Bicycle and Pedestrian School Safety Review Study

Assessment & Implementation Report Deltona Middle School

Deltona, FL

VOLUSIA TPO
TRANSPORTATION PLANNING ORGANIZATION
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Lassiter Transportation Group, Inc.
Engineering and Planning

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Volusia Transportation Planning Organization
Bicycle and Pedestrian School Safety Review Study

Assessment & Implementation Reports
Deltona Middle School
Deltona, Florida

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

James Bambrick: Principal of Deltona Middle School

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

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Mark P. Carruthers: Assistant Principal

Jon Cheney: Traffic Engineer, Volusia County

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Stephan C. Harris: Volusia TPO, Bicycle and Pedestrian Coordinator

Sergeant Tim Johnson: School Resource Officer Supervisor

Lieutenant Bobby Lambert: Executive Director of West Volusia PAL

Tina Martinez: GIS Specialist, Volusia County

Scott McGrath: Planner II, City of Deltona

Saralee Morrissey, AICP: Volusia County Schools

Michael Leader: Assistant Principal

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Deputy Kristina Welsh: Deltona Middle School SRO

Sandy Zapf: Administrative Assistant (Deltona Middle School)

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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 Deltona 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 Deltona Middle School's walk zone with recommendations documented in this report.

Table 1
Findings and Recommendations Summary
Deltona Middle School Assessment Study

Location	Agency Responsible	Observations	Recommendations
Deltona Middle School Walk Zone	SRO, Sheriff's Deputies, Deltona Middle School	Bicycling students were not wearing helmets	The SRO should take an active role in ensuring 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)
On Campus	School Board	Bicycle racks were rusted; gate remained open throughout the day; no lock on fence gate; students preferred to chain bicycles to the fence on the outer perimeter of the school campus; bicycle theft has occurred within unlocked bicycle enclosure	Existing bicycle racks should be replaced; gate should be locked during school hours to prevent theft
	Deltona Middle School	The sidewalk on the south side of the school from the walker and bicyclist gate ends at a basketball court; this forces students to walk in the parking lot to access the sidewalk on the other side of the basketball court	The basketball court gate should remain open during the arrival and dismissal times so students can walk through the basketball court to access sidewalks located on both sides of the court
	School Board	A Votran stop is located on-campus; students were observed exiting and entering the bus during arrival and dismissal times	This stop should be relocated outside of school property since staff is not available to monitor non-students who are exiting and entering the bus
		Students used the bus loop exit to enter and exit the school - students access the sidewalk on campus and on Enterprise Road by walking in the pavement of the bus exit lane to avoid the gate	The permanently fixed fence should be shortened to allow students to access the sidewalk on Enterprise Road and on the school campus
			Install rolling gates to sufficiently close off the bus loop exit and sidewalk after school hours
			Install 6' sidewalk to connect Enterprise Road and the campus
		The SRO is on campus in the mornings but not in the afternoons; this prevents the officer from effectively enforcing the law, mentoring, teaching classrooms, and providing a positive role model for students	An SRO should be assigned to each middle school to effectively carry out their duties by enforcing appropriate behavior around the school campus

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

Location	Agency Responsible	Observations	Recommendations
In Front of School on Enterprise Road	Volusia County/School Board	Motorists made U-turns into the bus loop entrance to drop students off and avoid morning queues	Since the bus loop has a driveway that serves exiting vehicles, the entrance of the bus loop should be converted to an enter only; flexible delineators, along with pavement markings that guide vehicles into the driveway should be employed
		Twelve restriction panels that state the NO PARKING restriction times, located below the No Parking signs, are peeling and illegible	The bottom panels of the NO PARKING signs should be replaced
	SRO and Sheriff's Deputies	In the morning, motorists pulled into the shoulder on the east and west sides of Enterprise Road to drop students off	Periodic enforcement should be implemented to monitor students as they are dropped-off; parents should be notified of proper drop-off procedures
		In the afternoons, parents parked on the shoulder on both sides of Enterprise Road in between NO PARKING signs; when motorists were parked on the west side of Enterprise Road, students would cross Enterprise Road to access the waiting vehicles without using the sidewalks	Students should use the crosswalks located to the north and south of the school when crossing Enterprise Road; periodic enforcement should be implemented to monitor parking restrictions and students as they are picked-up; parents and students should be notified of proper pick-up procedures in the newsletters and tickets should be issued to those who do not follow the rules
School Driveways	School Board	An EXIT ONLY plaque, located below a DO NOT ENTER sign, is faded and peeling	The EXIT ONLY plaque should be removed as it is fading and unnecessary
	School Board	Bus loop exit driveway pavement markings does not provide sufficient space to install crosswalk markings that joins the sidewalks	Pavement markings should be removed and STOP line should be relocated 15' back to install crosswalk markings; transition sidewalk approaches to allow 4' separation from crosswalk and stop line
		Four driveways have STOP lines that are faded and cracked	The existing driveway STOP lines should be removed and thermoplastic stop lines should be installed
		Crosswalk markings at all driveways are faded and worn	The existing crosswalk markings should be removed and thermoplastic special emphasis pavement markings should be installed in accordance with Standard Index No. 17346

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

Location	Agency Responsible	Observations	Recommendations
Camden Street and Jena Drive	City of Deltona	The advance school signage east of the intersection of Jena Drive and Camden Street is outdated and faded	Replace outdated school in advance signage with approved School Advance Crossing Assembly (S1-1 and W16-9P)
		School crossing sign at the intersection of Jena Drive and Camden Street is outdated and faded	Replace outdated school crossing signage with School Crossing Assembly (S1-1 and W16-7)
Intersection of Enterprise Road and Jena Drive	City of Deltona	Intersection does not have crosswalk markings	Special emphasis crosswalk markings should be installed
Extended Sidewalk Throughout Walk Zone Route	City of Deltona	Most students who live to the north and northeast of the walk zone must traverse along streets with no sidewalks or collector roads	Four-foot (minimum) sidewalks should be installed along the route shown in Figure 4
			Crosswalk markings should be installed at all intersections

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INTRODUCTION

The following Assessment Report for Deltona Middle School was conducted 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 Deltona Middle School is presented as Figure 1. Deltona Middle School is located at 250 Enterprise Road, north of Dirksen Road and south of Deltona Boulevard, in the City of Deltona. The purpose of this study is to evaluate the walk zone of Deltona Middle School for any safety issues that students might encounter if they choose to walk or bicycle to school.

Background on Deltona Middle School

Deltona Middle School (see Illustration 1) has been serving students in unincorporated Enterprise and the City of Deltona for over 40 years. It currently enrolls 1,183 students. The Principal of Deltona Middle School is Mr. James Bambrick. Deltona Middle School has three Assistant Principals: Mrs. Stacy Gotlib is the Assistant Principal for sixth grade, Michael Leader is the Assistant Principal for seventh grade, and Mr. Mark P. Carruthers is the Assistant Principal for eighth grade. The assigned School Resource Officer (SRO) is Deputy Kristina Welsh.

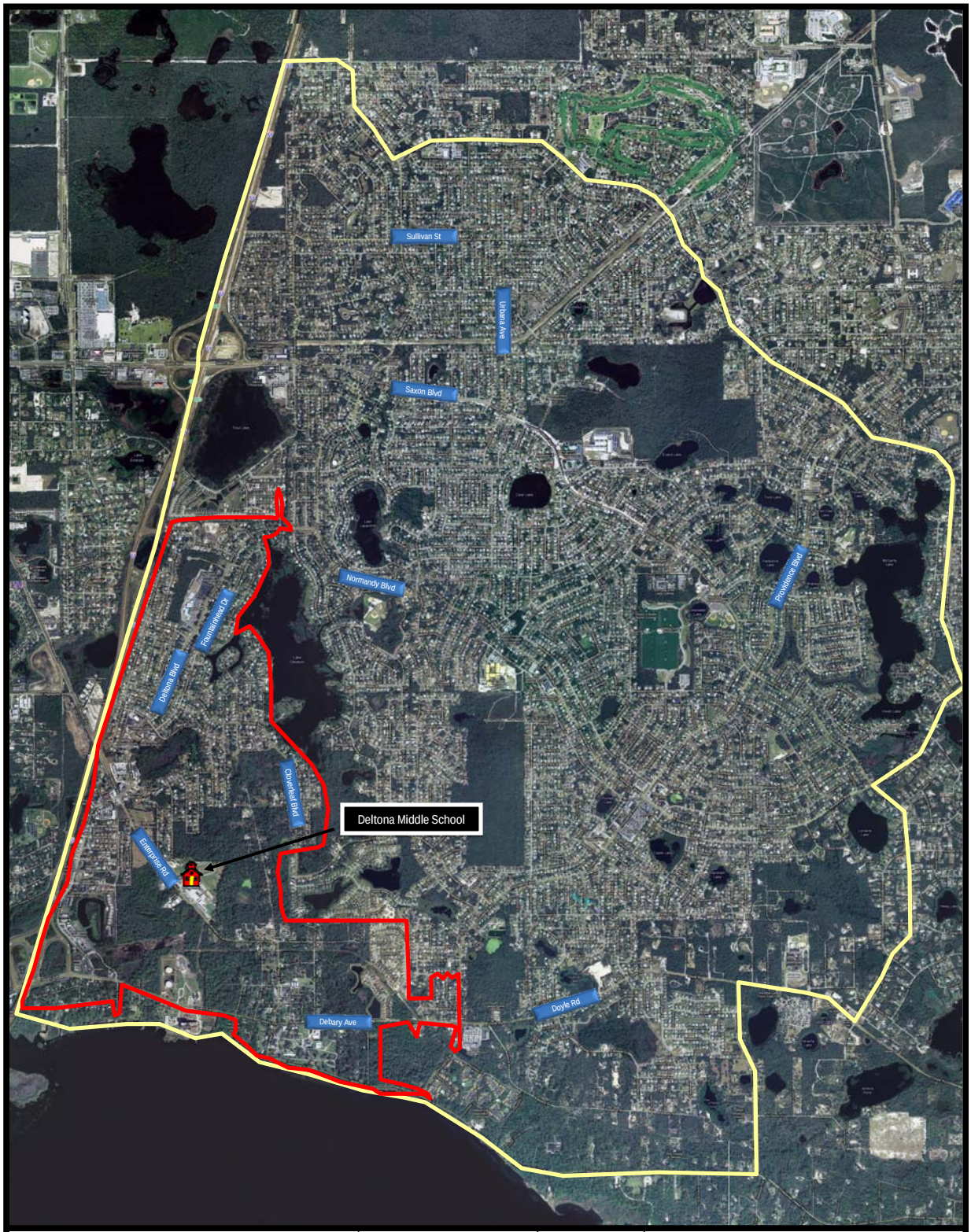
Illustration 1: Deltona Middle School's front office

Deltona Middle School encourages learning in many different fields of study. Currently, the school supports a complete and working agricultural farm, a state-of-the-art media center with three laboratories, a band and chorus room, and a fine arts program that includes a running/fitness club, open gym Saturdays for basketball, and a choral program.

Deltona Middle school promotes parent involvement in several ways. They host annual literacy nights, an Open House, an active Parent Teacher Student Association (PTSA) that meets monthly, and family nights. Family nights are offered to provide educational opportunities to students and parents including support in FCAT preparations, ADHD, and new technologies. Some tools the school uses to communicate with parents include interim reports, report cards, Parent Portal, Parent Link, conferences, e-mail, website, and posting messages on the marquee located at the front of the school.

Local businesses support Deltona Middle School by providing incentives to students who exceed expectations or have received recognition. Business partners include Riverside Bank, Cracker Barrel, Panchero's, and Indigo Lakes Country Club.

Deltona 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.



Aerial, Boundary, & Student Walk Zone

Deltona Middle School
Bicycle and Pedestrian Safety Study
Deltona, Florida

LEGEND:

- Student Home Locations
- School Walk-Zone
- Traffic Light Locations
- Ped Crash Locations
- Bike Crash Locations

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Figure 1

Volusia County MPO
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The following data was provided by Assistant Principal Carruthers:

- **Number of Volusia County Buses in Use:** 16 (see Illustration 2)
- **Number of Bus Riders:** An average of 850 students
- **Student Population:** 1,183 students
- **Percent of Students who Walk/Bicycle:** 5% - 8%
- **School Commencement and Dismissal Times:** 8:56 a.m. – 3:41 p.m.

Illustration 2: Deltona Middle School has two bus loops

Crash Data

Pedestrian and bicycle crash data for Deltona 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 two crashes noted. It is noted that none of the persons involved in these crashes are of Middle School age. 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
Deltona Middle School Assessment Study

Intersection	Date	Time	Crash Summary	Weather	Age 1	Age 2
Debary Avenue (CR 4162) at SR 400 I-4 East Overpass	10/15/2007	3:04 P.M.	Collision with Bicycle and Moving Vehicle	Dry and Clear	5	30
Main Street (CR 4156) at Pine Street	9/18/2008	2:36 P.M.	Collision with Bicycle and Moving Vehicle	Dry and Clear	62	11

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INTERVIEW

The Assistant Principal of Deltona Middle School, Mr. Mark Carruthers, was interviewed on April 28, 2010. This interview identified areas that needed to be investigated even though they may not have been considered an area of concern after reviewing the County-provided crash data.

Interview with Mr. Mark Carruthers, Assistant Principal

- Students arrive on campus as early as 8:00 a.m.
- Deltona Middle School has two main entrances and exits for walkers and bicyclists: the visitor exit driveway and the walker and bicyclist gate (see Figure 2).
- Deltona Middle School currently has 5% - 8% of walkers and bicyclists. More students used to ride their bicycles to school until warnings were issued, by motorcycle patrol, to non-helmet users. No tickets have been issued to students who choose not to wear a helmet.
- Fights and bullying often occur at the intersection of Jena Drive and Enterprise Road. Walker and bicyclist numbers have diminished because of perceived conditions at this intersection.
- Students living in the housing communities located west of Enterprise Road, on Pepperwood Avenue and Bellflower Avenue, use the field located between Enterprise Road and Pepperwood Avenue to access Enterprise Road and the school campus. After students cut across the field, they cross Enterprise Road to get to the eastern sidewalk.
- Students who stay after school for sports, detention, or school-related activities must deal with evening peak-hour traffic.

Deltona Middle School

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School Geometry

Figure 2

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Interview with Deputy Welsh, School Resource Officer

- Deputy Welsh is the SRO at Deltona Middle School in the mornings and River Springs Elementary School in the afternoons.
- No safety education is provided to the students regarding walking and bicycling to school.
- Motorists practice unsafe drop-off and pick-up procedures (see Illustration 3). Parents were notified, through Parent Link and at the School Advisory Council (SAC) meetings, of safety procedures during arrival and dismissal times.
- Deputy Welsh stated that the morning time is a cause of concern since it is sometimes dark and foggy and students feel their bad behavior can go undetected. This is especially true in the empty field located across from the cemetery on Enterprise Road because of the many fights and bullying that has occurred in the mornings.

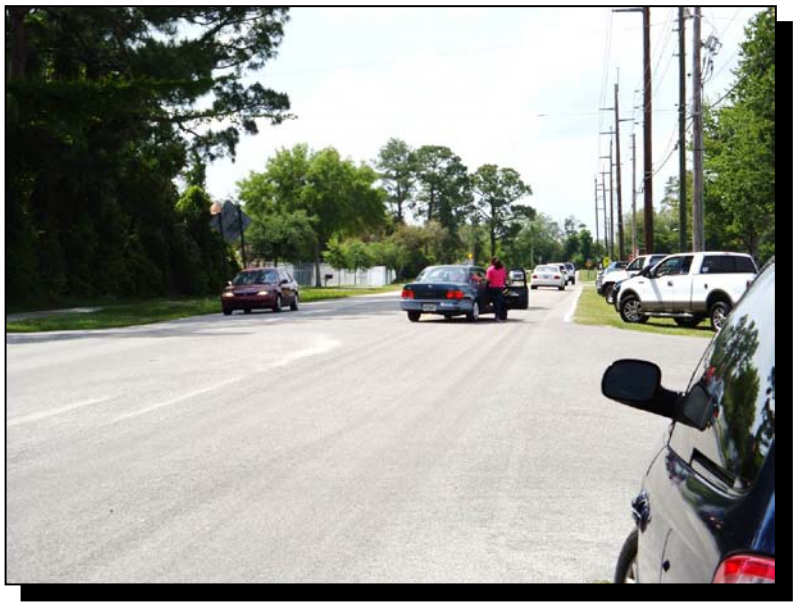

Illustration 3: Motorists pick up students in the through lanes on Enterprise Road looking north

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FINDINGS AND RECOMMENDATIONS

This section of the report includes data collected during the on-site and off-site investigative observations of Deltona Middle School and its walk zone. Intersections of interest were investigated based on comments from Assistant Principal Carruthers and the SRO, Deputy Kristina Welsh, a walk zone drive through, and comments from 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 Deltona 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, stop sign, or traffic 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 from the City of Deltona show that the two-way peak-hour traffic volume on Cloverleaf Drive is an average of 271 vehicles from Deltona Boulevard to Anderson Drive. Deltona Boulevard, from Gaynor Court to Enterprise Road, experiences an average two-way peak-hour traffic volume of 889 vehicles. Enterprise Road, from Deltona Boulevard to Main Street, experiences an average two-way peak-hour traffic volume of 562 vehicles. Debary Avenue, from Deltona Boulevard to Broadway Street, experiences an average two-way peak-hour traffic volume of 2,033 vehicles.

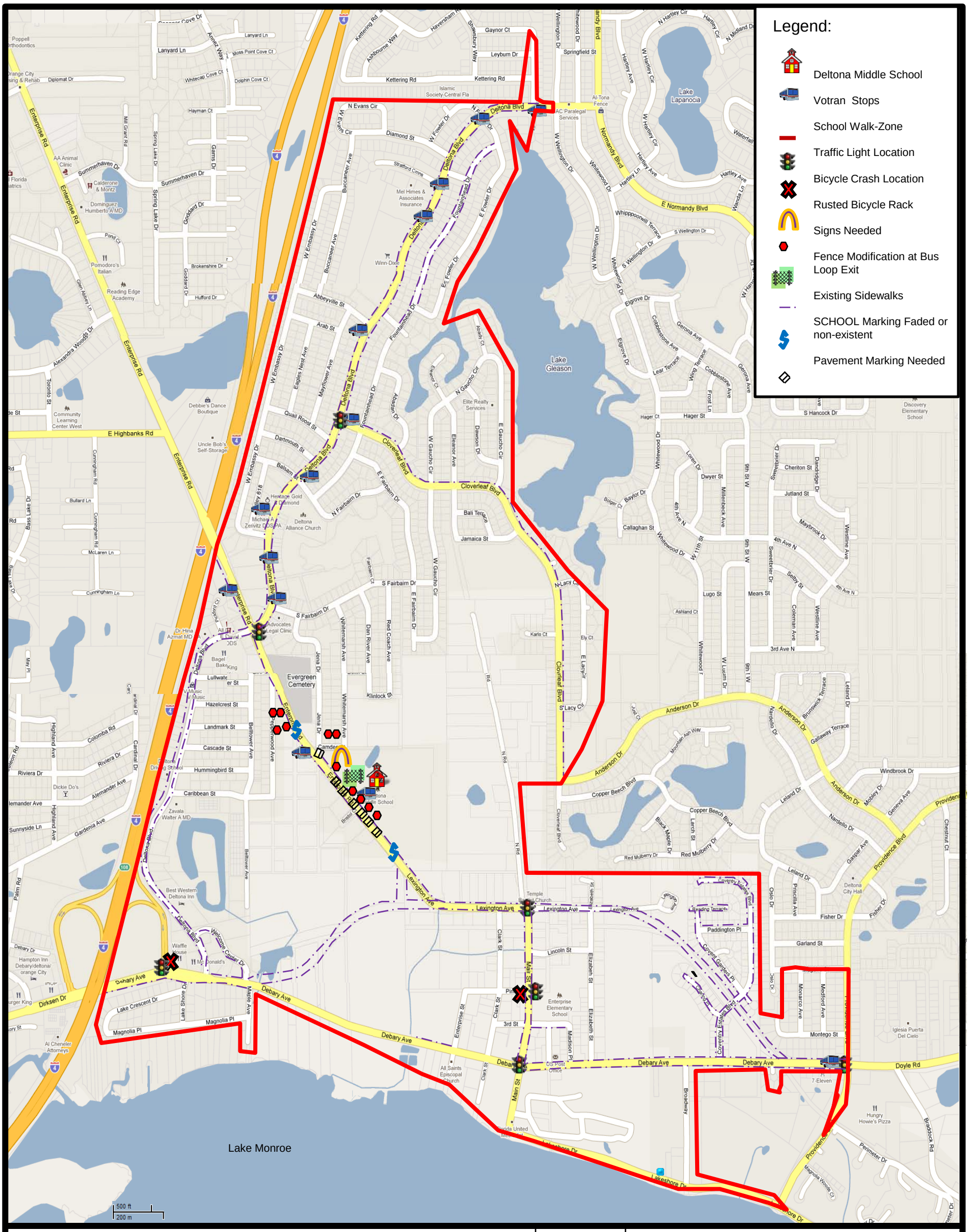
Cloverleaf Drive from Deltona Boulevard to Anderson Drive clearly experiences traffic below hazardous conditions since the two-way count is below the one-way threshold. Sections of Deltona Boulevard, from Balsam Street to Enterprise Road, Enterprise Road, from Deltona Boulevard to Main Street, and Debary Avenue, from Deltona Boulevard to Broadway Street, experience two-way traffic over the one-way hazardous condition volume. It is unlikely that Enterprise Road from Deltona Boulevard to Main Street would experience one-way counts in excess of 360 vehicles per hour given the peak-hour two-way count of 562 vehicles; however, it is likely that Deltona Boulevard from Balsam Street to Enterprise Road and Debary Avenue from Deltona Boulevard to Broadway Street could experience traffic volumes over 360 vehicles per hour.

Deltona Boulevard and Debary Avenue experience a significant amount of traffic; however, Deltona Boulevard and Debary Avenue have posted speed limits of 20 mph below the hazardous conditions speed and sidewalks are provided on both sides of the road. Furthermore, the road is curbed and pedestrian features are present at all crossings. Based on these findings, there are no hazardous conditions within Deltona Middle School's walk zone. The findings and recommendations relative hazardous conditions evaluations are summarized below in Table 3.

Table 3
Sidewalk Evaluation
Deltona Middle School Assessment Study

Street Name	Two-Way Peak-Hour Traffic Volume*	Perpendicular or Parallel Street	Crossing Guard Threshold	Traffic Signal or Stop Sign Available?	Posted Speed Limit	Threshold Exceeded?
Cloverleaf Drive	271	Perpendicular	360 vph per direction	Yes	N/A	No - Volume < Threshold
Deltona Boulevard	889	Perpendicular	360 vph per direction	Yes	N/A	No - Traffic Signal Provided
Enterprise Road	526	Parallel	≥ 55 mph	N/A	35 mph	No - Speed Limit < 55
Debary Avenue	2,033	Parallel	≥ 55 mph	N/A	35 mph	No - Speed Limit < 55

** Note - Only two-way peak-hour volumes are available. Logical inferences are made to evaluate probable one-way volumes based on the two-way data.*
vph = vehicles per hour



Deltona Middle School

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Existing Conditions

Figure 3

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On-Site Investigation - A.M. Observations

On-site observations were made at Deltona Middle School on May 4, 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: 4
- Number of bicycles chained to fence along Enterprise Road: 17
- Number of helmets: 2
- Two school-related flashing beacons located to the North and South of the school on Enterprise Road

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

Observations: Most of Deltona Middle School bicyclists were not wearing helmets (see Illustration 4).

Recommendations: The SRO and Sheriff's Deputies patrolling the walk zone should help promote bicycle safety by enforcing the bicycling rules which includes giving warnings and issuing tickets to students who do not follow the rules. Incentive programs that reward students who adhere to bicycle safety rules should be implemented to encourage students to wear their helmets. Incentive programs include "Operation Chill" which will again be implemented during the 2010-2011 school year. This incentive program rewards students with free Slurpee coupons at 7-Eleven if they are caught doing a good deed or following the rules.

The school newsletter should inform parents and students of the proper procedures regarding children bicycling to and from school. They should be informed of the penalties associated with not wearing a helmet including the $15 ticket that may be issued to a student each time they are observed not wearing a helmet (see 2009 Florida Statutes, 316.2065 Bicycle Regulations and 316.18). To ensure that all bicycling students wear helmets, the law should be enforced by the SROs, school staff, parents, and patrolling law enforcement, to be effective.

Illustration 4: Bicycling students are not wearing their helmets – looking north on Enterprise Road

Observations: Students chained their bicycles to the fence rather than use the school-provided bicycle racks (see Illustration 5). The bicycle racks are in need of repair since they are mostly rusted, bent, and broken in some areas. The bicycle storage gate was also unlocked during school hours.

Recommendations: The bicycle racks should be replaced and a lock should be used to secure the bicycle storage facility during school hours to prevent theft.

Illustration 5: Students chain their bicycles along the fence on Enterprise Road – looking north on Enterprise Road

Observations: Motorists pulled into the shoulder on either side of Enterprise Road to drop students off and avoid queues in the student drop-off loop (see Illustration 6). Students would then cross the flow of traffic if they were dropped-off on the West side of Enterprise Road to access the school campus.

Recommendations: Motorists should use the parent-loop or pull on to the shoulder on Jena Drive or Camden Street to drop students off in the mornings as is a current practice. Jena Drive and Camden Street are not busy streets during the mornings and afternoons. Parents and students should also be informed of the proper drop-off procedures through the school newsletter.

Illustration 6: Motorists pick up students in the through lanes on Enterprise Road looking north

Observations: A Votran bus stop is located in one of the bus loops on Deltona Middle School property (see Illustration 7).

Recommendations: Public bus stops should not be on school property since staff is not available to monitor who exits the bus. Revisions to the route and/or stop location are recommended to avoid the bus entering school property. Provisions for a bus stop that does not require crossing Enterprise Road should be considered.

Observations: Students used the bus loop enter the school (see Illustration 8). The sidewalk on Enterprise Road and the school campus is separated by a fence. In order to access the sidewalk on the school campus, students must walk around the gate which puts them into the bus lanes in the driveway.

Recommendations: The permanent segment of fencing blocking the two sidewalks should be removed so that students can access the sidewalks on Enterprise Road and the school campus safely. The rolling gate should be lengthened, if needed, to block the sidewalk and the bus loop exit driveway during non-school hours. This recommendation will also require the installation of a section of sidewalk to connect the sidewalks on both sides of the fence.

Illustration 7: Motorists pick up students in the through lanes on Enterprise Road looking north

Illustration 8: Students walk in the bus loop exit pavement to get around fence and gate – looking north on Enterprise Road

Observations: Motorists made U-turns or pulled into the driveways of the school entrances and exits to drop students off and avoid morning queues (see Illustration 9).

Recommendations: The bus loop has an entrance driveway and exit driveway. The bus loop entrance currently allows vehicles to exit the parking lot. The entrance driveway should only allow vehicles to enter and the exit driveway should only allow vehicles to exit the bus loop. Placing delineators to block off the exit lane and white chevron pavement markings at the entrance driveway will prevent motorists from completing a U-turn at this driveway.

Illustration 9: Motorists pull into the school driveways to drop students off to avoid queues – looking north on Enterprise Road

On-Site Investigations - P.M. Observations

On-site observations were made at Deltona Middle School on May 4, 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: Most bicyclists were not wearing helmets (see Illustration 10).

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 bicycling gear to students who adhere to bicycle safety rules. Warnings and the issuance of tickets should be given to students who do not follow the rules (2009 Florida Statutes, 316.2065 Bicycle Regulations).

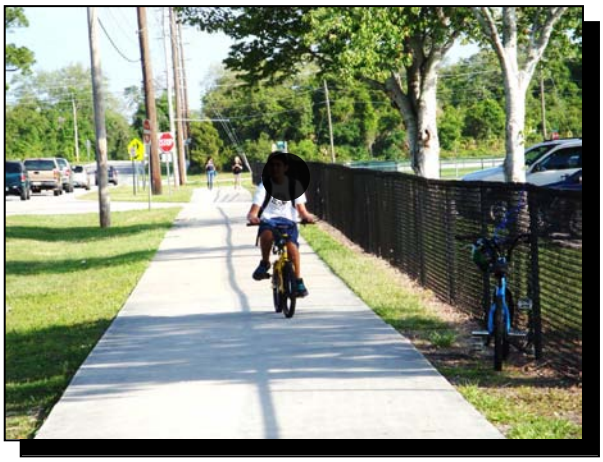

Illustration 10: Bicyclist without a helmet – looking North on Enterprise Road

Observations: Motorists parked in the shoulder on both sides of Enterprise Road to pick students up and avoid queues in the parent-loop (see Illustration 11). If the vehicle picking up a student was parked on the West side of Enterprise Road then students would have to cross traffic to access the vehicle rather than use the crosswalks located to the North and South of the school campus (see Illustration 12). Motorists were also parked in between NO PARKING signs.

Illustration 11: Motorists parked in shoulder along Enterprise Road – looking South

Recommendations: Motorists should use the parent-loop to pick students up in the afternoons. Parents and students should also be informed of proper pick-up procedures through the school newsletters and by the SRO.

Observations: A Votran bus stop picks up students in the afternoons and during school hours in one of the bus loops.

Recommendations: Public bus stops should not be on school property since staff is not available to monitor who exits and enters the bus. Revisions to the route and/or stop location are recommended to avoid the bus entering school property. Provisions for a bus stop that does not require crossing Enterprise Road should be considered.

Illustration 12: Students darting across road to access vehicles parked on the west side of Enterprise Road

Observations: Students used the bus loop exit to leave the school campus. The sidewalk on Enterprise Road and the school campus is separated by a fence. In order to access the sidewalk on the other side of the fence, students must walk around the gate which puts them into the bus lanes in the driveway.

Recommendations: The permanent segment of fencing blocking the two sidewalks should be removed so that students can access the sidewalks on Enterprise Road and the school campus safely. The rolling gate should be lengthened, if needed, to block the sidewalk and the bus loop exit driveway during non-school hours. This recommendation will also require the installation of a section of sidewalk to connect the sidewalks on both sides of the fence.

Observations: The SRO is responsible for law enforcement, mentoring, classroom teaching, and providing a positive role model for students; however, the officer is on campus in the mornings and not in the afternoons. This prevents her from enforcing helmet safety, safe crossing procedures, the prevention of bullying, and any safety practices.

Recommendations: Each middle school should have its own SRO that is on campus during school hours to effectively enforce the law, mentor, teach classrooms, and providing a positive role model for students.

Observations: Four driveways have faded and cracked stop lines (see Illustration 13).

Recommendations: The STOP lines should be repainted with thermoplastic paint to clearly show motorists the point behind which they should stop.

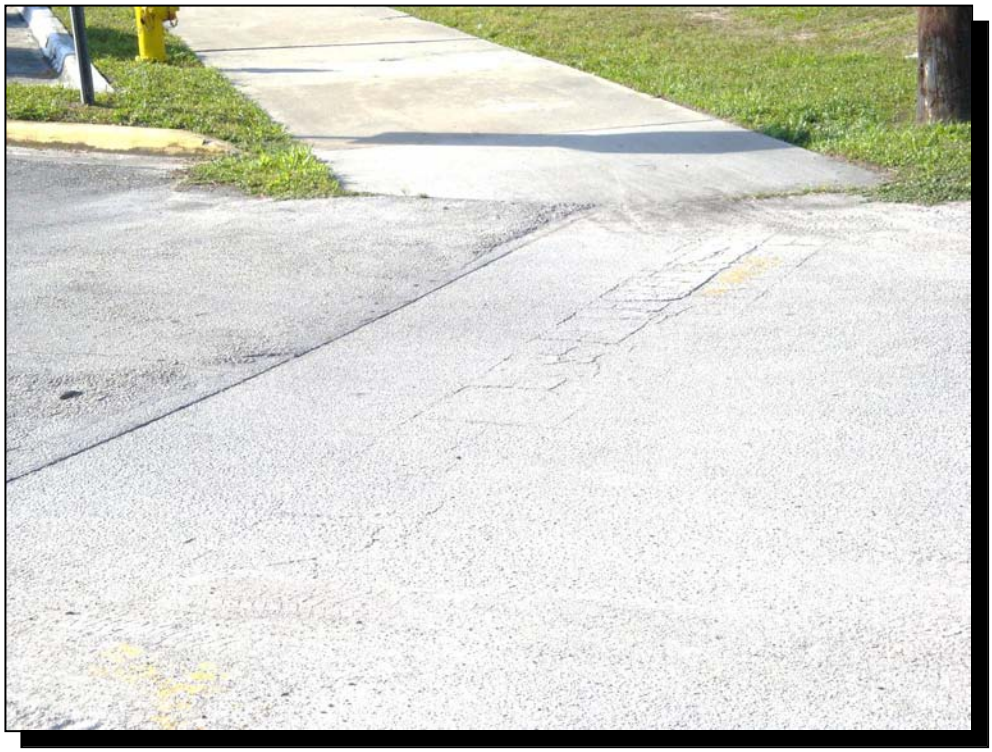

Illustration 13: Faded stop line at the visitor parking lot exit driveway

Observations: The current crosswalk markings at the driveways of the parent loop entrance and exit, the visitor entrance and exit, and the bus loop entrance and exit are faded and worn (see Illustration 14).

Recommendations: All driveways at Deltona Middle School should have special emphasis crosswalk markings and should be installed in accordance with Standard Index No. 17346. Crosswalk markings are especially important to bicyclists who live to the south of the school and must cross six driveways to access the sidewalk on the north side of the campus**.**

Illustration 14: Faded and worn crosswalk markings at the parent-loop entrance South of the school campus

Observations: Twelve panels that are located beneath NO PARKING signs along Enterprise Road, in front of Deltona Middle School, are peeling and worn. The panels show when the NO PARKING restriction is not in effect (see Illustration 15).

Recommendations: The bottom panels that show when parking is permissive should be replaced so that motorists are aware of when parking is allowed along Enterprise Road in front of the school campus.

Illustration 15: Faded NO PARKING restriction plaque along front of school

Observations: Motorists parked between NO PARKING signs on Enterprise Road in front of Deltona Middle School (see Illustration 16).

Recommendations: The SRO and the Sheriff's Deputies should not allow motorists to disregard the rules. The signs should be removed or the restriction should be enforced.

Observations: An EXIT ONLY plaque below a DO NOT ENTER sign located at the bus loop exit is peeling and illegible (see Illustration 17).

Recommendations: The EXIT ONLY plaque should be removed as it is fading and unnecessary.

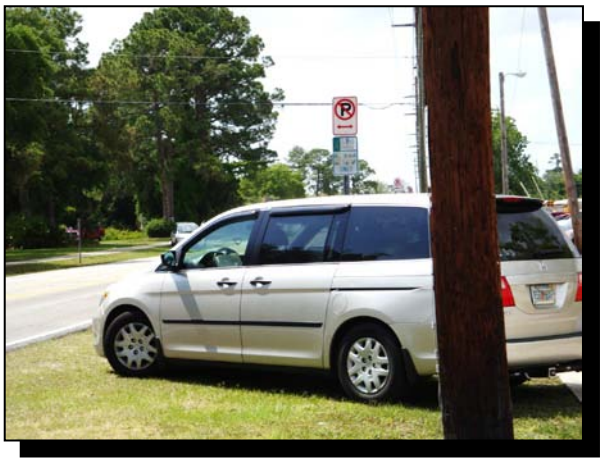

Illustration 16: Parents park between the NO PARKING signs – looking north on Enterprise Road

Illustration 17: Faded and peeling EXIT ONLY plaque at bus loop exit

Off-Site Investigations

Observations: The SCHOOL pavement marking located North of Deltona Middle School on Enterprise Road is faded and cracked.

Recommendations: New SCHOOL pavement markings should be installed on Enterprise Road, South of Deltona Middle School, in accordance with Standard Index No. 17344 using thermoplastic paint.

Observations: No SCHOOL pavement markings exists to the South of the school on Enterprise Road

Recommendations: SCHOOL pavement markings should be installed South of the school in accordance with Standard Index No. 17344.

Illustration 18

Observations: Students were observed using an empty field, west of the Evergreen Cemetery, to access or exit Enterprise Road. The students using this path live in the housing developments located to the West of Deltona Middle School on Pepperwood Avenue and along the streets connecting to Bellflower Avenue. Students prefer to cut through this open field rather than walk north out to Enterprise Road and then back down to the school campus.

Recommendations: The field is an area of concern since the assistant principal and SRO stated that fights often occur there. The Sheriff's Deputies should pay close attention to this field and issue citations to students who are not following the rules.

Observations: No crosswalk markings exist at the intersection of Enterprise Road and Jena Drive (see Illustration 20).

Recommendations: The intersection of Enterprise Road and Jena Drive should have special emphasis crosswalk markings in accordance with Standard Index No. 17346 to heighten driver awareness that students may be crossing. See illustrative recommendation shown in Illustration 20.

Illustration 20: The intersection of Jena Drive and Enterprise Road should have special emphasis crosswalk markings

Observations: Camden Street east of Jena Drive has an advance school sign that is outdated and faded.

Recommendations: The SCHOOL in advance signage should be replaced with School Advance Crossing Assemblies (S1-1 and W16-9P) to warn motorists that they are entering a restricted school zone and children may be present on Camden Street east of Jena Drive. Signs should be installed in accordance with Standard Index Nos. 17302 and 17344.

Observations: The SCHOOL crossing sign at the intersection of Jena Drive and Enterprise Road is outdated and worn (see Illustration 21).

Recommendations: The SCHOOL crossing sign at the intersection of Jena Drive and Enterprise Road should be replaced with a School Crossing Assembly (S1-1 and W16-7) and should be installed in accordance with Standard Index Nos. 17302 and 17344. School Crossing Assemblies warn motorists that students can be crossing at this intersection.

Observations: The SCHOOL crossing sign at the intersection of Jena Drive and Camden Street is outdated and worn (see Illustration 22).

Recommendations: The SCHOOL crossing sign at the intersection of Jena Drive and Camden Street should be replaced with a School Crossing Assembly (S1-1 and W16-7) and should be installed in accordance with Standard Index Nos. 17302 and 17344. School Crossing Assemblies warn motorists that students can be crossing at this intersection.

Illustration 21: Outdated and faded school crossing sign at the intersection of Jena Drive and Enterprise Road

Illustration 22: Outdated school crossing sign at the intersection of Jena Drive and Camden Street

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OTHER OFF-SITE RECOMMENDATIONS

Schools should have a safe, designated walk route that accommodates walkers and bicyclists who live within the walk zone. Walking and bicycling students living in the Walk Zone Areas, as shown in Figure 4, can use the following routes to and from school.

Walk Zone Area 1

Students who live in Walk Zone Area 1 can walk or ride their bicycles to and from school by using Deltona Boulevard located to the east. Deltona Boulevard has sidewalks on both sides of the road. Students should proceed South on Deltona Boulevard to Enterprise Road. Walkers and bicyclists should use the traffic signal located at the intersection of Deltona Boulevard and Enterprise Road to access the only sidewalks on the western side of Enterprise Road. Students should then use the crosswalk located on the North side of the school campus to cross Enterprise Road and access Deltona Middle School.

Walk Zone Area 2

Students who live in Walk Zone Area 2 can walk or ride their bicycles to and from school by using the following routes.

- Students can walk or ride their bicycles west to Deltona Boulevard and then proceed South on Deltona Boulevard to Enterprise Road. Deltona Boulevard has sidewalks on both sides of its road while Enterprise Road has sidewalks on the West side. Walkers and bicyclists can use the traffic signal located at the intersection of Deltona Boulevard and Enterprise Road to access the only sidewalks on the western side of Enterprise Road. Students should then use the crosswalk located on the North side of the school campus to cross Enterprise Road and access Deltona Middle School.

- Students who live further East within this Walk Zone Area may find that walking to Deltona Boulevard is too far. In this case, the construction of sidewalks, from Drake Terrace to Cloverleaf Boulevard, on Fountainhead Drive can be used and will connect existing sidewalks North of Drake Terrace on Fountainhead Drive and Cloverleaf Boulevard. Cloverleaf Boulevard has sidewalks on the North side of its roadway while Fountainhead Drive has sidewalks on the West side of its roadway. Students can use Cloverleaf Boulevard to access Deltona Boulevard. Walkers and bicyclists should then use the traffic signal located at the intersection of Deltona Boulevard and Enterprise Road to access the sidewalks located on the western side of Enterprise Road. Students should also use the crosswalk located on the North side of the school campus to cross Enterprise Road and access Deltona Middle School.

Walk Zone Area 3

Students who live in Walk Zone Area 3 can walk or ride their bicycles to and from school by accessing Deltona Boulevard from the following two routes.

- Students who live to the East of Cloverleaf Boulevard and to the North of Walk Zone Area 3 should use Cloverleaf Boulevard to access Deltona Boulevard. Students should then proceed South on Deltona Boulevard to Enterprise Road. Walkers and Bicyclists can use the traffic signal located at the intersection of Deltona Boulevard and Enterprise Road to access the sidewalks on the western side of Enterprise Road. Students should use the crosswalk located on the North side of the school campus to cross Enterprise Road and access Deltona Middle School.
- Students who live in the western section of Walk Zone Area 3 can use Fairbairn Drive to access Deltona Boulevard. They can then proceed South on Deltona Boulevard to Enterprise Road. Walkers and Bicyclists can use the traffic signal located at the intersection of Deltona Boulevard and Enterprise Road to access the sidewalks on the western side of Enterprise Road. Students should use the crosswalk on the North side of the school campus to cross Enterprise Road and access Deltona Middle School.

Walk Zone Area 4

Students who live in Walk Zone Area 4 can walk or ride their bicycles to and from school by accessing the school campus from the following two routes.

- Students can walk or ride their bicycles North on Bellflower Avenue to Ciro Street to Enterprise Road or Pepperwood Avenue to access Enterprise Road where they can utilize the only existing sidewalks on the western side of Enterprise Road and proceed south. Students should then use the crosswalks located on the North side of the school campus to cross Enterprise Road and access Deltona Middle School.

- Students who live in the western-most section of this walk area can walk or ride their bicycles North on Deltona Boulevard to access Enterprise Road and then proceed South. Students should use the crosswalk located on the North side of the school campus to cross Enterprise Road and access Deltona Middle School.

Walk Zone Area 5

Students living in Walk Zone Area 5 can walk or ride their bicycles to and from school by exiting the neighborhood through Lake Shore Drive or Maple Avenue and crossing Debary Avenue at the signalized intersection of Deltona Boulevard to access Deltona Boulevard North. Once walkers and bicyclist arrive at the intersection of Enterprise Road, they should then travel South to the school campus. Students should use the crosswalk located on the North side of the Deltona Middle School to cross Enterprise Road.

Walk Zone Area 6

Students living in Walk Zone Area 6 can walk or ride their bicycles to and from school by using Main Street to the newly constructed Debary Avenue West to Enterprise Road or directly access Debary Avenue and head west to Enterprise Road. Main Street and Debary Avenue have sidewalks on both sides of the road. Once on Enterprise Road, students can access Deltona Middle School by using the crosswalks located South of the school campus.

Creating a safe walkway to school is an opportunity to promote safe walking and bicycling practices. Students can meet at designated locations and walk or ride their bicycles to school. Parents or community leaders should take turns walking to school with students and Deltona Middle School and its business partners should provide incentives to make walking and bicycling a preferred mode of transportation. The following are a few of the major programs that encourage walking and bicycling to school and foster safety awareness in students and parents.

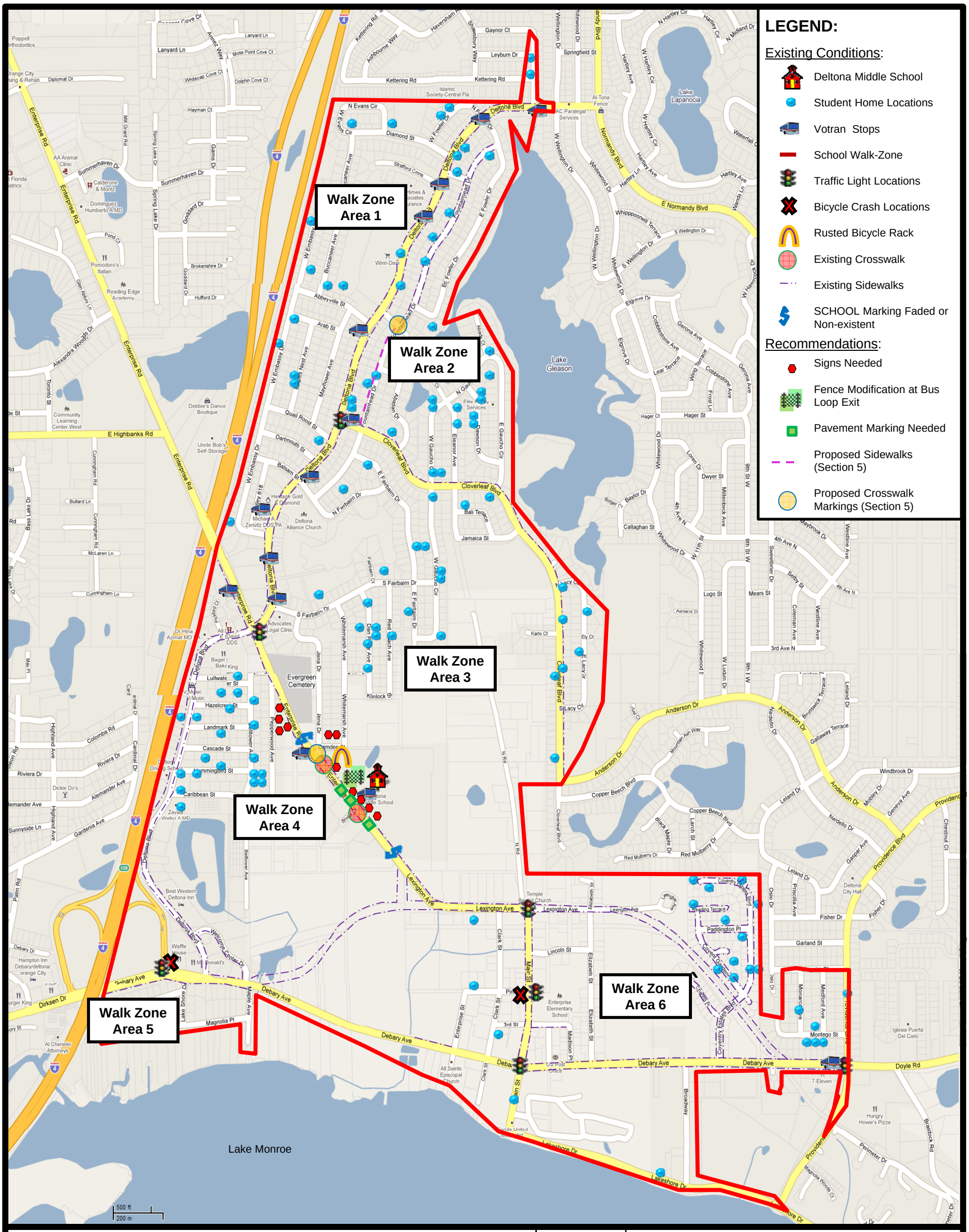
- Walking School Bus – A group of students who walk to school with an adult and picks up students on the way to school at a set place and time like a school bus.

- KidsWalk-to-School – A group of students who walk to school with an adult.

- SAFE KIDS Walk this Way – A year-round pedestrian safety program conducted by the National SAFE KIDS Campaign that participates in the International Walk to School Day. They work with parents, educators, and community leaders to teach pedestrian safety to students, enforce speed limits, and other traffic regulations.

- International Walk to School Day – An event that occurs around the world in October where students, parents, teachers, and community leaders walk to school together to promote being active and making the streets more friendly for walking and bicycling.

Since the SRO is on the Deltona Middle School campus in the mornings, the officer can encourage walking and bicycling programs and teach safe crossing procedures en route. Implementation of these recommendations and the encouragement of its use should allow students to walk and bicycle to and from school in a safer manner as well as promote a healthier lifestyle.



LEGEND:

Existing Conditions:

- Deltona Middle School
- Student Home Locations
- Votran Stops
- School Walk-Zone
- Traffic Light Locations
- Bicycle Crash Locations
- Rusted Bicycle Rack
- Existing Crosswalk
- Existing Sidewalks
- SCHOOL Marking Faded or Non-existent

Recommendations:

- Signs Needed
- Fence Modification at Bus Loop Exit
- Pavement Marking Needed
- Proposed Sidewalks (Section 5)
- Proposed Crosswalk Markings (Section 5)

Deltona Middle School

Bicycle and Pedestrian School Safety Review Study

Deltona, Florida

N

VOLUSIA TPO
TRANSPORTATION PLANNING ORGANIZATION
VISION - PLAN - IMPLEMENT

Existing Conditions and Recommendations

Figure 4

Lassiter Transportation Group, Inc.
Engineering and Planning

6

COST ESTIMATE

Table 3 shows the preliminary cost summary that would be associated with the recommendations listed within the Assessment section of this report for Deltona Middle School. These recommendations and existing conditions are also summarized on composite Figure 4. FDOT's *2010 Basis of Estimates* manual was used in the development of Table 4. A detailed cost estimate is presented in Appendix A. The estimated engineering cost for all recommendations within this section is $65,696.96. These recommendations are based on field observations and should be verified by a contractor.

Table 4
Cost Summary
Deltona Middle School Assessment Study

Location	Agency Responsible	Observations	Recommendations	Contract Amount[3]
Deltona Middle School Walk Zone	SRO, Sheriff's Deputies, Deltona Middle School	Bicycling students were not wearing helmets	The SRO should take an active role in ensuring 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
On Campus	School Board	Bicycle racks were rusted; gate remained open throughout the day; no lock on fence gate; students preferred to chain bicycles to the fence on the outer perimeter of the school campus; bicycle theft has occurred within unlocked bicycle enclosure	Existing bicycle racks should be replaced; gate should be locked during school hours to prevent theft	$2,433.80
	Deltona Middle School	The sidewalk on the South side of the school from the walker and bicyclist gate ends at a basketball court; this forces students to walk in the parking lot to access the sidewalk on the other side of the basketball court	The basketball court gate should remain open during the arrival and dismissal times so students can walk through the basketball court to access sidewalks located on both sides of the court	N/A
	School Board	A Votran stop is located on-campus; students were observed exiting and entering the bus during arrival and dismissal times	This stop should be relocated outside of school property since staff is not available to monitor non-students who are exiting and entering the bus	N/A
		Students used the bus loop exit to enter and exit the school - students access the sidewalk on campus and on Enterprise Road by walking in the pavement of the bus exit lane to avoid the gate	The permanently fixed fence should be shortened to allow students to access the sidewalk on Enterprise Road and on the school campus	$114.95
			Install rolling gates to sufficiently close off the bus loop exit and sidewalk after school hours	$4,154.23
			Install 6' sidewalk to connect Enterprise Road and the campus	$420.18
		The SRO is on campus in the mornings but not in the afternoons; this prevents the officer from effectively enforcing the law, mentoring, teaching classrooms, and providing a positive role model for students	An SRO should be assigned to each middle school to effectively carry out their duties by enforcing appropriate behavior around the school campus	N/A
In Front of School on Enterprise Road	Volusia County	Motorists made U-turns into the bus loop entrance to drop students off and avoid morning queues	Since the bus loop has a driveway that serves exiting vehicles, the entrance of the bus loop should be converted to an enter only; flexible delineators, along with pavement markings that guide vehicles into the driveway should be employed	$48.96
				$740.99
		Twelve restriction panels that state the NO PARKING restriction times, located below the No Parking signs, are peeling and illegible	The bottom panels of the NO PARKING signs should be replaced	$600.00
	SRO and Sheriff's Deputies	In the morning, motorists pulled into the shoulder on the east and west sides of Enterprise Road to drop off students	Periodic enforcement should be implemented to monitor students as they are dropped-off; parents should be notified of proper drop-off procedures	N/A
		In the afternoons, parents parked on the shoulder on both sides of Enterprise Road in between NO PARKING signs; when motorists were parked on the west side of Enterprise Road, students would cross Enterprise Road to access the waiting vehicles without using the sidewalks	Students should use the crosswalks located to the North and South of the school when crossing Enterprise Road; periodic enforcement should be implemented to monitor parking restrictions and students as they are picked-up; parents and students should be notified of proper pick-up procedures in the newsletters and tickets should be issued to those who do not follow the rules	N/A
School Driveways	Volusia County	An EXIT ONLY plaque, located below a DO NOT ENTER sign, is faded and peeling	The EXIT ONLY plaque should be removed as it is fading and unnecessary	$54.87
	School Board	Bus loop exit driveway pavement markings does not provide sufficient space to install crosswalk markings that joins the sidewalks	Pavement markings should be removed and stop line should be relocated 15' back to install crosswalk markings; transition sidewalk approaches to allow 4' separation from crosswalk and stop line	$1,827.23
		Four driveways have stop lines that are faded and cracked	The existing driveway stop lines should be removed	$348.16
			Stop lines should be installed with thermoplastic paint	$238.50
		Crosswalk markings at all driveways are faded and worn	The existing crosswalk markings should be removed and thermoplastic special emphasis pavement markings should be installed in accordance with Standard Index No. 173.46	$754.92
Enterprise Road, North of School	Volusia County	SCHOOL marking is faded and worn	Remove existing SCHOOL pavement marking and install SCHOOL marking in accordance with Standard Index No. 17344	$127.29
Enterprise Road, South of the School	Volusia County	No SCHOOL pavement markings exists to the South of the school toward Debary Avenue on Enterprise Road	Install SCHOOL pavement markings in accordance with Standard Index No. 17344	$108.10

Table 4 (Continued)
Cost Summary
Deltona Middle School Assessment Study

Camden Street and Jena Drive	City of Deltona	The advance SCHOOL signage East of the intersection of Jena Drive and Camden Street is outdated and faded	Replace outdated SCHOOL in advance signage with approved School Advance Crossing Assembly (S1-1 and W16-9P)	$496.79
		SCHOOL crossing sign at the intersection of Jena Drive and Camden Street is outdated and faded	Replace outdated SCHOOL crossing signage with School Crossing Assembly (S1-1 and W16-7)	$496.79
Intersection of Enterprise Road and Jena Drive	City of Deltona	Intersection does not have crosswalk markings	Special emphasis crosswalk markings should be installed	$921.60
Extended Sidewalk Throughout Walk Zone Route	City of Deltona	Most students who live to the North and Northeast of the walk zone must traverse along streets with no sidewalks or collector roads	Four-foot (minimum) sidewalks should be installed along the route shown in Figure 4	$40,960.55
			Crosswalk markings should be installed at all intersections	$603.66
			TOTAL	$55,451.57

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EXECUTIVE SUMMARY – IMPLEMENTATION REPORT

Lassiter Transportation Group, Inc. (LTG) was retained by the Volusia Transportation Planning Organization (TPO) to prepare an Implementation Report for the Bicycle and Pedestrian School Safety Review Study for 17 Volusia County schools. The Implementation Report for the Pedestrian and Bicycle School Safety Review Study is based on observations and recommendations of the Assessment Report and includes cost data, ranking criterion for the recommended improvements, and the best practices to follow on old and new developments. The subject of this Implementation Report is Deltona Middle School. The Implementation component of this report further details sidewalk-related recommendations and costs.

Assessment of Existing Conditions

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

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

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

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 improvements.

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

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

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 balance.

Best Practices

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

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

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

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

Sidewalk Maintenance

Findings

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

Illustration 25: School sidewalk

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

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

Best Practices

- A division of the city or county should be solely dedicated to sidewalk maintenance or, if in the case of privately maintained sidewalks, should be addressed through code enforcement procedures.
- Sidewalk maintenance issues should be 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

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 26).

Illustration 26: Faded crosswalk markings

Best Practices

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

- SCHOOL pavement markings and crosswalk markings should be clear and visible in order to warn motorists that they are entering a school zone and/or children are crossing.
- The FDOT's current standard (Index No. 17346) uses a special emphasis crosswalk that lengthens the life of the crosswalk marking.
- Thermoplastic paint should be used for all pavement and school markings to enhance the visibility of walkers and bicyclists. Thermoplastic paint should be used since it is durable, retro-reflective, 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.

Illustration 27: Flashing beacon traffic signal control

SCHOOL flashing beacons (Illustration 27) 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 28). 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.

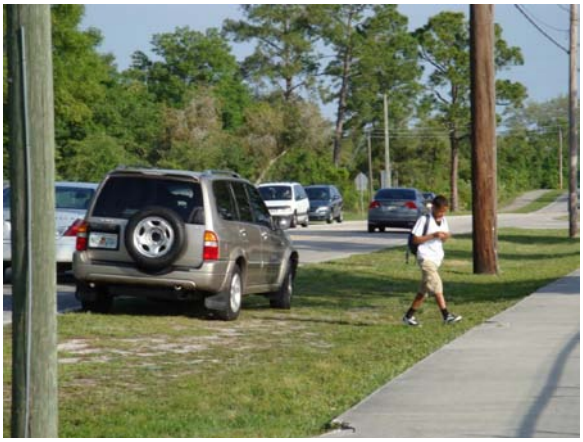

Illustration 28: Student accessing car on shoulder of Enterprise Road instead of parent-loop

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.

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MASTER IMPROVEMENT PLAN

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

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CONSTRUCTABILITY MATRIX

For the purposes of the constructability matrix and the prioritized list to follow, only sidewalk-related improvements are considered. The matrix in Table 5 shows the estimated cost of sidewalk projects that are recommended for improvement. Appendix K shows the unit by which each recommendation is measured and provides a more in-depth analysis of the cost. FDOT's *2010 Basis of Estimates* manual was used to develop the constructability matrix. The estimated engineering costs for these recommendations are $52,776.01. The costs shown in the constructability matrix includes construction and labor fees. Grading costs are not included. As mentioned before, these improvements are based on field observations and should be verified by a contractor prior to construction.

Table 5
Constructability Matrix
Deltona Middle School Implementation Report

Priority No.	Project Name	Description	Potential Constraints	Plan Quantity	Unit Measure	Unit Price	Estimated Cost
1	Sidewalk Extension	Sidewalk on Cloverleaf Boulevard should be extended from North of Drake Terrace to Fountainhead Drive	Right-of-Way should be verified prior to construction	745.00	SY	$70.03	$52,172.35
		Installation of crosswalk marking at Cloverleaf Boulevard /Drake Terrace	None	137.00	LF	$3.18	$603.66
						SUBTOTAL:	$52,776.01

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

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RECOMMENDED PRIORITY PROJECTS

The recommended projects, prioritized in Table 5, were ranked and rated with regards to safety, benefits associated with the improvement, constructability, and cost. This section of the report provides additional information about each project in ranking order.

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

Project No. 1: Extension of sidewalk on Cloverleaf Boulevard

Submitting Agency: City of Deltona
Project Location: Cloverleaf Boulevard
School Served: Deltona Middle School
Project Description: Extension of Sidewalk
LAP Coordinator: Volusia County
Maintaining Agency: City of Deltona

Safety Issue: Students in the north to northeastern segment of the walk zone may choose to walk along Fountainhead Drive until its termination at Cloverleaf before travelling onto Deltona Drive. The existing sidewalk at this location is not continuous, which creates the potential for kids to walk in the street or on private property, while travelling on Fountainhead Drive between Drake Drive and Cloverleaf Drive.

Project Description: This project will include the installation of four-foot sidewalks as well as the installation of a crosswalk marking at Cloverleaf Drive/Drake Terrace

Estimated Cost: The estimated cost for this project is $52,172.35. See Table 5 for a detailed constructability matrix.

WORKS CITED

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

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

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APPENDICES

APPENDICES

APPENDIX A: DETAILED COST ESTIMATE

Location	Agency Responsible	Observations	Recommendations	Pay Item Number[1]	Pay Item Description[1]	Plan Qty	Unit Measure[1]	Unit Price[2]	Contract Amount[3]
Deltona Middle School Walk Zone	SRO, Sheriff's Deputies, Deltona Middle School	Bicycling students were not wearing helmets	The SRO should take an active role in ensuring 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
On Campus	School Board	Bicycle racks were rusted; gate remained open throughout the day; no lock on fence gate; students preferred to chain bicycles to the fence on the outer perimeter of the school campus; bicycle theft has occurred within unlocked bicycle enclosure	Existing bicycle racks should be replaced; gate should be locked during school hours to prevent theft		BICYCLE RACK - HOLDS 18 BICYCLES	5.00	EA	$486.76	$2,433.80
	Deltona Middle School	The sidewalk on the south side of the school from the walker and bicyclist gate ends at a basketball court; this forces students to walk in the parking lot to access the sidewalk on the other side of the basketball court	The basketball court gate should remain open during the arrival and dismissal times so students can walk through the basketball court to access sidewalks located on both sides of the court						N/A
	School Board	A Votran stop is located on-campus; students were observed exiting and entering the bus during arrival and dismissal times	This stop should be relocated outside of school property since staff is not available to monitor non-students who are exiting and entering the bus						N/A
		Students used the bus loop exit to enter and exit the school - students access the sidewalk on campus and on Enterprise Road by walking in the pavement of the bus exit lane to avoid the gate	The permanently fixed fence should be shortened to allow students to access the sidewalk on Enterprise Road and on the school campus	550-10-218	FENCING, TYPE B, 0.0-5.0', RESET EXISTING	11.00	LF	$10.45	$114.95
			Install rolling gates to sufficiently close off the bus loop exit and sidewalk after school hours	550-60-236	FENCE GATE, TYPE B, SLIDE/CANT, 24.1'-30' OPEN	1.00	EA	$4,154.23	$4,154.23
			Install 6' sidewalk to connect Enterprise Road and the campus	522-1	SIDEWALK CONC, 4" THICK	6.00	SY	$70.03	$420.18
		The SRO is on campus in the mornings but not in the afternoons; this prevents the officer from effectively enforcing the law, mentoring, teaching classrooms, and providing a positive role model for students	A SRO should be assigned to each middle school to effectively carry out their duties by enforcing appropriate behavior around the school campus						N/A
In Front of School on Enterprise Road	Volusia County	Motorists made U-turns into the bus loop entrance to drop students off and avoid morning queues	Since the bus loop has a driveway that serves exiting vehicles, the entrance of the bus loop should be converted to an enter only; flexible delineators, along with pavement markings that guide vehicles into the driveway should be employed	711-17	THERMOPLASTIC, REMOVE	36.00	SF	$1.36	$48.96
				705-11-1	DELINEATOR, FLEXIBLE TUBULAR	12.00	EA	$49.87	$598.44
				711-11-111	THERMOPLASTIC, STD, WHITE, SOLID, 6"	0.05	NM	$2,851.07	$142.55
		Twelve restriction panels that state the NO PARKING restriction times, located below the No Parking signs, are peeling and illegible	The bottom panels of the NO PARKING signs should be replaced	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	12.00	EA	$50.00	$600.00
	SRO and Sheriff's Deputies	In the morning, motorists pulled into the shoulder on the east and west sides of Enterprise Road to drop students off	Periodic enforcement should be implemented to monitor students as they are dropped-off; parents should be notified of proper drop-off procedures						N/A
		In the afternoons, parents parked on the shoulder on both sides of Enterprise Road in between NO PARKING signs; when motorists were parked on the west side of Enterprise Road, students would cross Enterprise Road to access the waiting vehicles without using the sidewalks	Students should use the crosswalks located to the north and south of the school when crossing Enterprise Road; periodic enforcement should be implemented to monitor parking restrictions and students as they are picked-up; parents and students should be notified of proper pick-up procedures in the newsletters and tickets should be issued to those who do not follow the rules						N/A

Location	Agency Responsible	Observations	Recommendations	Pay Item Number[1]	Pay Item Description[1]	Plan Qty	Unit Measure[1]	Unit Price[2]	Contract Amount[3]
School Driveways	Volusia County	An EXIT ONLY plaque, located below a DO NOT ENTER sign, is faded and peeling	The EXIT ONLY plaque should be removed as it is fading and unnecessary	700-48-60	SIGN PANELS, REMOVE, 15 OR LESS	1.00	EA	$54.87	$54.87
	School Board	Bus loop exit driveway pavement markings does not provide sufficient space to install crosswalk markings that joins the sidewalks	Pavement markings should be removed and stop line should be relocated 15' back to install crosswalk markings; transition sidewalk approaches to allow 4' separation from crosswalk and stop line	711-17	THERMOPLASTIC, REMOVE	252.00	SF	$1.36	$342.72
				711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	187.00	LF	$3.18	$594.66
				711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	122.00	LF	$1.68	$204.96
				522-1	SIDEWALK CONC, 4" THICK	9.78	SY	$70.03	$684.89
		Four driveways have stop lines that are faded and cracked	The existing driveway stop lines should be removed	711-17	THERMOPLASTIC, REMOVE	256.00	SF	$1.36	$348.16
			Stop lines should be installed with thermoplastic paint in accordance with Standard Index No. 17344	711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	75.00	LF	$3.18	$238.50
		Crosswalk markings at all driveways are faded and worn	The existing crosswalk markings should be removed	711-17	THERMOPLASTIC, REMOVE	30.00	SF	$1.36	$40.80
			Thermoplastic special emphasis pavement markings should be installed in accordance with Standard Index No. 17346	711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	158.00	LF	$3.18	$502.44
				711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	126.00	LF	$1.68	$211.68
Enterprise Road, North of School	Volusia County	SCHOOL marking is faded and worn	Remove existing SCHOOL pavement marking and install SCHOOL marking in accordance with Standard Index No. 17344	711-17	THERMOPLASTIC, REFURBISH, WHITE, MESSAGE	1.00	EA	$127.29	$127.29
Enterprise Road, South of the School	Volusia County	No SCHOOL pavement markings exists to the south of the school toward Debary Avenue on Enterprise Road	Install SCHOOL pavement markings in accordance with Standard Index No. 17344	711-11-160	THERMOPLASTIC, STD, WHITE, MESSAGE	1.00	EA	$108.10	$108.10
Camden Street and Jena Drive	City of Deltona	The advance school signage east of the intersection of Jena Drive and Camden Street is outdated and faded	Replace outdated school in advance signage with approved School Advance Crossing Assembly (S1-1 and W16-9P)	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	1.00	EA	$247.71	$247.71
				700-48-18	SINGLE PANELS, F & I, 15 OR <	1.00	AS	$249.08	$249.08
		School crossing sign at the intersection of Jena Drive and Camden Street is outdated and faded	Replace outdated school crossing signage with School Crossing Assembly (S1-1 and W16-7)	700-48-58	SIGN PANELS, REPLACE, 15 OR LESS	1.00	EA	$247.71	$247.71
				700-48-18	SINGLE PANELS, F & I, 15 OR <	1.00	AS	$249.08	$249.08
Intersection of Enterprise Road and Jena Drive	City of Deltona	Intersection does not have crosswalk markings	Special emphasis crosswalk markings should be installed	711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	200.00	LF	$3.18	$636.00
				711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	170.00	LF	$1.68	$285.60
Extended Sidewalk Throughout Walk Zone Route	City of Deltona	Most students who live to the north and northeast of the walk zone must traverse along streets with no sidewalks or collector roads	Five-foot (minimum) sidewalks should be installed along the route shown in Figure 4	522-1	SIDEWALK CONC, 4" THICK	731.20	SY	$70.03	$51,205.94
			Crosswalk markings should be installed at all intersections	711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	137.00	LF	$3.18	$435.66
				711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	100.00	LF	$1.68	$168.00
								TOTAL	$65,696.96

1 Taken from FDOT's *2010 Basis of Estimates* Manual
2 Taken from FDOT's Pay Item Cost History, specifically from Area 6 (Volusia County) or 6 Month Statewide Averages
3 Unit Price x Plan Qty

APPENDIX B: DATA COLLECTION (ON-SITE)

On-Site Observations: VCMPO Bike/Pedestrian Safety Study

Name of School: Deltona Middle School

Job #: 3706.04

Principal: Mr. James Bambrick

Date of Site Visit: May 4, 2010

Location 250 Enterprise Rd.
Deltona, FL 32725

- [x] Observe Entry and Exit Pedestrians and Bicyclists
- [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 — South of school (walk/bicyclist gate) Bus entry, visitor entry, parent loop entry
- [x] Exit Locations — Bus loop exit, Visitor loop exit, parent loop exit
- [x] Obstacles — none noted
- [x] Use of Bicycles — Number of Bicycles ≈17
- [x] Check for Helmet Compliance — Helmets: 2 — Without Helmets: 15
- [x] Sidewalk Conditions (Take Pictures where Applicable) good
- [x] Transit Stops/Routes → Bus loop
- [x] Traffic Flashing Signals 2
- [x] School Related Signage
- [x] School Related Flashing Signals - not in front of school
- [x] Traffic Signals ~~@ intersections~~ none
- [x] Pedestrian Signals
- [x] Drainage Ditches/Bridges/Retention Ponds @ intersection of Jena and Fairbairn → drivers driving thru this area.
- [x] Conservation and Park Lands none noted

[K] Trails none

[X] Check for Opportunities to Make Improvements and Photograph

Description of Obstacles: ~~elementary~~ ~~none on campus~~

Increase length of parent loop by connecting visitor & parent loop.

[X] Curb Ramp at All Crosswalk to Sidewalk

Existent _____ Non-existent X

[X] Observance of Illegal Drop-offs many

[X] Observance of Illegal Right of Way Parking

Yes X No _____

Notes: Motorists park directly in front of school to wait for students, park along Enterprise Rd on either side, or pull in shoulder & drop students off. Pavement markings in front of school barely visible.

~~Principal Comment:~~

APPENDIX C: DATA COLLECTION (OFF-SITE)

3706.04

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

Off-Site Observations: VCMPO Bike/Pedestrian Safety Study

School: Deltona Middle School

Observer: Dian

Observation Date: May 4, 2010

Principal: Mr. James Bambrick

Crossing Guard/Supervisor: Deputy Welsh (SRO)

Location	Clear Path (No Obstacles)	> 4 ft Between Sidewalk & Pavement	No Drainage Issues: Ditches, Bridges, Rinin. Code	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 Dena & Enterprise	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*No crosswalk or sidewalk on either side of Dena. *Speeding vehicles in reduced speed zone * Bad geometry * Drivers driving in drainage, grassed area
	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 Enterprise along fieldacross from cemetary	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	SCHOOL marking faded
	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 Camden & Dena	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	* no S.walk *Need updated signage along camden & Dena * Faded Stop line
	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: Deltona Middle School

Observer: Dian

Observation Date: May 4, 2010

Principal: Mr. James Bambrick

Crossing Guard/Supervisor: Deputy Welsh (SRO)

Location	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
CurbType: (None) Type E Type F Valley Gutter In front of School	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	* No parking signs old & outdated * Motorists not paying attention to signs
	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 Open Field ~~across~~ across from Cemetary on Enterprise	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	* Students crossing road out of field during arrival & dismissal times
	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 Along Enterprise	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	* Students darting thru traffic even though they have 2 crosswalk on either side of school
	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: Deltona Middle School

Observer: Dian

Observation Date: _____

Principal: Mr. James Bambrick

Crossing Guard/Supervisor: Deputy Welsh (SRO)

Location	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
CurbType: None / Type E / Type F / Valley Gutter — Bellflower & Pepperwood	(Y)	Y	(Y)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	* Students from this area cut thru Openfield to get to School
	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 D: 2009 FLORIDA STATUTES EXCERPTS

The 2009 Florida Statutes

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

(2) TRANSPORTATION; CORRECTION OF HAZARDS.--

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

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

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

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

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

1. It shall be considered a hazardous walking condition with respect to any road along which students must walk in order to walk to and from school if there is not an area at least 4 feet wide adjacent to the road, having a surface upon which students may walk without being required to walk on the road surface. In addition, whenever the road along which students must walk is uncurbed and has a posted speed limit of 55 miles per hour, the area as described above for students to walk upon shall be set off the road by no less than 3 feet from the edge of the road.

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

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

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

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

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

1. If the traffic volume on the road exceeds the rate of 360 vehicles per hour, per direction (including all lanes), during the time students walk to and from school and if the crossing site is uncontrolled. For purposes of this subsection, an "uncontrolled crossing site" is an intersection or other designated crossing site where no crossing guard, traffic enforcement officer, or stop sign or other traffic control signal is present during the times students walk to and from school.

2. If the total traffic volume on the road exceeds 4,000 vehicles per hour through an intersection or other crossing site controlled by a stop sign or other traffic control signal, unless crossing guards or other traffic enforcement officers are also present during the times students walk to and from school.

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

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

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

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

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

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

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

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

Note.--Former s. 234.302.

316.2065 Bicycle regulations.--

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1. The child possesses a bicycle helmet; or

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

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

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

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

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

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

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

Note.--Former s. 316.111.

318.18 Amount of penalties.--The penalties required for a noncriminal disposition pursuant to s. 318.14 or a criminal offense listed in s. 318.17 are as follows:

(1) Fifteen dollars for:

(a) All infractions of pedestrian regulations.

(b) All infractions of s. 316.2065, unless otherwise specified.

(c) Other violations of chapter 316 by persons 14 years of age or under who are operating bicycles, regardless of the noncriminal traffic infraction's classification.

(2) Thirty dollars for all nonmoving traffic violations and:

(a) For all violations of s. 322.19.

(b) For all violations of ss. 320.0605, 320.07(1), 322.065, and 322.15(1). Any person who is cited for a violation of s. 320.07(1) shall be charged a delinquent fee pursuant to s. 320.07(4).

1. If a person who is cited for a violation of s. 320.0605 or s. 320.07 can show proof of having a valid registration at the time of arrest, the clerk of the court may dismiss the case and may assess a dismissal fee of up to $10. A person who finds it impossible or impractical to obtain a valid registration certificate must submit an affidavit detailing the reasons for the impossibility or impracticality. The reasons may include, but are not limited to, the fact that the vehicle was sold, stolen, or destroyed; that the state in which the vehicle is registered does not issue a certificate of registration; or that the vehicle is owned by another person.

2. If a person who is cited for a violation of s. 322.03, s. 322.065, or s. 322.15 can show a driver's license issued to him or her and valid at the time of arrest, the clerk of the court may dismiss the case and may assess a dismissal fee of up to $10.

3. If a person who is cited for a violation of s. 316.646 can show proof of security as required by s. 627.733, issued to the person and valid at the time of arrest, the clerk of the court may dismiss the case and may assess a dismissal fee of up to $10. A person who finds it impossible or impractical to obtain proof of security must submit an affidavit detailing the reasons for the impracticality. The reasons may include, but are not limited to, the fact that the vehicle has since been sold, stolen, or destroyed; that the owner or registrant of the vehicle is not required by s. 627.733 to maintain personal injury protection insurance; or that the vehicle is owned by another person.

(c) For all violations of ss. 316.2935 and 316.610. However, for a violation of s. 316.2935 or s. 316.610, if the person committing the violation corrects the defect and obtains proof of such timely repair by an affidavit of compliance executed by the law enforcement agency within 30 days from the date upon which the traffic citation was issued, and pays $4 to the law enforcement agency, thereby completing the affidavit of compliance, then upon presentation of said affidavit by the defendant to the clerk within the 30-day time period set forth under s. 318.14(4), the fine must be reduced to $10, which the clerk of the court shall retain.

(d) For all violations of s. 316.126(1)(b), unless otherwise specified.

(3)(a) Except as otherwise provided in this section, $60 for all moving violations not requiring a

APPENDIX E: 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 F: 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 G: LETTER TO PRINCIPAL AND PRINCIPAL QUESTIONNAIRE

Lassiter Transportation Group, Inc.
Engineering and Planning

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

Ref: 3706.04

April 06, 2010

Principal James Bambrick
Deltona Middle School
250 Enterprise Road
Deltona, FL 32725

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

Dear Mr. Bambrick:

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 Deltona 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, P.E.
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

VOLUSIA COUNTY
METROPOLITAN PLANNING ORGANIZATION

PRINCIPAL
QUESTIONNAIRE

TO: Deltona Middle School
Mr. James Bambrick, Principal
250 Enterprise Road
Deltona, FL 32725

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. Deltona 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: 1183

   Comments:

2. Number of students (or approximate percentage) who walk/bicycle to/from school: 5-8 %

   Comments: More bike rides than walkers

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

   Need for more sidewalks. See comments below

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?

   We do have parents park on grass across from gym - students have been seen running across street.

5. Are you aware of any safety hazards or issues along the school's walk zone?
Jona St seems to attract Off task behavior by walkers - Area has no side walks & students walk down middle of street

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

7. What is your biggest concern relative to the conditions faced by the students who walk/bicycle to/from school?
Crossing between Jona / Enterprise near Ag Farm area

8. What changes/improvements would you like to see relative to the conditions faced by the students who walk/bicycle to/from school?
(1) No sidewalk on Enterprise by Cemetery Enterprise / Deltona Blvd.
(2) Also no sidewalk on Deltona Blvd up by Bagel King Shopping area.

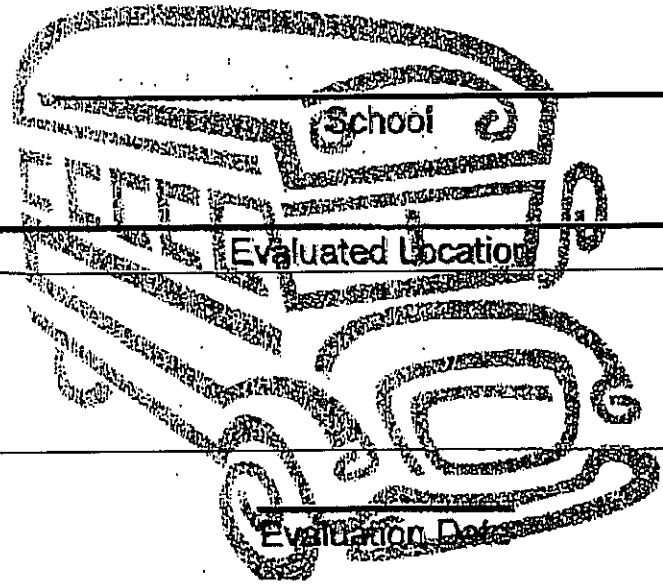
COMMENTS:

APPENDIX H: HAZARDOUS-COURTESY (09-10)

Code Number: _____
(Only issued if deemed hazardous)

Student Transportation Services

State Criteria
for
Determining State Variance Workbook



School _____

Evaluated Location _____

Description:

Evaluation Date _____

Re-Evaluation Date (pending on the ESE422 form) _____

Committee Members

Member	Agency	Phone No.	Email Address

School Board designated committee: The School Board designated committee shall consist of representatives from: The County & City/Cities' Engineering offices; Traffic Safety Units of Local Police & Sheriffs; Director of Student Transportation or designee; School Principal or Designee; Student transportation Safety Officer; Area Manager

DOES THIS AREA QUALIFY: ☐ **- APPROVED** ☐ **- DENIED**

If approved, the following must be submitted:

☐ **City/County/State Engineer must complete form ESE422**

1006.23

Florida Statutes

234.021 Hazardous Walk Conditions

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

(2) Identification. –

(a) When a request for review is made to the district superintendent of schools or the district 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, a representative of the county sheriff, a representative of the local safety council, if a safety council exists in the county, and a representative of the local governmental entity where the perceived hazardous condition exists. If any of such representatives determines that a condition is hazardous to such students according to the guidelines established by subsection (3) or based upon his or her findings upon inspection, he or she shall report to the Department of Education with respect thereto. Upon a determination that a condition is hazardous to such 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.

(b) It is intended that district school boards and local governmental entities work cooperatively to identify conditions, which are hazardous to students who must walk to school. It is further intended that state or local governmental entities having jurisdiction correct such hazardous conditions within a reasonable period of time.

State Criteria for Determining State Variance

Walkways Parallel to the Road:

Yes ☐ No ☐

1. **Is the location in a residential area with little or no traffic?**
   Another way of looking at this is, is the location in a residential area and on a road or street which is not used as a major artery or "cut-through"?

☐ ☐ 2. **Is the location on a road in which the traffic volume is less than 180 vehicles per direction, per hour between approximately 6:00 a.m. – 9:00 a.m. and 2:00 p.m. – 4:00 p.m.?**
   Note: After obtaining the official traffic count, check to be sure the count exceeds 360 (two directions) during at least one of the hours targeted. If the traffic count is for a total 24 hour period, you must divide the total by 10% in rural areas and 8% in urban areas to obtain a per hour count.

Traffic Count: _____

☐ ☐ 3. **Is the area located on a road that has a posted speed limit of 30 miles per hour or less?**

Posted Speed: _____

If the answer to either 1, 2 or 3 is yes, the area does not qualify. If the answer to 1, 2 and 3 are all no, continue.

Yes ☐ No ☐

4. **Is the posted speed limit less than 55 m.p.h.?**

☐ ☐ 5. **Is there a four (4) foot wide flat "surface upon which a student may walk" without requiring the student to walk on the road?**
   Note: The surface does not have to be a sidewalk, simply a flat surface. Also, weeds and tall grass are a maintenance problem and do not constitute a hazardous walking area.

If the posted speed limit is 55 m.p.h. or greater:

Yes ☐ No ☐

6. **Is there a four (4) foot wide flat surface (see question no. 5 above) separated from the road by an additional three (3) feet?**

If the answer to 5 or 6 (depending on the speed limit) is yes, the area does not qualify.

State Criteria for Determining State Variance

Walkways Parallel to the Road:

1. Any walkway having a surface of which students walk and is not at least four (4) feet wide and is adjacent to roadway will be considered hazardous walking conditions. In addition, whenever the roadway is uncurbed and has a posted speed limit of 55 m.p.h., the walkway shall be set off no less than three (3) feet from the edge of the road.

2. The provisions of subparagraph one 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 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 m.p.h. or less.*

DOES THIS AREA QUALIFY: ☐ **- APPROVED** ☐ **- DENIED**

Approved/Denied – Explain: _____

State Criteria for Determining State Variance

Walkways Perpendicular to the Road:

(When students must cross the road)

Yes ☐ No ☐

1. **Does the traffic volume exceed 360 vehicles per direction, per hour (but less than 4,000 total per hour).**
   See question 2 on Parallel Walkways for note pertaining to traffic count.

If answer is no, area does not qualify. If answer is yes, continue.

In High Volume Urban Areas

Yes ☐ No ☐

2. **Is there anyone of the following:**
   - ☐ Crossing Guard
   - ☐ Traffic Enforcement Officer
   - ☐ Stop Sign
   - ☐ Other Traffic Control Signal

If answer is yes, area does not qualify. If answer is no, area does qualify.

Yes ☐ No ☐

3. **Does the traffic volume exceed 4,000 total vehicles per hour during times students walk to school?**

If answer is yes, continue.

Yes ☐ No ☐

4. **Is there a crossing guard or other traffic enforcement officer?**

If answer to 4 is no, area qualified. If answer to 4 is yes, area does not qualify.

State Criteria for Determining State Variance

Walkways Perpendicular to the Road:

A walkway will be considered hazardous for students if the following conditions exist:

1. Traffic volume on such road exceeds the rate of 360 vehicles per hour, per direction (*including all lanes*), during the time students walk to and from school and crossing site is uncontrolled. For purposes of this subsection an "uncontrolled crossing site" is defined as 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. Total traffic volume on such road exceeds 4,000 vehicles per hour through an intersection or other crossing site controlled by a stop sign or other traffic control signal, without crossing guards or other traffic enforcement officers present during the time of students' use.

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

DOES THIS AREA QUALIFY: ☐ **- APPROVED** ☐ **- DENIED**

Approved/Denied – Explain: _____

District Name: Volusia County
District Number: 64

Volusia County Schools

State Variance Report for Hazards Not Corrected

School: _____

PLEASE PRINT or TYPE

Code Number	Cost to Correct Hazard	Interagency Priority Code (see below)	Reasons Hazardous Condition not corrected

Interagency Priority Code

1. Project to be corrected in one year or less
2. Project to be corrected in two years of less
3. Project to be corrected in three years or less
4. Project to be corrected in four years or less
5. Project to be corrected in five years of less
6. Project not practical or feasible to correct

_____
Print Name

_____
Title

_____
Agency

_____
Phone No.

Return this form by email to gpakin@volusia.k12.fl.us or mail to:
Volusia County Schools
Student Transportation Services
Attn: Transportation Variance Chairperson
P.O. Box 2118
DeLand, Florida 32720-2118

_____VCS

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 I: MEETING MINUTES WITH ASSISTANT PRINCIPAL MARK CARRUTHERS AND DEPUTY KRISTINA WELSH, SRO

Lassiter Transportation Group, Inc.
Engineering and Planning

Ref: 3706.04

MEETING MINUTES

Subject:	Meeting with the Assistant Principal of Deltona Middle School, Mr. Mark P. Carruthers and Deputy Kristina Welsh VCMPO School Bike/Pedestrian Safety Study
Location:	Deltona Middle School 250 Enterprise Road Deltona, FL 32125
Date:	Thursday, April 29, 2010 (9 a.m.)
Attendees:	Mr. Mark P. Carruthers, Assistant Principal, Sweetwater Elementary Deputy Kristina Welsh, School Resource Officer Steve Harris, VCMPO Chris Bowley, AICP Sans Lassiter, P.E., LTG Dian Singh, LTG

Discussion Items:

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

2. **Overview of Deltona Middle School**
    - 1,183 students in attendance
    - Issues with 10% of the population
    - One known gang member
    - 16 busses in use and 50-60 students per bus (800-960 students ride bus)
    - 5% - 8% of the students walk/bike to school
        - Used to have more bicyclists until warnings were issued to students who did not wear helmets
        - Motors unit gives warnings and tickets to non-helmet wearers after they have had a warning; however, no tickets have been issued
        - Patrol officers monitor walk zone
    - Debary Ave (county maintained road) installed sidewalks
    - Sheriff's Office Patrol
        - Captain Dave Brannan recommends that when officers are not investigating an issue, they are must run radar and patrol school walk zones
    - Students access school from the west via two crossings located to the north and south of the school
    - Deputies do not direct traffic, they monitor traffic
    - 6th, 7th, and 8th graders are kept separated (buildings, holdings in the a.m. and p.m.)

- Deputy Welsh only on Deltona Middle School Campus in the a.m.
    - Monitored four schools but now only two: Deltona and Riversprings Elementary Schools
- Teachers do assist in arrival/dismissal procedures
    - Supplemented position
    - Some teachers had to be eliminated due to funding
- No safety education is provided to the students regarding walking/biking since students are not attentive and do not follow through with the instructions
- Parents are notified of safety procedures during the arrival/dismissal times however these procedures are not followed
    - Parent Link, a message that can be sent out to all parents at the same time, was used numerous times to discuss safety procedures, helmet use, etc.
    - Parents have a hard time accepting constructive criticism
    - School Advisory Council (SAC) meetings usually discusses safety issues
        - Allows parents and teachers to connect
- Students on campus by 8 a.m.

3. <u>Areas of Concern</u>

- Facility maintenance problems
    - Enterprise Rd and Deltona Blvd has no sidewalks
    - Students living on Caribbean St, Hummingbird St, etc in the low housing developments off of Bellflower Ave cut across field located between Pepperwood Ave and Enterprise Rd to get to sidewalk on Enterprise Rd
    - Students sometimes cross the road without the aid of crosswalk to get to the other side (darting through traffic)
- Many students do not wear helmets
- One student lies in the middle of the road
- Illegal drop-off/pick-up
    - Parents drop-off students on either side of Enterprise Rd to the east, west, and in front of the school
    - Depending on what side the students are dropped off on, students then dart across traffic to get to the school
- Bullying is a major concern on/off campus
- Intersection of Jena Dr and Enterprise Rd (by agricultural building)
    - Geometry of intersection very dangerous
    - Many fights and bullying occurs at this intersection
    - Number of walkers/bikers diminished due to this intersection
    - Teacher could be put on guard but must be a high profile teacher; if not high profile, such as VP or Deputy Welsh, the students will not listen and could get “run over” if determined that they are weak

    - Would like some landscaping or fencing to protect the animals at agricultural farm since a cow was stabbed five times by students
    - Pavement markings must be repainted
    - Crosswalk markings should be used at this intersection
- In front
- Organized Crime
    - Students know where fights are and arrive at those locations before teachers and administrative staff due to texting
    - Cell phones are major issues since the district allows its use
    - Cell phones are supposed to be off during school hours; however, students are still texting during class
    - The only preventative measures the administrative staff and teachers can implement is to keep phones until the end of day
- A.M., according to Deputy Welsh, is a time of more concern since it is sometimes still dark and foggy, especially in the field (for students who are coming from the low income area on Bellflower Ave area
- Students who stay after school, for sports, detention, or school related activities, must deal with traffic from motorists getting off of work
- P.M., according to Vice Principal Carruthers, is a time of more concern since the students have all day to get all fired up
    - Lots of behavioral issues during this time
- Votran stop in bus loop
- Students exit at bus loop where their isn't a continuous sidewalk – students walk into pavement to go around gate then get on sidewalk
- Student bike rack gate not closed
    - Students chain bike to fence in the RTW rather than make use of the bike rack
    - Student's bike go missing from time to time due to above issue
- Crosswalk sign to north of school is old (must be upgraded to current MUTCD standards
- Possible relocation of crosswalk (see Sans notes on graphics)
- Crosswalk restriping at entrances of school
- Left-turn lane markings on Enterprise Rd to the teacher parking lot must be repainted
- Dangerous intersection located at the exit of the parent loop and the entrance to the teacher parking lot
    - Parents exiting loop look to the left & right but do not look for teachers making left turn into parking lot – can cause a collision
- Pepperwood Ave (field)
    - Two clear entrances to field from Pepperwood Ave to Enterprise Rd
    - Sexual predators can easily hide and wait for children
    - Many fights occur in field

- Students use this field rather than walk north on Pepperwood Ave to Enterprise Rd then head south to school

4. <u>Possible Recommendations</u>:

- Jena Dr and Enterprise Rd should be a controlled intersection in the morning and afternoon due to the amount of bully and harming of animals at the agricultural farm
- Encourage students to walk together especially if a bad student(s) will use the same route to school
- Walking School Bus should be implemented to protect the "good" students

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 J: CONTACT LIST

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

Name of School: GALAXY MIDDLE SCHOOL
Job #: 3706.05
Principal: MR. JULIAN JONES
Date: 7/1/2010
School Resource Officer: NONE ASSIGNED AT THIS TIME

	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									Principal Julian Jones 386-575-4144 jjones@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													Principal Julian Jones 386-575-4144 jjones@volusia.k12.fl.us
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							Principal Julian Jones 386-575-4144 jjones@volusia.k12.fl.us
Census for Bikers						X							Principal Julian Jones 386-575-4144 jjones@volusia.k12.fl.us
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							NONE @ MIDDLE SCHOOL LEVEL
Safe Routes Tally				X	X								Principal Julian Jones 386-575-4144 jjones@volusia.k12.fl.us
Proposed Trails	X								X	X			Jon Cheney @ jcheney@co.volusia.fl.us (386) 257-6000, ext. 5968 City of Deltona, Chris Bowley @ 386-878-8602
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						DIAN SINGH @ LTG
Bridges							X						DIAN SINGH @ LTG
Retention Ponds							X						DIAN SINGH @ LTG
Safety Procedures				X									Principal Julian Jones 386-575-4144 jjones@volusia.k12.fl.us
Funded/Future Improvements and Proposed Project Including:													
Roadways	X	X	X										Jon Cheney @ jcheney@co.volusia.fl.us (386) 257-6000, ext. 5968 City of Deltona, Chris Bowley @ 386-878-8602
Developments (subdivisions, schools, shopping centers)	X	X											Jon Cheney @ jcheney@co.volusia.fl.us (386) 257-6000, ext. 5968
Attendance Zone Changes				X									Principal Julian Jones 386-575-4144 jjones@volusia.k12.fl.us
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						DIANSINGH @ LTG
Bridges							X						DIANSINGH @ LTG
Retention Ponds							X						DIANSINGH @ LTG
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 City of Deltona, Chris Bowley @ 386-878-8602