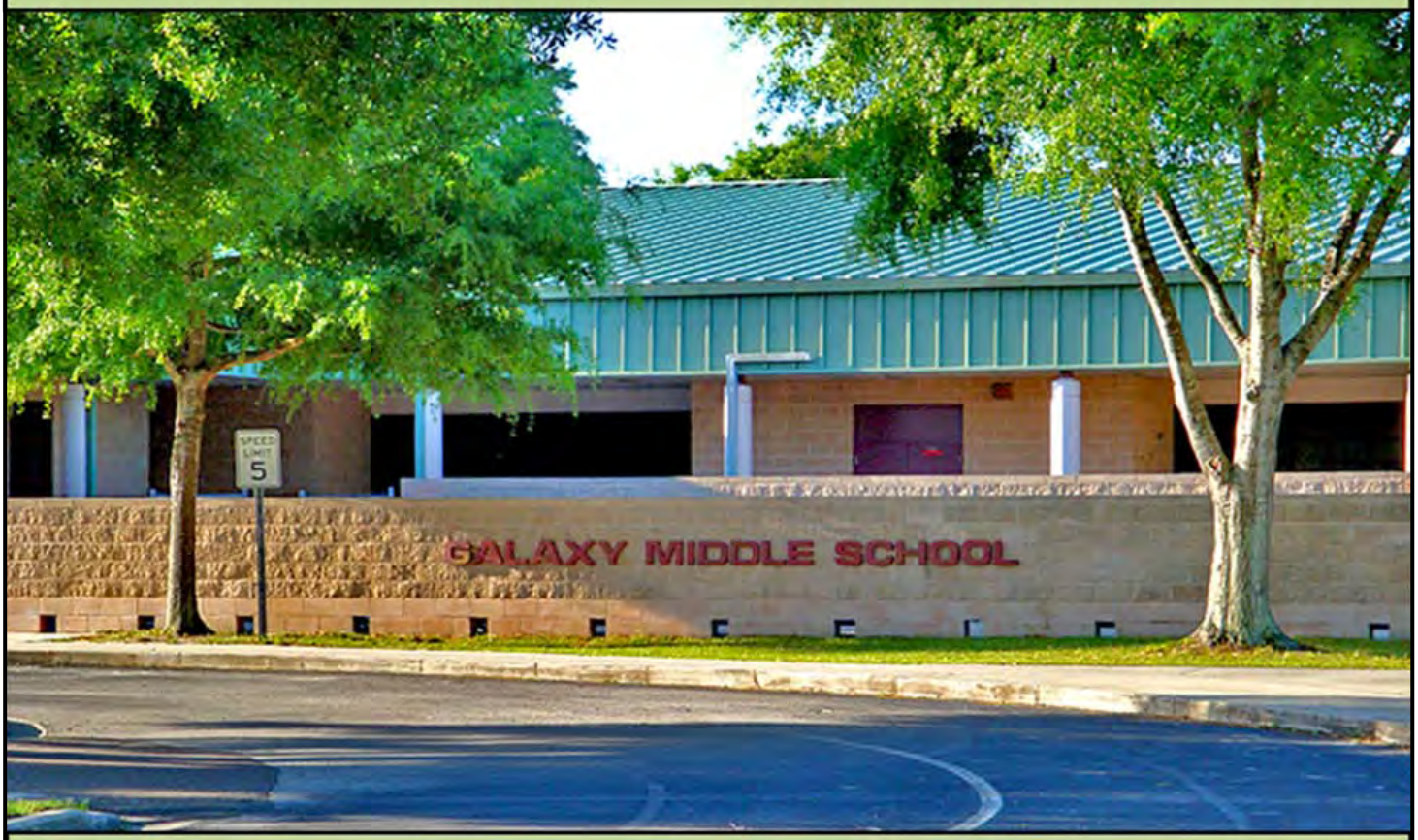
Bicycle and Pedestrian School Safety Review Study

Assessment & Implementation Report Galaxy Middle School

Deltona, FL



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March 7, 2011

Volusia Transportation Planning Organization
Bicycle and Pedestrian School Safety Review Study

Assessment & Implementation Report
Galaxy Middle School
Deltona, Florida

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Acknowledgements

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Greg Akin: Director, Volusia County School District/Student Transportation Services

Anabel Alicea: Crossing Guard

Deputy Pat Allison: Sherriff's Office

Chris Bowley, AICP: Director of the Department of Planning and Development Services

Dan Brown, MPH, MRP: Safe Routes to School Center, Program Manager

Charlie Bynum: Vice Principal of Galaxy Middle School

Jon Cheney: Traffic Engineer, Volusia County

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Table of Contents

List of Figures

List of Tables

Appendices

1

EXECUTIVE SUMMARY

Lassiter Transportation Group, Inc. (LTG) was contracted by the Volusia 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 enable the Volusia TPO to make recommendations for projects that will improve the walkability of students living within the school walk zone. The subject of this Assessment Report is Galaxy Middle School.

Purpose

The purpose of the Bicycle and Pedestrian School Safety Review Study is to create a safe environment for students to walk or bicycle to school. The goal for the assessment phase of this study is to provide the Volusia 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 includes the walk zone surrounding the school and it will evaluate safety issues that may affect students walking or bicycling to school. In addition, another goal of the assessment report is to continue the coordination among the stakeholders to implement the recommendations of these studies.

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

- Increased practice of safe bicycle, pedestrian, and traffic skills
- Knowledge of their environment
- Improve childhood health
- Improve sense of self-image and autonomy
- Reduce childhood obesity
- Contributes to a healthy social and emotional development
- More alert students who do better in school
- Increased likelihood that students will grow up to lead a healthy lifestyle

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

- Decline in the congestion on the roads
- Decreased opportunities for traffic accidents
- Improved air quality
- Improved community security
- Reduced fuel consumption
- Enhanced community accessibility
- Increased community involvement
- Improved partnerships among schools, parents, community groups, and the local government leaders

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

Table 1
Findings and Recommendations Summary
Galaxy Middle School Assessment Study

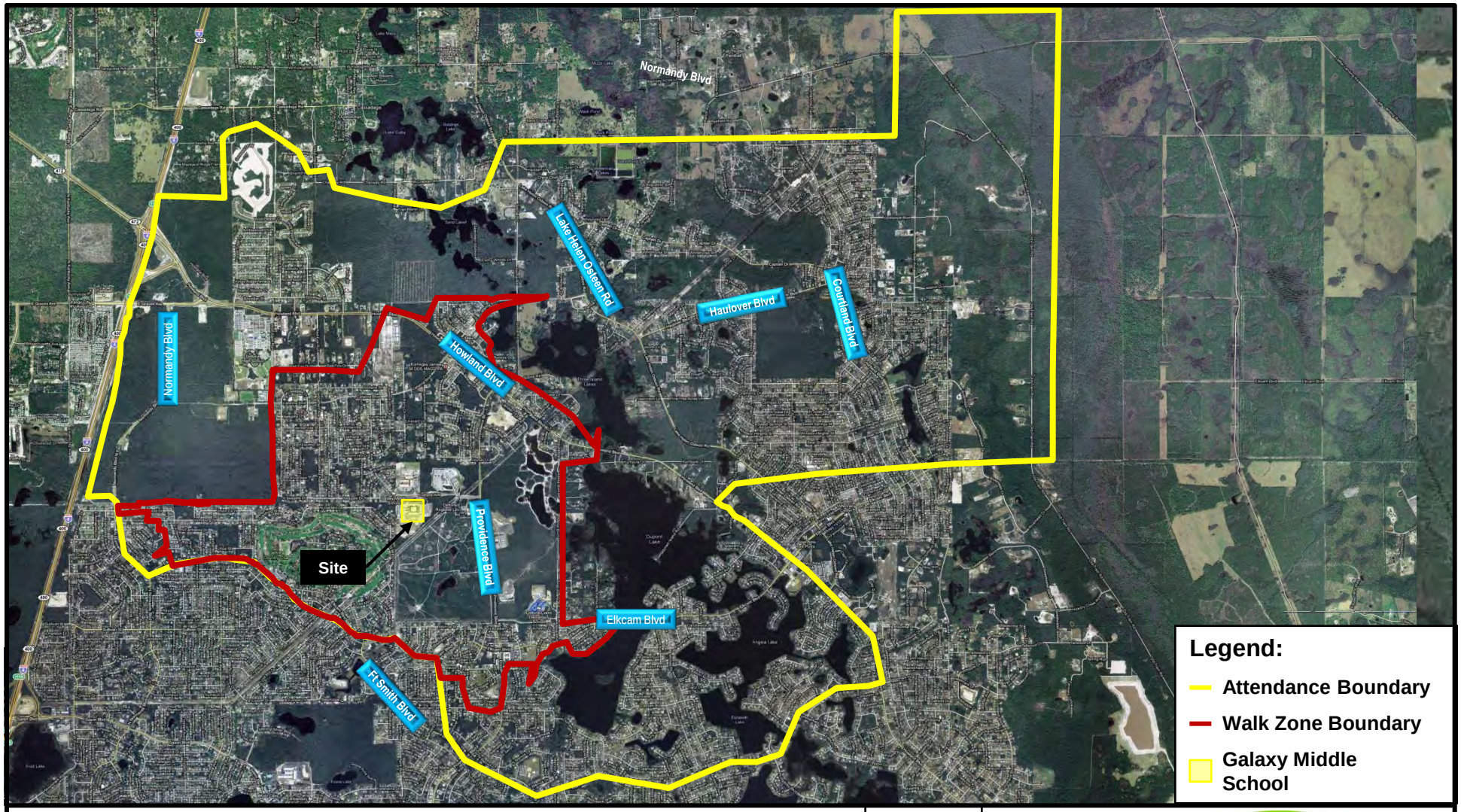
Location	Responsible Agency	Observations	Recommendations
Galaxy Middle School Walk Zone	School Board	Bicycling students are not wearing helmets	The assigned SRO should take an active role to ensure all students are wearing helmets; if students choose not to wear helmets then warnings should be given, followed by the issuance of tickets (2009 Florida Statutes, 316.2065 Bicycle Regulations)
Student Entry and Exit Gate Between Bus Entrance and Parent Entrance	City of Deltona	Students have to cross to west side of campus and return across the entrance and exit of the parent loop driveways if they are destined east of the site	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
Parent-Loop Exit	Galaxy Middle School Staff	Students were observed exiting the parent loop exit driveway, which puts them in the travel lane of exiting vehicles	Students should be redirected to the proposed sidewalk (see recommendation in Section 5) that is parallel to the parent loop exit; this will divert student traffic away from the driveways of the parent loop exit and the parent loop entrance
	City of Deltona	DO NOT ENTER (R5-1) signs located on either side of the parent loop exit are faded and cracked	Remove existing sign and replace with a current DO NOT ENTER (R5-1) sign
		Stop line is faded and unnoticeable	Refurbish stop line
Teacher Parking Lot/Bus Loop	City of Deltona	Stop line is faded and unnoticeable	Refurbish stop line
Along Eustace Avenue, in front of Galaxy Middle School	City of Deltona	12 NO PARKING signs are faded	Replace NO PARKING (R7-1) signs
Along Eustace Avenue	City of Deltona	SCHOOL crossing sign at crosswalks are outdated, faded, cracked, not reflective, or current on background color; adjacent crosswalk marking are faded	Remove exiting signs and replace with a School Crossing Assembly (S1-1 and W16-7) that has a reflective fluorescent yellow-green background
			Remove existing crosswalk markings, at mid-block across from the parent loop exit, and install special emphasis crosswalk markings
		SCHOOL pavement markings, adjacent to the advance school signs, are old and faded	Refurbish single-lane SCHOOL pavement markings
		Advance school signage are outdated, faded, cracked, not reflective, or current on background color	Remove existing signs and replace with a School Advance Crossing Assemblies (S1-1 and W16-9P)
Eustace Avenue, East of School	City of Deltona	Pavement to shoulder has an excessive drop of greater than 8 inches in some places	Stabilization should be used to fill the shoulder to pavement height

Table 1 (Continued)
Findings and Recommendations Summary
Galaxy Middle School Assessment Study

Location	Responsible Agency	Observations	Recommendations
Intersection of Providence Boulevard and Eustace Avenue	City of Deltona	Crosswalk markings are faded and worn	Remove existing crosswalk markings and install special emphasis crosswalk markings (Index No. 17346)
		On Eustace Avenue, the STOP pavement markings are faded and worn	Refurbish STOP pavement marking messages
Entrances and Exits of Galaxy Middle School Driveways	City of Deltona	Crosswalk markings are faded and worn at the entrances and exits of the school (parent entrance to loop, exit from loop, and bus/staff parking driveways)	Remove existing crosswalk markings and install special emphasis crosswalk markings (Index No. 17346)
Intersection of Eustace Avenue, Seagate Avenue, and Timbercrest Elementary School's Parent Parking Lot Driveway	City of Deltona	Crosswalk markings are faded and worn	Remove existing crosswalk markings and install special emphasis crosswalk markings (Index No. 17346)
		School crossing signs at crosswalks are outdated, faded, cracked, not reflective, or current on background color	Remove existing sign and replace with School Crossing Assembly (S1-1 and W16-7P)
	Sheriff's Department	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 fliers to this effect with warnings and tickets to be issued to habitual offenders
Seagate Drive, South of Eustace Avenue	City of Deltona	SCHOOL pavement markings are faded and worn	Refurbish single-lane SCHOOL pavement markings
		Advance school signs are outdated, faded, cracked, not reflective, or current on background color	Remove existing sign and replace with School Advance Crossing Assembly (S1-1 and W16-9P)
			Refurbish SCHOOL crosswalk markings adjacent to School Advance Crossing Assembly
Intersection of Seagate Drive and Placid Avenue	City of Deltona	Three SCHOOL crossing signs are outdated and faded	Remove existing signs and replace with School Crossing Assembly (S1-1 and W16-7P)
		Three-way intersection has faded crosswalk markings at all three crossings	Repaint crosswalk markings using special emphasis crosswalk markings (Index No. 17346)
Seagate Drive, West of Placid Avenue	City of Deltona	SCHOOL pavement markings are faded and worn	Refurbish single-lane SCHOOL pavement markings
Placid Avenue	City of Deltona	Advance school signs are outdated, faded, cracked, not reflective, or current on background color	Remove existing signs and replace with School Advance Crossing Assembly (S1-1 and W16-9P)
Old Mill Drive and Placid Avenue	City of Deltona	Two SCHOOL Crossing Signs are outdated and faded	Remove faded signs and replace with School Crossing Assemblies (S1-1 and W16-7P)

Table 1 (Continued)
Findings and Recommendations Summary
Galaxy Middle School Assessment Study

Location	Responsible Agency	Observations	Recommendations
Old Mill Drive, East and West of Placid Avenue	City of Deltona	Two SCHOOL in advance signs are old, faded, cracked, not reflective, or current on background color; adjacent SCHOOL pavement marking is faded and worn	Remove faded sign and replace with School Advance Crossing Assemblies (S1-1 and W16-9P)
			Refurbish SCHOOL pavement marking adjacent to School Advance Crossing Assemblies
Intersection of Old Mill Drive and Vicksburg Street	City of Deltona	STOP line is faded and unnoticeable	Refurbish STOP line
Vicksburg Street, West of Union Circle	City of Deltona	No sidewalk is available for walkers and bicyclists	Approximately 4,600 feet of 5-foot sidewalk (minimum) should be installed along Vicksburg Street, from Union Circle to Normandy Boulevard
Intersection of Old Mill Drive and Elkcam Boulevard	City of Deltona	Sidewalk switches from north- to south-side of Eustace Avenue but no crosswalk or signage is available to warn motorists of pedestrians crossing to gain access to the sidewalk on the other side of the road	100 feet of crosswalk markings should be installed on Eustace Avenue and Old Mill Drive



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Deltona, Florida

N

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Aerial of Attendance and Walk Zone

Figure 1

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2

INTRODUCTION

LTG has been given the task of conducting an Assessment Report for Galaxy Middle School as part of a Bicycle and Pedestrian School Safety Review Study for the Volusia TPO. An aerial that shows the walk zone and the boundary of Galaxy Middle School is presented as Figure 1. Galaxy Middle School is located at 2400 Eustace Avenue, west of Providence Boulevard, in the City of Deltona. The purpose of this study is to evaluate the walk zone of Galaxy Middle School for any safety issues that students might encounter if they choose to walk or bicycle to school.

Background on Galaxy Middle School

Galaxy Middle School, shown in Illustration 1, was built in 1990 and is currently in its 20th year of operation. Its enrollment numbers have gone down, from over 1,800 students to its current enrollment of 1,150 students. The Principal of Galaxy Middle School is Mr. Julian Jones and the Vice-Principal is Mr. Charlie Bynum.

Illustration 1: Galaxy Middle School

Galaxy Middle School supports the community in many ways. For instance, they maintain a Family Center on campus where students can check out materials or resources to help with the many facets of school life such as Reading, Math, Language Arts, Social Studies and Science. Parents are also allowed to check out materials from the Family Center to encourage learning at home. The Family Center provides information and holds workshops for FCAT, test-taking strategies, and tutoring. The workshops are not only geared for the students at Galaxy Middle School but for the parents as well. The last workshop the school conducted was for parents and students and was based on budgeting, preparing, and following a personal spending plan. Additionally, Galaxy Middle School encourages the Deltona branch of the YMCA to use its gym during the basketball season. The school also provides staff to promote safety during practices and games.

Galaxy Middle School has a good network of sidewalks on most collector roads and some residential roads in its walk zone. Sidewalk widths range from four to ten feet.

The following data was provided by Mr. Bynum:

- **Number of Volusia County Buses in Use:** 16
- **Number of Walkers:** Approximately 25%
- **Student Population:** 1,150 Students

Crash Data

Pedestrian and bicycle crash data for Galaxy Middle School's walk zone was provided by Volusia County and is presented in Table 2. The ages presented in the table are of the two people involved in the crash noted. The crash at the Parent Loop Entrance involved a student at Galaxy Middle School. The data in Table 2 was generated based on the following guidelines:

- Data was collected during the timeframes of 07:45 a.m. - 09:15 a.m. and 3:30 p.m. - 4:15 p.m. on Mondays, Tuesdays, Thursdays, and Fridays
- Data was collected during the timeframes of 07:45 a.m. - 09:15 a.m. and 02:30 p.m. - 03:15 p.m. on Wednesdays
- Data was collected within the walk zone of the school
- Crashes occurring within the last three years

Table 2
Bicycle and Pedestrian Crash Data
Galaxy Middle School Assessment Study

Intersection	Date	Time	Crash Summary	Weather	Age 1	Age 2
Parent-Loop Entrance (Galaxy Middle School)	12/12/2008	8:30	Collision with Bicycle and Moving Vehicle	Dry and Clear	51	13

3

INTERVIEW

The Vice-Principal of Galaxy Middle School, Mr. Charlie Bynum, was interviewed on April 22, 2010. This interview identified areas of concern to the Vice Principal and Staff.

Interview with Mr. Charlie Bynum, Vice-Principal

- The sheriff's office usually patrols the walk zone area in the mornings and afternoons and issues tickets to those who are driving unsafely (see Illustrations 2 and 3)
- Students, in the past, were able to use the school bus if the bus stop was close to their homes but the school district has become stricter with the two-mile walk zone route. This was a direct result of funding cuts to the schools. Students living within the school walk zone must walk or ride their bicycle to school or provide their own transportation. Students living outside the two-mile walk zone are able to use Volusia County School busses.

  The school allows walkers and bicyclists to enter and exit the school through one gate, located on the west side of the school, between the teacher's parking lot entrance and the parent loop entrance. There are two gates that can be used by walkers and bicyclists but the entrance and exit gate, located to the east of the school, is locked since the school prefers to have a controlled exit/entrance (the geometry of the school entrances and exits are presented in Figure 2).

Illustration 2: Deputy pulling over speeding drivers east on Eustace Avenue

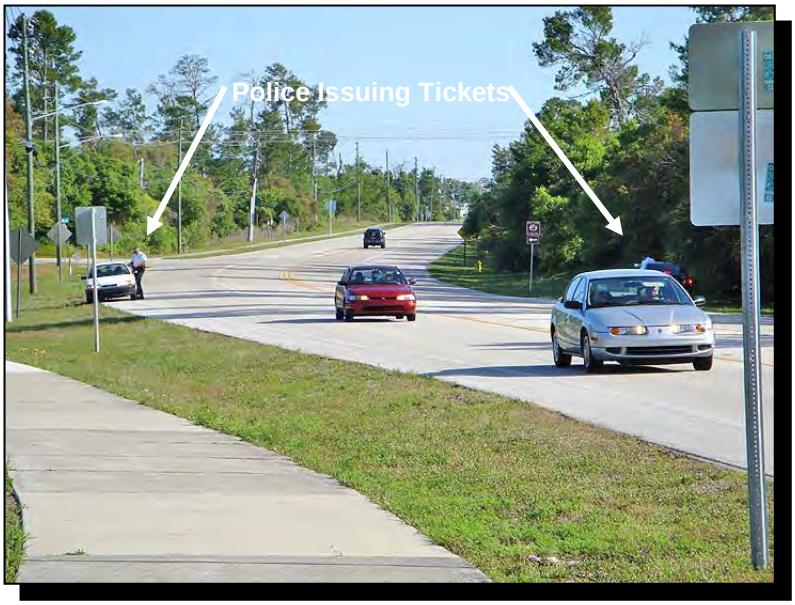
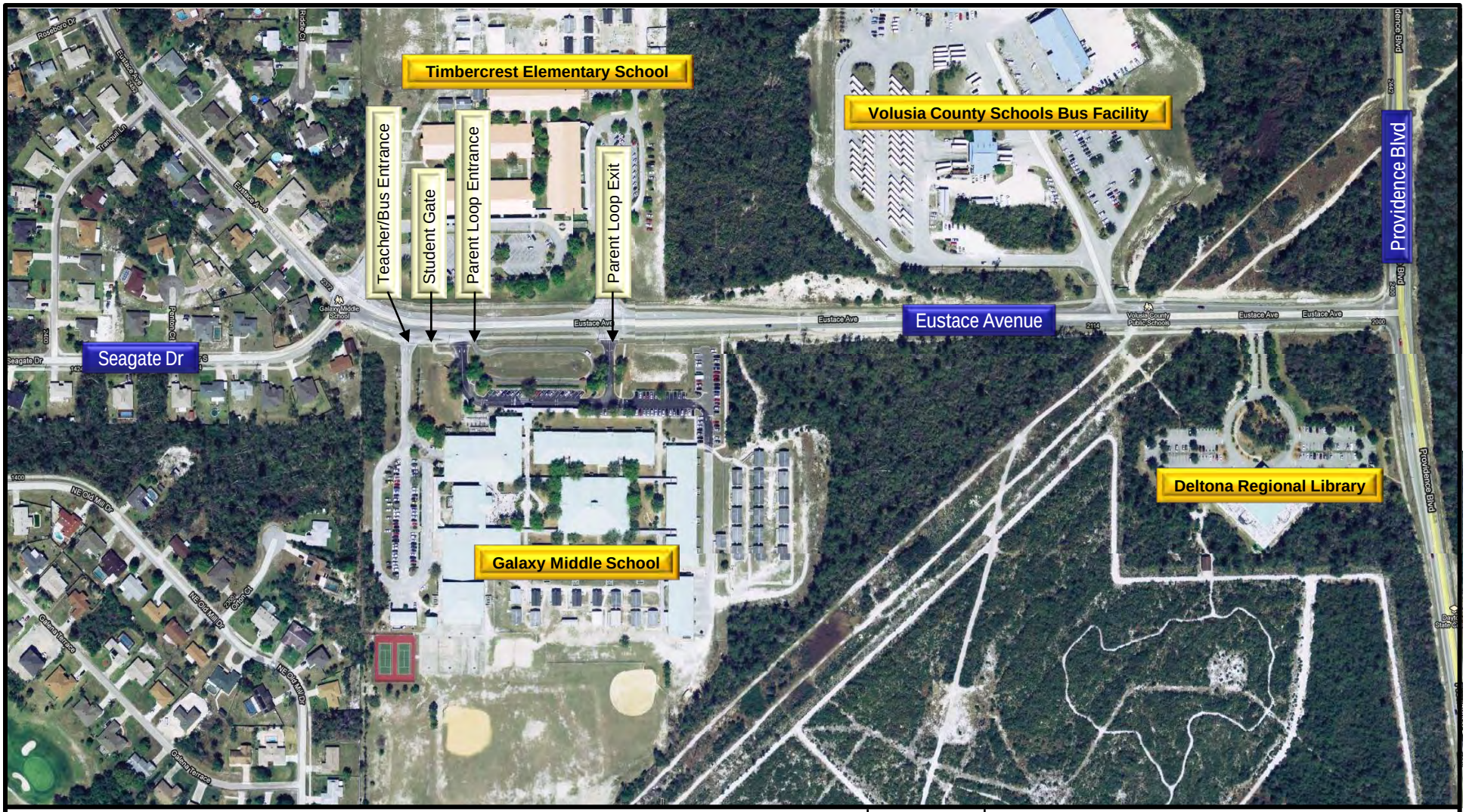


Illustration 3: Deputies pulling over speeding drivers on Providence Boulevard, south of Eustace Avenue



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Bicycle and Pedestrian School Safety Review Study

Deltona, Florida

N

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School Geometry

Figure 2

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- Galaxy Middle School does not currently have a School Resource Officer (SRO) but they have been assigned to one recently. Usually, the SRO will enforce helmet usage and safety procedures. Currently, the majority of students have been observed to not wear helmets. The SRO's usually hand out helmets as well as warnings and tickets to non-helmet wearers.

  Deputies issue tickets to motorists who were speeding or who drop students off at any of the driveways then make a u-turn to exit the school.

  - No known accidents have occurred with vehicles and students.
  - A recent crash occurred on Seagate Drive and Eustace Avenue between a walker and a Galaxy Middle School student bicyclist. The walker was taken by ambulance to the hospital.

- Parents were not notified of arrival and dismissal procedures. Some parents park on Eustace Avenue, east of the school campus, and wait for their children, some wait in the parent-loop, and a few of the students are picked up at the curb along Eustace Avenue or Seagate Drive.

Illustration 4: Students heading east, toward Providence Boulevard must cross the parent-loop exit and entrance

- The afternoons usually experience more traffic since students are waiting to be picked-up.
- Students walking out to Eustace Avenue to a parked vehicle or heading to Providence Boulevard is an area of concern since they are navigating next to vehicles that may contain sexual predators (see Illustration 4).

Sexual predators live within the school walk zone and the boundary of Galaxy Middle School. Sexual predators can be observed on Providence Boulevard trying to pick up stragglers on their way to school and even at school bus stops; however, once a sexual predator is known to live close to a school bus stop, the location of the bus stop is changed almost immediately.

Illustration 5: Deltona Regional Library, approximately .5 miles east of Galaxy Middle School on Eustace Avenue

- Some local residential roads do not have sidewalks for students to walk upon. If sidewalks are available, then they must navigate through vehicles that are parked on the sidewalks and driveways. This is especially dangerous since predators can be lurking or living nearby.

- For parents who do not wish to wait in the long queue lines during arrival/dismissal times, it is recommended by Galaxy Middle School that the parents make use of the library parking lot. Deltona Regional Library is located almost half a mile east of Galaxy Middle School on Eustace Avenue and has sufficient parking to allow parents to park and drop off or pick up their children (see Illustration 5).

Interview of Crossing Guards and Sheriff's Deputy

Middle school students do not have crossing guards since they should be able to judge traffic safety issues and navigate intersections safely. Timbercrest Elementary School, located directly across from Galaxy Middle School, has a crossing guard station at the intersection of Eustace Avenue and Seagate Drive. The crossing guards located at this intersection, Anabel Alicea and Yvette Espejo, do cross the middle school students even though they are only responsible for crossing elementary school children (see Illustration 6). From their stations, they clearly observe the comings and goings of the middle school students and vehicular traffic and are concerned about the students coming from the west that have to cross the teacher's parking lot to access the walker and bicyclist gate and from the east where students must cross the parent loop exit and the parent loop entrance.

Illustration 6: Timbercrest Elementary School crossing guards at Eustace Avenue and Seagate Drive

Approximately four months ago, the school flashing beacons flashed only during arrival and dismissal times for Timbercrest Elementary School located directly across from Galaxy Middle School on Eustace Avenue. The crossing guards manually turned the beacons on and off. Nancy Strickland, a crossing guard supervisor, advised that the flashers were recently upgraded and programmed to include the Galaxy Middle School arrival and dismissal times.

Deputy Pat Allison, a motorcycle patrol deputy, can be seen on most mornings and afternoons patrolling Eustace Avenue (see Illustration 7). Deputy Allison stated that there is a major problem with speeders. He usually gives warnings or issue tickets to motorists who are habitually driving unsafely. Deputy Allison has advised Galaxy Middle School parents that they are allowed to park in the Timbercrest Elementary School parent's parking lot in the afternoons to wait for their child rather than have curbside pick-up when students exit the school. During the dismissal time of Galaxy Middle School, the elementary school has already been dismissed and Timbercrest Elementary School's parent

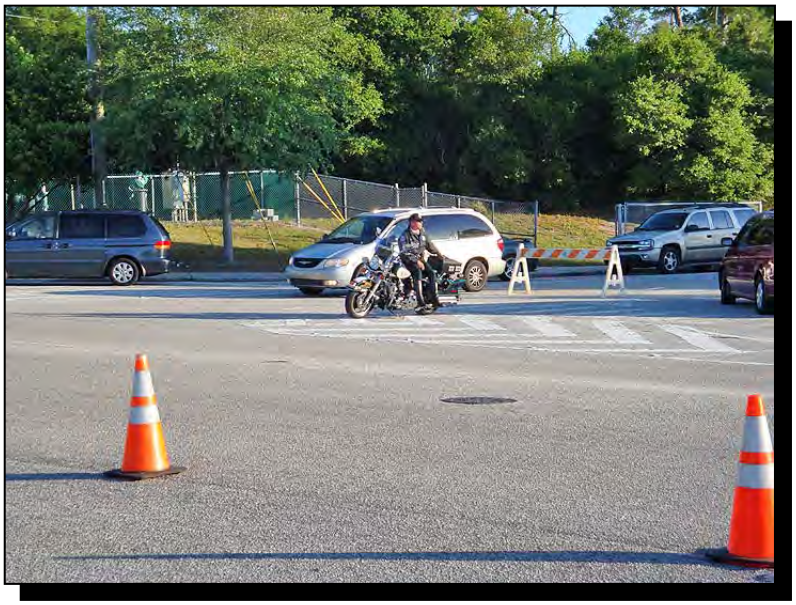


Illustration 7: Deputy keeping an eye on traffic at the entrance of Timbercrest Elementary School's parent parking lot entrance/exit

parking lot is mostly empty. Deputy Allison also stated that the speed limit on Providence Boulevard was reduced from 45 mph to 35 mph as a direct result of unsafe operating speeds.

Approximately 10 middle school students were observed crossing from Timbercrest Elementary School to Galaxy Middle School (see Illustration 8). Ms. Lisa Parker, Volunteer Coordinator at Timbercrest Elementary, stated that Galaxy Middle School students do volunteer at her school. The middle school students are matched with elementary teachers and they aid with filing, running errands, arranging folders, and providing whatever help is necessary.

Illustration 8: Students crossing Eustace Avenue from Timbercrest Elementary School

4

FINDINGS AND RECOMMENDATIONS

This section of the report includes data collected during the on-site and off-site investigative observations of Galaxy Middle School and its walk zone. Intersections of interest were investigated based on comments from Vice Principal Bynum, a walk zone drive through, and comments from interested parties such as Deputy Pat Allison, the crossing guards at the intersection of Eustace Avenue and Seagate Drive, and Chris Bowley, the Director of the Department of Planning and Development Services for the City of Deltona. Figure 3 shows existing traffic signals, and existing conditions within Galaxy Middle School's walk zone.

Hazardous Conditions Evaluation of Sidewalk Locations

The evaluation of sidewalk safety features were 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 Florida Highway Administration (FHWA).

For a walkway that is parallel to the road, the following conditions will be considered 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

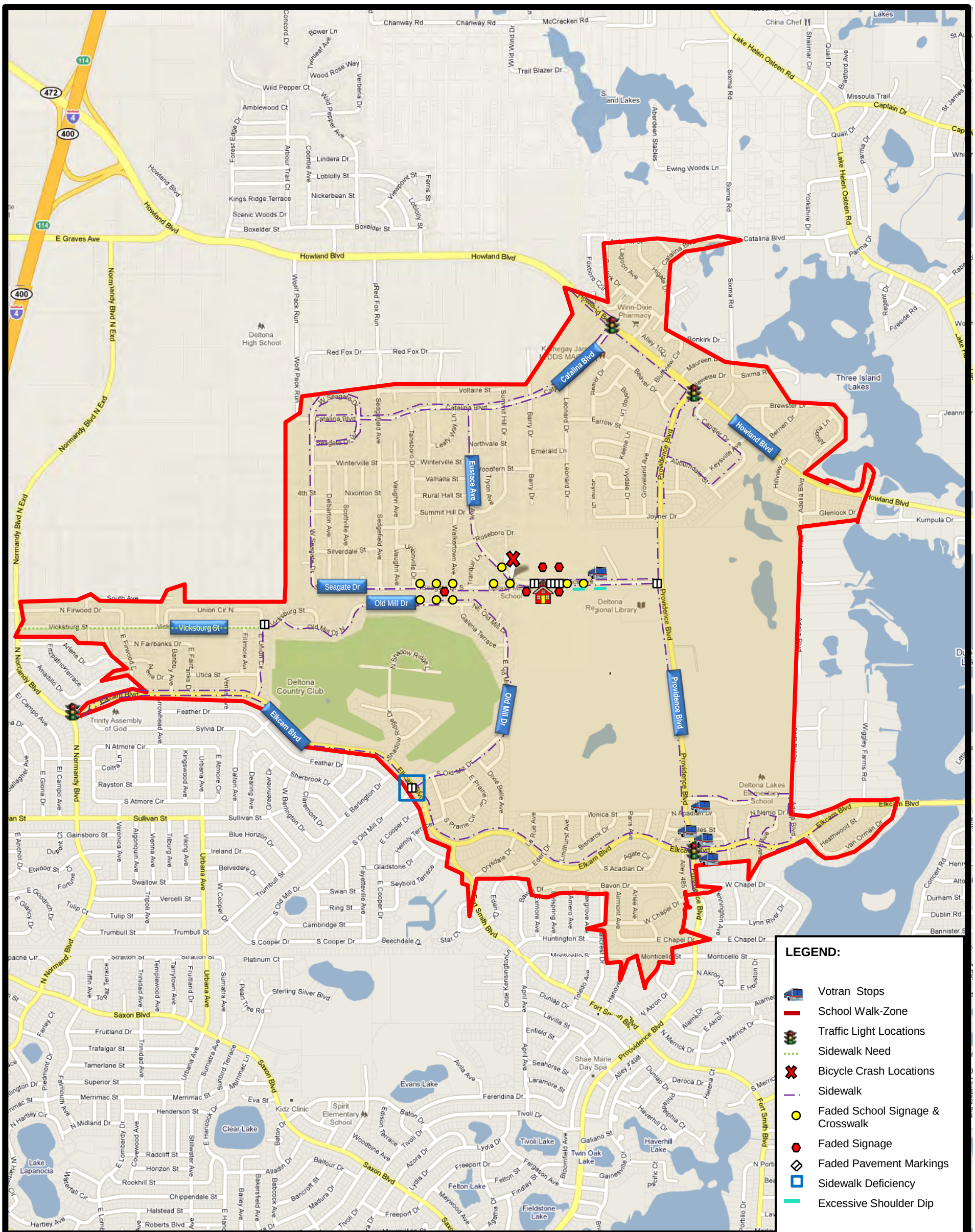
- The road along which students must walk is uncurbed and has a posted speed limit of 55 miles per hour

For walkways that are perpendicular to the road, the following conditions will be considered 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

The most current traffic counts for the City of Deltona shows that the two-way peak-hour traffic volume on Eustace Avenue is 239 vehicles per hour from Catalina Boulevard to Seagate Drive. Eustace Avenue, from Seagate Drive to Providence Boulevard, experiences a two-way peak-hour traffic volume of 444 vehicles per hour. Eustace Avenue from Catalina Boulevard to Seagate Drive clearly experiences traffic below hazardous conditions since the two-way count is below the one-way threshold while the section of Eustace Avenue from Seagate Drive to Providence Boulevard experiences two-way traffic over the one-way hazardous condition volume; it is unlikely that one-way counts would exceed 444 vehicles per hour. Based on these findings, there are no hazardous conditions.



Galaxy Middle School

Bicycle and Pedestrian School Safety Review Study

Deltona, Florida

N

Figure 3

Existing Conditions

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On-Site Investigation - A.M. Observations

On-site observations were made at Galaxy Middle School on April 27, 2010 during school arrival hours, 8:15 a.m. to 9:15 a.m., to examine entering and exiting vehicles as well as queuing which are normal activities that the school would experience on any given day. The following general information was gathered.

- Bicycles Parked in Bicycle Rack: 31
- Number of Skateboards: 1
- Number of Helmets: 7
- Two school-related flashing beacons located to the east and west of the school on Eustace Avenue
- One flashing signal on Seagate Drive

During the on-site school visit, the following observations were made (followed by recommendations for each area of concern):

Observations: Motorists dropped students off at the curb along Eustace Avenue to avoid queue lines in the student drop-off loop.

Recommendations: Motorists should use the drop-off loop or proceed to the eastern side of Galaxy Middle School to pull off on the shoulder to drop off students. Parents and students should also be informed of the proper drop-off procedures.

Observations: Approximately 15 students were observed to come from Providence Boulevard (see Illustration 9). They then had to navigate through two busy driveways, the parent-loop exit and the paren- loop entrance, before they arrived at the controlled entrance to the school. Section 5 of this report explores an alternate access gate for students coming from the east.

Recommendations: The school should allow students to access Galaxy Middle School without having to cross the driveways. It is recommended that students who are coming from Providence Boulevard access an already in-place sidewalk that extends from a gate to the school on the east side of the school campus. Section 5 of this report provides more details for this recommendation.

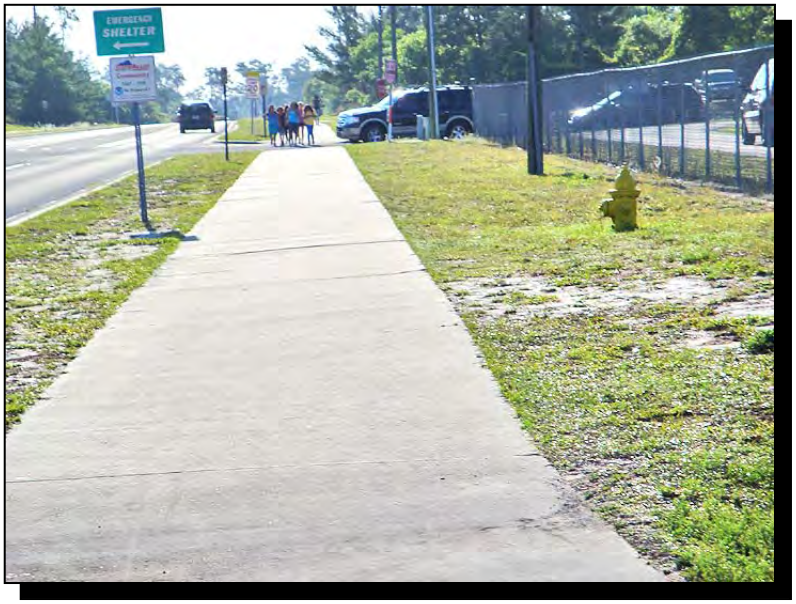


Illustration 9: Students walking to school from Providence Boulevard

Observations: Many Galaxy Middle School bicyclists were not wearing helmets (see Illustrations 10 and 11).

Recommendations: Warnings and tickets should be issued to students who are not wearing helmets. The SRO should help promote bicycle safety by offering incentives and handing out free gear to students who adhere to bicycle safety rules.

Observations: Drivers were not paying attention to the school zone reduced speed limit and were observed to be speeding.

Recommendations: The Sheriff's Office should have deputies running radar within the school zone to detect unsafe driving. Tickets should be issued to all drivers that are not following the rules and higher fines should apply during the times that the school zone reduced speed is in effect.

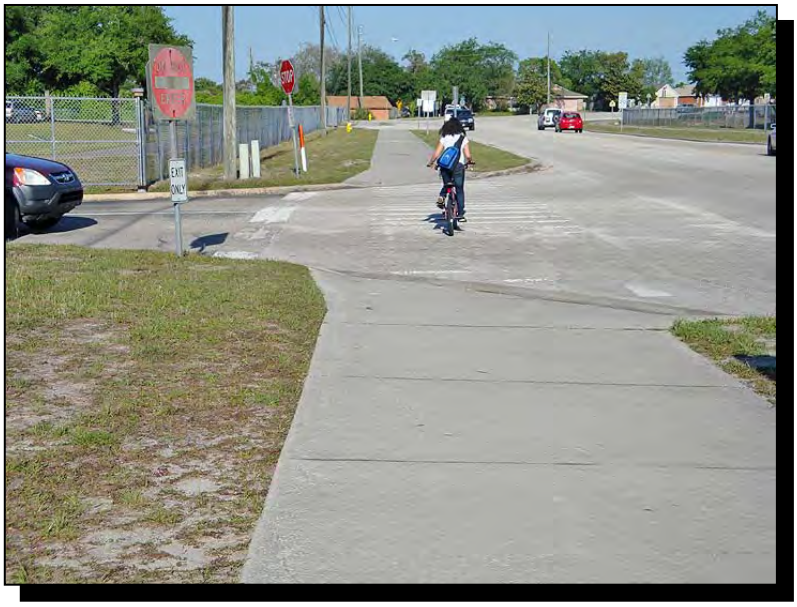


Illustration 10: No helmet use on Eustace Avenue

Illustration 11: Student is not wearing a helmet and is crossing a busy intersections on Eustace Avenue

On-Site Investigations - P.M. Observations

On-site observations were made at Galaxy Middle School on April 27, 2010 during school dismissal hours of 3:15 p.m. to 4:30 p.m. to examine entering and exiting vehicles as well as queuing which are normal activities that the school would experience on any given day. During the afternoon school visit, the following observations were made followed by recommendations for each issue.

Observations: Long queue lines resulted in curb-side pick-up along Eustace Avenue.

Recommendations: The queue length is due to vehicles waiting for students who are walking across the parent-loop exit driveway and heading to Providence Boulevard (see Illustration 12). Making use of the recommended alternate gate in Section 5 will divert student traffic from this driveway and will reduce delay for motorists exiting the loop.

Illustration 12: Students heading toward Providence Boulevard on Eustace Avenue

Observations: A student was observed crossing from the parent-loop exit to then cross Eustace Avenue to reach the Timbercrest Elementary School's parent parking lot.

Recommendations: Students should use the crossing at the intersection of Seagate Drive and Eustace Avenue to access the parent parking lot at Timbercrest Elementary School. This should be strictly enforced by teachers, law enforcement, SROs, and parents. Parents and students should be notified of proper pick-up procedures. Procedural brochures should be delivered to the homes of each student discussing the following items:

- Helmet safety
- Crossing procedures
- Parking procedures
- Drop-off/pick-up procedures

Observations: The entrance and exit to the teacher and school bus parking lot, the entrance to the parent-loop, and the exit to the parent-loop has faded crosswalk markings.

Recommendations: The crosswalk markings should be installed per Standard Index No. 17346. This will make motorists more aware of walkers and bicyclists crossing at these driveways.

Observations: Parents were parking on the shoulder of Eustace Avenue, on the east side of the school campus. Some of the cars were having difficulties getting out of the shoulder since there was an 8.5 inch drop from the pavement to the shoulder on east side of the school to the utility easement on Eustace Avenue.

Recommendations: The shoulder should be filled and stabilized so that motorists can have ease of entry and exit. This section of Eustace Avenue does not restrict parents from parking in the shoulder and it is a safer option for student pick-up instead of curb-side pick-up if motorists and students are not inclined to walk the half-mile to the library.

Observations: The parent-loop exit has a DO NOT ENTER (R5-1) sign that is cracked and faded (see Illustration 13).

Recommendations: The DO NOT ENTER (R5-1) signs should be replaced to make motorists aware of this driveway restriction. Signage should be updated to the current standards for the 2010 year. They should be installed in accordance with Standard Index No. 17302.

Illustration 13: Faded DO NOT ENTER sign at the driveway of the parent-loop exit driveway on Eustace Avenue

Off-Site Investigations

Observations: Elkcam Boulevard, at the intersection of Old Mill Drive, contains a sidewalk that switches sides, from the north side of Elkcam Boulevard to the south side of Elkcam Boulevard; however, there are no crosswalk markings or signage for motorists to recognize that this intersection could have pedestrians crossing the street (see Illustrations 14 and 15).

Recommendations: This intersection should have special emphasis crosswalk markings and proper pedestrian signage along Elkcam Boulevard and Old Mill Drive. A YIELD HERE TO PEDESTRIANS (R1-5) sign adjacent to a stop bar and crosswalk is recommended on Elkcam Boulevard and should be in installed per Standard Index Nos. 17346 and 17302.

Illustration 14: Intersection of Elkcam Boulevard and Old Mill Drive looking south

Illustration 15: Intersection of Elkcam Boulevard and Old Mill Drive looking south shows not crosswalk markings to cross Elkcam Boulevard to access the other sidewalk

Observations: Vicksburg Street, a residential road, does not have sidewalks; however, it does connect to sidewalks on either ends; to the west at Union Circle and to the east at Normandy Boulevard. It was observed that at least three students used this road; however, student locations, per the current enrollment, show that approximately 9 students could use this road to walk or bicycle to and from school. Students observed walking home were walking on the pavement and then moving to the shoulder of the road when a vehicle passed them (see Illustration 16). Vehicles appeared to be exceeding the posted speed limit, as noted during field observations.

Recommendations: Five-foot sidewalks should be installed on this road since students could use Vicksburg Road to walk or bicycle to and from school. The sidewalk should commence at Union Circle and end at Normandy Boulevard where sidewalks are already in existence. The Sheriff's Office should run radar on Vicksburg Road to deter motorists from speeding and practicing unsafe driving habits.

Illustration 16: Students walking west on Vicksburg Street towards Normandy Boulevard

Observations: Eustace Avenue, east of Galaxy Middle School, has excessive drops of greater than 8 inches in some places (see Illustration 17).

Recommendations: It is recommended that the area be filled with stabilized material equivalent to the adjacent roadway's pavement section. Coordination with the maintaining agency is advised.

Observations: Advanced school signs on Eustace Avenue and Seagate Drive are old, cracked and not up to current standards.

Recommendations: Posted advanced school signs should be replaced with approved advanced warning school signs that warn motorists of the approaching school zone. Approved advanced warning SCHOOL signs are reflective and have a fluorescent yellow-green background that is more noticeable to motorists.

Illustration 17: A drop of 8.5 inches exists between the pavement and the shoulder on Eustace Avenue east of Galaxy Middle school

Observations: SCHOOL crossing signs are faded and cracked at the intersection of Eustace Avenue and Seagate Drive.

Recommendations: A SCHOOL crossing sign assembly (S1-1 and W16-7P) should be installed in accordance with Standard Index No. 17344. These assemblies warn motorists of students crossing the roadway.

Observations: SCHOOL markings located on Eustace Avenue, Seagate Drive, and Old Mill Drive are faded, cracked, and non-existent in some areas.

Recommendations: SCHOOL marking should be repainted to make motorists more aware that they are in a school zone per Standard Index No. 17344.

Observations: The intersection of Seagate Drive at Placid Avenue and Placid Avenue at Old Mill Drive has faded and cracked crosswalk markings. SCHOOL crossing signs were also outdated, faded and worn.

Recommendations: Crosswalk markings, such as the high emphasis crosswalk markings, should be installed per Standard Index No. 17346 to warn motorists of the school zone. This will enable students to cross safely at intersections. Signage should be updated to the current 2010 standards. SCHOOL signs should have the fluorescent yellow-green background that is reflective and should be installed in accordance with Standard Index Nos. 17344 and 17302.

Observations: Crosswalk markings are mostly faded and worn at the driveways of the staff/bus entrance, parent loop entrance, and the parent loop exit.

Recommendations: Crosswalk markings, such as the high emphasis crosswalk markings, should be installed per Standard Index No. 17346 to warn motorists of the school zone. This will enable students to cross safely at intersections. Illustrations 18 and 19 shows an example of the worn pavement markings found at the exit and entrance to the student drop-off loop of Galaxy Middle School.

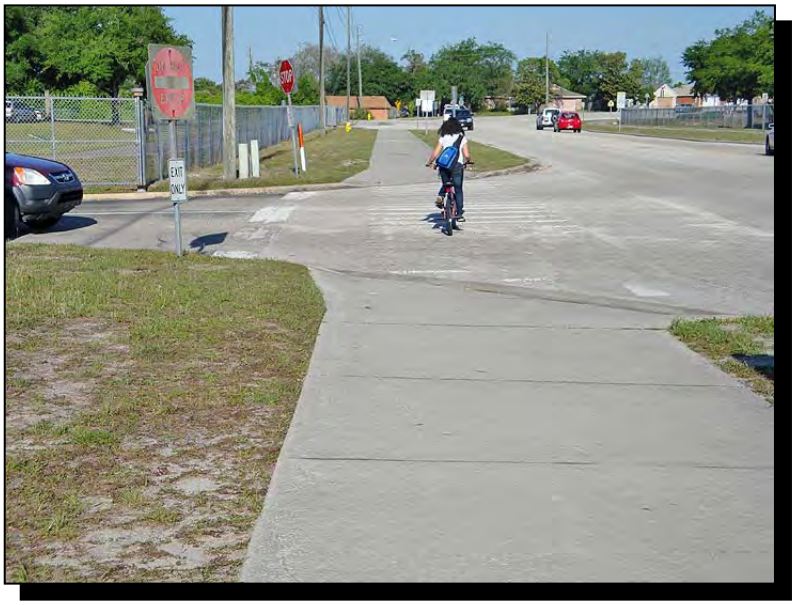


Illustration 18: Faded crosswalk markings at the parent loop exit driveway

Illustration 19: Faded crosswalk markings at the parent loop entrance driveways

Observations: NO PARKING (R7-1) signs are old and faded on both sides of Eustace Avenue in front of Galaxy Middle School (see Illustration 20).

Recommendations: Signs should be replaced with NO PARKING (R7-1) signs that are current to warn motorists of the restriction. Signs should be installed in accordance with Standard Index No. 17302.

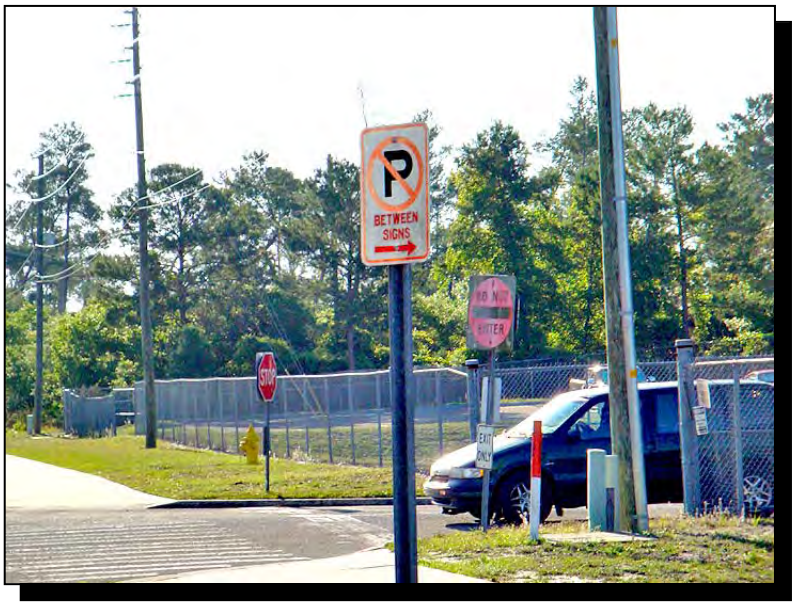


Illustration 20: Faded No Parking signs along Eustace Avenue in front of Galaxy Middle School

5

OTHER ON-SITE RECOMMENDATIONS

It was observed that more students chose to walk in the afternoon than in the morning. Approximately 25 students were observed walking/bicycling to school in the morning and approximately 60 students were observed walking and bicycling towards Providence Boulevard in the afternoon. The exit driveway of the parent-loop was detained in the afternoons due to students using the driveway crosswalks in a steady stream.

It is recommended that the short north-south on-campus sidewalk, east of the parent loop exit, be used to allow students access on and off Galaxy Middle School campus for those heading east toward Providence Boulevard. This existing sidewalk commences from the main school sidewalk, crosses over the parking lot via a crosswalk, and ends at a fence on the outer perimeter of the school on Eustace Avenue (see Illustration 21). Students coming from/to Providence Boulevard would be diverted from crossing two driveways that are in constant use in the mornings and afternoons.

The following changes are suggested if this recommendation is implemented.

- The sidewalk must have ramps installed at two end sections to connect to the crosswalk in the parking lot to become ADA compliant (see Illustration 22 and 23)
- A section of fencing should be removed and a gate installed
- A section of sidewalk should be poured to connect the sidewalk from where the school sidewalk ends to the sidewalk along Eustace Avenue (see Illustration 24)

Illustration 21: Sidewalk on Galaxy Middle School's campus that leads to Eustace Avenue, looking north

Illustration 22: If recommendation is implemented then sidewalk must be altered to conform to ADA standards

- Since the school prefers to have controlled entrances and exits, staff should be assigned to this gate to ensure the safety of the students

Another reason this recommendation is being suggested is that an accident occurred at the driveway of the parent-loop entrance when a student was riding his bike along Eustace Avenue from Providence Boulevard. When the student entered into the driveway of the parent loop entrance, a vehicle turned into the loop at the same time and crashed into the student. The student did not sustain injuries but the motorist was charged for leaving the scene of an accident.

The use of the recommended new sidewalk should allow motorists to enter and exit the parent-loop more safely since no students will be crossing the driveways.

This recommendation, summarized in Figure 5, will not be covered under the Volusia TPO School Safety Review Study since this recommendation is on school property. The Bicycle and Pedestrian School Safety Review Study supported by the TPO is specifically geared for the walk zone; however, this recommendation should be taken into consideration by the Volusia County School Board since a crash has occurred at one of the driveways. Given that students are still crossing the driveways to access either the walker/bicyclist gate in the mornings or Providence Boulevard in the afternoons, the parent-loop exit and entrance is an area of concern.

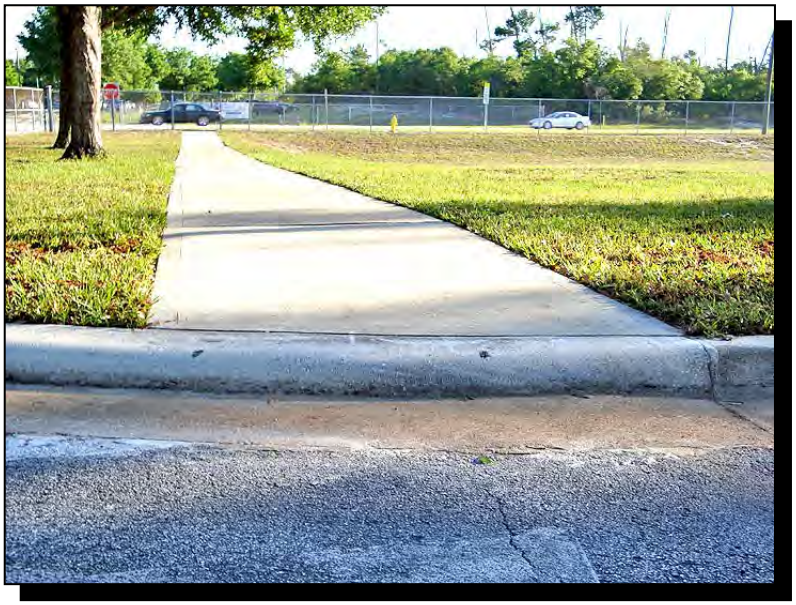


Illustration 23: If recommendation is implemented then sidewalk must be modified to conform to ADA standards

Illustration 24: If recommendation is implemented the fence section, shown where the sidewalk terminated, must b removed and a gate should be installed; additional sidewalk must also be installed to connect the existing sidewalk on campus to the sidewalk on Eustace Avenue

Galaxy Middle School

Bicycle and Pedestrian School Safety Review Study

Deltona, Florida

Proposed Entrance/Exit

Figure 4

N

VOLUSIA TPO
TRANSPORTATION PLANNING ORGANIZATION
VISION - PLAN - IMPLEMENT

Lassiter Transportation Group, Inc.
Engineering and Planning

6

COST ESTIMATE

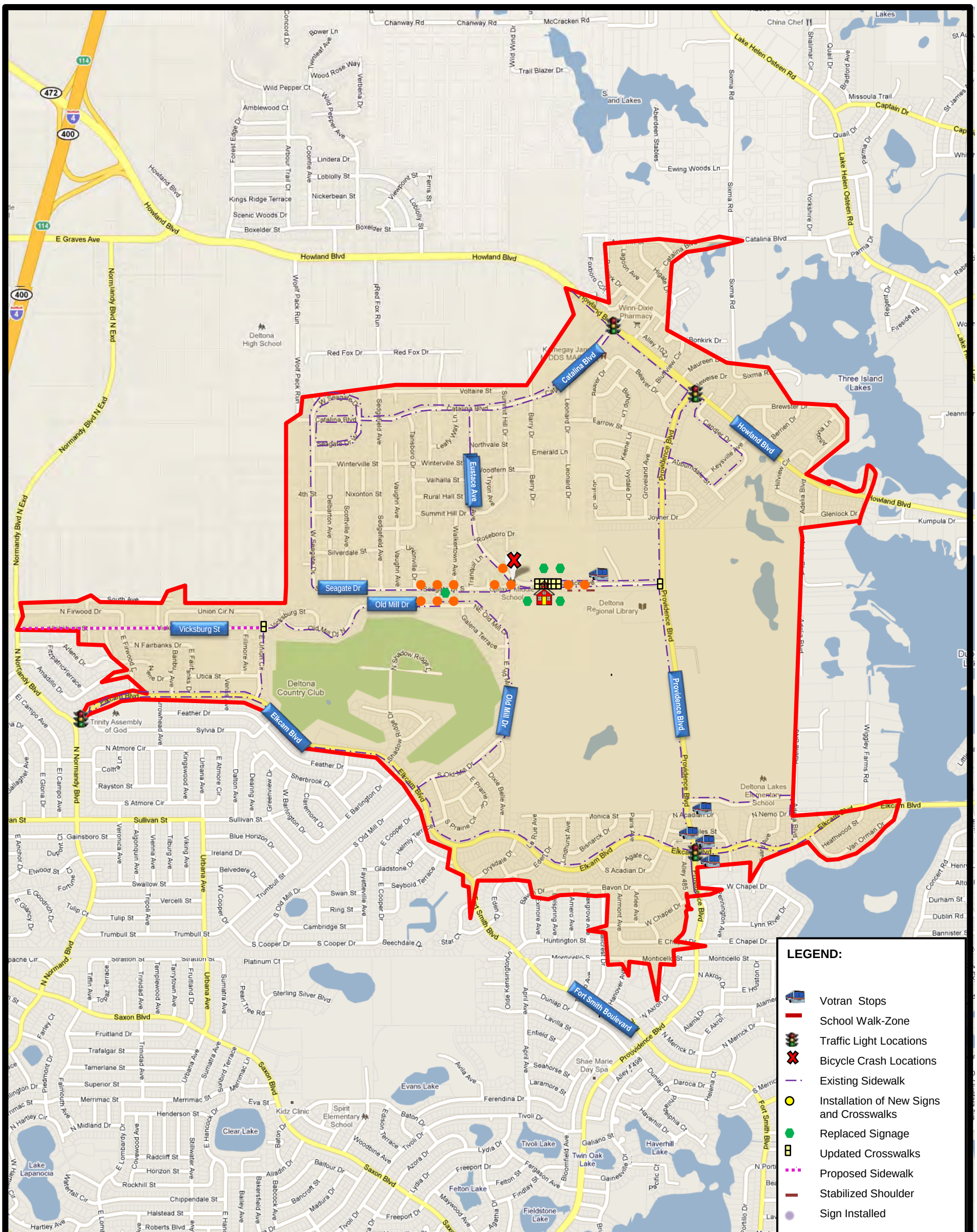
Table 3 shows the preliminary cost summary that would be associated with all the recommendations listed within this Assessment section for Galaxy Middle School. These recommendations and existing conditions are also summarized on composite Figure 5. FDOT's *2010 Basis of Estimates* manual was used in the development of Table 3. A detailed cost estimate is presented in Appendix B. The estimated engineering costs for the recommendations are $116,295.90. These recommendations are based on field observations and should be verified by a contractor.

Table 3
Cost Summary
Galaxy Middle School Assessment Study

Location	Observations	Recommendations	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
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
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
	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	$100.00
	STOP line is faded and unnoticeable - motorists were observed rolling over stop line	Refurbish STOP line	$104.04
Teacher Parking Lot/Bus Loop	STOP line is faded and unnoticeable - motorists were observed rolling over stop line	Refurbish STOP line	$55.08
Along Eustace Avenue, in Front of Galaxy Middle School	12 NO PARKING signs are faded	Replace NO PARKING (R7-1) signs	$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	$100.00
			$361.66
		Remove existing crosswalk markings at mid-block and in front of Galaxy Middle School's parent-loop exit	$435.20
		Install special emphasis crosswalk markings at the mid-block crossings	$453.60
			$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)	$100.00
			$361.66
	SCHOOL pavement markings, adjacent to the advanced school signage, are outdated and faded	Refurbish single-lane SCHOOL pavement markings	$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	$7,776.00
Intersection of Providence Boulevard and Eustace Avenue	Crosswalk marking is faded and worn	Remove existing crosswalk markings	$435.20
		Install crosswalk markings using special emphasis crosswalk markings (Index No. 17346)	$265.44
			$636.00
	On Eustace Avenue, the STOP pavement markings are faded and worn	Refurbish STOP pavement marking message	$254.58
	On Eustace Avenue, the STOP line is faded and unnoticeable - motorists were observed rolling over stop line	Refurbish stop line	$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 bus/staff parking driveways)	Remove existing crosswalk markings	$2,040.00
		Install crosswalks using special emphasis crosswalk markings (Index No. 17346)	$829.92
			$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	$1,849.60
		Install crosswalks using special emphasis crosswalk markings (Index No. 17346)	$699.60
			$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 background	$200.00
			$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
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	$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)	$50.00
			$180.83
		Refurbish SCHOOL crosswalk markings adjacent to advanced school signage	$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	$150.00
			$542.49
	Three-way intersection has faded crosswalk markings at all three crossings	Remove existing crosswalk markings	$508.64
		Install crosswalk markings using special emphasis crosswalk markings (Index No. 17346)	$399.84
			$858.60

Table 3 (Continued)
Cost Summary
Galaxy Middle School Assessment Study

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	$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)	$100.00
			$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	$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)	$100.00
			$361.66
		Refurbish SCHOOL pavement marking adjacent to school in advance signs	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	$41.34
Vicksburg Street, West of Union Circle	No sidewalk available for walkers/bicyclists	Approximately 4,600 feet of five-foot sidewalk is recommended along Vicksburg Street, from Union Circle to Normandy Boulevard	$89,554.36
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	$336.00
		TOTAL	**$116,295.90**



Galaxy Middle School

Bicycle and Pedestrian School Safety Review Study

Deltona, Florida

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Figure 5

Consolidated Map

VOLUSIA TPO
TRANSPORTATION PLANNING ORGANIZATION
VISION - PLAN - IMPLEMENT

Lassiter Transportation Group, Inc.
Engineering and Planning

7

EXECUTIVE SUMMARY – IMPLEMENTATION SECTION

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 Galaxy Middle School.

Assessment of Existing Conditions

Conditions within the walk zone of Galaxy Middle School have been presented and 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.

8

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 improvement

- 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.

The FHWA's guidelines of best practices for the installation of new sidewalks indicate that 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. These older neighborhoods must then be retrofitted to be compliant with 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 hazardous. When sidewalks are obstructed or do not have curb ramps, it is unsafe 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

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):

- 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 addressed immediately and 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

Illustration 25: Faded crosswalk markings

Pavement Markings

Findings

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 25).

Best Practices

The following best practices are recommended to improve 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, and slip resistant.
- 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.

SCHOOL flashing beacons 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.

Regulations are not always followed by adults dropping off/picking up students (Illustration 26). 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.

Illustration 26: Parent vehicle waiting to pick student up on shoulder instead of using parent loop.

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.

9

MASTER IMPROVEMENT PLAN

Refer to Figure 5 of the Assessment Section, which highlights existing conditions as well as proposed improvements. The following sections will provide more details on the sidewalk-related improvements shown in Figure 5.

10

CONSTRUCTABILITY MATRIX

For the purposes of the constructability matrix and the prioritized list to follow, only sidewalk-related improvements are considered. It should be noted that recommendations for signage and pavement markings have also been made within the context of the Assessment section, which, although not prioritized within this section because they are not direct sidewalk improvements, are recommended to be prioritized dependant upon proximity to the school campus.

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 $89,554.36. The costs shown in the constructability matrix include construction and labor fees. Grading costs are not included. As mentioned before, these improvements are based on field observations and should undergo engineering design prior to construction.

Table 4
Constructability Matrix
Galaxy Middle School Implementation Report

Priority No	Project Name	Description	Potential Constraints	Pay Item Number	Plan Qty	Unit Measure	Unit Price	Contract Amount
1	Sidewalk Installation	Approximately 4,600 feet of 5-foot sidewalk should be installed along Vicksburg Street, from Union Circle to Normandy Boulevard	Right-of-Way should be verified prior to construction	522-1	1,278	SY	$70.03	**$89,554.36**

Cost taken from the FDOT's Basis of Estimates
Area 6 (Volusia County) and 6 Month Moving Statewide Averages were used, where applicable
Abbreviations:

LF - Foot
SY - Square Yard
EA - Each
AS - Assembly
SF – Square Foot

11

RECOMMENDED PRIORITY PROJECTS

There is only one sidewalk improvement recommended within this report. Multiple improvements would have otherwise been 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: Installation of sidewalk on Vicksburg Street from Union Circle to Normandy Boulevard

Submitting Agency: City of Deltona
Project Location: Vicksburg Street
School Served: Galaxy Middle School
Project Description: Sidewalk Installation
LAP Coordinator: Volusia County
Maintaining Agency: City of Deltona

Safety Issue: Vicksburg Street does not have sidewalks although it does connect to sidewalks on both ends (to the west at Union Circle and to the east at Normandy Boulevard). Students observed walking home were walking within the travel way and then moving to the shoulder of the road when vehicles approached.

Project Description: This project will include the installation of five-foot sidewalks.

Estimated Cost: The estimated cost for this project is $89,554.36.

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12

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_0L	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

[X] 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
Seagate & Eustace	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	*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	
Providence, South of Hoaland	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	*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	
Providence, South of Eustace	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	* 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 & 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	CurbType: None / Type E / Type F / Valley Gutter	Clear Path (No Obstacles)	> 4 ft Between Sidewalk & Pavement	No Drainage Issues: Ditches, Bridges, Rtntn. Ponds	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
Vicksburg Rd, West of Union Circle	Valley Gutter	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	
Eustace Ave, East of School	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	
School Driveways	Valley Gutter	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, Rtnln. 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	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*Sidewalk stops from N to S side of Eustace. Need Ped. crossing signs & crosswalk markings WB & EB
Intersection of Ft Smith & Elkram	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

Title XLVIII	Chapter 1006	View Entire Chapter
K-20 EDUCATION CODE	SUPPORT FOR LEARNING	

(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

123 Live Oak Ave. ▪ Daytona Beach, FL 32114 ▪ Phone 386.257.2571 ▪ Fax 386.257.6996

www.lassitertransportation.com

Walk Gate
- have to cross to queues of parents ~~picking up~~ 8th

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.

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 in 50-60 riders each

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

   No sidewalks 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 sidewalks - lack of area for parents in loop
   - parking on shlder/sidw to avoid

School Start 8:56 3:41 Aerial (Neptune)

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
- Flasher goes "off" outside elem school hrs (need to remain "on" in MS in/out)
- 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 esp on Eustace
- Coming up Eustace - cars parking on S/W, kids having to walk in St
- Police have monitored speed individ w/ radar (warnings, then tickets)

COMMENTS:

Not aware of any students using VOTRAN
Bike vs Walk
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 issue 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

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