Bicycle and Pedestrian School Safety Review Study: Assessment & Implementation Report

Starke Elementary School

DeLand, FL

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Lassiter Transportation Group, Inc.
Engineering and Planning

Volusia County Transportation Planning Organization
Bicycle and Pedestrian School Safety Review Study

Assessment & Implementation Report
Starke Elementary
DeLand, FL

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EXECUTIVE SUMMARY

Lassiter Transportation Group, Inc. (LTG) was contracted by the Volusia County Transportation Planning Organization (TPO) 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 aid the Volusia County TPO in making recommendations for projects that will improve conditions within the walk zones for these schools, and potentially make walking and biking to school a more attractive mode of transportation for students. The subject of this Assessment Report is Starke Elementary School. Evaluation of the Starke Elementary School walk zone has resulted in the following side-walk related recommendations:

- Continue sidewalk on south side of Euclid Avenue between Orange Avenue and Stone Street
- Continue sidewalk on south side of Hubbard Avenue between High Street and Stone
- Continue sidewalk on east side of Boundary Avenue from Euclid Avenue to approximately 190 feet south of Hubbard Avenue
- Install sidewalk on west side of Stone Street between Euclid Avenue and Beresford Avenue
- Install sidewalk on north side of West Lisbon Parkway between Adelle Avenue and Clara Avenue
- Install sidewalk on south side of Beresford Avenue from South Thompson Avenue to Clara Avenue

Purpose

The purpose of this study is to improve the 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 TPO 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 examines 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
- Improved childhood health
- Improved sense of self-image and autonomy
- Reduced childhood obesity
- Conducive 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

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INTRODUCTION

LTG has been retained to conduct an Assessment Report for Starke Elementary School as part of a Bicycle and Pedestrian School Safety Review Study for the Volusia County TPO. Starke Elementary School is located at 730 S Parsons Avenue, in the City of DeLand. A school location map, that also illustrates the walk zone of the school, is presented as Figure 1.

Background on Starke Elementary School

Starke Elementary School was built in 1955 and is currently in its 55th year of operation. The Principal of Starke Elementary is Mrs. Barbara Head.

Starke Elementary School is a PDS (Professional Development School), and works in conjunction with Stetson University to accomplish common educational goals that include developing exemplary practice to maximize student outcomes, providing optimum sites for teacher candidate preparation, offering in-service teacher professional development, and implementing reflective inquiry to enhance teacher and student learning.
The following information on Starke Elementary has been provided by Principal Head:

- **Number of Volusia County Buses in Use:** 1
- **Daycare Buses that Drop-Off and Pick-Up:** 1
- **Percentage of Walkers:** Approximately 70%
- **Crossing Guard Location:** Intersection of Beresford Avenue/Parsons Avenue

Illustration 1: Crossing Guard Location

- **Student Population:** 402 Students

Figure 1

- **Location and Description of Access Points (an aerial of the school with these locations highlighted has been attached as Figure 2):**

  - One driveway on Beresford Avenue, which provides access to Visitor and Staff Parking Lot

  - Three driveways on Parsons Avenue: Southernmost driveway and walker's gate provide access for student walkers and an additional Visitor's lot, and is the exit for the school bus; middle access driveway is the entrance for the school and daycare buses, the northernmost access driveway is the exit of the parent-loop.

Illustration 2: Southernmost Driveway on Parsons

Illustration 3: Bus Loop Entrance and Parent-loop Exit

  - One Driveway to the parent-loop at the rear of the school, which may be accessed via Winnemissett Avenue

Illustration 4: Parent- Loop Entrance via Delaware Avenue at Winnemissett Ave.

Figure 2

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EXISTING CONDITIONS

Starke Elementary School is located at 730 South Parsons Avenue in the City of DeLand Florida, in the northwest quadrant of Parsons Avenue's intersection with Beresford Avenue. Beresford Avenue is a Volusia County urban collector with a posted speed limit of 30 mph (except during the school arrival and dismissal time through the school zone, when the speed limit is 20 mph); throughout the Starke Elementary School walk zone. Parsons Avenue is a City (local) street which provides access to residences between Beresford Avenue and West Hubbard Avenue (to the north) and is a one-way facility alongside the school property.

School Walk Zone

The Starke Elementary School walk zone, beginning with the 2011 school year, is bounded by SR 44 to the north, SR 15A to the west, US 17/92 to the east, and Vermont Avenue at its southernmost point. The following Volusia County Schools are also located within these limits:

- Woodward Avenue Elementary School
- DeLand Middle School
- Southwestern Middle School

The school is located within a predominantly residential area and the zone is served by a network of local streets. The zone is not impacted by transit, as the closest Volusia County transit route is along Woodland Boulevard (the eastern limit of the attendance zone). There is one retention pond located within the zone to the north of Vermont Avenue, west of Woodland Boulevard. Figure 3 shows the approximate locations of the other schools, retention pond, as well as the crash locations to be discussed below. The locations of traffic signals are also indicated.

Crash Data

Pedestrian and bicycle crash data for Starke Elementary School's walk zone was obtained from Volusia County and is presented in Table 1. The data in Table 1 was generated based on the following guidelines:

- Data was collected for crashes falling within the boundaries of the 2011 School Year Walk Zone
- Data was collected during the timeframes of 7:15 a.m.-8:15 a.m. and 2:30 p.m.-3:30 p.m. on Mondays, Tuesdays, Thursdays, and Fridays
- Data was collected during the timeframes of 7:15 a.m.-8:15 a.m. and 1:30 p.m.-2:30 p.m. on Wednesdays
- Data was collected within the walk zone of the school
- Crashes occurring within the last three years

Figure 3

Table 1
Bicycle and Pedestrian Crash Data for Starke Elementary School
Starke Elementary School Assessment Study

DATE	ACCIDENT INTERSECTION	BICYCLE/PEDESTRIAN INVOLVMENT	DAY/NIGHT	AGE OF CYCLIST/PEDESTRIAN
6/28/2007	HOWRY AVENUE AT SOUTH ADELLE AVENUE	COLL. W/ BICYCLE	DAYLIGHT	12
5/9/2008	SR 44 (W. NEW YORK AVENUE) AT SOUTH BOUNDARY AVENUE	COLL. W/ BICYCLE	DAYLIGHT	14

Data collected for this table is attached as Appendix A. The crash data shows that within the walk zone, there were two bicycle related accidents. It should be noted that 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.

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MEETINGS

A meeting was held at Starke Elementary School on September 29, 2010. In attendance were members of LTG Staff, Volusia TPO Staff, Starke Elementary Principal Barbara Head, Starke Elementary Administrator Cameron Robinson, and Crossing Guard (CG) Supervisor Bea Leatherman. This meeting, along with questionnaires which were produced by LTG and completed by both the Principal and CG Supervisor, assisted in identifying matters of concern within the school walk zone (see completed questionnaires as well as initial letters sent to establish this meeting in Appendix B).

Meeting Summary

Most prevalent among the concerns discussed in the meeting, as expressed by both the Principal and Crossing Guard Supervisor, is the absence of a sidewalk along the southern edge of Beresford Avenue adjacent to school property.

Other concerns pointed out by Principal Head or CG Supervisor Leatherman are as follows:

- There is a sandy area in the crosswalk at the Beresford Avenue/Parsons Avenue crosswalk which puddles and becomes muddy when it rains

- The absence of sidewalks in some areas of the walk zone leads to some of the smaller school children (K-2nd grade) inadvertently walking in the travelled way, for lack of better judgment of where they should walk

Illustration 5: Beresford Avenue adjacent to School Property

- There is an industrial type (metal) business across Beresford Avenue from the school, between Parsons Avenue and Clara Avenue. Persons at this business have been observed by the crossing guard and school administration to discourage or scold kids from walking along this property. This leads to kids crossing the road, unaided and not at crossing locations, to avoid walking along this property

Illustration 6: Sand along southern border of Beresford Avenue

- Some motorists along Beresford Avenue, adjacent to the school, do not appear to adhere to the posted speed limit (which is posted at 20 mph through the school zone) around arrival and dismissal time.

- Parents drop-off/pick-up students along the shoulder of Parsons Avenue despite the presence of NO PARKING OR STANDING signs instead of using the parent-loop at the rear of the school.

Illustration 7: Property of Metal Company on south side of Beresford Avenue

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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 Starke Elementary School and its walk zone. Areas of interest identified in the meeting with and completed questionnaires from Principal Head and the Crossing Guard Supervisor, Ms. Leatherman were investigated, along with a thorough field review of conditions 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). The relevant excerpts are included in Appendices C and D.

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

On-Site Investigation - A.M. Observations
LTG visited Starke Elementary School on Tuesday October 5, 2010 during school arrival and dismissal time. Both periods were observed for an interval of 25 minutes before and after the bell, for a comprehensive view of all queuing, entering, and exiting patterns at different entry/exit points around the school as well as student walking and cycling practices at the crosswalk and along the adjacent roadways. The following general information was gathered (see Appendix E for checklist):

- Bicycles parked in bicycle rack: 8
- Number of skateboards: 0
- Number of helmets: 0
- Two school related flashing signals located to the east and west of the school

Observation: LTG began the investigation by observing vehicular traffic on Parsons Avenue. Parsons Avenue is a one-way (southbound) street between Beresford Avenue and Volusia Avenue. A visitors driveway, which the majority of student walkers and cyclists use to access the school property, and exit of the parent-loop are located along this segment of Parsons Avenue. It was reported that parents stop along this roadway to drop off their kids instead of using the parent-loop. This practice can be hazardous because it creates an unnecessary potential conflict point between students crossing the road and vehicles.

Recommendations: Setting up cones across Parsons Avenue during the arrival period, just south of Volusia Avenue will prevent motorists from being able to turn onto this segment of roadway for the purpose of dropping off students. The presence of these cones would cause no inconvenience to the homeowners between Volusia Avenue and Beresford Avenue as they will still be able to travel southbound. Visitors to campus would be able to use the additional entrance and visitor lot on Beresford Avenue.

Observation: Although few bikers were observed at this school, helmet usage was not good among the few observed bikers, based on the day of observation.

Illustration 8: Bike Rack

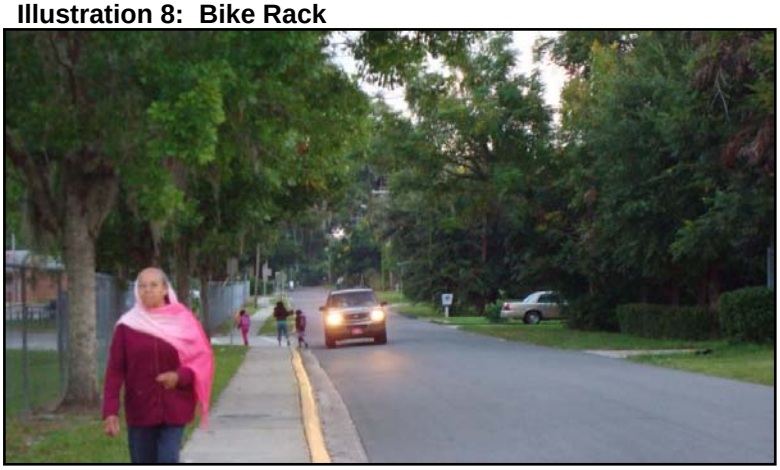

Illustration 9: Stopped vehicle on Parsons Avenue for drop-off

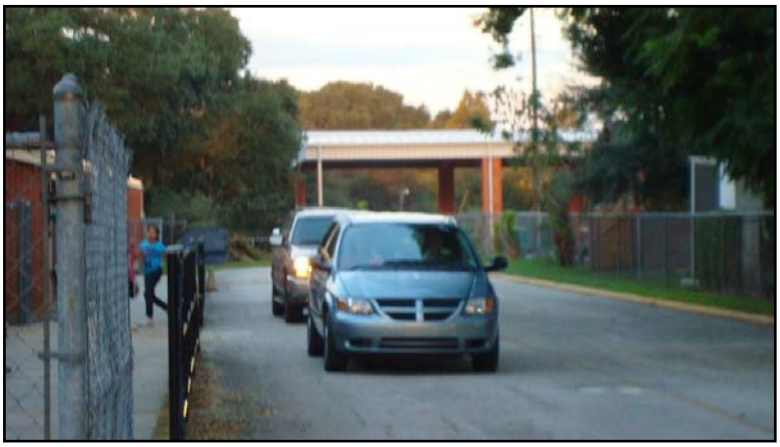

Illustration 10: Cars queued at Parent-Loop during arrival period

Recommendations: This school may be a good candidate for the receipt of free bicycle helmets through programs headed by the Department of Health or the Sheriff's Office.

Observation: There was minimal queuing at the parent-loop, which may be accessed at Winnemissett Avenue, north of the school, and exited on Parsons Avenue. A maximum queue of three vehicles was observed and the traffic flow was shown to be relatively quick. This observation is consistent with the information provided by the Principal that most of the students walk to school (thereby making vehicular traffic to the campus very minimal).

Recommendations: Previous recommendation to prohibit access to Parsons Avenue at Volusia Avenue will increase proper usage of the parent-loop.

Observation: Inappropriate speeds along Beresford Avenue during the school arrival period (speeds in excess of the posted 20 mph) as well as Parsons Avenue were observed, and confirmed by Officer Juan of the DeLand Police Department, who was present and taking speed shots at the crossing location on the morning of the observation.

Recommendation: This situation should be monitored continuously through police presence, when possible, to decrease the potential danger to students crossing Beresford Avenue that is posed by vehicles travelling through the school zone at unlawful speeds.

Illustration 11: DeLand Police Officer taking speed shots

On-Site Investigations - P.M. Observations

Observation: Motorists parked along the eastern shoulder of Parsons Avenue to wait for kids or stopped in the roadway itself to pick them up, as opposed to utilizing the parent-loop. This is a hazardous situation because it causes children to cross oncoming traffic on Parsons Avenue, unaided, in order to access parent vehicles.

Recommendation: Locating cones across Parsons, north of Volusia Avenue, during the school dismissal period would prevent parents from being able to use Parsons Avenue for this purpose.

Observation: It should be noted that a few organized and fairly large groups of kids, headed by adults, were observed picking up students from school and walking. Additionally, teachers and staff were noted to play a large role in the dismissal process by waiting with kids at the walker gates, and parents and bus loop until they were picked up by the respective responsible parties**.**

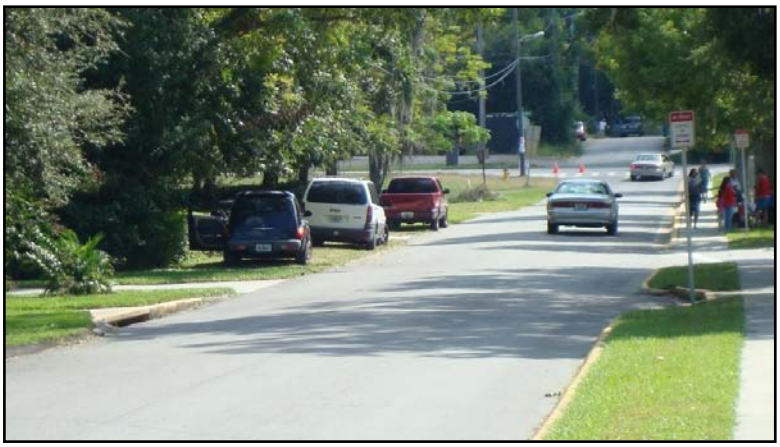

Illustration 12: Vehicles parked along Eastern shoulder of Parsons Avenue for child pick-up

Recommendations: N/A.

Off-Site Investigation

Observations: At the intersection of Beresford Avenue at Parsons Avenue, there is a DO NOT ENTER (MUTCD R5-1) sign, supplemented by a "School Days When Children are Present" (MUTCD code S4-2) plaque, which is intended to prohibit northbound turns onto Parsons Avenue. This sign creates a potential safety concern in that it may lead motorists to believe that entering this location when children are not present is allowable when in fact, Parsons Avenue is a one-way street at this location. Children who may be crossing Parsons Avenue, unseen by motorists, would be endangered by unexpected traffic from the prohibited (northbound) direction.

Recommendations: The S4-2 plaque should be replaced with a prohibitive R5-1a WRONG WAY sign.

Observation: A significant amount of sand is present along Beresford Avenue at the CG location. When it rains, puddling at this location would force students waiting to cross the road to stand in the roadway (note that there is no significant separation between the edge of pavement and the roadway at this location).

Illustration 13: Restrictive Sign

Recommendation: The sand build-up should be removed. The installation of sidewalk along this southern side of Beresford Avenue, adjacent to the school would allow kids to discern exactly where they may walk and stand.

Observation: The crosswalk at the intersection of Beresford Avenue/Delaware Avenue is faded and partially covered with sand. This situation may contribute to children walking or cycling into the road to avoid the sandy area, particularly on days when it rains.

Recommendation: The striping at this location should be refurbished, and the sand build-up removed.

Illustration 14: Sand infringing upon the crosswalk at Beresford Avenue//Clara Avenue

Observations: There is a location on Beresford Avenue, approximately 110 feet east of Thompson Avenue, where overgrown shrubbery at a private residence significantly infringes onto the sidewalk. The sidewalk along this portion of roadway meets the minimum width criteria of five feet. Such impedance may force students to detour from the sidewalk into the travelled way.

Illustration 15: Intersection of Beresford Avenue/Delaware Avenue

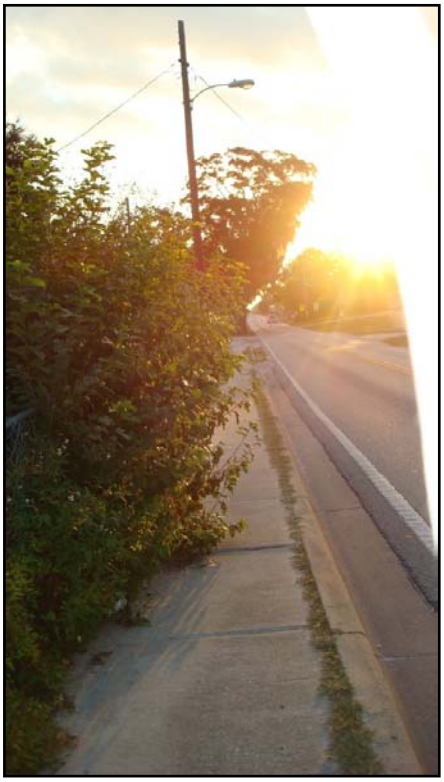

Illustration 16: North side of Beresford Avenue, east of Thompson Avenue

Recommendations: It is not the responsibility of the public agencies to be caretakers of private property. However, this obstruction, as well as any others that may exist on sidewalks, may be reported to these agencies that can develop a system to notify residents responsible for creating visual obstructions which require corrective action.

Observations: There is a lack of continuous sidewalk coverage on Beresford Avenue. This leads to students walking in the travelled way, in the absence of sidewalks which would dictate exactly where one should walk.

Recommendations: See next section on Sidewalk Inventory.

Sidewalk Inventory

An inventory of sidewalk coverage within the walk zone was taken. The focus of this inventory was the east/west and north/south urban collectors within the walk-zone. This was to verify whether there are routes of continuous sidewalk coverage that can be taken to and from the school. The sidewalk coverage on these urban collector roads is summarized in Tables 2 and 3. It should be noted that sidewalk coverage meets only minimum width and distance to pavement criteria throughout the majority of the walk zone. Additionally, there are a few portions of segments on which there is no clear delineation between the edge of sidewalk and the travelled way. Maintenance of sidewalks within the area has also been observed to be an issue requiring more attention. A system of pedestrians reporting to the City any obstructions or any safety concerns along these sidewalks (which may stem from adjacent private residences) is recommended.

The inventory of sidewalk coverage indicates the following general guidelines should be followed by walkers under the existing conditions:
:

- walkers in the northwestern portion of the walk zone should walk eastward at least as far as Adelle Avenue, before walking southward to the school in order to avoid gaps in sidewalk coverage on the northern and westernmost roadway segments in the walk zone

- walkers in the southern portion of the walk zone should travel to and from school via Clara Avenue

Florida Highway Administration (FHWA) guidelines indicate that urban collector roadways should have sidewalk coverage on both sides of the roadway where there is commercial development, and on at least one side of the road where there is residential development. The following sidewalk improvements are recommended to improve connectivity within the walk zone:

- Continue sidewalk on south side of Euclid Avenue between Orange Avenue and Stone Street
- Continue sidewalk on south side of Hubbard Avenue between High Street and Stone
- Continue sidewalk on east side of Boundary Avenue from Euclid Avenue to approximately 190 feet south of Hubbard Avenue
- Install sidewalk on west side of Stone Street between Euclid Avenue and Beresford Avenue
- Install sidewalk on north side of West Lisbon Parkway between Adelle Avenue and Clara Avenue
- Install sidewalk on south side of Beresford Avenue from South Thompson Avenue to Clara Avenue

It should be noted that, although there is sidewalk along the north side of Beresford Avenue adjacent to the school, sidewalk installation is also being recommended for the south side. The presence of Starke Elementary School, as well as other commercial development along this segment of Beresford Avenue, dictates that there should ideally be sidewalk coverage on both sides of the street. A pedestrian landing at the intersections of Beresford Avenue/Parsons Avenue and Beresford Avenue/Clara Avenue are also recommended for simultaneous installation.

Table 2
East/West Urban Collector Sidewalk Inventory
Starke Elementary School Assessment Study

East/West Roadway	Segment	Sidewalk Details				
		Sidewalk Coverage	Side of Road			Segments lacking coverage
			North	South	Exceptions	
Howry Avenue	Boundary Avenue to Stone Street	✓	✓	✓		N/A
	Stone Street to Adelle Avenue	✓	✓	✓	South side only from Salisbury Ave. to Orange Ave. & North side only from Julia Ave. to Adelle Ave.	N/A
	Adelle Avenue to Clara Avenue	✓	✓			N/A
	Clara Avenue to Florida Avenue	✓	✓	✓		N/A
Voorhis Avenue	Boundary Avenue to Stone Street	✓	✓	✓	North side only from High St. to Marydell Ave.	N/A
	Stone Street to Adelle Avenue	✓		✓		N/A
	Adelle Avenue to Clara Avenue	✓		✓		N/A
	Clara Avenue to Florida Avenue	✓	✓	✓		N/A
Euclid Avenue	Boundary Avenue to Stone Street	✓	✓			N/A
	Stone Street to Adelle Avenue	✓		✓		625 ft. between Stone St. & Orange Ave.
	Adelle Avenue to Clara Avenue	✓	✓			N/A
	Clara Avenue to Florida Avenue	✓	✓			N/A
Hubbard Avenue	Boundary Avenue to Stone Street	✓		✓		640 ft. between High St. & Stone St.
	Stone Street to Adelle Avenue	✓		✓		N/A
	Adelle Avenue to Clara Avenue	✓	✓		** See footnote	N/A
	Clara Avenue to Florida Avenue	✓	✓			N/A
Beresford Avenue	Boundary Avenue to Stone Street	✓	✓	✓	North side only from High St. to Stone St.	N/A
	Stone Street to Adelle Avenue	✓	✓	✓	North side only from Stone St. to Julia Ave.	N/A
	Adelle Avenue to Clara Avenue	✓	✓	✓	North side only from S. Thompson Ave. to Clara Ave.	N/A
	Clara Avenue to Florida Avenue	✓	✓			N/A
West Lisbon Parkway	Boundary Avenue to Florida Avenue	No				N/A

**There is sidewalk present on the southern side of this segment between Thompson Avenue and Clara Avenue, which does not appear to meet minimum setback criteria, nor is there clear delineation between sidewalk and pavement."*

Table 3
North/South Urban Collector Sidewalk Inventory
Starke Elementary School Assessment Study

North/South Roadway	Segment	Sidewalk Details				
		Sidewalk Coverage	Side of Road			Segments lacking coverage
			West	East	Exceptions	
Boundary Avenue	Howry Avenue to Voorhis Avenue	✓	✓	✓		N/A
	Voorhis Avenue to Euclid Avenue	✓	✓	✓		N/A
	Euclid Avenue to Hubbard Avenue	No	N/A			
	Hubbard Avenue to Beresford Avenue	✓		✓		from Hubbard Ave. to 190 feet south
	Beresford Avenue to Lisbon Parkway	N/A				
Stone Street	Howry Avenue to Voorhis Avenue	✓	✓	✓		N/A
	Voorhis Avenue to Euclid Avenue	✓	✓	✓		N/A
	Euclid Avenue to Hubbard Avenue	No	N/A			
	Hubbard Avenue to Beresford Avenue	No			Sporadic coverage on West side between Hubbard Ave.& Winnemissett Ave.	N/A
Adelle Avenue	Howry Avenue to Voorhis Avenue	✓	✓	✓		N/A
	Voorhis Avenue to Euclid Avenue	✓		✓		N/A
	Euclid Avenue to Hubbard Avenue	✓		✓		N/A
	Hubbard Avenue to Beresford Avenue	✓	✓	✓		N/A
Clara Avenue	Howry Avenue to Voorhis Avenue	✓	✓			N/A
	Voorhis Avenue to Euclid Avenue	✓	✓	✓		N/A
	Euclid Avenue to Hubbard Avenue	✓	✓	✓		N/A
	Hubbard Avenue to Beresford Avenue	✓	✓			N/A
	Beresford Avenue to Vermont Avenue	✓	✓			N/A

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OTHER RECOMMENDATIONS

The number of walkers to Starke Elementary School is high (estimated by the Principal to be about 70 percent), under existing conditions. Continuous sidewalk along the roadway segments which will be heavily travelled by students, such as Beresford Avenue, would enhance the walking experience of these students. However, there are ideas that can be implemented also in the short term to this end, such as the Walking School Bus program that is in the early stages of implementation at Starke Elementary by the Department of Health in conjunction with the Volusia TPO.

A Walking School Bus is a group of children walking to school with one or more adults. Starke Elementary School is a good candidate for the Walking School Bus program because, as was reported by the school staff and observed by LTG during the a.m. and p.m. observations of the school, there is already some form of group walking in place. In particular, a group of parents from a development to the southwest of the school where there is a somewhat dense concentration of enrolled students walk with children in a group to and from school. This group has been recognized by the school and the coordinators at the Department of Health as a good group with which to begin the Walking School Bus program at Starke Elementary.

LTG recommends that this pilot group meet at the intersection of Clara Street and West Lisbon Parkway and travel up Clara Avenue to Beresford Avenue. Because there is currently no sidewalk in place on the southern side of Beresford Avenue between Clara Avenue and the school, it is recommended that this group cross to the northern side of Beresford Avenue and proceed west to the school along this northern side of Beresford Avenue which is already served by a sidewalk. The presence of adults within this large group crossing Beresford Avenue at Clara Avenue may also provide assistance to other student walkers needing to cross the road at this location to avoid walking on the private property of the metal company or in the travelled way due to the absence of sidewalks on the southern side of Beresford Avenue.

Walking School Bus programs generally begin small, with view to expand as success is achieved. Naturally, planned routes would change as demand changes dependent upon the residences of those enrolled at Starke Elementary, which will change from year to year. However, stops along the collector road intersections with Adelle Avenue and Clara Avenue which are both served by a sidewalk on at least one side of the road are recommended in the future when expansion of this project is being considered.

The demographic of the City of DeLand is reported to include an Hispanic population of approximately nine percent. Discussions with Starke Elementary School staff also indicate that a significant amount of parents speak Spanish as a first language or solely. Therefore, it is also recommended that all literature mailed to parents to inform them on this and other bicycle and pedestrian safety information be sent out in both English and Spanish.

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SUMMARY

Table 4 summarizes all recommendations that have been made within this report. These recommendations and existing conditions are also illustrated on Figure 4. It should be noted that Volusia County has identified $1,000,000 for the purpose of constructing sidewalks at not-yet determined locations in its 2010/2011-2014/2015 Transportation Improvement Program. Therefore, it is recommended that the City of DeLand and the County collaborate to implement the recommendations of highest priority.

Figure 4

Table 4
Summary of Recommended Improvements
Starke Elementary School Assessment Study

Location	Observations	Recommendations
On-Campus		
On Parsons Avenue between Beresford Avenue and Volusia Avenue	Parents stop and stand in their vehicles to drop off and pick up kids instead of using the parent- loop	Cones should be set up across Parsons Avenue at Volusia Avenue during the arrival and dismissal periods
General	Poor helmet usage	School should work with programs that provide free helmets to school students such as those offered through the Sheriff's office and Department of Health
Beresford Avenue, adjacent to School Property	Inappropriate Speeds on Beresford Avenue and Parsons Avenue	Speeds should be monitored continuously through police presence, when possible
Off-Campus		
Intersection of Beresford Avenue/Parsons Avenue	""SCHOOL DAYS WHEN CHILDREN ARE PRESENT" supplemental sign	Replace sign with "R5-1a "WRONG WAY" sign
Crossing Guard location at Beresford Avenue/Parsons Avenue	Accumulation of sand surrounding crosswalk	Removal and routine maintenance
Various sidewalk locations in walk zone	Obstructions on sidewalks such as overgrown shrubbery	Implementation of program to report such obstructions and have responsible property owners notified
Various sidewalk locations in walk zone	There are gaps in sidewalk connectivity	Recommend that sidewalk be installed or continued to the relevant side of the roadway, to increase connectivity in the walk zone. See Chapter 5 for detailed segments
South side of Beresford Avenue, adjacent to school property	Lack of sidewalk	Install sidewalk along south side of Beresford Avenue from S. Thompson Avenue to Florida Avenue. Pedestrian landings should be installed simultaneously at Parsons Avenue and Clara Avenue
Intersection of Beresford Avenue/Delaware Avenue	Faded crosswalk markings and sand accumulation	Crosswalk should be refurbished, sand should be removed and crosswalk should be maintained routinely so that sand does not accumulate
General	Group walking, headed by parents or adults	Growth of the Walking Bus Program targeted at existing groups with view to expand. Information materials mailed home to parents should be translated in English and Spanish

8

EXECUTIVE SUMMARY – IMPLEMENTATION REPORT

Lassiter Transportation Group, Inc. (LTG) was retained by the Volusia Transportation Planning Organization (TPO) to prepare an Implementation Report for the Bicycle and Pedestrian School Safety Review Study for 17 Volusia County schools. 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 criterion for the recommended improvements, and the best practices to follow on old and new developments. The subject of this Implementation Report is Starke Elementary School. Recommendations for sidewalk improvements have been prioritized into seven projects, with an associated total cost of $176,256.07.

Assessment of Existing Conditions

Conditions within the walk zone of Starke Elementary School have been presented in assessed within the Assessment report contained in the previous sections. Recommendations were also made within those sections to improve observed conditions. These recommendations are evaluated within the following sections, based on these factors:

- Safety severity
    - Distance from the school
    - Crashes
    - Traffic flow (how it affects walkers and bicyclists)
- Benefits associated with improvement
    - Walker and bicyclist traffic
    - Walking and bicycling network/connectivity
- Constructability
- Cost

Each safety issue was rated, ranked, and placed on a prioritized list. A preliminary cost estimate was completed using the FDOT's *2010 Basis of Estimates Manual*. Actual construction costs may vary based on detailed engineering. It is noted that an in-depth engineering constructability analysis of the project should be conducted to determine if the recommendation can be constructed at the suggested estimated cost since recommendations are based on field observations.

9

BEST PRACTICES

This section of the report will address the best practices to make walking and bicycling a safer mode of transportation for students. These practices are not only applicable to the walk zone but to any new or old development that supports walking and bicycling. The data gathered for this section of the report comes from the Federal Highway Administration (FHWA), Americans with Disabilities Act of 1990 (ADA), and other documents that are supported by the FDOT.

Sidewalk Design for New Roadways and Developments

Findings

Sidewalk design for new roadways and developments are usually based on anticipated pedestrian demand, the type of development, whether residential, industrial, or commercial, and the jurisdiction. Developers may not want to construct sidewalks because the adjoining properties may not have sidewalks. In some cases, development requirements did not address sidewalk construction or connectivity. These conditions have led to developments that do not include sidewalk connectivity.

Best Practices

When planning a development which is located within the walk zone of a school, safe, connected networks of sidewalks that can be easily navigated by students should be required. If it is not possible to have safe sidewalks then multi-use trails should be considered.

All sidewalks should provide for disabled pedestrians and ought to be incorporated into the planning process for all new roadways and developments. The FHWA has established the following guidelines to assist local jurisdiction with determining when and where pedestrian facilities are needed.

- Develop sidewalks as integral parts of all city streets
- If land use plans anticipate pedestrian activity then sidewalks should be constructed as part of the street development
- Sidewalks should connect nearby urban communities
- Provide sidewalks in rural and suburban areas at schools, local businesses, and industrial plants that result in pedestrian concentrations
- Provide sidewalks whenever the roadside and land development conditions are such that pedestrians regularly move along a main or high-speed highway
- Incorporate sidewalks in rural areas with higher traffic speeds and the general absence of lighting
- Construct sidewalks along any street or highway without shoulders, even if there is light pedestrian traffic

The FHWA went on to say that to initiate the sidewalk installation guidelines above and to promote accessible sidewalk facilities, municipalities should consider the following recommendations:

- Agencies should accept bids from contractors who understand and construct accessible facilities
- Require employees and contractors to demonstrate their knowledge of accessibility topics. If, at any stage of the development process (i.e., planning, design, or installation) accessibility is not addressed, hold the responsible party accountable and make improvements.

- Engineering, transportation, and public policy decision makers should partner with transit providers on projects and programs, and require that transit systems include accessible pedestrian facilities
- Consult with representatives from disability agencies and organizations during all phases of project development
- Include persons with disabilities in the first phases of programming, planning, designing, operating, and constructing pedestrian facilities
- Agencies should ensure that accessibility guidelines are followed throughout planning, project development, and construction of pedestrian facilities

Other local agencies, such as the school board within which the development falls, and the city or county planner, should make sure that the sidewalks are within the minimum set requirements, have good connectivity between residential and commercial developments, increases the allowable densities near major intersections (wider sidewalks), are near major shopping areas and transit lines, and ensure pedestrian friendly sidewalk designs. However, specific design principles must be in place before these options can be exercised. Planning for pedestrian sidewalk usage should be one of the primary goals for developers and should be an integral part of planning for walkable communities.

New developments should consider the following sidewalk safety features to plan for walkers and bicyclists:

- Sidewalks should be constructed on both sides of the road
- Wide pathways
- Acceptable lighting
- No obstacles within walkway
- Sidewalk connectivity
- Sidewalk network
- ADA compliant
- Pedestrian facilities (e.g., shaded benches)
- Changes in grade and slope should be moderate

Sidewalk Retrofit

Findings

Cities, counties, and states have codes and regulations that determine how wide a sidewalk must be and how much shoulder should exist between the sidewalk and pavement. The cities and counties must also follow regulations, set by the ADA, to aid disabled pedestrians. These codes have changed as a result of society working towards consuming less energy and promoting safety and healthier lifestyles. In some older neighborhoods, sidewalks are not up to standards since ADA guidelines were not developed and implemented until the 1990s. If the roadway is retrofitted in the future, then existing sidewalks must be brought into compliance with current ADA standards.

Issues with retrofitting sidewalks may include right-of-way costs, conflicting drainage features or swales in the right-of-way, and steep grades. Some sidewalks may have all the aforementioned issues but insufficient right-of-way for retrofitting.

Best Practices

It is best to create developments with school routes, pedestrian transit routes, and amenities within close walking distances. However, retrofitting sidewalks should be considered in older, noncompliant developments. Additional right-of-way may be required to implement retrofit recommendations.

Projects aimed at retrofitting older sidewalks should research data pertaining to what type of right-of-way exists, a cost analysis of the right-of-way purchase, cost of construction, the condition of existing sidewalks, and the benefits associated with the project. The right-of-way acquisitions process is detailed in *The Real Estate Acquisition Handbook* and is produced by the FDOT.

Existing Substandard Sidewalk

Findings

Older neighborhoods and developments that did not plan for pedestrians may have existing substandard sidewalks. Substandard sidewalk issues include the following (Pedestrian and Bicycle Information Center):

- Sidewalks are buckled, lifted, or cracked due to tree roots or other causes
- Sidewalks are blocked due to the placement of utility poles, sign posts, potholes, fire hydrants, bus benches, newspaper racks, parked cars, or other obstructions
- Sidewalks are blocked by bushes or low tree branches
- Sidewalks lack curb ramps at street corners, crosswalks, and driveways
- The driveway side slopes are steep and hard to cross
- Sidewalk shoulders and adjacent drop-offs are excessive

Any of these existing conditions may make walking and bicycling difficult. When sidewalks are obstructed or do not have curb ramps, it is difficult for walkers and bicyclists to get off the sidewalk and on to the pavement to walk around the obstruction. Driveways with steep side slopes may cause walkers to trip or bicyclists to lose balance.

Best Practices

It is important to determine what sidewalks are substandard and those sidewalks should be placed on a prioritized list to be repaired or brought up to current standards. Maintaining existing sidewalks is paramount to providing a safe walking and bicycling environment.

The restriction of heavy vehicles on the sidewalk, installing root barriers if trees are planted too close to a sidewalk, and removing obstacles will keep sidewalks safe for students who are walking or bicycling to school. Depending on the average width of tree root spread, there should be rules that determine what species, and how far, trees must be planted from the sidewalk to prevent cracks and buckling. Trees and bushes should be kept trimmed to avoid blocking the sidewalk and to maximize the mobility of pedestrians. For obstacles that cannot be moved, regulations should be developed that prevent future installations affecting the sidewalk.

Driveways that have steep slopes should be re-graded to conform to ADA approved practices. This will allow for an easy transition between the sidewalk and the driveway for all pedestrians and bicyclists.

Curb ramps should be installed at all crossings, wherever applicable, such as at an intersection or at a mid-block crossing. Sidewalks should end at a detectable warning strip or whenever the sidewalk changes, such as at a mid-block crossing, and should conform to standards approved by the ADA. Standards set by the ADA include the width, length, slope, and texture of curb ramps and the width and length of landings, if they are needed.

Sidewalk Maintenance

Findings

A sidewalk that clearly has maintenance issues may inhibit pedestrian and bicyclist usage. Existing sidewalks may be hazardous to pedestrians and bicyclists if the following issues exist (FHWA):

Illustration 17: School sidewalk

- Step separation - a vertical displacement of 13 mm (0.5 in) or greater that could cause pedestrians to trip or prevent the wheels of a wheelchair or stroller from rolling smoothly
- Badly cracked concrete - holes and rough spots ranging from hairline cracks to indentations wider than 13 mm (0.5 in)
- Spalled areas - fragments of concrete or other building material detached from larger structures
- Settled areas that trap water - sidewalk segments with depressions, reverse cross slopes, or other indentations that make the sidewalk path lower than the curb; these depressions trap silt and water on the sidewalk and reduce the slip resistant nature of the surface.
- Tree root damage - roots from trees growing in adjacent landscaping that cause the walkway surface to buckle and crack
- Vegetation overgrowth - ground cover, trees, or shrubs on properties or setbacks adjacent to the path that have not been pruned can encroach onto the path and create obstacles
- Obstacles - objects located on the sidewalk, in setbacks, or on properties adjacent to the sidewalk that obstruct the passage space or the visibility of sidewalk users; obstacles commonly include trash receptacles, utility poles, newspaper vending machines, and mailboxes
- Blocked or inadequately protected drainage inlets and inadequate flow planning
- Temporary construction interruptions
- Inadequate patching after utility installation

Sidewalks are typically in the public right-of-ways and are the sole responsibility of the city or county, depending on who has jurisdiction over that roadway. In some cases, sidewalks are provided along privately maintained roads and common spaces and are the responsibility of a Homeowners Association (HOA) or other property management entity.

Best Practices

- A division of the city or county should be solely dedicated to sidewalk maintenance or, if in the case of privately maintained sidewalks, should be addressed through code enforcement procedures.
- Sidewalk maintenance issues should be placed on a prioritized list of sidewalk projects to be completed.
- Maintenance issues should be solved by using strategies standard to road maintenance. This will minimize the risk of walkers and bicyclists on their way to and from school; and all maintenance issues should be handled consistently throughout the jurisdiction.

Improving Existing Roadway Conditions

Findings

Existing roadway conditions may not offer enough safety for walkers and bicyclists. Motorists may speed within school walk zones and not pay attention to their surroundings. Motorists pulling out of driveways may look for oncoming vehicles but may not look for walkers and bicyclists crossing the driveway.

Best Practices

Roadway conditions can be improved to maintain safety and accessibility for walkers and students who may want to ride their bicycles to school. The following are best practices that should improve existing roadway conditions for walkers and students who choose to ride their bicycles to school.

- Signage and pavement markings should be highly visible and current
- Traffic calming devices should be considered to reduce speeds
- Speed studies should be conducted to lower speed limits year-round
- ADA standards should be adhered to
- Consider one-way streets if traffic is too congested during the arrival and dismissal times
- Strict police enforcement should be imposed to deter illegal and unsafe parking practices as well as moving violations within the school zone

Pavement Markings

Findings

Illustration 18: Faded crosswalk markings

Pavement markings are essential to the transportation system to communicate and enhance the messages of roadway operational conditions by augmenting other traffic control devices. School pavement markings and crosswalk markings are especially important since they alert the motorist of walkers and bicyclists entering the pavement at crosswalks and intersections. Pavement markings can easily fade or become obliterated over time. It was observed that SCHOOL markings which warn motorists that they will soon enter into a school zone are often faded, cracked, or chipped (Illustration 18).

Best Practices

The following best practices are recommended to improve the safety, life, and effectiveness of pavement markings.

- SCHOOL pavement markings and crosswalk markings should be clear and visible in order to warn motorists that they are entering a school zone and/or children are crossing.
- The FDOT's current standard (Index No. 17346) uses a special emphasis crosswalk that lengthens the life of the crosswalk marking.
- Thermoplastic paint should be used for all pavement and school markings to enhance the visibility of walkers and bicyclists. Thermoplastic paint should be used since it is durable, retro-reflective.
- The crosswalk should align with the sidewalk ramps.
- Crosswalks should be installed where walkers and bicyclists are in the pavement for the shortest distance and time possible.
- Pavement markings should be accompanied by the proper signage.
- Pedestrian median refuges should be installed for long crosswalks with interim medians.
- Walkers and bicyclists should be dissuaded from crossing at intersections or mid-block crossings where heavy traffic exists unless accompanied by crossing guards.

Traffic Signal Control

Findings

Traffic signalization has an important role in promoting safety for students who walk or bicycle to school. Drivers at busy intersections can easily overlook students trying to cross a street; consequently, signals allow students the necessary time to safely cross busy intersections.

Illustration 19: Flashing beacon traffic signal control

SCHOOL flashing beacons (Illustration 19) also play an important role in safety. Flashing beacons alert drivers that they are entering a school zone and indicate that the displayed speed limit is in effect. It was observed that school flashing beacons can be operated manually or can be pre-set to turn off/on during pre-programmed timeframes. Manually run school flashing beacons are usually operated by school crossing guards, who are primarily assigned to cross elementary school students. Unfortunately, this does not address the needs of middle school students.

Best Practices

- Pedestrian signal heads should be considered at all intersections that utilize traffic control signals for motor vehicles within the school walk zones.
- Pedestrian signal buttons should be placed such that it is obvious to elementary and middle school students which buttons to press to access the desired sidewalk.
- Pedestrian signal heads should employ the countdown display which exhibits the symbols of the WALKING MAN beside the numerical countdown. This will help students to decide if they have enough time to cross or if they should wait for the next pedestrian signal phase.
- Students should be educated on the proper ways to cross an intersection when using a pedestrian signal head.
- For students who must cross more than two lanes of traffic, the assignment of crossing guards or overhead pedestrian bridges should be considered.
- U-turns and Right-on-Reds should be prohibited at intersections where students utilize pedestrian crossings.
- School attendance zones that have crossings at heavily congested intersections should have their walk zones re-evaluated so that students can either walk to another school or transportation could be provided.

Enforcement and Education

Findings

Walkers and bicyclists do not always follow proper crossing procedures. Students may dart through traffic to access the school in the mornings or access a vehicle parked across the road from the school in the afternoons. Students may also cross streets at mid-block without the aid of a crosswalk or an adult. When crosswalks do exist, students do not always follow proper crossing procedures.

Illustration 20: Student accessing car in the travel lanes of Parsons Avenue instead of parent-loop

Regulations are not always followed by adults dropping off/picking up students (Illustration 20). Motorists were observed to park in No Parking areas and make prohibited vehicular movements, including u-turns. Some motorists were observed to be speeding within the reduced-speed zone.

Students who choose to ride their bicycles to school do not always wear helmets.

Best Practices

- Students and parents should be educated on proper crossing procedures. Parents, crossing guards, and School Resource Officers (SRO) should be the main resources for safety.
- Parents should receive flyers or recorded messages on a school-wide basis to inform them of the proper drop-off/pick-up procedures. Strict enforcement of these procedures should eventually deter parents from practicing unsafe drop-off/pick-up actions.
- Prohibited vehicular movements should be strictly handled and higher fines could be considered, where allowable by law, during the arrival and dismissal times of school.
- Helmets should always be worn by bicycling students. Parents, school staff, crossing guards, and school resource officers should encourage helmet usage. Non-compliant helmet users should be dealt with consistently and strictly.
- Encourage walking and bicycling by providing free helmets, stickers, reflective gear, or create an incentive program.
- Schools should provide a safe and secure bicycle storage facility for students who choose to ride their bicycles to school.
- Parents should be informed about the different walking and bicycling programs available and the school and its volunteers should assist in planning and implementing those programs.
- Students who are regular walkers and bicyclists should be paired with other walkers and bicyclists who live in the same area.
- Crossing guards should be involved in the re-zoning of walk zones since they have a better understanding of the distribution of the walker and bicyclist population.

School Board Considerations

Findings

School districts generally employ the two-mile walk route to determine the walk zone. This is not always the best option to promote safety. Students may have to cross congested intersections, too many intersections, and/or busy driveways.

Sidewalks are not always located on both sides of the road. This may encourage unsafe crossings where no crosswalks exist. Walk zones can also include sidewalks that end at an unsignalized intersection with no safe alternative to gain access to the sidewalk on the opposite side of the roadway.

It was noted that schools prefer to have one controlled point of entry that is monitored by school staff. In these cases, students who walk or ride their bicycles to school may have to cross busy driveways including drop-off/pick-up loops, bus loops, and even parent and teacher parking lots, to enter/exit the controlled point of entry.

Best Practices

- As defined in F.S. 1006.23, the School District staff collaborates with the Sheriff's crossing guards, City and County Public Works and FDOT to evaluate a school's walk zone and its hazardous walking conditions as defined.
- In effort to avoid the inter-mingling of elementary, middle, and high school traffic, school arrival and dismissal, Volusia County School District has a three-tiered bell schedule. Further, each school separates bus traffic from parent pick-up drop-off traffic.
- It is necessary to review all new development plans within the school walk zone to ensure that developers are providing sidewalks on either side of the road and maintaining sidewalk connectivity and networking to the school. Volusia County School District is a member of city and county development review teams and reviews new site plans and subdivisions to ensure adequate area is designated for school bus stops and sidewalks. City and County land development regulations require sidewalks.
- All new schools should be planned with good sidewalk connectivity/network to all neighborhoods and developments within its walk zone.
- As required by F.S. 1006.23, Volusia County School District provides bus service to students who do not have access to safe routes to school.
- There are certain programs which promote walking and bicycling to school. Volusia County School District currently participates in such programs (e.g. Walking School Bus, SAFE KIDS Walk This Way, and International Walk to School Day). Bicycle and pedestrian safety is part of the existing elementary physical education curriculum.
- A No Backpack policy should be considered to encourage walking and bicycling to school and consideration to the following is recommended:
    - All textbooks should be accessible on-line
    - A set of textbooks should be available at the local library
    - Provide students with a set of textbooks to keep at home
- Each school should enforce bicycle safety, helmet usage should be closely monitored for compliance, and PTA meetings to ensure parent support and compliance with these policies should be promoted.
- All teachers assisting during arrival/dismissal should wear safety vests when they are crossing students or interacting with vehicular traffic.

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MASTER IMPROVEMENT PLAN

Refer to Figure 4 of the Assessment Section for the recommendations. It highlights the locations of existing conditions as well as proposed improvements. The following sections will provide more details on each of the recommendations shown in Figure 4.

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CONSTRUCTABILITY MATRIX

For the purposes of the constructability matrix and the prioritized list to follow, only sidewalk-related improvements are considered. The matrix in Table 4 shows the estimated cost of sidewalk projects that are recommended for improvement. FDOT's *2010 Basis of Estimates* manual was used to develop the constructability matrix. The estimated engineering costs for these recommendations are $176,256.07. The costs shown in the constructability matrix includes construction and labor fees. Grading costs are not included. As mentioned before, these improvements are based on field observations and should be verified by a contractor prior to construction.

Table 5
Constructability Matrix
Starke Elementary School Implementation Report

PRIORITY #	PROJECT NAME	DESCRIPTION		PAY ITEM NUMBER	PAY ITEM DESCRIPTION	PLAN QTY	UNIT MEASURE	UNIT PRICE	CONTRACT AMOUNT
		LOCATION	RECOMMENDATION						
1	Sidewalk Extension	Beresford Avenue (southern side) between South Thompson Avenue and Clara Avenue	Sidewalk should be installed	522-1	SIDEWALK CONC, 5" THICK	508.00	SY	$45.22	$22,971.76
	Landing Installation	Southwest Quadrant of Beresford Avenue/Parsons Avenue*	Landing should be installed according to FDOT Index Number 310	522-1	SIDEWALK CONC, 5" THICK	3.56	SY	$45.22	$160.98
	Landing Installation	Southwest Quadrant of Beresford Avenue/Clara Avenue*	Landing should be installed according to FDOT Index Number 310	522-1	SIDEWALK CONC, 5" THICK	3.56	SY	$45.22	$160.98
								SUBTOTAL:	$23,293.73
2	Crosswalk Refurbishment	Beresford Avenue/Delaware Avenue	Refurbish crosswalk marking	711-12-125	THERMOPLASTIC, REFURB, WHITE, SOLID, 24"	80.00	LF	$3.18	$254.40
3	Sidewalk Extension	South side of Euclid Avenue between Orange Avenue and Stone Street	Sidewalk should be installed	522-1	SIDEWALK CONC, 5" THICK	347.00	SY	$45.22	$15,691.34
4	Sidewalk Extension	South side of Hubbard Avenue between High Street and Stone	Sidewalk should be installed	522-1	SIDEWALK CONC, 5" THICK	356.00	SY	$45.22	$16,098.32
5	Sidewalk Extension	East side of Boundary Avenue from Euclid Avenue to approximately 190 feet south of Hubbard Avenue	Sidewalk should be installed	522-1	SIDEWALK CONC, 5" THICK	466.00	SY	$45.22	$21,072.52
6	Sidewalk Extension	West side of Stone Street between Euclid Avenue and Beresford Avenue	Sidewalk should be installed	522-1	SIDEWALK CONC, 5" THICK	1,464.00	SY	$45.22	$66,202.08
7	Sidewalk Extension	North side of West Lisbon Parkway between Adelle Avenue and Clara Avenue	Sidewalk should be installed	522-1	SIDEWALK CONC, 5" THICK	744.00	SY	$45.22	$33,643.68
								TOTAL:	**$176,256.07**

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RECOMMENDED PRIORITY PROJECTS

The recommended projects, prioritized in Table 4, were ranked and rated with regards to safety, benefits associated with the improvement, constructability, and cost. This section of the report provides additional information about each project in ranking order.

Background: The Volusia TPO is continuing in its capacity to improve the safety of the school walk zone for walkers and bicyclists who live within the school walk zone. The safety issues addressed within this report will be reviewed by the TPO for potential funding to implement the recommended changes and, thereby, improve the safety of the school walk zone, where possible.

Project No. 1: Extension of sidewalk on Beresford Avenue and Installation of Pedestrian Landings at Parsons Avenue and Clara Avenue

Submitting Agency: Volusia County
Project Location: Beresford Avenue
School Served: Starke Elementary School
Project Description: Extension of Sidewalk
LAP Coordinator: Volusia County
Maintaining Agency: City of DeLand

Safety Issue: There is a gap in sidewalk coverage on the southern side of Beresford Avenue between South Thompson Avenue and Clara Avenue, which leads to students walking in the travelled way, in the absence of sidewalks which would dictate exactly where one should walk.

Project Description: This project will include the installation of five-foot sidewalks on the southern side of Beresford Avenue between South Thompson Avenue and Clara Avenue as well as the installation of pedestrian landings in the southwest quadrant of the Beresford Avenue intersections at Parsons Avenue and Clara Avenue.

Estimated Cost: The estimated cost for this project is $23,293.73.

Project No. 2: Refurbishment of Crosswalk Markings

Submitting Agency: Volusia County
Project Location: Beresford Avenue at the intersection of Delaware Avenue
School Served: Starke Elementary School
Project Description: Refurbishment of Crosswalk Markings
LAP Coordinator: Volusia County
Maintaining Agency: Volusia County

Safety Issue: Pavement markings are old and faded and should be well maintained in order to promote correct usage of the crosswalk locations.

Project Description: This project will include the refurbishment of the existing crosswalk markings.

Estimated Cost: The estimated cost for this project is $254.40.

Project No. 3: Sidewalk Extension

Submitting Agency: Volusia County
Project Location: Euclid Avenue
School Served: Starke Elementary School
Project Description: Extension of Sidewalk
LAP Coordinator: Volusia County
Maintaining Agency: Volusia County

Safety Issue: Gaps in sidewalk coverage along major school routes may force students to walk or bicycle within the travelled way.

Project Description: This project will include the installation of five-foot sidewalks along the southern side of Euclid Avenue between Orange Avenue and Stone Street.

Estimated Cost: The estimated cost for this project is $15,691.34.

Project No. 4: Sidewalk Extension

Submitting Agency: City of DeLand
Project Location: Hubbard Avenue
School Served: Starke Elementary School
Project Description: Extension of Sidewalk
LAP Coordinator: Volusia County
Maintaining Agency: City of DeLand

Safety Issue: Gaps in sidewalk coverage along major school routes may force students to walk or bicycle within the travelled way.

Project Description: This project will include the installation of five-foot sidewalks along the southern side of Hubbard Avenue between High Street and Stone Street.

Estimated Cost: The estimated cost for this project is $16,098.32.

Project No. 5: Sidewalk Extension

Submitting Agency: Volusia County
Project Location: Boundary Avenue
School Served: Starke Elementary School
Project Description: Extension of Sidewalk
LAP Coordinator: Volusia County
Maintaining Agency: Volusia County

Safety Issue: Gaps in sidewalk coverage along major school routes may force students to walk or bicycle within the travelled way.

Project Description: This project will include the installation of five-foot sidewalks along the eastern side of Boundary Avenue from Euclid Avenue to approximately 190 ft. south of Hubbard Avenue.

Estimated Cost: The estimated cost for this project is $21,072.52.

Project No. 6: Sidewalk Extension

Submitting Agency: City of DeLand
Project Location: Stone Street
School Served: Starke Elementary School
Project Description: Extension of Sidewalk
LAP Coordinator: Volusia County
Maintaining Agency: City of DeLand

Safety Issue: Gaps in sidewalk coverage along major school routes may force students to walk or bicycle within the travelled way.

Project Description: This project will include the installation of five-foot sidewalks along the western side of Stone Street between Euclid Avenue and Beresford Avenue.

Estimated Cost: The estimated cost for this project is $66,202.08.

Project No. 7: Sidewalk Extension

Submitting Agency: Volusia County
Project Location: West Lisbon Parkway
School Served: Starke Elementary School
Project Description: Extension of Sidewalk
LAP Coordinator: Volusia County
Maintaining Agency: Volusia County

Safety Issue: Gaps in sidewalk coverage along major school routes may force students to walk or bicycle within the travelled way.

Project Description: This project will include the installation of five-foot sidewalks along the northern side of West Lisbon Parkway between Adelle Avenue and Clara Avenue.

Estimated Cost: The estimated cost for this project is $33,643.68
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WORKS CITED

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

"2010 FDOT Design Standards." http://www.dot.state.fl.us/rddesign/rd/rtds/10/2010Standards.shtm.

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

"KidsWalk-to-School." U.S. Department of Health and Human Services Centers 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>.

"Southern Association of Colleges and Schools: Council on Accreditation and School Improvement." < http://www.sacscasi.org/>.

"An Investigation into Application and Bonding Strengths of Thermoplastic Pavement Markers in Concrete and Asphaltic Roadway Surfaces." < http://www.dot.state.fl.us/research-center/Completed_Proj/Summary_SMO/FDOT_BC052_rpt.pdf>.

"Pedestrian and Bicycle Information Center." < http://www.walkinginfo.org/problems/problems-sidewalks.cfm>.

"Right-of-Way Procedures Manual." < http://www.dot.state.fl.us/rightofway/ProceduresManual.shtm>.

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

Section 108 Loan Guarantee Program (Community Development Block Grant). < http://www.hud.gov /offices/cpd/communitydevelopment/programs/108/>.

"The Real Estate Acquisition Handbook. Florida Department of Transportation. <http://www.dot. state.fl.us/rightofway/documents/AcquisitionHandbookEnglish.pdf>.

"Volusia County Property Appraiser." < http://webserver.vcgov.org/index.html>.

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APPENDICES

APPENDICES

APPENDIX A: CITY OF DELTONA TRANSPORTATION CONCURRENCY SPREADSHEET

City of Deltona
Transportation Concurrency Spreadsheet

Road ID	Road Name	Limits (From-To)	Area	Link Length (in miles)	E+C No. of Lanes	Posted Speed	Facility Type	Link K Factor	Adopted LOS	Daily Capacity	ArtPlan Daily Capacity	2007 AADT	2007 Daily LOS	Peak Hour Capacity	ArtPlan Peak Hour Capacity	2007 Peak Hour Traffic	Exempt Traffic	Approved Traffic	Total Peak Hour Traffic	V/C Ratio	Available Pk. Hr. Capacity	2007 Peak Hour LOS	Funded Improvement
DLT-1	I-4	Dirksen Dr. to Saxon Blvd.	DEB	2.85	6	65	UA_FWISG1_6L	0.0818	D	103,600		95,356	D	10,050		7,800	0	0	7,800	0.776	2,250	C	
DLT-2	I-4	Saxon Blvd. to SR 472	DLT-DL	3.15	6	65	UA_FWISG1_6L	0.0818	D	103,600		89,000	D	10,050		7,280	0	0	7,280	0.724	2,770	C	6L Under Construction
DLT-3	I-4	SR 472 to Orange Camp Rd.	DLT-DL	2.15	6	65	UA_FWISG1_6L	0.0818	D	103,600		61,500	C	10,050		5,031	0	0	5,031	0.501	5,019	B	6L Under Construction
DLT-4	SR 415	SR 44 to Ft. Smith Blvd.	DLT	5.6	2	55	RDA_UFH_2W_2L_U_WL	0.0977	C	15,300		10,500	C	1,480		1,026	0	0	1,026	0.693	454	C	
DLT-5	SR 415	Ft. Smith Blvd. to Howland Blvd.	DLT	5.9	2	55	UA_UFH_2W_2L_U_WL	0.0977	D	21,300		6,600	B	2,060		645	0	0	645	0.313	1,415	B	4L ROW 2009/10
DLT-6	SR 415	Howland Blvd. to Bowen Ln.	DLT	0.75	2	55	UA_UFH_2W_2L_U_WL	0.0977	D	21,300		15,700	D	2,060		1,534	0	0	1,534	0.745	526	D	4L ROW 2009/10
DLT-7	SR 415	Bowen Ln. to Doyle Rd.	DLT	0.75	2	45	UA_UFH_2W_2L_U_WL	0.0977	D	21,300		15,700	D	2,060		1,534	0	0	1,534	0.745	526	D	4L ROW 2009/10
DLT-8	SR 415	Doyle Rd. to Enterprise-Osteen Rd.	DLT	0.35	2	55	UA_UFH_2W_2L_U_WL	0.0977	D	21,300	**28,000**	19,300	D	2,060	**2,740**	1,886	0	0	1,886	0.688	854	D	4L ROW 2009/10
DLT-9	SR 415	Enterprise-Osteen Rd. to Seminole Co.	DLT	4	2	55	TA_UFH_2W_2L_U_WL	0.0977	C	14,900	**28,100**	19,300	D	1,440	**2,750**	1,886	0	0	1,886	0.686	864	D	4L ROW 2009/10
DLT-10	SR 472	CR 4101 to I-4	DL SE	0.65	4	55-45	UA_UFH_2W_4L_D_WL	0.0977	D	61,800		27,000	B	5,870		2,638	0	0	2,638	0.449	3,232	B	
DLT-11	Captain Dr.	Lake Helen-Osteen Rd. to Urmey Ave.	DLT	0.5	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		6,113	D	960		350	0	0	350	0.365	610	C	
DLT-12	Captain Dr.	Urmey Ave. to Courtland Blvd.	DLT	1	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		3,562	C	960		209	0	0	209	0.218	751	C	
DLT-13	Catalina Blvd.	Wolf Pack Run to Sedgefield Ave.	DLT	1	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		4,116	D	960		402	0	0	402	0.419	558	D	
DLT-14	Catalina Blvd.	Sedgefield Ave. to Howland Blvd.	DLT	1	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		4,116	D	960		248	0	0	248	0.258	712	C	
DLT-15	Catalina Blvd.	Howland Blvd. to Sixma Rd.	DLT	0.5	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080	**10,600**	15,799	F	960	**1,020**	837	0	0	837	0.821	183	E	
DLT-16	Catalina Blvd.	Sixma Rd. to Lake Helen-Osteen Rd.	DLT	0.4	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080	**10,600**	9,401	E	960	**1,020**	682	0	0	682	0.669	338	D	
DLT-17	Cloverleaf Blvd./Anderson Dr.	Deltona Blvd. to Jamaica St.	DLT	0.5	2	30	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		5,431	D	960		299	0	0	299	0.311	661	C	
DLT-18	Cloverleaf Blvd./Anderson Dr.	Jamaica St. to Anderson Dr.	DLT	0.5	2	30	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		4,144	D	960		243	44	0	287	0.299	673	C	
DLT-19	Cloverleaf Blvd./Anderson Dr.	Anderson Dr. to Providence Blvd.	DLT	1	2	35	UA_NSOSRS_2W_2L_U_WL	0.0977	E	12,600		2,943	C	1,200		257	60	0	317	0.264	883	C	
DLT-20	Courtland Blvd.	Beckwith St. to Flynn St.	DLT	0.5	2	40	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		1,907	C	960		93	0	0	93	0.097	867	C	
DLT-21	Courtland Blvd.	Flynn St. to Captain Dr.	DLT	0.5	2	40	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		7,975	D	960		378	0	0	378	0.394	582	D	
DLT-22	Courtland Blvd.	Captain Dr. to Gimlet Dr.	DLT	0.75	2	40	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		5,111	D	960		255	0	0	255	0.266	705	C	
DLT-23	Courtland Blvd.	Gimlet Dr. to Elkcam Blvd.	DLT	0.75	2	40	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080	**22,900**	9,975	E	960	**2,250**	482	0	0	482	0.214	1,768	D	
DLT-24	Courtland Blvd.	Elkcam Blvd. to Puerto Rico Dr.	DLT	0.75	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		4,331	D	960		204	0	0	204	0.213	756	C	
DLT-25	Courtland Blvd.	Tallywood Dr. to Newmark Dr.	DLT	0.25	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		1,907	C	960		89	0	0	89	0.093	871	C	
DLT-26	Courtland Blvd.	Newmark Dr. to Sanborn Ln.	DLT	0.55	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		4,577	D	960		199	0	0	199	0.207	761	C	
DLT-27	Courtland Blvd.	Sanborn Ln. to Howland Blvd.	DLT	0.45	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		5,973	D	960		267	0	0	267	0.278	693	C	
DLT-28	Courtland Blvd.	Howland Blvd. to Post Court	DLT	0.5	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080	**7,700**	10,195	F	960	**760**	421	0	0	421	0.439	539	D	
DLT-29	Courtland Blvd.	Post Court to India Blvd.	DLT	0.7	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080	**7,700**	12,066	F	960	**760**	569	0	0	569	0.593	391	D	
DLT-30	Courtland Blvd.	India Blvd. to Maltby Dr.	DLT	0.3	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		6,972	D	960		311	0	0	311	0.324	649	C	
DLT-31	Courtland Blvd.	Maltby Dr. to Ft Smith Blvd.	DLT	0.4	2	35	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080	**10,300**	12,711	F	960	**1,010**	597	0	0	597	0.591	413	D	
DLT-32	Courtland Blvd.	Ft Smith Blvd. to Larchmont Dr.	DLT	1	2	40	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080	**10,300**	11,351	F	960	**1,010**	545	0	0	545	0.540	465	D	
DLT-33	Courtland Blvd.	Larchmont Dr. to Doyle Rd.	DLT	0.8	2	40	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		6,377	D	960		290	0	0	290	0.302	670	C	
DLT-34	Courtland Blvd.	Doyle Rd. to Staten Dr.	DLT	0.4	2	30	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		3,106	C	960		162	0	0	162	0.169	798	C	
DLT-35	Courtland Blvd.	Staten Dr. to Enterprise-Osteen Rd.	DLT	0.5	2	30	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		2,402	C	960		119	0	0	119	0.124	841	C	
DLT-36	Deltona Blvd.	Normandy Blvd. to Gaynor Ct.	DLT	0.15	4	35	UA_NSOSRS_2W_4L_D_WL	0.0977	E	25,200		14,802	D	2,400		879	0	0	879	0.366	1,521	C	
DLT-37	Deltona Blvd.	Gaynor Ct. to Abbeyville St.	DLT	0.6	4	35	UA_NSOSRS_2W_4L_D_WL	0.0977	E	25,200		14,312	D	2,400		809	68	0	877	0.365	1,523	C	
DLT-38	Deltona Blvd.	Abbeyville St. to Balsam St.	DLT	0.5	4	35	UA_NSOSRS_2W_4L_D_WL	0.0977	E	25,200		14,285	D	2,400		788	0	0	788	0.328	1,612	C	
DLT-39	Deltona Blvd.	Balsam St. to Enterprise Rd.	DLT	0.5	4	35	UA_NSOSRS_2W_4L_D_WL	0.0977	E	25,200		18,396	D	2,400		1,001	0	0	1,001	0.417	1,399	C	
DLT-40	Deltona Blvd.	Enterprise Rd. to Hummingbird St.	DLT	0.35	2	30	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080	**11,800**	15,305	F	960	**1,150**	1,355	0	0	1,355	1.178	(205)	F	
DLT-41	Deltona Blvd.	Hummingbird St. to DeBary Ave.	DLT	0.5	2	30	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080	**11,800**	12,174	F	960	**1,150**	646	0	0	646	0.562	504	D	
DLT-42	Dirksen/DeBary/Doyle	Palm Rd. to WB I-4 Ramps	DLT	0.2	2	45	UA_NSMCRS_2W_2L_U_0L	0.0977	E	12,480	**17,400**	16,300	F	1,184	**1,710**	1,593	0	0	1,593	0.932	117	F	
DLT-43	Dirksen/DeBary/Doyle	WB I-4 Ramps to EB I-4 Ramps	DLT	0.2	4	35	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		22,930	D	3,120		2,240	0	0	2,240	0.718	880	D	
DLT-44	Dirksen/DeBary/Doyle	I-4 to Deltona Blvd.	DLT	0.1	4	35	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		31,210	E	3,120		3,049	0	0	3,049	0.977	71	E	
DLT-45	Dirksen/DeBary/Doyle	Deltona Blvd. to Enterprise St.	DLT	0.65	4	35	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		20,510	C	3,120		2,004	0	0	2,004	0.642	1,116	C	
DLT-46	Dirksen/DeBary/Doyle	Enterprise St. to Main St.	DLT	0.15	4	35	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		19,980	C	3,120		1,952	0	0	1,952	0.626	1,168	C	
DLT-47	Dirksen/DeBary/Doyle	Main St. to Broadway St.	DLT	0.4	4	35	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		21,930	D	3,120		2,143	0	0	2,143	0.687	977	D	
DLT-48	Dirksen/DeBary/Doyle	Broadway St. to Providence Blvd.	DLT	0.4	4	35	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		21,930	D	3,120		2,143	0	0	2,143	0.687	977	D	
DLT-49	Dirksen/DeBary/Doyle	Providence Blvd. to Garfield Rd.	DLT	1.2	2	40	UA_NSMCRS_2W_2L_U_0L	0.0977	E	12,480	**13,100**	13,250	F	1,184	**1,280**	1,295	89	0	1,384	1.081	(104)	F	
DLT-50	Dirksen/DeBary/Doyle	Garfield Rd. to Saxon Blvd.	DLT	1.5	2	45	UA_NSMCRS_2W_2L_U_0L	0.0977	E	12,480		10,760	D	1,184		1,051	0	0	1,051	0.888	133	D	
DLT-51	Dirksen/DeBary/Doyle	Saxon Blvd. to Sheryl Dr.	DLT	2	2	45	UA_NSMCRS_2W_2L_U_0L	0.0977	E	12,480		9,020	D	1,184		881	0	0	881	0.744	303	D	
DLT-52	Dirksen/DeBary/Doyle	Sheryl Dr. to Courtland Blvd.	DLT	0.55	2	45	UA_NSMCRS_2W_2L_U_0L	0.0977	E	12,480		8,810	D	1,184		861	0	0	861	0.727	323	D	
DLT-53	Dirksen/DeBary/Doyle	Courtland Blvd. to Bull Run Ave.	DLT	0.7	2	45	UA_NSMCRS_2W_2L_U_0L	0.0977	E	12,480		6,700	C	1,184		655	0	0	655	0.553	529	C	
DLT-54	Dirksen/DeBary/Doyle	Bull Run Ave. to SR 415	DLT	0.8	2	35	UA_NSMCRS_2W_2L_U_0L	0.0977	E	12,480		5,500	C	1,184		537	0	0	537	0.454	647	C	
DLT-55	Elkcam Blvd.	Normandy Blvd. to Ft. Smith Blvd.	DLT	1.5	2	35	UA_NSOSRS_2W_2L_U_WL	0.0977	E	12,600		10,153	E	1,200		820	0	0	820	0.683	380	D	
DLT-56	Elkcam Blvd.	Ft. Smith Blvd. to Providence Blvd.	DLT	1	2	35	UA_NSOSRS_2W_2L_U_WL	0.0977	E	12,600		7,158	D	1,200		572	0	0	572	0.477	628	D	
DLT-57	Elkcam Blvd.	Providence Blvd. to Acadian Dr.	DLT	0.15	2	35	UA_NSOSRS_2W_2L_U_WL	0.0977	E	12,600		11,751	E	1,200		929	0	0	929	0.774	271	D	
DLT-58	Elkcam Blvd.	Acadian Dr. to Montecito Ave.	DLT	0.9	2	35	UA_NSOSRS_2W_2L_U_WL	0.0977	E	12,600		11,587	E	1,200		931	0	0	931	0.776	269	D	
DLT-59	Elkcam Blvd.	Montecito Ave. to Howland Blvd.	DLT	1	2	40	UA_NSOSRS_2W_2L_U_WL	0.0977	E	12,600		5,591	D	1,200		444	0	0	444	0.370	756	C	
DLT-60	Elkcam Blvd.	Howland Blvd. to Lake Helen-Osteen Rd	DLT	0.15	2	40	UA_NSOSRS_2W_2L_U_WL	0.0977	E	12,600		6,068	D	1,200		611	0	0	611	0.509	589	D	
DLT-61	Elkcam Blvd.	Lake Helen-Osteen Rd to Otis Ave.	DLT	0.5	2	40	UA_NSOSRS_2W_2L_U_WL	0.0977	E	12,600		4,736	C	1,200		519	0	0	519	0.433	681	D	
DLT-62	Elkcam Blvd.	Otis Ave. to Courtland Blvd.	DLT	0.2	2	40	UA_NSOSRS_2W_2L_U_WL	0.0977	E	12,600		5,119	D	1,200		477	0	0	477	0.398	723	D	
DLT-63	Elkcam Blvd.	Courtland Blvd. to Riverhead Dr.	DLT	0.5	2	35	UA_NSOSRS_2W_2L_U_WL	0.0977	E	12,600		592	C	1,200		59	0	0	59	0.049	1,141	C	
DLT-64	Enterprise Rd.	Highbanks Rd. to Deltona Blvd.	DEB	0.5	4	45	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		15,750	C	3,120		1,539	0	0	1,539	0.493	1,581	C	
DLT-65	Enterprise Rd.	Deltona Blvd. to Bristol Court	DEB-DLT	0.6	2	35	UA_NSMCRS_2W_2L_U_WL	0.0977	E	15,600		6,860	C	1,480		670	0	0	670	0.453	810	C	
DLT-66	Enterprise Rd./Lexington Ave.	Bristol Court to Main St.	DLT	0.5	2	35	UA_NSMCRS_2W_2L_U_0L	0.0977	E	12,480		4,650	C	1,184		454	0	0	454	0.383	730	C	
DLT-67	Eustace Ave.	Catalina Blvd. to Seagate Dr.	DLT	0.35	2	30	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		2,468	C	960		239	0	0	239	0.249	721	C	
DLT-68	Eustace Ave.	Seagate Dr. to Providence Blvd.	DLT	0.5	2	30	UA_NSOSRS_2W_2L_U_0L	0.0977	E	10,080		3,639	C	960		444	168	0	612	0.638	348	D	
DLT-69	Fort Smith Blvd.	Elkcam Blvd. to Ingram Terr.	DLT	0.5	3	30	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270		3,160	C	1,740		278	0	0	278	0.160	1,462	C	Funded widen 2L to 3L
DLT-70	Fort Smith Blvd.	Ingram Terr. to Providence Blvd.	DLT	0.5	3	30	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270		3,020	C	1,740		266	0	0	266	0.153	1,474	C	Funded widen 2L to 3L
DLT-71	Fort Smith Blvd.	Providence Blvd. to Newmark Dr.	DLT	0.5	3	35	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270		11,901	D	1,740		1,075	0	0	1,075	0.618	665	D	Funded widen 2L to 3L
DLT-72	Fort Smith Blvd.	Newmark Dr. to Marlow St.	DLT	0.5	3	35	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270		7,576	C	1,740		664	0	0	664	0.382	1,076	C	Funded widen 2L to 3L
DLT-73	Fort Smith Blvd.	Marlow St. to Normandy Blvd.	DLT	0.35	3	35	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270		6,454	C	1,740		561	0	0	561	0.322	1,179	C	Funded widen 2L to 3L
DLT-74	Fort Smith Blvd.	Normandy Blvd. to Potomac Ave.	DLT	0.35	3	35	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270	**22,500**	14,262	D	1,740	**2,210**	1,142	0	0	1,142	0.517	1,068	D	Funded widen 2L to 3L/Under Constr.
DLT-75	Fort Smith Blvd.	Potomac Ave. to India Blvd.	DLT	0.2	3	35	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270	**22,500**	15,887	E	1,740	**2,210**	1,284	0	0	1,284	0.581	926	D	Funded widen 2L to 3L/Under Constr.
DLT-76	Fort Smith Blvd.	India Blvd. to Eldron Ave.	DLT	1.1	3	35	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270		7,154	C	1,740		585	0	0	585	0.336	1,155	C	Funded widen 2L to 3L/Under Constr.
DLT-77	Fort Smith Blvd.	Eldron Ave. to Courtland Blvd.	DLT	1.15	3	35	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270		6,496	C	1,740		556	0	0	556	0.320	1,184	C	Funded widen 2L to 3L/Under Constr.
DLT-78	Fort Smith Blvd.	Courtland Blvd. to Cloudcroft Dr.	DLT	0.4	3	35	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270		7,567	C	1,740		643	0	0	643	0.370	1,097	C	Funded widen 2L to 3L/Under Constr.
DLT-79	Fort Smith Blvd.	Cloudcroft Dr. to Howland Blvd.	DLT	0.35	3	35	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270		7,388	C	1,740		633	0	0	633	0.364	1,107	C	Funded widen 2L to 3L
DLT-80	Fort Smith Blvd.	Howland Blvd. to Orchard Dr.	DLT	0.35	3	35	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270		3,949	C	1,740		362	0	0	362	0.208	1,378	C	Funded widen 2L to 3L
DLT-81	Fort Smith Blvd.	Orchard Dr. to SR 415	DLT	0.2	3	35	UA_NSOSRS_2W_3L_U_WL	0.0977	E	18,270		3,482	C	1,740		314	0	0	314	0.180	1,426	C	Funded widen 2L to 3L
DLT-82	Graves Ave.	Kentucky Ave. to Howland Blvd.	DLT	0.9	2	45	UA_NSMCRS_2W_2L_U_WL	0.0977	E	15,600		13,740	D	1,480		1,342	0	0	1,342	0.907	138	D	
DLT-83	Howland Blvd.	I-4/SR 472 to Wolf Pack Run	DLT	0.4	4	45	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900	**25,400**	31,910	E	3,120	**2,490**	3,118	0	0	3,118	0.999	2	E	
DLT-84	Howland Blvd.	Wolf Pack Run to Red Fox Run	DLT	0.3	4	45	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900	**25,400**	27,980	D	3,120	**2,490**	2,734	85	0	2,819	0.904	301	D	
DLT-85	Howland Blvd.	Red Fox Run to Catalina Blvd.	DLT	0.85	4	45	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900	**25,400**	28,610	D	3,120	**2,490**	2,795	0	0	2,795	0.896	325	D	
DLT-86	Howland Blvd.	Catalina Blvd. to Bluffview Circle	DLT	0.25	4	45	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		21,780	D	3,120		2,128	10	0	2,138	0.685	982	D	
DLT-87	Howland Blvd.	Bluffview Circle to Providence Blvd.	DLT	0.1	4	45	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		22,660	D	3,120		2,214	0	0	2,214	0.710	906	D	
DLT-88	Howland Blvd.	Providence Blvd. to Adelia Blvd.	DLT	0.5	2	45	UA_NSMCRS_2W_2L_U_WL	0.0977	E	15,600	**13,600**	16,590	F	1,480	**1,330**	1,621	0	0	1,621	1.095	(141)	F	4L ROW 2010/11
DLT-89	Howland Blvd.	Adelia Blvd. to Elkcam Blvd.	DLT	1.6	2	40	UA_NSMCRS_2W_2L_U_WL	0.0977	E	15,600	**13,600**	14,720	E	1,480	**1,330**	1,438	0	0	1,438	0.972	42	E	4L ROW 2010/11
DLT-90	Howland Blvd.	Elkcam Blvd. to Lake Helen-Osteen Rd.	DLT	0.3	4	40	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		17,460	C	3,120		1,706	483	0	2,189	0.702	931	D	2L to 4LD Under Constr.
DLT-91	Howland Blvd.	Lake Helen-Osteen Rd. to Day Rd.	DLT	0.2	4	40	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		20,690	C	3,120		2,021	0	0	2,021	0.648	1,099	C	2L to 4LD Under Constr.
DLT-92	Howland Blvd.	Day Rd. to Newmark Dr.	DLT	0.5	4	50	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		19,440	C	3,120		1,899	3	0	1,902	0.610	1,218	C	2L to 4LD Under Constr.
DLT-93	Howland Blvd.	Newmark Dr. to Roble Ln.	DLT	0.75	4	50	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		16,820	C	3,120		1,643	0	0	1,643	0.527	1,477	C	2L to 4LD Under Constr.
DLT-94	Howland Blvd.	Roble Ln. to Courtland Blvd.	DLT	0.4	4	50	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		15,800	C	3,120		1,544	0	0	1,544	0.495	1,576	C	2L to 4LD Under Constr.
DLT-95	Howland Blvd.	Courtland Blvd. to Fish Hawk Rd.	DLT	1.25	4	50	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		12,690	C	3,120		1,240	0	0	1,240	0.397	1,880	C	2L to 4LD CON FY2008/09
DLT-96	Howland Blvd.	Fish Hawk Rd. to Ft Smith Blvd.	DLT	0.55	4	50	UA_NSMCRS_2W_4L_D_WL	0.0977	E	32,900		11,850	C	3,120		1,158	0	0	1,158	0.371	1,962	C	2L to 4LD CON FY2008/09

APPENDIX B: DETAILED COST ESTIMATE

Location	Observations	Recommendations	Pay Item Number	Pay Item Description	Plan Qty	Unit Measure	Unit Price	Contract Amount
Galaxy Middle School Walk Zone	Bicycling students are not wearing helmets	The assigned SRO should take an active role to ensure all students are wearing helmets; if students choose not to wear helmets then warnings should be given, followed by the issuance of tickets (2009 Florida Statutes, 316.2065 Bicycle Regulations)	N/A	N/A				N/A
Student Entry and Exit Gate (from/to Providence Boulevard)	Students have to cross to the west side of the campus to return across the entrance and exit of the parent loop if they are destined to the east	As recommended in Section 5 of this report, an alternate entrance/exit gate should be used in conjunction with the existing sidewalk to facilitate access to the east	N/A	N/A				N/A
Parent Loop Exit	Students were observed exiting this driveway, which puts them in the travel lane of exiting vehicles	Students should be redirected to the proposed sidewalk (see Section 5) that is parallel to the parent loop exit	N/A	N/A				N/A
	DO NOT ENTER (R5-1) signs located on either side of the parent loop exit are faded and cracked	Replace DO NOT ENTER (R5-1) sign	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	2	EA	$50.00	$100.00
	Stop line is faded and unnoticeable - motorists were observed rolling over stop line	Refurbish stop line	711-12-125	THERMOPLASTIC, REFURBISH, STANDARD, WHITE, SOLID, 24"	51	LF	$2.04	$104.04
Teacher Parking Lot/Bus Loop	Stop line is faded and unnoticeable - motorists were observed rolling over stop line	Refurbish stop line	711-12-125	THERMOPLASTIC, REFURBISH, STANDARD, WHITE, SOLID, 24"	27	LF	$2.04	$55.08
Along Eustace Avenue, in Front of Galaxy Middle School	12 NO PARKING signs are faded	Replace NO PARKING (R7-1) signs	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	12	EA	$50.00	$600.00
Along Eustace Avenue	School crossing sign at crosswalks are outdated, faded, cracked, not reflective, or current; adjacent crosswalk markings are faded	Replace crossing sign with a School Crossing Assembly (S1-1 and W16-7) that has a reflective fluorescent yellow green background	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	2	EA	$50.00	$100.00
			700-20-31	SINGLE POST SIGN, INSTALL, LESS THAN 12"	2	AS	$180.83	$361.66
		Remove existing crosswalk markings at mid-block and in front of Galaxy Middle School's parent loop exit	711-17	THERMOPLASTIC, REMOVE	320	SF	$1.36	$435.20
		Install special emphasis crosswalk markings at the mid-block crossings	711-11-123	THERMOPLASTIC, STANDARD, SOLID, 12"	270	LF	$1.68	$453.60
			711-11-125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24"	210	LF	$3.18	$667.80
	Advance school signage are outdated, faded, cracked, not reflective, or current on background color	Replace outdated school in advance signs with School Advance Crossing Assemblies (S1-1 and W16-9P)	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	2	EA	$50.00	$100.00
			700-20-31	SINGLE POST SIGN, INSTALL, LESS THAN 12"	2	AS	$180.83	$361.66
	SCHOOL pavement markings, adjacent to the advanced school signage, are outdated and faded	Refurbish single-lane SCHOOL pavement markings	711-12-160	THERMOPLASTIC, REFURBISH, STANDARD, WHITE, MESSAGE	2	EA	$127.29	$254.58
Eustace Avenue, East of School	Pavement drops off approximately 8.5 inches to the shoulder	Stabilization should be used to fill the shoulder to pavement height	285-70-4	OPTIONAL BASE, BASE GROUP 4	960	SY	$8.10	$7,776.00
Intersection of Providence Boulevard and Eustace Avenue	Crosswalk marking is faded and worn	Remove existing crosswalk markings	711-17	THERMOPLASTIC, REMOVE	320	SF	$1.36	$435.20
		Install crosswalk markings using special emphasis crosswalk markings (Index No. 17346)	711-11-123	THERMOPLASTIC, STANDARD, SOLID, 12"	158	LF	$1.68	$265.44
			711-11-125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24"	200	LF	$3.18	$636.00
	On Eustace Avenue, the STOP pavement markings are faded and worn	Refurbish STOP pavement marking message	711-12-160	THERMOPLASTIC PAVEMENT MARKING, STANDARD, WHITE, MESSAGE	2	EA	$127.29	$254.58
	On Eustace Avenue, the stop line is faded and unnoticeable - motorists were observed rolling over stop line	Refurbish stop line	711-12-125	THERMOPLASTIC, REFURBISH, STANDARD, WHITE, SOLID, 24"	28	LF	$3.18	$89.04
Entrances and Exits of Galaxy Middle School Driveways	Crosswalk markings are faded at the entrances and exits of the school (parent entrance to loop, exit from loop, and	Remove existing crosswalk markings	711-17	THERMOPLASTIC, REMOVE	1500	SF	$1.36	$2,040.00
		Install crosswalks using special emphasis crosswalk markings (Index No. 17346)	711-11-123	THERMOPLASTIC, STANDARD, SOLID, 12"	494	LF	$1.68	$829.92
			711-11-125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24"	590	LF	$3.18	$1,876.20
Intersection of Eustace Avenue, Seagate Avenue, and Timbercrest Elementary School's Parent Parking Lot Driveway	Crosswalk markings are faded and worn	Remove existing crosswalk markings	711-17	THERMOPLASTIC, REMOVE	1360	SF	$1.36	$1,849.60
		Install crosswalks using special emphasis crosswalk markings (Index No. 17346)	711-11-125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24"	220	LF	$3.18	$699.60
			711-11-123	THERMOPLASTIC, STANDARD, SOLID, 12"	460	LF	$1.68	$772.80
	School crossing sign at crosswalks are outdated, faded, cracked, not reflective	Replace with School Crossing Assemblies (S1-1 and W16-7P) that has a reflective fluorescent yellow green	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	4	EA	$50.00	$200.00
			700-20-31	SINGLE POST SIGN, INSTALL, LESS THAN 12"	4	AS	$180.83	$723.32
	Students were dropped-off/picked-up at the curb from travel lanes	Law enforcement should be present periodically to enforce proper drop-off/pick-up procedures; parents should be given brochures on arrival and dismissal procedures	N/A	N/A				N/A

Location	Observations	Recommendations	Pay Item Number	Pay Item Description	Plan Qty	Unit Measure	Unit Price	Contract Amount
Seagate Drive, South of Eustace Avenue	SCHOOL pavement marking is faded, worn, and is not effective in making drivers aware of school zone	Refurbish single-lane SCHOOL pavement markings	711-12-160	THERMOPLASTIC PAVEMENT MARKING, STANDARD, WHITE, MESSAGE	1	EA	$127.29	$127.29
	Advance school signage are outdated, faded, cracked, not reflective, or current on background color	Replace outdated school in advance signs with approved School Advance Crossing Assemblies (S1-1 and W16-9P)	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	1	EA	$50.00	$50.00
			700-20-31	SINGLE POST SIGN, INSTALL, LESS THAN 12"	1	AS	$180.83	$180.83
		Refurbish SCHOOL crosswalk markings adjacent to advanced school signage	711-12-160	THERMOPLASTIC, REFURBISH, WHITE, MESSAGE	1	EA	$127.29	$127.29
Intersection of Seagate Drive and Placid Avenue	Three school crossing signs are outdated, cracked, not reflective, or current on background color	Replace with School Crossing Assemblies (S1-1 and W16-7) that has a reflective fluorescent yellow green background	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	3	EA	$50.00	$150.00
			700-20-31	SINGLE POST SIGN, INSTALL, LESS THAN 12"	3	AS	$180.83	$542.49
	Three-way intersection has faded crosswalk markings at all three crossings	Remove existing crosswalk markings	711-17	THERMOPLASTIC, REMOVE	374	SF	$1.36	$508.64
		Install crosswalk markings using special emphasis crosswalk markings (Index No. 17346)	711-11-123	THERMOPLASTIC, STANDARD, SOLID, 12"	238	LF	$1.68	$399.84
			711-11-125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24"	270	LF	$3.18	$858.60
Seagate Drive, West of Placid Avenue	SCHOOL pavement marking is faded, worn, and is not effective in making drivers aware of school zone	Refurbish single-lane SCHOOL pavement markings	711-12-160	THERMOPLASTIC, REFURBISH, WHITE, MESSAGE	1	EA	$127.29	$127.29
Placid Avenue	Advance school signage are outdated, faded, cracked, not reflective, or current on background color	Replace outdated school in advance signs with School Advance Crossing Assemblies (S1-1 and W16-9P)	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	2	EA	$50.00	$100.00
			700-20-31	SINGLE POST SIGN, INSTALL, LESS THAN 12"	2	AS	$180.83	$361.66
Intersection of Old Mill Drive and Placid Avenue	Two school crossing signs are outdated and faded	Replace with a School Crossing Assembly (S1-1 and W16-7) that has a reflective fluorescent yellow green background	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	4	EA	$50.00	$200.00
Old Mill Drive, East and West of Placid Avenue	Advance school signage are outdated, faded, cracked, not reflective, or current on background color; adjacent SCHOOL pavement marking is faded and worn	Replace outdated school in advance signs with School Advance Crossing Assemblies (S1-1 and W16-9P)	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	2	EA	$50.00	$100.00
			700-20-31	SINGLE POST SIGN, INSTALL, LESS THAN 12"	2	AS	$180.83	$361.66
		Refurbish SCHOOL pavement marking adjacent to school in advance signs	711-12-160	THERMOPLASTIC, REFURBISH, WHITE, MESSAGE	1	EA	$127.29	127.29
Intersection of Old Mill Drive and Vicksburg Street	Stop line is faded and unnoticeable - motorists were observed rolling over stop line	Refurbish stop line	711-12-125	THERMOPLASTIC, REFURBISH, STANDARD, WHITE, SOLID, 24"	13	LF	$3.18	$41.34
Vicksburg Street, West of Union Circle	No sidewalk available for walkers/bicyclists	Approximately 4,600 feet of 4-foot sidewalk is recommended along Vicksburg Street, from Union Circle to Normandy Boulevard	522-1	SIDEWALK CONC, 4" THICK	1023	SY	$70.03	$71,640.69
Intersection of Old Mill Drive and Elkcam Boulevard	Sidewalk switches from north- to south-side of Elkcam Boulevard but no crosswalk is available to warn motorists of pedestrians crossing	100 feet of crosswalk marking on Eustace Avenue and Old Mill Drive	711-11-123	THERMOPLASTIC, STANDARD, SOLID, 12"	200	LF	$1.68	$336.00
							TOTAL	**$98,382.23**

APPENDIX C: DATA COLLECTION (ON-SITE)

On-Site Observations: VCMPO Bike/Pedestrian Safety Study

Name of School: **Galaxy Middle School**

Job #: **3706.05**

Principal: **Mr. Julian Jones**

Date of Site Visit: 4-27-10

Location **2400 Eustace Avenue**

Deltona, FL 32725

- [x] Observe Entry and Exit Pedestrians and Bicyclists 4 entrances: 1 Teacher parking lot, 1 Entrance of parent loop, 1 exit of parent loop, 1 walker/ biker exit/entrance
- [x] Observe Traffic Patterns and the Impact to Bicycle Riders and Pedestrians

Photos of Study Area (Note Any Adverse Conditions)

- [x] Entrance of School
- [x] Entry Locations 3 Parent loop entrance, walkers/bikers entrance, and teacher/bus entrance
- [x] Exit Locations 3 walker/biker, parent exit loop, bus loop/teacher parking
- [ ] Obstacles none
- [x] Use of Bicycles
  Number of Bicycles 31
- [x] Check for Helmet Compliance
  Helmets: 7 Without Helmets: _____
- [x] Sidewalk Conditions (Take Pictures where Applicable) good
- [x] Transit Stops/Routes
- [x] Traffic Flashing Signals 3
- [x] School Related Signage
- [x] School Related Flashing Signals 3
- [x] Traffic Signals none
- [x] Pedestrian Signals none
- [x] Drainage Ditches/Bridges/Retention Ponds none that would impact students
- [ ] Conservation and Park Lands Preserve located between school & library on Eustace and on Providence Blvd

[X] Trails bird trail or Preserve

[X] Check for Opportunities to Make Improvements and Photograph

Description of Obstacles: driveway pavement markings to be repainted, 2 entrances to school should be used → need to install 2 curb ramps & paint crosswalk to connect s/w, installation of gate to allow access to students heading East

[ ] Curb Ramp at All Crosswalk to Sidewalk

Existent _____ Non-existent _____

[X] Observance of Illegal Drop-offs

[ ] Observance of Illegal Right of Way Parking

Yes _____ No X

Notes:

Principal Comment:

APPENDIX D: DATA COLLECTION (OFF-SITE)

(Circle One) High Crash Proposed by Principal Proposed by Guard Crossing Guard Station

Off-Site Observations: VCMPO Bike/Pedestrian Safety Study

School: Galaxy Middle School

Page: 1 of 3

Observer: Dian Singh

Observation Date: 4-27-10

Principal: Mr. Julian Jones

School Resource Officer: None @ this time

Location	Clear Path (No Obstacles)	> 4 ft Between Sidewalk & Pavement	No Drainage Issues: Ditches, Bridges, Rtntn. Pnds	Correct Drop-Off/Pick-Up Procedures Followed	Existing Shoulder	No Sidewalk Deficiencies	No Sidewalk Obstacles	Sidewalk Connects to Crosswalk with Ramp	Crosswalk & Sidewalk Line Up	Designated Bike Lane	Proper Crosswalk Signage	Maintained Crosswalk Striping	School Related Flashing Signals	School Related Signage	Traffic Signal	Pedestrian Signals	Pedestrian Signage	No Illegal Parking	Comments
CurbType: None / Type E / Type F / Valley Gutter Seagate & Eustace	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*Crosswalk markings must be repainted & *parents dropping students off @ curb. *Students dropped off
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
CurbType: None / Type E / Type F / Valley Gutter Providence, South of Haviland	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*NO separation between sidewalk & pavement w/ the exception of put mnt. markings
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
CurbType: None / Type E / Type F / Valley Gutter Providence, South of Eustace	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	* An area that is prone to sexual predators & heavily patrolled area in AM & PM
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

Pictures: school, school entrance and exit, intersection of study, obstacles, maintenance issues, possible improvements etc.

(Circle One) High Crash **Proposed by Principal** Proposed by Guard Crossing Guard Station

Vice-Principal T. Chris Bowley

Off-Site Observations: VCMPO Bike/Pedestrian Safety Study

School: **Galaxy Middle School** Page: 2 of 3

Observer: Dian Singh Observation Date: 4-27-10

Principal: **Mr. Julian Jones** School Resource Officer: None @ this time

Location	Clear Path (No Obstacles)	> 4 ft Between Sidewalk & Pavement	No Drainage Issues: Ditches, Bridges, Rtnln. Pads	Correct Drop-Off/Pick-Up Procedures Followed	Existing Shoulder	No Sidewalk Deficiencies	No Sidewalk Obstacles	Sidewalk Connects to Crosswalk with Ramp	Crosswalk & Sidewalk Line Up	Designated Bike Lane	Proper Crosswalk Signage	Maintained Crosswalk Striping	School Related Flashing Signals	School Related Signage	Traffic Signal	Pedestrian Signals	Pedestrian Signage	No Illegal Parking	Comments
CurbType: None / Type E / Type F / Valley Gutter Vicksburg Rd, West of Union Circle	(Y)	Y	(Y)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(Y)	* No striping on pavement * No sidewalk * No pedestrian features
	N	(N)	N	N	(N)	(N)	(N)	N	N	(N)	N	(N)	(N)	(N)	(N)	(N)	(N)	N	
CurbType: None / Type E / Type F / Valley Gutter Eustace Ave, East of School	(Y)	(Y)	(Y)	Y	(Y)	(Y)	(Y)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	N	N	N	(N)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
CurbType: None / Type E / Type F / Valley Gutter School Driveways	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	* Faded crosswalk markings
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

Pictures: school, school entrance and exit, intersection of study, obstacles, maintenance issues, possible improvements etc.

(Circle One) **High Crash** **Proposed by Principal** **Proposed by Guard** **Crossing Guard Station**

Off-Site Observations: VCMPO Bike/Pedestrian Safety Study

School: **Galaxy Middle School**

Page: 3 of 3

Observer: Dian Singh

Observation Date: 4-27-10

Principal: **Mr. Julian Jones**

School Resource Officer: None @ this time

Location	Clear Path (No Obstacles)	> 4 ft Between Sidewalk & Pavement	No Drainage Issues: Ditches, Bridges, Rmin. Ends	Correct Drop-Off/Pick-Up Procedures Followed	Existing Shoulder	No Sidewalk Deficiencies	No Sidewalk Obstacles	Sidewalk Connects to Crosswalk with Ramp	Crosswalk & Sidewalk Line Up	Designated Bike Lane	Proper Crosswalk Signage	Maintained Crosswalk Striping	School Related Flashing Signals	School Related Signage	Traffic Signal	Pedestrian Signals	Pedestrian Signage	No Illegal Parking	Comments
CurbType: (None) Type E Type F Valley Gutter Intersection of Ft Smith & Elkcam	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*Sidewalk switches from N to S side of Eustace. Need Ped. crossing signs & crosswalk markings WB & EB
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
CurbType: None Type E Type F Valley Gutter	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
CurbType: None Type E Type F Valley Gutter	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

Pictures: school, school entrance and exit, intersection of study, obstacles, maintenance issues, possible improvements etc.

APPENDIX E: 2009 FLORIDA STATUTES EXCERPTS

The 2009 Florida Statutes

(1) DEFINITION.--As used in this section, "student" means any public elementary school student whose grade level does not exceed grade 6.

(2) TRANSPORTATION; CORRECTION OF HAZARDS.--

(a) It is intended that district school boards and other governmental entities work cooperatively to identify conditions that are hazardous along student walking routes to school and that district school boards provide transportation to students who would be subjected to such conditions. It is further intended that state or local governmental entities having jurisdiction correct such hazardous conditions within a reasonable period of time.

(b) Upon a determination pursuant to this section that a condition is hazardous to students, the district school board shall request a determination from the state or local governmental entity having jurisdiction regarding whether the hazard will be corrected and, if so, regarding a projected completion date. State funds shall be allocated for the transportation of students subjected to such hazards, provided that such funding shall cease upon correction of the hazard or upon the projected completion date, whichever occurs first.

(3) IDENTIFICATION OF HAZARDOUS CONDITIONS.--When a request for review is made to the district school superintendent or the district school superintendent's designee concerning a condition perceived to be hazardous to students in that district who live within the 2-mile limit and who walk to school, such condition shall be inspected by a representative of the school district and a representative of the state or local governmental entity that has jurisdiction over the perceived hazardous location. The district school superintendent or his or her designee and the state or local governmental entity or its representative shall then make a final determination that is mutually agreed upon regarding whether the hazardous condition meets the state criteria pursuant to this section. The district school superintendent or his or her designee shall report this final determination to the department.

(4) STATE CRITERIA FOR DETERMINING HAZARDOUS WALKING CONDITIONS.--

(a) *Walkways parallel to the road.*--

1. It shall be considered a hazardous walking condition with respect to any road along which students must walk in order to walk to and from school 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. In addition, whenever the road along which students must walk is uncurbed and has a posted speed limit of 55 miles per hour, the area as described above for students to walk upon shall be set off the road by no less than 3 feet from the edge of the road.

2. The provisions of subparagraph 1. do not apply when the road along which students must walk:

a. Is in a residential area which has little or no transient traffic;

b. Is a road on which the volume of traffic is less than 180 vehicles per hour, per direction, during the time students walk to and from school; or

c. Is located in a residential area and has a posted speed limit of 30 miles per hour or less.

(b) *Walkways perpendicular to the road.*--It shall be considered a hazardous walking condition with respect to any road across which students must walk in order to walk to and from school:

1. 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. For purposes of this subsection, 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.

2. 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 volume shall be determined by the most current traffic engineering study conducted by a state or local governmental agency.

History.--s. 297, ch. 2002-387.

316.75 School crossing guards.--The Department of Transportation shall adopt uniform guidelines for the training of school crossing guards. Each local governmental entity administering a school crossing guard program shall provide a training program for school crossing guards according to the uniform guidelines. Successful completion of the training program shall be required of each school guard except:

(1) A person who received equivalent training during employment as a law enforcement officer.

(2) A person who receives less than $5,000 in annual compensation in a county with a population of less than 75,000.

(3) A student who serves in a school patrol.

School crossing guard training programs may be made available to nonpublic schools upon contract.

History.--s. 2, ch. 92-194; s. 42, ch. 97-190.

Note.--Former s. 234.302.

316.2065 Bicycle regulations.--

(1) Every person propelling a vehicle by human power has all of the rights and all of the duties applicable to the driver of any other vehicle under this chapter, except as to special regulations in this chapter, and except as to provisions of this chapter which by their nature can have no application.

(2) A person operating a bicycle may not ride other than upon or astride a permanent and regular seat attached thereto.

(3)(a) A bicycle may not be used to carry more persons at one time than the number for which it is designed or equipped, except that an adult rider may carry a child securely attached to his or her person in a backpack or sling.

(b) Except as provided in paragraph (a), a bicycle rider must carry any passenger who is a child under 4 years of age, or who weighs 40 pounds or less, in a seat or carrier that is designed to carry a child of that age or size and that secures and protects the child from the moving parts of the bicycle.

(c) A bicycle rider may not allow a passenger to remain in a child seat or carrier on a bicycle when the rider is not in immediate control of the bicycle.

(d) A bicycle rider or passenger who is under 16 years of age must wear a bicycle helmet that is properly fitted and is fastened securely upon the passenger's head by a strap, and that meets the standards of the American National Standards Institute (ANSI Z 90.4 Bicycle Helmet Standards), the standards of the Snell Memorial Foundation (1984 Standard for Protective Headgear for Use in Bicycling), or any other nationally recognized standards for bicycle helmets adopted by the department. As used in this subsection, the term "passenger" includes a child who is riding in a trailer or semitrailer attached to a bicycle.

(e) Law enforcement officers and school crossing guards may issue a bicycle safety brochure and a verbal warning to a bicycle rider or passenger who violates this subsection. A bicycle rider or passenger who violates this subsection may be issued a citation by a law enforcement officer and assessed a fine for a pedestrian violation, as provided in s. 318.18. The court shall dismiss the charge against a bicycle rider or passenger for a first violation of paragraph (d) upon proof of purchase of a bicycle helmet that complies with this subsection.

(4) No person riding upon any bicycle, coaster, roller skates, sled, or toy vehicle may attach the same or himself or herself to any vehicle upon a roadway. This subsection does not prohibit attaching a bicycle trailer or bicycle semitrailer to a bicycle if that trailer or semitrailer is commercially available and has been designed for such attachment.

(5)(a) Any person operating a bicycle upon a roadway at less than the normal speed of traffic at the time and place and under the conditions then existing shall ride as close as practicable to the right-hand curb or edge of the roadway except under any of the following situations:

1. When overtaking and passing another bicycle or vehicle proceeding in the same direction.

2. When preparing for a left turn at an intersection or into a private road or driveway.

3. When reasonably necessary to avoid any condition, including, but not limited to, a fixed or moving object, parked or moving vehicle, bicycle, pedestrian, animal, surface hazard, or substandard-width lane, that makes it unsafe to continue along the right-hand curb or edge. For the purposes of this subsection, a "substandard-width lane" is a lane that is too narrow for a bicycle and another vehicle to travel safely side by side within the lane.

(b) Any person operating a bicycle upon a one-way highway with two or more marked traffic lanes may ride as near the left-hand curb or edge of such roadway as practicable.

(6) Persons riding bicycles upon a roadway may not ride more than two abreast except on paths or parts of roadways set aside for the exclusive use of bicycles. Persons riding two abreast may not impede traffic when traveling at less than the normal speed of traffic at the time and place and under the conditions then existing and shall ride within a single lane.

(7) Any person operating a bicycle shall keep at least one hand upon the handlebars.

(8) Every bicycle in use between sunset and sunrise shall be equipped with a lamp on the front exhibiting a white light visible from a distance of at least 500 feet to the front and a lamp and reflector on the rear each exhibiting a red light visible from a distance of 600 feet to the rear. A bicycle or its rider may be equipped with lights or reflectors in addition to those required by this section.

(9) No parent of any minor child and no guardian of any minor ward may authorize or knowingly permit any such minor child or ward to violate any of the provisions of this section.

(10) A person propelling a vehicle by human power upon and along a sidewalk, or across a roadway upon and along a crosswalk, has all the rights and duties applicable to a pedestrian under the same circumstances.

(11) A person propelling a bicycle upon and along a sidewalk, or across a roadway upon and along a crosswalk, shall yield the right-of-way to any pedestrian and shall give an audible signal before overtaking and passing such pedestrian.

(12) No person upon roller skates, or riding in or by means of any coaster, toy vehicle, or similar device, may go upon any roadway except while crossing a street on a crosswalk; and, when so crossing, such person shall be granted all rights and shall be subject to all of the duties applicable to pedestrians.

(13) This section shall not apply upon any street while set aside as a play street authorized herein or as designated by state, county, or municipal authority.

(14) Every bicycle shall be equipped with a brake or brakes which will enable its rider to stop the bicycle within 25 feet from a speed of 10 miles per hour on dry, level, clean pavement.

(15) A person engaged in the business of selling bicycles at retail shall not sell any bicycle unless the bicycle has an identifying number permanently stamped or cast on its frame.

(16)(a) A person may not knowingly rent or lease any bicycle to be ridden by a child who is under the age of 16 years unless:

1. The child possesses a bicycle helmet; or

2. The lessor provides a bicycle helmet for the child to wear.

(b) A violation of this subsection is a nonmoving violation, punishable as provided in s. 318.18.

(17) The court may waive, reduce, or suspend payment of any fine imposed under subsection (3) or subsection (16) and may impose any other conditions on the waiver, reduction, or suspension. If the court finds that a person does not have sufficient funds to pay the fine, the court may require the performance of a specified number of hours of community service or attendance at a safety seminar.

(18) Notwithstanding s. 318.21, all proceeds collected pursuant to s. 318.18 for violations under paragraphs (3)(e) and (16)(b) shall be deposited into the State Transportation Trust Fund.

(19) The failure of a person to wear a bicycle helmet or the failure of a parent or guardian to prevent a child from riding a bicycle without a bicycle helmet may not be considered evidence of negligence or contributory negligence.

(20) Except as otherwise provided in this section, a violation of this section is a noncriminal traffic infraction, punishable as a pedestrian violation as provided in chapter 318. A law enforcement officer may issue traffic citations for a violation of subsection (3) or subsection (16) only if the violation occurs on a bicycle path or road, as defined in s. 334.03. However, they may not issue citations to persons on private property, except any part thereof which is open to the use of the public for purposes of vehicular traffic.

History.--s. 1, ch. 71-135; s. 1, ch. 76-31; s. 2, ch. 76-286; s. 1, ch. 78-353; s. 8, ch. 83-68; s. 5, ch. 85-309; s. 1, ch. 86-23; s. 7, ch. 87-161; s. 21, ch. 94-306; s. 899, ch. 95-148; s. 1, ch. 96-185; s. 2, ch. 97-300; s. 161, ch. 99-248.

Note.--Former s. 316.111.

APPENDIX F: AMERICANS WITH DISABILITIES ACCESSIBILITY GUIDELINES EXCERPTS

4.7 Curb Ramps.

4.7.1 Location. Curb ramps complying with 4.7 shall be provided wherever an accessible route crosses a curb.

4.7.2 Slope. Slopes of curb ramps shall comply with 4.8.2. The slope shall be measured as shown in Fig. 11. Transitions from ramps to walks, gutters, or streets shall be flush and free of abrupt changes. Maximum slopes of adjoining gutters, road surface immediately adjacent to the curb ramp, or accessible route shall not exceed 1:20.

4.7.3 Width. The minimum width of a curb ramp shall be 36 in (915 mm), exclusive of flared sides.

4.7.4 Surface. Surfaces of curb ramps shall comply with 4.5.

4.7.5 Sides of Curb Ramps. If a curb ramp is located where pedestrians must walk across the ramp, or where it is not protected by handrails or guardrails, it shall have flared sides; the maximum slope of the flare shall be 1:10 (see Fig. 12(a)). Curb ramps with returned curbs may be used where pedestrians would not normally walk across the ramp (see Fig. 12(b)).

4.7.6 Built-up Curb Ramps. Built-up curb ramps shall be located so that they do not project into vehicular traffic lanes (see Fig. 13).

4.7.7 Detectable Warnings. A curb ramp shall have a detectable warning complying with 4.29.2. The detectable warning shall extend the full width and depth of the curb ramp.

4.7.8 Obstructions. Curb ramps shall be located or protected to prevent their obstruction by parked vehicles.

4.7.9 Location at Marked Crossings. Curb ramps at marked crossings shall be wholly contained within the markings, excluding any flared sides (see Fig. 15).

4.7.10 Diagonal Curb Ramps. If diagonal (or corner type) curb ramps have returned curbs or other well-defined edges, such edges shall be parallel to the direction of pedestrian flow. The bottom of diagonal curb ramps shall have 48 in (1220 mm) minimum clear space as shown in Fig. 15(c) and (d). If diagonal curb ramps are provided at marked crossings, the 48 in (1220 mm) clear space shall be within the markings (see Fig. 15(c) and (d)). If diagonal curb ramps have flared sides, they shall also have at least a 24 in (610 mm) long segment of straight curb located on each side of the curb ramp and within the marked crossing (see Fig. 15(c)).

4.7.11 Islands. Any raised islands in crossings shall be cut through level with the street or have curb ramps at both sides and a level area at least 48 in (1220 mm) long between the curb ramps in the part of the island intersected by the crossings (see Fig. 15(a) and (b)).

4.8 Ramps.

4.8.1* General. Any part of an accessible route with a slope greater than 1:20 shall be considered a ramp and shall comply with 4.8. Appendix Note

4.8.2* Slope and Rise. The least possible slope shall be used for any ramp. The maximum slope of a ramp in new construction shall be 1:12. The maximum rise for any run shall be 30 in (760 mm) (see Fig. 16). Curb ramps and ramps to be constructed on existing sites or in existing buildings or facilities may have slopes and rises as allowed in 4.1.6(3)(a) if space limitations prohibit the use of a 1:12 slope or less. Appendix Note

4.8.3 Clear Width. The minimum clear width of a ramp shall be 36 in (915 mm).

4.8.4* Landings. Ramps shall have level landings at bottom and top of each ramp and each ramp run. Landings shall have the following features:

(1) The landing shall be at least as wide as the ramp run leading to it.

(2) The landing length shall be a minimum of 60 in (1525 mm) clear.

(3) If ramps change direction at landings, the minimum landing size shall be 60 in by 60 in (1525 mm by 1525 mm).

(4) If a doorway is located at a landing, then the area in front of the doorway shall comply with 4.13.6. Appendix Note

4.8.5* Handrails. If a ramp run has a rise greater than 6 in (150 mm) or a horizontal projection greater than 72 in (1830 mm), then it shall have handrails on both sides. Handrails are not required on curb ramps or adjacent to seating in assembly areas. Handrails shall comply with 4.26 and shall have the following features:

(1) Handrails shall be provided along both sides of ramp segments. The inside handrail on switchback or dogleg ramps shall always be continuous.

(2) If handrails are not continuous, they shall extend at least 12 in (305 mm) beyond the top and bottom of the ramp segment and shall be parallel with the floor or ground surface (see Fig. 17).

(3) The clear space between the handrail and the wall shall be 1 - 1/2 in (38 mm).

(4) Gripping surfaces shall be continuous.

(5) Top of handrail gripping surfaces shall be mounted between 34 in and 38 in (865 mm and 965 mm) above ramp surfaces.

(6) Ends of handrails shall be either rounded or returned smoothly to floor, wall, or post.

(7) Handrails shall not rotate within their fittings. Appendix Note

4.8.6 Cross Slope and Surfaces. The cross slope of ramp surfaces shall be no greater than 1:50. Ramp surfaces shall comply with 4.5.

APPENDIX G: CITY OF DELTONA LAND DEVELOPMENT EXPERPTS

COMMISSION POLICY/PROCEDURE

EFFECTIVE DATE	POLICY NUMBER	PAGE NUMBER	SUPERSEDES POLICY
7/16/01	CC01-003	1 of 2	Dated: N/A

Subject: Sidewalk Prioritization Plan	Adopted by the Deltona City Commission at the Regular City Commission meeting held on July 16, 2001.

GENERAL:

The building of sidewalks will be prioritized according to need, be limited to rights of way owned by the City of Deltona, and shall be subject to annual budget appropriations.

The following criteria will be used in determining where sidewalks will be constructed. In most cases, new sidewalk construction will be limited to one side of the street until all priority areas have sidewalks in place.

Sidewalks may be constructed close to pedestrian generators, to continue a walk on an existing street, to link areas, or depending on probable future development.

SCHOOLS:

Sidewalks will be constructed along roadways with pedestrian traffic en route to elementary and middle schools within one half (.5) mile and one (1.0) mile of the school as well as along roadways with pedestrian traffic en route to bus stop locations.

COLLECTOR ROADS:

Sidewalks will be provided on at least one side of all minor collectors and both sides of arterials and major collectors and also along roadways that are being widened or otherwise improved.

CDBG AREAS:

In Community Development Block Grant areas, sidewalks along roadways will be constructed so as to provide neighborhood improvements in targeted areas.

LOCATION OF SIDEWALKS:

Sidewalks shall be placed in the right-of-way, parallel to the street, unless an exception has been permitted to preserve topographical or natural features or to provide visual interest, or unless the applicant shows that an alternative pedestrian system provides safe and convenient circulation.

SUBDIVISIONS:

All subdivisions shall have four-foot-wide concrete sidewalks on both sides of all local and minor collector streets and five-foot-wide sidewalks on all arterial or major collector streets. All sidewalks shall be located within street rights-of-way or approved easements.

SPECIAL CONSIDERATION:

Special considerations will be given along roadways where circumstances or changes in development or use warrant construction of sidewalks, also where new park construction entails additional sidewalks.

SIDEWALK ASSESSMENTS:

The City may, at its discretion, construct a sidewalk along any street or roadway it feels is needed and appropriate for the health, safety and welfare of its citizens. In doing so, the City reserves the right to assess each property owner on a street frontage basis.

APPENDIX H: LETTER TO PRINCIPAL AND PRINCIPAL QUESTIONNAIRE

Lassiter Transportation Group, Inc.
Engineering and Planning

Via Email (jfjones@volusia.k12.fl.us)

Ref: 3706.05

April 06, 2010

Principal Mr. Julian Jones
Galaxy Middle School
2400 Eustace Avenue
Deltona, FL 32725

Re: Volusia County Metropolitan Planning Organization (VCMPO) Bike and Pedestrian Safety Review

Dear Mr. Jones:

The VCMPO has been awarded a Florida Department of Transportation (FDOT) safety grant to study bicycle and pedestrian safety as it relates to elementary and middle schools, such as Galaxy Middle School, in the VCMPO planning area. Lassiter Transportation Group, Inc. has been retained to conduct these studies on the VCMPO's behalf.

We would like input from you to identify any bicycle and pedestrian safety-related issues or concerns that the school may be experiencing. Enclosed with this letter is a questionnaire form detailing the information that we are requesting. We would like to arrange a meeting with you, at your convenience, to discuss these items and will contact you in the near future to this end.

If you should have any questions or comments regarding this letter, please feel free to contact me at (386) 257-2571.

Sincerely,

LASSITER TRANSPORTATION GROUP, INC.

R. Sans Lassiter, PE
President

c: Stephan C. Harris, Bicycle & Pedestrian Coordinator, VCMPO
Saralee Morrissey, AICP, Director of Site Acquisitions & Intergovernmental Coordinator, Volusia County Schools
Jon Cheney, PE, Volusia County Traffic Engineering
Chris Bowley, AICP, City of Deltona Planning & Development

Walk Grade
- have to cross to queues / parents ~~Picking up~~ 3 h

VOLUSIA COUNTY
METROPOLITAN PLANNING ORGANIZATION

PRINCIPAL QUESTIONNAIRE

TO: Galaxy Middle School
Ms. Julian Jones, Principal
2400 Eustace Avenue
Deltona, FL 32725

AP - 5 yrs at school

FROM: Stephan Harris
Volusia County Metropolitan Planning Organization (VCMPO)
2570 W. International Speedway Blvd, Suite 120
Daytona Beach, FL 32114-8145

RE: **MEETING DATE (TBD)**
SCHOOL WALK ZONE SAFETY ANALYSIS

The Volusia County Metropolitan Planning Organization (MPO) is conducting assessments aimed at improving the safety conditions for students who bicycle or walk to and from school. Galaxy Middle School has been chosen as one of the schools to be studied during this study phase. The following questionnaire will aid us in this effort. Your participation is key to the success of this analysis and is greatly appreciated.

You will be meeting with our traffic engineering consultants who will be conducting this study, Lassiter Transportation Group. Each staff member responsible for conducting the on-site analysis has gone through the appropriate back-ground check. Should you have any questions, please do not hesitate to contact them directly. Mr. Sans Lassiter or Ms. Crystal Mercedes PH: (386) 257-2571 or by E-mail: rlassiter@lassitertransportation.com or cmercedes@lassitertransportation.com.

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1. Number of students currently enrolled: 1150 (used to be 1800)

   Comments:

2. Number of students (or approximate percentage) who walk/bicycle to/from school: 25%

   Comments: 16 Buses ~ 50-60 riders each

3. Are you aware of any facility (sidewalk, crosswalk, etc.) maintenance issues? If yes, please explain.

   No side walks if there are Sidewalks they are Used for parking by home owners

4. Are you aware of any parents who stop and/or park along the walk zone route to drop-off/pick-up their students to avoid the regular school pick-up lines? If yes, does this cause a safety issue with the students who walk/bicycle?

   Not aware Yes Parents park along Eustace Ave on or near the sidewalk - lack of area for parents in loop
   - parking on shldr/SW to avoid

School Start 8:56 3:41

VOLUSIA COUNTY
METROPOLITAN PLANNING ORGANIZATION

Elem School Guard leaves before MS starts

Policy

5. Are you aware of any safety hazards or issues along the school's walk zone?

No – Elem Schools get Xing guards, not MS
– U Turns after dropping kids off
– Flashers goes "off" outside elem school hrs (need to remain "on" in MS in front)
– Students crossing site access queues
– Parents parking on Eustace S/W

6. Please list all known crash incidents within the walk zone. Did any of the crashes cause an issue for walkers/bikers? If yes, please explain.

None
– Knows of 1 at Eustace / Seagate – Bicycle hit kid with bolt on axle - tore up walkers leg

7. What is your biggest concern relative to the conditions faced by the students who walk/bicycle to/from school?

– No Crossing guard for Middle School
– Parents parked on S/W

8. What changes/improvements would you like to see relative to the conditions faced by the students who walk/bicycle to/from school?

More - Side walks on Eustace
- Coming up Eustace - cars parking on S/W, kids having to walk in St
- Police have monitored speed individ w/ K radar unit

COMMENTS:

Not aware of any students using VOTRAN
Bike vs Walk (warnings, then tickets)
Helmets - SRO shared w another school (helmet enforcement)
- majority don't have helmets
Possible double-lane Kiss loop
Consider use of Library for parking
Predator road along Providence Blvd - adjacent to preserve on east side of street – ? Potential call box
- Video surveillance
Safety issue causing more parent drop-off/pick-up to occur

APPENDIX I: HAZARDOUS-COURTESY (09-10)

STATE #	AREA	Condition Code	Location of Hazard	Hazardous/Courtesy	Reason	Responsible Governmental Entity	Date Determined Hazardous MO/DAY/YR	Next Review Date	Projected Completion Date	Number of Students Determined	Per Hour Traffic Count
070014	**1**	A	E & W of Airport Road bet Ocean Pines Drive & 800 block of Airport Road **(Pine Trail)**	H	No 4ft flat walk space	A	03/02/07	4/17/2010	N/A	18	449
070015	**1**	A	Westside of Tymber Creek fr 218 Tymber Creek S to Tymber Creek N to Jason St **(Pathways)**	H	No 4ft flat walk space	A	03/02/07	4/17/2010	N/A	28	664
070019	**1**	C	E & W of RR bet Hand & Calle Grande **(Holly Hill Elem)**	H	No 4ft flat walk space	A	03/02/07	4/17/2010	N/A	10	725
070021	**1**	C	Eastside Tymber Creek fr Airport to Durrence Ln**(Pathways)**	H	No 4ft flat walk space	A	03/02/07	4/17/2010	N/A	37	467
100001	**1**	B	Eastside of LPGA fr INTL Tennis to Champion Dr **(Champion Elem)**	H	Multi Ln Roadway	A	08/24/09	4/17/2010	N/A	6	650
	1		E & W of RR bet Hand & Calle Grande **(Holly Hill Middle)**	C	No Ped Feature @ R Rxing			4/17/2010		35	
	1		Williamson Blvd N from Mason to Indigo Dr S **(Palm Terrace)**	C	Multi Ln Roadway			4/17/2010		37	
	1		East of Nova Rd from Fernery Trl to U S 1 **(Tomoka Elem)**	C	Multi Ln Roadway			4/17/2010		35	
STATE #	**AREA**	**Condition Code**	**Location of Hazard**	**Hazardous/Courtesy**	**Reason**	**Responsible Governmental Entity**	**Date Determined Hazardous MO/DAY/YR**	**Next Review Date**	**Projected Completion Date**	**Number of Students Determined**	**Per Hour Traffic Count**
070004	**2**	C	US1 crossing at Dunlawton Avenue S to Niver St **(Port Orange)**	H	Multi Ln Roadway	C	03/02/07	4/17/2010	N/A	10	730
070008	**2**	C	Westside Nova Rd. bet Madeline Ave & Dunlawton crossing at Herbert St. **(Sugar Mill)**	H	No Ped Feature @ R Rxing	E	03/02/07	4/17/2010	N/A	87	858
080001	**2**	C	Southside Dunlawton between Jackson St & Lemon St **(Sugar Mill)**	H	Multi Ln Roadway	C	06/13/07	4/17/2010	N/A	32	1,298
080002	**2**	C	Ridgewood Av East and West from Reed Canal to Dunlawton Ave **(Sugar Mill)**	H	No Ped Feature @ R Rxing	C	06/13/07	4/17/2010	N/A	37	1,502
	2		Taylor Rd between I-95 and Fern Park Dr. to include Summertrees Subdivision **(Spruce Creek High)**	C	No Ped Feature @ exit/entrance ramp to I-95			4/17/2010			
	2		East of RR from Beville to ISB/W of Nova Rd between Beville and Bellevue **(T T Small)**	C	High Crime			4/17/2010			
	2		Westside of Nova Rd between Reed Canal and Beville **(South Daytona Elem)**	C	Multi Ln Roadway			4/17/2010			
	2		Westside of Clyde Morris between Big Tree and Shangri La then Eastand west of Clyde Morris to Shangri La N **(Atlantic High)**	C	Multi Ln Roadway & No 4ft walkspace			4/17/2010			

STATE #	AREA	Condition Code	Location of Hazard	Hazardous/Courtesy	Reason	Responsible Governmental Entity	Date Determined Hazardous MO/DAY/YR	Next Review Date	Projected Completion Date	Number of Students Determined	Per Hour Traffic Count
	3		Southside of 801 S Old County Rd - Indian River Blvd from Willow Oak to US1 **(Edgewater Elem)**	C	Multi Ln Roadway			4/17/2010			
STATE #	**AREA**	**Condition Code**	**Location of Hazard**	**Hazardous/Courtesy**	**Reason**	**Responsible Governmental Entity**	**Date Determined Hazardous MO/DAY/YR**	**Next Review Date**	**Projected Completion Date**	**Number of Students Determined**	**Per Hour Traffic Count**
070003	**4**	C	Minnesota Ave E of Blue Lk Bridge to Kepler Rd on Kepler Rd fr SR44 to Talmadge**(Blue Lake)**	H	No 4ft flat walk space	A	03/01/07	4/17/2010	N/A	0	255
070005	**4**	C	US92 @ Stone N - US17 - Old Dayt.-Dietrick-US92-US17/92-Plymouth-Stone-US92**(George Marks)**	H	No Ped feature at 17-92 or 92 @ Garfield, No 4ft flat walk space	C	03/01/07	4/17/2010	N/A	44	1,877
070012	**4**	C	E & W of CR3 between North Road & Menton Road **(Pierson)**	H	No 4ft flat walk space	A	03/01/07	4/17/2010	N/A	57	144
070016	**4**	C	N & S of Graves Ave E fr Florabunda Cir to I-4 Overpass **(Orange City)**	H	Multi Ln Roadway over 55mph	A	03/01/07	4/17/2010	N/A	47	975
090001	**4**	B	On Hwy 44 W, Northside between 15A & Grand Av **(Woodward Elem)**	H	Multi Ln Roadway	A	09/21/08	4/17/2010	N/A	15	650
	4		West of 17-92 between Beresford and Voorhis **(DeLand Middle)**	C	Multi Ln Roadway			4/17/2010			
	4		Center St between Palmetto Av and Hagstrom Rd **(Pierson Elem)**	C	Multi Ln Roadway over 55mph			4/17/2010			
STATE #	**AREA**	**Condition Code**	**Location of Hazard**	**Hazardous/Courtesy**	**Reason**	**Responsible Governmental Entity**	**Date Determined Hazardous MO/DAY/YR**	**Next Review Date**	**Projected Completion Date**	**Number of Students Determined**	**Per Hour Traffic Count**
070006	**5**	C	E & W SR 415 fr Eastside Ln to Longwood Dr **(Osteen)**	H	No 4ft flat walk space	C	03/01/07	4/17/2010	N/A	39	1,342
070010	**5**	A	N & S Dirksen/DeBary West of Mansion Blvd to E of Maple Ave & Salvadore Rd **(Enterprise)**	H	No 4ft flat walk space	A	03/01/07	4/17/2010	N/A	20	1,556
070013	**5**	C	E & W of Doyle Road bet Saxon Blvd & Twisted Oak**(Forest Lake)**	H	No 4ft flat walk space	A	03/01/07	4/17/2010	N/A	9	542
100002	**5**	B	East & Westside of Providence fr Lakeshore to Anderson **(Enterprise Elem)**	H	No 4ft flat walk space	A	08/03/09	4/17/2010	N/A	70	193
100003	**5**	A	N & S of Fort Smith fr Deed to Clovis **(Sunrise Elem)**	H	No 4ft flat walk space	A	08/10/09	4/17/2010	N/A	32	650
	5		Dirksen Dr -DeBary Av between Riverside Condos and Maple Av **(Deltona Middle)**	C	Multi Ln Roadway			4/17/2010			
STATE #	**AREA**	**Condition Code**	**Location of Hazard**	**Hazardous/Courtesy**	**Reason**	**Responsible Governmental Entity**	**Date Determined Hazardous MO/DAY/YR**	**Next Review Date**	**Projected Completion Date**	**Number of Students Determined**	**Per Hour Traffic Count**
	6		Riverbluff and Highbanks Rd W to Sanctuary Av **(DeBary Elem)**	C	No Ped Feature @ R Rxing			4/17/2010			
	6		South and West sides of Volusia Av and Rhode Island **(Manatee Cove)**	C	Multi Ln Roadway			4/17/2010			
	6		Saxon Blvd west of Normandy **(Spirit Elem)**	C	Multi Ln Roadway			4/17/2010			

APPENDIX J: MEETING MINUTES WITH VICE-PRINCIPAL BYNUM

Lassiter Transportation Group, Inc.
Engineering and Planning

Ref: 3706.01

MEETING MINUTES

Subject: Meeting with the Assistant Principal of Galaxy Middle School, Mr. Charlie Bynum
VCMPO School Bike/Pedestrian Safety Study

Location: Galaxy Middle School
2400 Eustace Avenue
Deltona, FL 32125

Date: Thursday, April 22, 2010 (8 a.m.)

Attendees: Mr. Charlie Bynum, Assistant Principal, Sweetwater Elementary
Steve Harris, VCMPO
Chris Bowley, AICP
Sans Lassiter, P.E., LTG
Dian Singh, Engineer, LTG

Discussion Items:

1. **Introduction**:
   - R. Sans Lassiter, P.E.

2. **Overview of Sweetwater Elementary by Principal Pat Miller**
   - 1150 students in attendance
   - 16 busses in use and 50-60 students per bus (800-960 students ride bus)
   - Approximately 25 students ride bicycles
   - District more strict with two mile radius walk zone
     - could get bussed before but now no exceptions
     - students outside the walk zone must walk
     - even @ high volume intersections, sexual predators living in area
     - only bus stop within walk zone for Exceptional Student Education (ESE) students
   - Only entrance/exit to sidewalk for walkers located on western-most gate of school
     - Students using this gate must walk through entrance to parent parking lot, entrance to parent loop, and exit of parent loop (three entrances/exits) to get to cars off campus east of school or to access Providence Boulevard
     - Three gates can be used by students for entrance/exit but two are locked since there are not enough available resources to monitor gates
   - No crossing guards at middle schools, however, the crossing guards at the intersection of Seagate Avenue and Eustace Avenue who cross students of Timbercrest Elementary, located across from Galaxy Middle School, do cross middle school students until their shift has ended
     - School flashers are tuned on/off by the crossing guards when they arrive/leave for shift (when flasher is off, speed is back to 35 mph)
   - Sheriff's office helps in the AM and PM by pulling over and issuing tickets for speeders and/or motorists who drop students off at the gate then proceed to make a u-turn to leave the school

- No known accidents with vehicles and students
- Recent accident at Seagate Drive and Eustace Avenue with bicyclist and pedestrian crashing into each other (pedestrian was taken by ambulance to hospital)
- PM experiences worst traffic since students are waiting to be picked up and parents are waiting for students to get to car
- Need quick drop-off/pick-up
    - Parents park and/or drop off at sidewalk to avoid queue
- Votran stop in front of library on Eustace Avenue but no riders from Galaxy Middle School
- Parents not notified of arrival/dismissal procedures

3. **Areas of Concern**

- Eustace Avenue
    - Pedestrians parking east of school on either side of street
    - Between school and library, no capacity @ school drop off so parents usually drop-off/pick-up or park on side of road (Eustace Avenue)
        - Cars parked along this road poses a problem for students since students must pass through these cars to get to parents or are heading to providence
        - Big issue of sexual predators
    - Speeding drivers
        - Speed measuring devices are sometimes placed on Eustace to show how fast motorists are driving – is helpful when in place
- Providence Boulevard
    - Sexual predators try to pick up stragglers along preserve
- Sidewalk
    - Residents park on sidewalk and driveway, thereby blocking students from using sidewalks
- Speeding drivers
- SRO: Galaxy Middle School does not currently have an SRO (one has been assigned)
    - SRO enforces helmet use by giving warning tickets and tickets to students not wearing a helmet
    - Majority of students do not wear helmets
- Sexual Predators – live close by to bus stops

4. **Possible Recommendations:**

- Longer parent loop or double-lane loop (per VP)
- Sidewalks that can be used by students and not for parking by residents
- More enforcement in the afternoon
- Parents can park at library – possible connect library to school with walking/biking path
- Call box on Providence Boulevard across from the Deltona Administrative Building

- Visual Safety: parked VCSO car on side of road to deter sexual predators
- Talk to Sheriff Dave Brannan
- Potential projects programmed on Providence Boulevard – Talk to Chris Bowley

Disclaimer: The above Meeting Minutes represent LTG's notes taken and/or comments recorded during the subject meeting. Recipients in attendance at the meeting are requested to review the comments presented above. Any comments identified as either misrepresented or missing are accidental in nature and should be noted to LTG by telephone (386.257.2571), fax (386.257.6996) or e-mail (rlassiter@lassitertransportation.com). Any such notices shall be reviewed and addressed in writing by LTG as *Revised* Meeting Minutes and circulated to all attendees as well as to the balance of the distribution list.

APPENDIX K: CONTACT LIST

Data Collection Checklist/Contact List
VCMPO Bike/Pedestrian Safety Study

Name of School: _____ Job #: _____

Principal: _____ Date: _____

X-Gurard Supervisor: _____

	Volusia County Traffic Engineer	City of Port Orange	Public Works (Volusia County Engineers)	Sweetwater Elementary	Volusia County Schools	Questionnaire	Observation	GIS	VCMPO	BPAC	Property Appraiser	Sheriffs Office	Contact
General:													
Crash Data Ordered	X												Jon Cheney @ jcheney@co.volusia.fl.us (386) 257-6000, ext. 5968
Crash Data Received													Jon Cheney @ jcheney@co.volusia.fl.us (386) 257-6000, ext. 5968
Attendance Zones For study School					X								Tina Martinez, GIS Specialist @ temartin@volusia.k12.fl.us 386-947-8786 EXT 50720
City Boundaries											X		MorganG@co.volusia.fl.us @ 386-254-4601
Notice of Intent to Principal				X									Patricia Miller @ 386-322-6230 PAMILLER@volusia.k12.fl.us
Notice of Intent to Supervisor of Crossing Guards (Sheriffs Office)												X	Lt. Bobby Lambert @ blambert@vcso.us Volusia County Sherriff's Office @ 386-736-5961
Number of Students Living in Walk Zone					X								Tina Martinez, GIS Specialist @ temartin@volusia.k12.fl.us 386-947-8786 EXT 50720
Specific:													
Signals/Crosswalks or Related Traffic Improvements	X	X											Jon Cheney @ jcheney@co.volusia.fl.us (386) 257-6000, ext. 5968
Sidewalk, Trail or Bike Lane (Elementary)	X	X	X										Arden Fontaine 386-736-5965 x5621 afontaine@co.volusia.fl.us
Sidewalk, Trail or Bike Lane (Middle School)													Ann Conoly, Manager (Support Services Center) 386-734-7190, Ext. 20410 E-mail: aconley@volusia.k12.fl.us/
Attendance Zone Changes													Pat Miller @ 386-322-6230
Walk Zones (Elementary)					X								Saralee Morrissey @ smorriss@volusia.k12.fl.us 386-255-6475 Ext. 50772
Walk Zones (Middle School)					X								Ann Conoly, Manager (Support Services Center) 386-734-7190, Ext. 20410 E-mail: aconley@volusia.k12.fl.us/
Attendance Zone for Study School					X								Saralee Morrissey @ smorriss@volusia.k12.fl.us 386-255-6475 Ext. 50772
Census for Walkers						X							Pat Miller @ 386-322-6230
Census for Bikers						X							Pat Miller @ 386-322-6230
Census for Bus Riders						X							Greg Akin gpakin@volusia.k12.us 386-736-6753 ext. 20812
Walking/Biking Routes				X	X								Saralee Morrissey @ smorriss@volusia.k12.fl.us 386-255-6475 Ext. 50772
Crossing Locations				X		X							Cindy Pagliari, School Crossing Guard Supervisor 386-323-0151 cpagliari@vcso.us
Safe Routes Tally				X	X								Pat Miller @ 386-322-6230
Proposed Trails	X								X	X			Jon Cheney @ jcheney@co.volusia.fl.us (386) 257-6000, ext. 5968
Conservation and Park Lands								X					Tina Martinez, GIS Specialist @ temartin@volusia.k12.fl.us 386-947-8786 EXT 50720
Municipal Boundaries								X					Tina Martinez, GIS Specialist @ temartin@volusia.k12.fl.us 386-947-8786 EXT 50720
Drainage Ditches							X						Crystal Mercedes @ Lassiter Transportation 386-257-2571
Bridges							X						Crystal Mercedes @ Lassiter Transportation 386-257-2571
Retention Ponds							X						Crystal Mercedes @ Lassiter Transportation 386-257-2571
Safety Procedures				X									Pat Miller @ 386-322-6230
Funded/Future Improvements and Proposed Project Including:													
Roadways	X	X	X										Jon Cheney @ jcheney@co.volusia.fl.us (386) 257-6000, ext. 5968
Developments (subdivisions, schools, shopping centers)	X	X											Jon Cheney @ jcheney@co.volusia.fl.us (386) 257-6000, ext. 5968
Attendance Zone Changes				X									Pat Miller @ 386-322-6230
Proposed School Construction/Improvement Projects		X			X								Saralee Morrissey @ smorriss@volusia.k12.fl.us 386-255-6475 Ext. 50772
Conservation and Park Lands	X												Jon Cheney @ jcheney@co.volusia.fl.us (386) 257-6000, ext. 5968
Drainage Ditches							X						Crystal Mercedes @ Lassiter Transportation 386-257-2571
Bridges							X						Crystal Mercedes @ Lassiter Transportation 386-257-2571
Retention Ponds							X						Crystal Mercedes @ Lassiter Transportation 386-257-2571
Expansion Plans Such as Drainage Canals, Airport Expansion, Pedestrian Bridges, Public Land Expnsn.	X	X	X										Jon Cheney @ jcheney@co.volusia.fl.us (386) 257-6000, ext. 5968