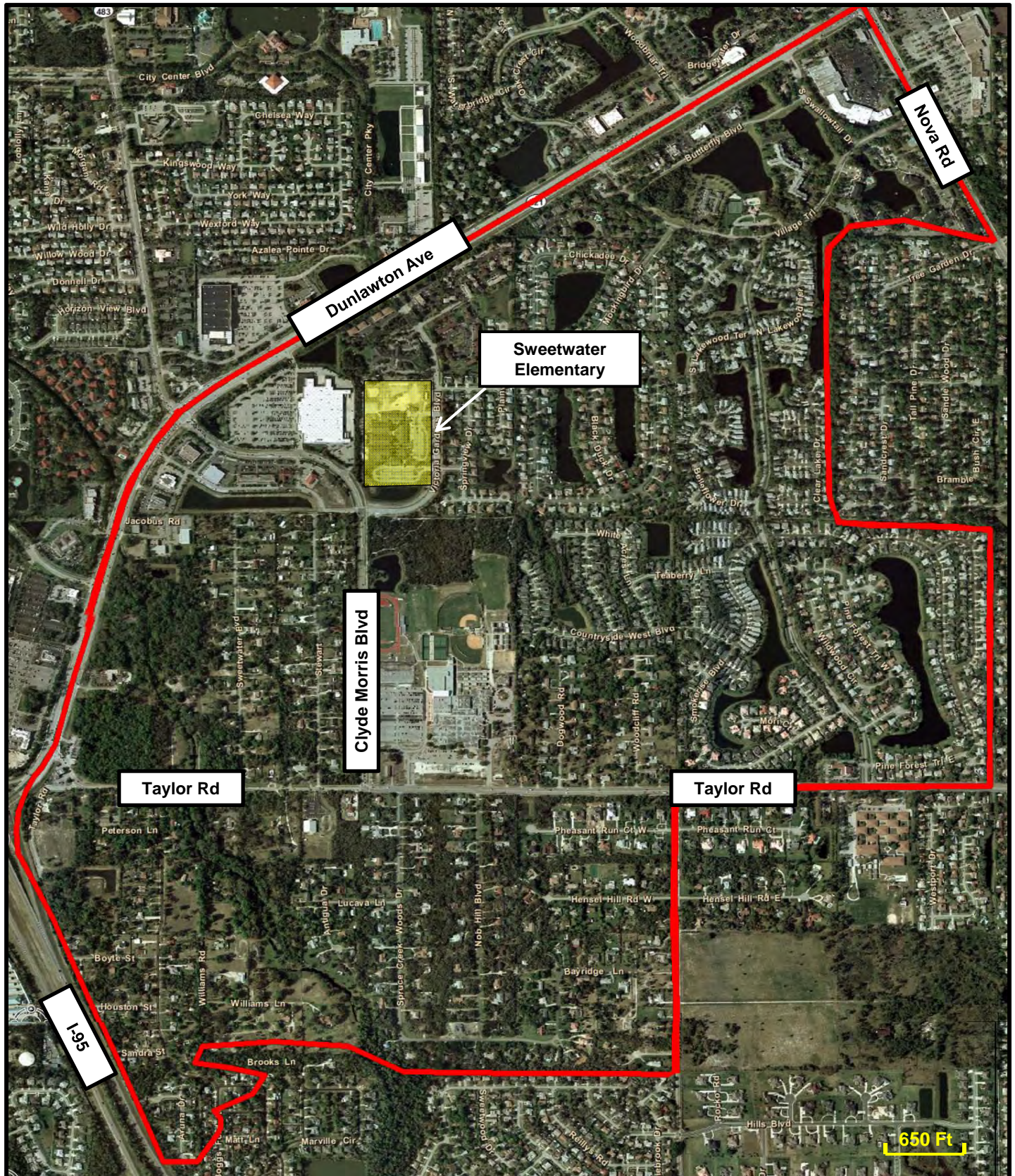
Sweetwater Elementary School has an excellent support staff as well as strong parental support in the form of volunteering. Over 13,000 volunteer hours were accounted for in the 2008-2009 school year. For the past 15 years, this school has earned the Florida “Five Star School” Award which is based on 100% community involvement from the categories of Business Partnerships, Family Involvement, Volunteers, Student Community Service, and School Advisory Councils. Business Partners are an integral part of Sweetwater Elementary School's incentive program because students build self-esteem and awareness through awards of discount coupons and earning certificates from the local businesses.

The following data was given:

- **Number of Volusia County Buses in Use:** 8
- **Daycare Buses that Drop-Off and Pick-Up:** 8
- **Percentage of Bus Riders:** Approximately 21%
- **Crossing Guard Location:** North of Victoria Gardens Boulevard and Appleview Way
- **Student Population:** 653 Students



Illustration 1: Bus Drop-Off/Pick-up

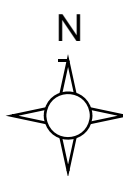


Sweetwater Elementary School
Bicycle and Pedestrian Safety Study
Port Orange, Florida

Student Walk-Zone

Figure 1

Page 4



Lassiter Transportation Group, Inc.
Engineering and Planning

Safe Routes to School Student Arrival and Departure Tally Sheet

The purpose of conducting a *Safe Routes to School Student Arrival and Departure Tally Sheet* is to show how students plan to travel to and from school. If students prefer to be dropped-off or picked-up rather than walk or bicycle to school, then safety issues can be associated with this decision.

The *Safe Routes to School Student Arrival and Departure Tally Sheet* data was collected for Sweetwater Elementary for the 2009-2010 school years. The tally was taken on a Tuesday and Wednesday, in the morning and afternoon. The data collected presented the number of students that walked, bicycled, rode the school bus, had a parent drop-off and pick-up, carpoled, arrived via transit, or had other modes of transportation, such as riding a scooter or skateboard, in the mornings and afternoons. Figures 2 and 3 show how Sweetwater Elementary School students choose to travel to and from school.

Figure 2
A.M. Travel Plans
Sweetwater Elementary School Assessment Study

A.M. Transportation

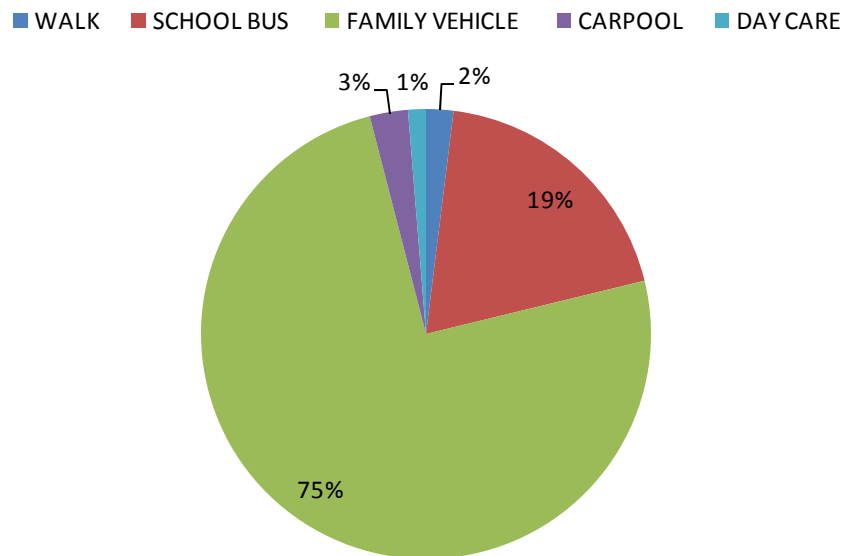


Figure 3 shows that 75% of the students preferred to travel to school with the use of a family vehicle, 19% of the students preferred to ride the bus, 3% of the students preferred to carpool, 2% of the students preferred to walk to school, and 1% of the students had a day care van drop them off to school. No students used public transportation, bicycles, nor other means of transportation to get to school.

Figure 3
P.M. Travel Plans
Sweetwater Elementary School Assessment Study

P.M. Transportation

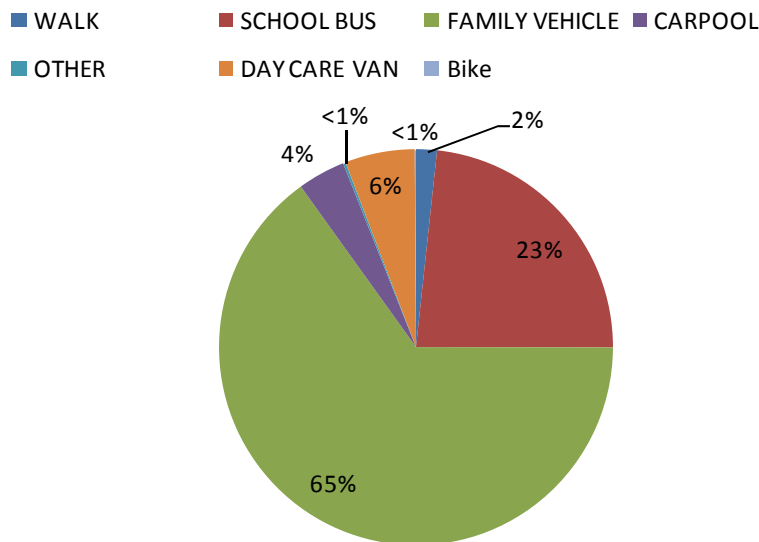


Figure 4 shows that 65% of the students preferred to travel home with the use of a family vehicle, 23% of the students preferred to ride the bus, 6% of the students preferred to have a day care van pick them up, 4% of the students preferred to carpool, 2% of the students preferred walk to school, and less than 1% of the students preferred to ride their bicycles or choose an alternative method of transportation. No students used public transportation as a means of transportation to get home.

Survey About Walking and Biking to School for Parents

The *Survey About Walking and Biking to School for Parents*, another tool developed by the SRTS, was also analyzed. In order to establish a parent's point of view on students walking to and from school, this survey was sent out to all the parents of Sweetwater Elementary School students. Parents preferred not to have their children walk or bicycle to school primarily because of issues with speeding drivers and high volumes of traffic en route to school, safety at the intersections, and no crossing guards/adult supervision. From the survey, many parents were open to having their children walk or bicycle to school but improvements should be made to make this option safer. Helpful suggestions made by some of the parents that support walking or bicycling included creating a group/unit of kids that ride to school and a safer walking or bicycling route for students having to walk or ride near Spruce Creek High School.

Crash Data

Pedestrian and bicycle crash data for Sweetwater Elementary School's walk zone was obtained from Volusia County and is presented in Table 2. The data in Table 2 was generated based on the following guidelines:

- Data was collected during the time frames of 7:15 a.m.-8:15 a.m. and 1:45 p.m.-2:30 p.m. on Mondays, Tuesdays, Thursdays, and Fridays
- Data was collected during the time frames of 7:15 a.m.-8:15 a.m. and 12:45 p.m.-1:30 p.m. on Wednesdays
- Data was collected within the walk zone of the school
- Crashes occurring within the last three years

Table 2
Bicycle and Pedestrian Crash Data for Sweetwater Elementary School
Sweetwater Elementary School Assessment Study

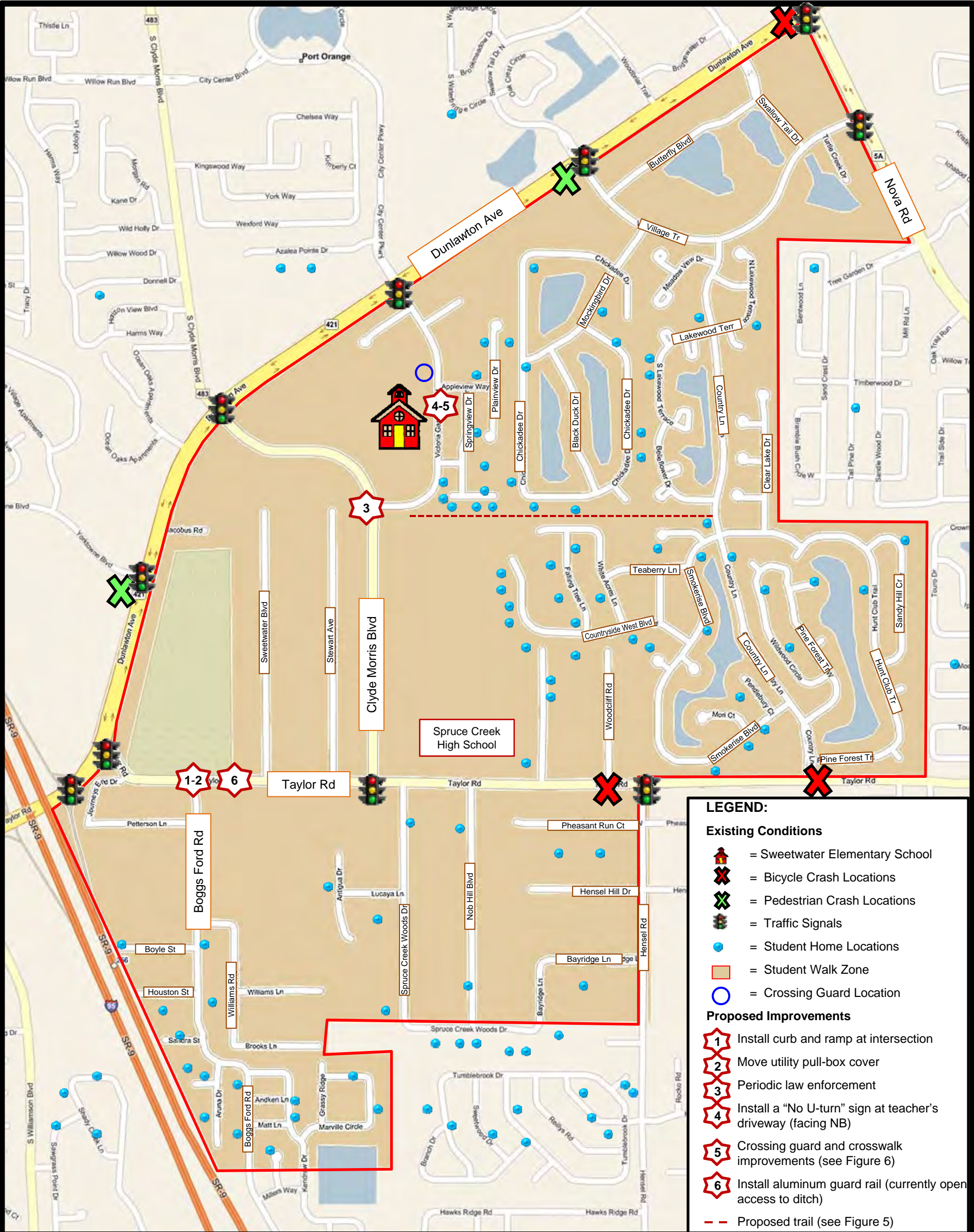
DATE	ACCIDENT INTERSECTION	BICYCLE/PEDESTRIAN INVOLVMENT	DAY/NIGHT
08/28/07	Woodcliff Rd and Taylor Rd	BICYCLE	Daylight
09/26/07	Country Ln and Taylor Rd	BICYCLE	Daylight
11/29/07	Dunlawton Ave and Yorktowne Blvd	DISABLED PEDESTRIAN	Daylight
09/16/08	Dunlawton Ave and Swallow Tail Dr	PEDESTRIAN	Daylight
02/18/09	Dunlawton Ave and Nova Road	BICYCLE	Daylight

A graphical representation of the crash sites is located in Figure 4. Data collected for this table is shown in Appendix C. The crash data shows that within the walk zone, there were three bicycle related accidents, one pedestrian related accident, and one pedestrian operating an electrical mobility device related accident. It should be noted that the pedestrians and bicyclists listed above are not within the age range of elementary school students; therefore, no conclusions can be drawn from this data relative to elementary school student safety hazards. The high crash areas included segments of Dunlawton Avenue with three accidents, and segments of Taylor road with two accidents. It should also be noted that all of these crashes occurred on the periphery of the walk zone and, therefore, the likelihood of involvement of elementary school students is minimal. All of the crashes occurred during a dry period.



Illustration 2: 86 Year-Old Male Bicyclist was Hit and Killed by a Speeding Driver at 3 P.M.

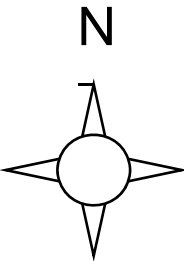
A fatal crash occurred at the intersection of Clyde Morris Boulevard and Victoria Gardens Boulevard, as shown in Illustration 2, on Friday, February 26, 2010 at around 3 p.m. The crash involved an 86 year-old male bicyclist who was hit and killed by a speeding driver while crossing Clyde Morris Boulevard.



Sweetwater Elementary School
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Existing/Proposed Conditions

Figure 4
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INTERVIEWS

LTG interviewed the Principal of Sweetwater Elementary, Patricia Miller, and the Crossing Guard Supervisor, Cindy Pagliari. These interviews identified areas that needed to be investigated even though they may not have been considered high crash areas after reviewing the County-provided crash data.

Principal Patricia Miller

Principal Miller was interviewed at Sweetwater Elementary School on March 4, 2010. Vice-Principal Dr. Hollie Newnam was also present at this interview. They stated that the sidewalk network to the school is in good condition, except for a 250-foot segment located in the southwest quadrant of Clyde Morris Boulevard and Dunlawton Avenue, adjacent to the Walgreens Drug Store. However, this segment of sidewalk is on the MPO's List of Prioritized XU Bicycle/Pedestrian Projects.

The following information was gathered during the interview from Principal Miller and Vice-Principal Newnam:

- Students can arrive on campus at 7:15 A.M. for extra-curricular activities
- The school session start at 7:55 a.m. and ends at 2:05 p.m.
- Students arrive to and from school mostly by parent drop-off and pick-up
- Students who live within the walk zone still get dropped-off and picked-up
- Spruce Creek High School is a hazardous area for students to maneuver during the morning
- The majority of elementary age students live south of Taylor Road
- Four to five teachers assist during the arrival and dismissal times

The needs of the school have changed over time for many reasons. Sweetwater Elementary School used to have more walkers. However, the Victoria Gardens Apartments and the housing developments across from the school mostly have middle and high school aged students.

There is an existing safety concern that is caused by parents parking opposite the school premises on Victoria Gardens Boulevard, as shown in Illustration 3. They park across the street from Sweetwater Elementary School to avoid the waiting queue where the students are dropped-off or picked-up. The students cross Victoria Gardens

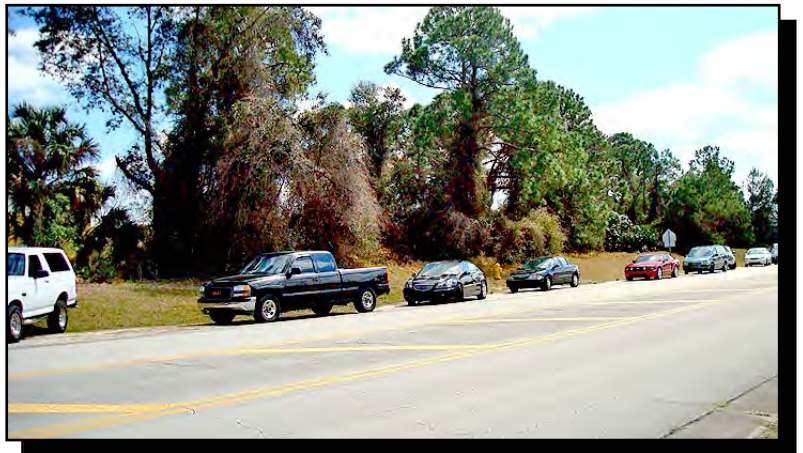


Illustration 3: Motorists Parking on the Eastern Side of Sweetwater Elementary School Campus on Victoria Gardens Boulevard

Boulevard without the aid of the crossing guard north of the intersection of Victoria Gardens Boulevard and Applevue Way. During the hours of arrival and dismissal, Victoria Gardens Boulevard is congested and unsafe for students to cross without the aid of a crossing guard, as shown in Illustration 4. Sweetwater Elementary School uses cones and NO PARKING signs in an attempt to dissuade parents from dangerous driving.

Students who live within the walk zone are still being dropped-off and picked-up. This is primarily because of the crossing at the intersection of Taylor Road and Clyde Morris Boulevard. Most of the students attending Sweetwater Elementary School live south of Taylor Road. The intersection of Clyde Morris Boulevard and Taylor Road frequently has speeding drivers, including students from Spruce Creek High School. Some of the Sweetwater Elementary School students that are heading to Taylor Road and Clyde Morris Boulevard must cross the driveway of the high school on Taylor Road and on Clyde Morris Boulevard. This interaction happens in the morning when the elementary students arrive early to school for breakfast, music lessons, or guard duty.

The school has asked for increased police assistance but it was not warranted due to the low enrollment numbers. However, a police on bicycle assists about once every three weeks and issues speeding tickets to drivers who are speeding and making illegal u-turns.

Sweetwater Elementary School promotes safety by providing in-school education on bicycle safety. The police department has joined with the school and provides free helmets to student riders.

Crossing Guard Supervisor, Cindy Pagliari

In 1992, the Florida Legislature implemented the Ramon Turnquest School Crossing Guard Act, now incorporated in the Florida Statutes. As indicated in the 2009 edition of the *Florida School Crossing Guard Training Guidelines* manual, this act requires crossing guards to be trained according to FDOT standards. These guidelines include classroom instructions and practical instructions. School crossing guards are responsible for the safety of the students that cross at their stations. The Volusia County crossing guards are overseen by the Sheriff's Department.

The only crossing guard station for Sweetwater Elementary School is at the intersection of Victoria Gardens Boulevard and Applevue Way, as shown in Illustrations 5-7. This location currently crosses 15-20 students



Illustration 4: Congestion at the Entrance of the Parent Loop on Victoria Gardens Boulevard



Illustration 5: Crossing Guard Location North of Victoria Gardens Boulevard and Applevue Way

during arrival and dismissal times. Students crossing at this location come from the Victoria Gardens Apartments and the various single-family developments located across from Sweetwater Elementary School on Victoria Gardens Boulevard, as shown in Illustration 6. Cindy Pagliari, the crossing guard supervisor, has been living in the Sweetwater Elementary School neighborhood for 25 years. She was a crossing guard at the intersection of Clyde Morris Boulevard and Taylor Road for 13 years but that guard location was closed since no students were crossing at that intersection. She currently supervises nine schools within Volusia County.

Motorists park across from the school and allow students to walk across Victoria Gardens Boulevard to access Sweetwater Elementary School. Drivers tend to drive in excess of the posted school zone speed of 15 mph, as shown in Illustration 7. LTG interviewed the crossing-guard, Debbie Haaf, at the crossing guard station located at Victoria Gardens Boulevard and Appleview Way, as shown in Illustration 5. She expressed concerns about speeding drivers who were not paying attention to the restricted school zone speed limits or were distracted by cell phone usage. These conditions are significantly worse in the mornings.

Hazardous areas within the school walk zone include the intersection of Clyde Morris Boulevard and Victoria Gardens Boulevard where left-turn restrictive signs are being disobeyed. Another hazardous area is the intersection of Boggs Ford Road and Taylor Road. There are many sidewalk issues along Taylor Road, which provides access to Sweetwater Elementary School. Issues include the sidewalk being too close to the road and vehicles traveling at speeds in excess of 35 mph, the posted speed limit.

Safety is the primary concern of crossing guards. Crossing guards verbally provide safety warnings and advice to all students that they cross, which is part of their FDOT crossing guard checklist. A safety procedure that Ms. Pagliari would like to see implemented at Sweetwater Elementary is a Walk-to-School Day, similar to one recently implemented at Westside Elementary in Daytona Beach, where students might meet at the local Applebee's, located at the intersection of Victoria Gardens Boulevard and Dunlawton Avenue. The students, crossing guard(s), parents, and community members/leaders could then walk to school together while the students learn about proper safety procedures.



Illustration 6: Students Accessing Various Single-Family Developments North of School – Crossing Guard Not Using STOP Paddle



Illustration 7: Crossing Guard Practicing Safe Crossing Procedures by Instructing Student to Wait behind Yellow Sidewalk Line

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FINDINGS AND RECOMMENDATIONS

This section of the report includes data collected during the on-site and off-site investigative observations of Sweetwater Elementary School and its walk zone. Intersections of interest were investigated based on comments from Principal Miller and the Crossing Guard Supervisor, Ms. Pagliari, and are presented on a map shown in Figure 4. Figure 4 also shows traffic signals, student homes, existing conditions, and recommendations for improvements within the walk zone.

LTG evaluated the safety of sidewalk features based on conditions that are deemed hazardous in the *2009 Florida Statutes*, the *Americans with Disabilities Act (ADA) of 1990 Guidelines*, the *Manual on Uniform Traffic Control Devices (MUTCD)*, the *Florida Department of Transportation (FDOT)*, and the *Federal Highway Administration (FHWA)*.

For a walkway that is parallel to the road, the *2009 Florida Statutes*, Chapter 1006.23 considers the following conditions to be hazardous:

- If there is not an area at least 4 feet wide adjacent to the road, having a surface upon which students may walk without being required to walk on the road surface
- The road along which students must walk is uncurbed and has a posted speed limit of 55 miles per hour

For walkways that are perpendicular to the road, the *2009 Florida Statutes*, Chapter 1006.23 considers the following conditions to be hazardous:

- If the traffic volume on the road exceeds the rate of 360 vehicles per hour, per direction (including all lanes), during the time students walk to and from school and if the crossing site is uncontrolled (an "uncontrolled crossing site" is an intersection or other designated crossing site where no crossing guard, traffic enforcement officer, or stop sign or other traffic control signal is present during the times students walk to and from school)
- If the total traffic volume on the road exceeds 4,000 vehicles per hour through an intersection or other crossing site controlled by a stop sign or other traffic control signal, unless crossing guards or other traffic enforcement officers are also present during the times students walk to and from school

Traffic counts for roadways in the school walk zone were collected from the City of Port Orange. Victoria Gardens Boulevard, North of Clyde Morris Boulevard and South of Dunlawton Avenue does experience traffic greater than 360 vehicles per hour; however, this is not true for arrival and dismissal times. Only at 6:00 a.m. does traffic exceed the 360 vehicles per hour threshold. Village Trail, South of Dunlawton Avenue, and Country Lane, South of Village Trail, does experience traffic greater than the 360 vehicles per hour threshold and this occurs during the times of arrival and dismissal of Sweetwater Elementary School.

On-Site Investigation - A.M. Observations

LTG visited Sweetwater Elementary School on Wednesday March 3, 2010 during school arrival, 7:40 a.m. to 8:05 a.m., and dismissal, 1:30 p.m. to 2:15 p.m., queuing and exiting time to observe the normal activities that the school would experience on a given day. The following general information was gathered, as shown in Illustrations 8:

- Bicycles Parked in Bicycle Rack: 3
- Number of Skateboards: 1
- Number of Helmets: 4
- Two School Related Flashing Signal Located to the North and South of the School

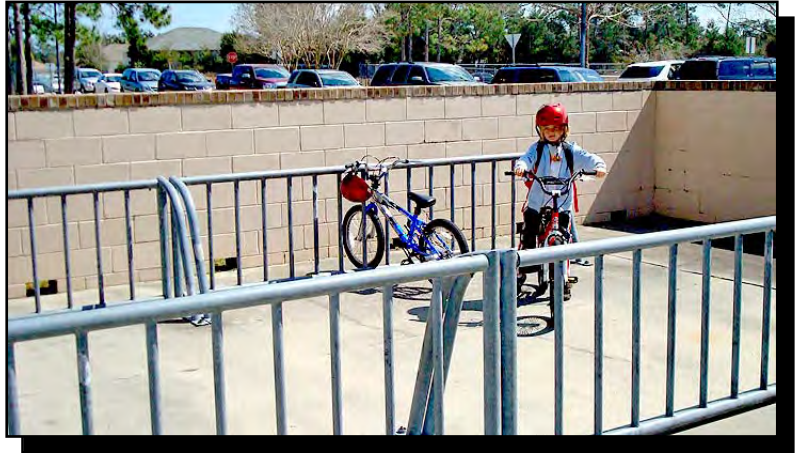


Illustration 8: Bicycle Rack

Observations: LTG began the investigation by observing vehicular traffic on Victoria Gardens Boulevard at the main school entrance. Motorists park in front of the school and students either walk across Victoria Gardens Boulevard to the school campus or are escorted by parents. This can be a hazardous situation during arrival and dismissal times because of traffic congestion and speeding drivers (see Illustration 9).

Recommendations: This situation should be monitored for safety concerns. Students should not be allowed to cross Victoria Gardens Boulevard without an adult.

Observations: It was observed that the parking lot, interior to the parent drop-off loop, filled up quickly. It was also observed that the Victoria Gardens Boulevard parking within the right-of-way began to collect vehicles early. There have been no reported incidents at this location; however, the principal stated concerns with the safety of this crossing.

Recommendations: A crossing guard should be assigned to supervise this crossing location.



Illustration 9: Motorists Park in Front of School Campus on Victoria Gardens Boulevard

Observations: From 7:45 a.m. to 7:55 a.m., seven vehicles were observed making u-turns at the entrance of the teacher parking lot and dropping students off at the curb. These students then walk uncontrolled through the teachers parking lot/bus loop without using a sidewalk.

Recommendations: Northbound u-turns should not be allowed. It is recommended that NO U-TURN (R3-4) signs be installed facing northbound traffic on Victoria Gardens Boulevard between the two school entrances. The parents should, instead, drop the students at the proposed relocated crossing of Victoria Gardens Boulevard immediately south of Applevue Way (see later recommendations for the relocation of the existing crosswalk).

On-Site Investigations - P.M. Observations

Observations: During the afternoon observations, motorists parked off-campus and either waited for students to come to the car or exited their vehicle and proceeded to the school campus to escort students to the parked vehicles (see Illustrations 10 and 11).

Recommendations: This situation should be monitored for safety concerns. Students should not be allowed to cross Victoria Gardens Boulevard without an adult.

Observations: It was observed that the parking lot, interior to the parent drop-off loop, filled up quickly. It was also observed that the Victoria Gardens Boulevard parking within the right-of-way began to collect vehicles early. There have been no reported incidents at this location; however, the principal stated a concern with the safety of this crossing.

Recommendations: A crossing guard should be assigned to supervise this crossing location.



Illustration 10: School Related Traffic Control



Illustration 11: Pedestrians and Students Walking from the Parent Loop to Vehicles Parked Off Campus (photo location approximately 150 ft north of parent loop on west side of Victoria Gardens Boulevard looking southwest)

Observation: Few students were observed crossing at the northerly Victoria Gardens Boulevard crossing guard station. Most of the students that made use of the crossing guard live in the residential developments located across from, and to the north of, Sweetwater Elementary School. This area was observed to have a good sidewalk network and the students do practice safe crossing procedures. The crossing guard at this intersection directed traffic primarily through hand signals (see Illustration 12).

Recommendations: The *MUTCD* states, in Section 7D.04, that a crossing guard shall use a STOP paddle and it shall be the primary hand signaling device. The STOP (R1-1) paddle is octagonal in shape and has the STOP message on both sides.

Observations: The school crosswalk marking located at the intersection of Applevue Way and Victoria Gardens Boulevard is worn and faded (see Illustration 13).

Recommendations: If this crossing location is not relocated, (see later recommendation for its relocation) the crosswalk marking should be re-painted to conform to Section 7C.03 of the *MUTCD* standards. If the crosswalk is relocated, then complete removal of the thermoplastic paint is recommended. A well-maintained crosswalk will make drivers more aware of pedestrians and bicyclists crossing at this intersection.



Illustration 12: Crossing Guard Directing Traffic Using Hand Signals



Illustration 13: Faded and Worn School Crosswalk Markings at Victoria Gardens Boulevard and Applevue Way

Off-Site Investigation

Observations: At the intersection of Clyde Morris Boulevard and Victoria Gardens Boulevard, drivers were disregarding three restrictive signs that prohibit left-turns during SCHOOL DAYS 7:30 AM to 8:10 am and 2:45-3:30 PM (see Illustrations 14 and 15).

Recommendations: It is recommended that law enforcement of this restriction be implemented to reduce violations.



Illustration 14: Restrictive Signs at the Intersection of Clyde Morris Boulevard and Victoria Gardens Boulevard



Illustration 15: Restrictive Signs at the Intersection of Clyde Morris Boulevard and Victoria Gardens Boulevard

Observations: Spruce Creek High School is located at the intersection of Taylor Road and Clyde Morris Boulevard. LTG performed observations during the arrival and dismissal times of Sweetwater Elementary School.

No elementary students were observed at this intersection. During the dismissal and arrival times for the high school no vehicles were observed traveling in excess of the posted speed limit due to congestion and the presence of police officers and community service officers (CSO) directing traffic. The intersection of Taylor Road and Clyde Morris Boulevard is highly congested during the arrival and dismissal times of Spruce Creek High School (see Illustrations 16 and 17).

Recommendations: Due to the safety issues related to mixing high school student drivers and elementary school pedestrians and lack of crossing guards, no walk route is recommended that would cross entrances to the student parking facilities of Spruce Creek High School. According to interviews with the Sweetwater Elementary School staff, no students currently cross Taylor Road even though half of the school walk zone is located south of Taylor Road (see Figure 4).



Illustration 16: Looking West at the Intersection of Clyde Morris Boulevard and Taylor Road



Illustration 17: Looking South at the Intersection of Taylor Road and Clyde Morris Boulevard

Observations: Boggs Ford Road and Taylor Road, currently a three-way intersection, has a continuous sidewalk on the southern side of Taylor Road. The southwest quadrant of the intersection at Taylor Road and Boggs Ford Road does not have a landing at the end of the vertical slope (see Illustrations 18-21).

Recommendations: According to the standards set by the ADA, the ramp should be constructed as follows:

- The landing shall be at least as wide as the ramp run leading to it
- The landing length shall be a minimum of 60 inches
- If the ramps change directions at landings, the minimum landing size shall be 60 by 60 inches

Detectable warnings should also be placed at the curb ramp under Index 304 of the FDOT Design Standards and the ADA for disability considerations.

Further analysis of this issue will be addressed in the Implementation Report to determine constructability and cost feasibility.

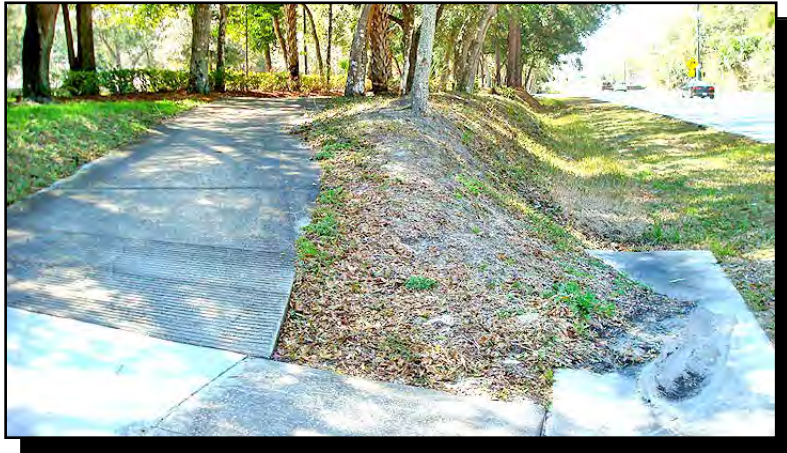


Illustration 18: No Level Landing or Ramp at the Intersection of Taylor Road and Boggs Ford Road

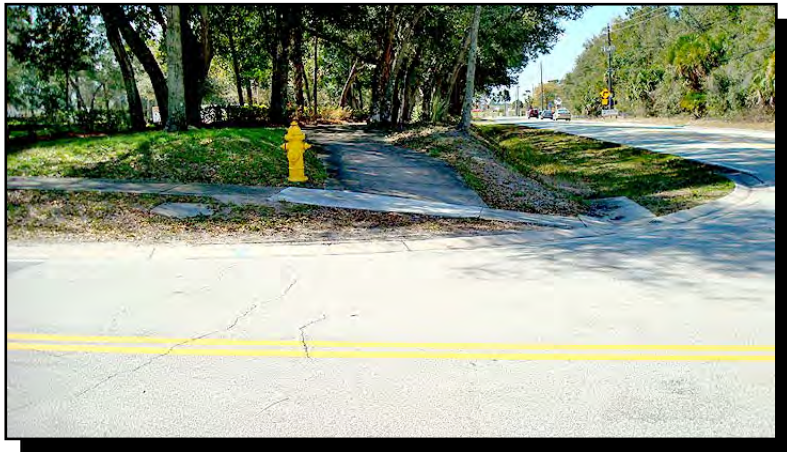


Illustration 19: No Level Landing or Ramp at the Intersection of Taylor Road and Boggs Ford Road

Observations: The sidewalk ends at a flume drainage feature, located in the southwest quadrant of Taylor Road and Boggs Ford Road (see Illustrations 18-21).

Recommendations: The sidewalk cannot end at the flume drainage feature for safety reasons. An ADA compliant grate, with spacings of no greater than ½ inch (13 mm) wide, should be placed over the flume drainage feature and the sidewalk built up around the grate.

The ADA also requires that a ramp should connect the sidewalk to the curb. The ADA guidelines recommend a ramp slope of 1:16 and 1:20 to provide a more safe and effective passage to the crosswalk.

If a space limitation exists, as may be the case at this intersection for an existing construction, then the following ADA guidelines will apply:

- A slope between 1:10 and 1:12 is allowed for a maximum rise of six inches.
- A slope between 1:8 and 1:10 is allowed for a maximum rise of three inches. A slope steeper than 1:8 is not allowed.

It is recommended that a ramp be placed at the intersection of the two sidewalks in the southwest quadrant of this intersection. It is further recommended that crosswalk markings be added to connect the ramps on either side of Boggs Ford Road. This may require relocating the STOP line four feet south of the crosswalk markings.

Detectable warnings should be installed at this intersection, as described in Index No. 304 of the FDOT Design Standards. To provide a safe passage for pedestrians, a pedestrian handrail may be required based on grades adjacent to the existing sidewalk.

A constructability review and cost feasible plan will follow in the Implementation Report on Sweetwater Elementary School.

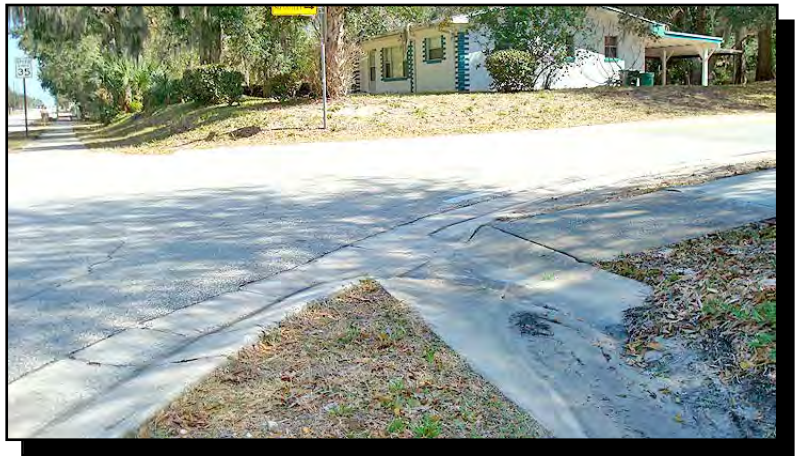


Illustration 20: Sidewalk Ends in Flume Inlet at the Intersection of Taylor Road and Boggs Ford Road (Looking East)



Illustration 21: Sidewalk Ends in Flume Inlet at the Intersection of Taylor Road and Boggs Ford Road (Looking West)

Observations: The existing curb ramp in the southeast quadrant of Taylor Road and Boggs Ford Road does not have detectable warnings (see Illustrations 22 and 23).

Recommendations: Detectable warnings should be installed on all curb ramps to meet ADA standards and as described in Index 304 of the FDOT Design Standards.



Illustration 22: Sidewalk has no Detectable Warnings at the Intersection of Taylor Road and Boggs Ford Road (Looking West)



Illustration 23: Sidewalk has no Detectable Warnings at the Intersection of Taylor Road and Boggs Ford Road (Southwest Quadrant)

Observations: A damaged utility pull box cover is located in the southwest quadrant of Taylor Road and Boggs Ford Road, close to the edge of the sidewalk (see Illustrations 24 and 25).

Recommendations: The damaged pull box cover should be replaced as this represents a pedestrian safety hazard.



Illustration 24: Damaged Pull Box Cover in the Southwest Quadrant at Taylor Road and Boggs Ford Road



Illustration 25: Damaged Pull Box Cover in the Southwest Quadrant at Taylor Road and Boggs Ford Road

Observations: A pedestrian and bicycling bridge located on Taylor Road, east of the intersection of Taylor Road and Boggs Ford Road, has a gap in the drop-off protection between the headwall guiderail and the bridge guiderail on the west side of the bridge which does not provide protection between the creek and the sidewalk (see Illustrations 26-29).

Recommendations: A safety rail should be installed that connects the bridge to the existing pedestrian handrail (see illustration 28). This safety rail should meet FDOT Index No. 870 standards for an aluminum pipe guiderail. The guiderail should be attached to the top of the existing headwall.



Illustration 26: Westbound Approach to Bridge



Illustration 27: Eastbound Approach to Bridge



Illustration 28: Eastbound Approach to Bridge



Illustration 29: Eastbound Approach to Bridge

5

OTHER RECOMMENDATIONS

City of Port Orange staff noted that a continuous path serving the residential developments east of Sweetwater Elementary School could enhance pedestrian and bicycle use. LTG reviewed the Volusia County Property Appraisers site and noted a drainage easement that connects these developments which could be established as a multi-use path if open drainage portions of the easement could be piped (see Figure 5).

Once the pedestrian and bicycling trail is built, students served by the trail could walk or bicycle to school in a safer traffic environment for the following reasons:

- Students would not interact with speeding drivers, including Spruce Creek High School students, on Taylor Road or Clyde Morris Boulevard
- Students would not have direct contact with heavy traffic volumes on Taylor Road
- Students would not have to cross two of Spruce Creek High Schools' Student Parking Lots
- Parents may feel more comfortable allowing their children to walk or bicycle to school

Additionally, it is recommended that Sweetwater Elementary School move its current crossing guard location to the south side of the intersection of Applevue Way and Victoria Gardens (see Figure 6). One of Sweetwater Elementary School's concern is the pedestrians and students who cross Victoria Gardens Boulevard from cars parked randomly in the right-of-way without crossing guard protection. This recommendation will allow motorists to park across from the school campus, on the stabilized shoulder, but the crossing guard is now accessible for crossing and students coming from the housing development across from Sweetwater Elementary School will also have access to the crossing guard.

Sweetwater Elementary School has a satisfactory sidewalk system; however, due to heavy congestion and speeding drivers, many parents may not feel comfortable in letting their children walk or bicycle to school. LTG finally recommends any of the programs listed in this report that will enable children to be more active. SRTS is a long-term program that gets everyone involved, from parents to community leaders. The Walking School Bus allows students to travel to school in a group with parental supervision. Having parents and community members monitor the routes to school daily will make the community and the children healthier. These programs have been implemented in other schools and those schools have mostly found success.



Sweetwater Elementary School

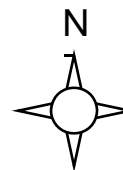
Bicycle and Pedestrian Safety Study

Port Orange, Florida

Proposed Trail

Figure 5

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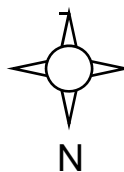


Sweetwater Elementary School
Bicycle and Pedestrian Safety Study
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**Crosswalk/Crossing Guard
Proposed Improvements**

Figure 6

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6

ESTIMATES

Table 3 shows the preliminary cost summary that would be associated with the recommendations listed within this report. These recommendations and existing conditions are also summarized on composite Figure 7. FDOT's *2010 Basis of Estimates* manual was used in the development of Table 3. A detailed cost estimate is presented in Appendix B. The estimated engineering costs for the recommendations are \$8,379.43.

It is noted that if the recommendation for the relocation of the crossing guard station to the intersection of Victoria Gardens Boulevard and Applevue Way is not implemented, then the refurbishment of the existing crosswalk must be completed. The existing crosswalk is faded and worn. It is recommended that the new special emphasis crosswalk (Index No. 17346) be used to bring heightened awareness of crossing students to drivers.

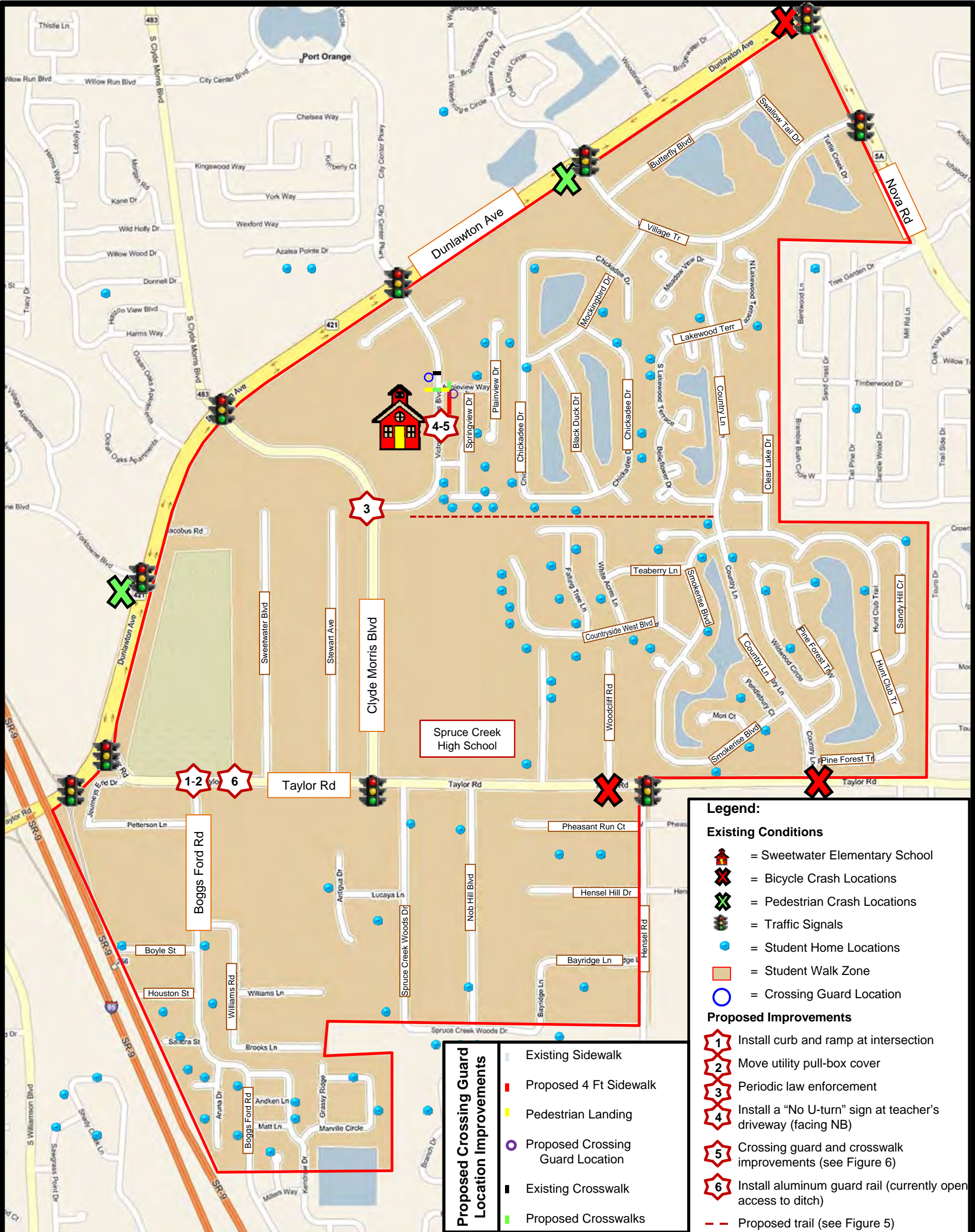
The intersection of Boggs Ford Road and Taylor Road has a sidewalk that ends at a flume inlet. The recommended option of an ADA compliant grate provides for safe passage across the existing drainage flume. Additional field verification is required to fully examine the feasibility of alternate options and will be more closely looked at in the Implementation Report, which follows the Assessment Report. It is noted that a pedestrian guiderail may be required and is based on the grades adjacent to the existing sidewalk.

Table 3
Cost Summary
Sweetwater Elementary School Assessment Study

LOCATION	RECOMMENDATION	CONTRACT AMOUNT
Clyde Morris Boulevard and Victoria Gardens Boulevard	Law enforcement should be present periodically to enforce sign restriction	\$0.00
Pedestrian and Bicycling Bridge on Taylor Road	Aluminum guiderail (FDOT Index No. 850) should connect the bridge railing and hand railing	\$157.80
Southwest Quadrant of Taylor Road and Boggs Ford Road*	Landing should be installed according to FDOT Index Number 310	\$243.68
Southwest Quadrant of Taylor Road and Boggs Ford Road*	Sidewalk should end at curb ramp with detectable warnings	\$190.29
Southwest Quadrant of Taylor Road and Boggs Ford Road*	Sidewalk should end at curb ramp with detectable warnings	\$452.30
Proposed Crossing Guard Location South of Applevue Way	Sidewalk with pedestrian landing should be installed to cross students coming from parked cars and north of school	\$3,970.10
Southeast Quadrant of Taylor Road and Boggs Ford Road	Detectable warnings should be installed at curb ramps to meet ADA and FDOT standards	\$904.60
Entrance to Teachers' Parking Lot	Install NO U-TURN (R3-4) signs	\$442.46
Proposed Crossing Location (Applevue Way and Victoria Gardens Boulevard)	Install special emphasis crosswalk marking (Index No. 17346) with thermoplastic paint	\$1,470.30
Proposed Crossing Location (Applevue Way and Victoria Gardens Boulevard)	Install special emphasis crosswalk marking (Index No. 17346) with thermoplastic paint	\$259.50
Proposed Crossing Location (Applevue Way and Victoria Gardens Boulevard)	Reapply Stop line marking on Applevue Way	\$42.00
Taylor Road and Boggs Ford Road	Reapply Stop line marking connecting Boggs Ford Road	\$101.40
Existing Crossing Guard Location	School crosswalk marking has faded; refurbish crosswalk	\$105.00
Existing Crossing Guard Location	Crossing guard should use an Aluminum 18" reflective STOP paddle to direct traffic when children are crossing	\$40.00
Taylor Road and Boggs Ford Road	Replace damaged pull box cover (by utility owner)	
TOTAL:		8,379.43

* Cost does not include retrofit over flume inlet, only sidewalk and landing.

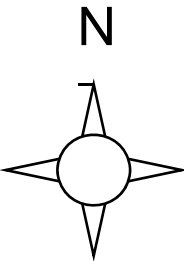
**Product found at the following website: www.schoolmasters.com



Sweetwater Elementary School
Bicycle and Pedestrian Safety Study
Port Orange, Florida

Consolidated Map

Figure 7
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WORKS CITED

"2010 Basis of Estimates Manual." < <http://www.dot.state.fl.us/Specificationsoffice/Estimates/BasisofEstimates/BOEManual/BOEOnline.shtm>>.

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"Curb Ramps." ADA Accessibility Guidelines for Buildings and Facilities (ADAAG). < <http://www.access-board.gov/adaag/html/adaag.htm>>.

"Florida School Crossing Guard Training Guidleines." Florida Department of Transportation Safety Offices. <http://www.dot.state.fl.us/safety/ped_bike/brochures/pdf/SCG%20Training%20Guidelines2009.pdf>.

"KidsWalk-to-School." U.S. Department of Health and Human ServicesCenters for Disease Control and Prevention. < <http://www.cdc.gov/nccdphp/dnpa/kidswalk/pdf/kidswalk.pdf>>.

"Manual on Uniform Traffic Control Devices." < http://mutcd.fhwa.dot.gov/htm/2009/part7/part7_toc.htm>.

"Safe Routes to School Guideline." < http://www.saferoutesinfo.org/guide/pdf/SRTS-Guide_full.pdf>.