



A SAFE SCHOOLS TRANSPORTATION STUDY

Triangle
ELEMENTARY SCHOOL

KINDERGARTEN ROUND-UP
5 9 IN THE CAFETERIA
5 00 7 00 PM

HOME OF THE BANANAS
Tripling the fun!
APR. 1997
A HAPPY PLACE TO LEARN

Triangle
Elementary
School

Triangle Elementary School

Mount Dora, FL

August 2013



Triangle Elementary School Snapshot

May 8, 2013

Grades: Pre-K – 5th

Total Students: 682

- Provided Bus Transportation: 285
- Not Provided Bus Transportation: 397
- Buses Assigned to School (6 reg, 7 ESE) 13

Students Living within the “Walk Zone”: 322

- Provided Bus Transportation: 86
- Not Provided Bus Transportation: 236

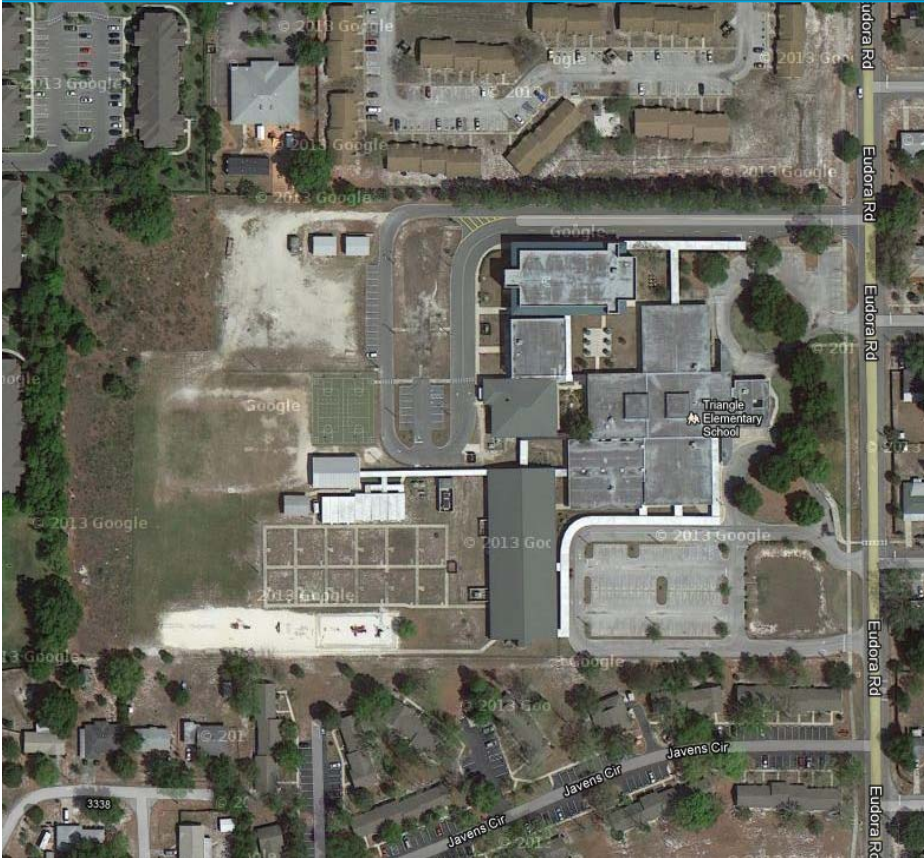
Students Living within LCS PRZ*: 173

- Provided Bus Transportation: 7
- Not Provided Bus Transportation: 166

Observation Day (Sunny)

- Walkers: 54
- Bike Riders: 18

(+ 2 scooters, 1 skateboard)



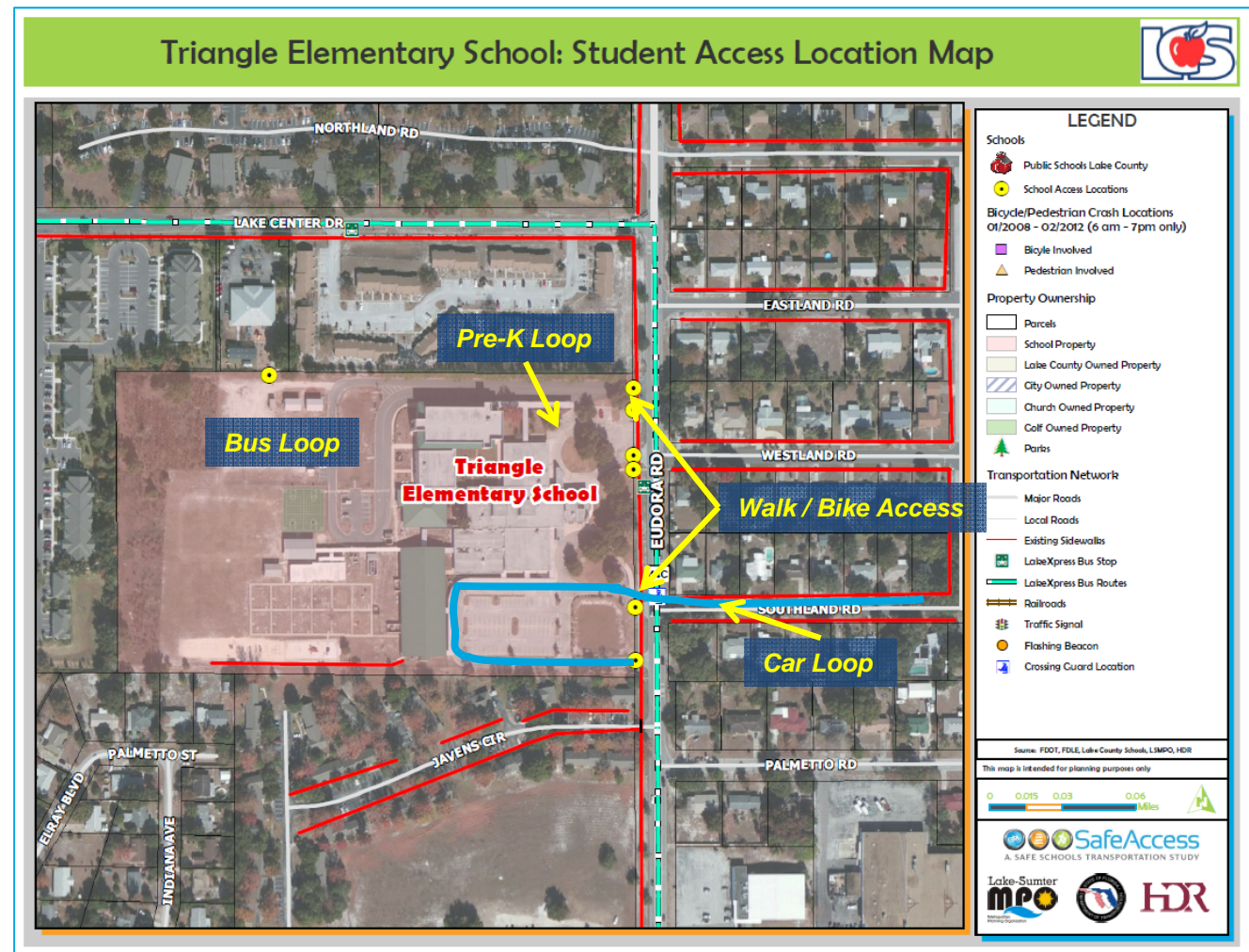
- ✓ Triangle Elementary School website – Click [here](#)
- ✓ City of Mount Dora website – Click [here](#)
- ✓ Lake County Schools website – Click [here](#)

* LCS PRZ is the Lake County Schools designated Parent Responsibility Zone

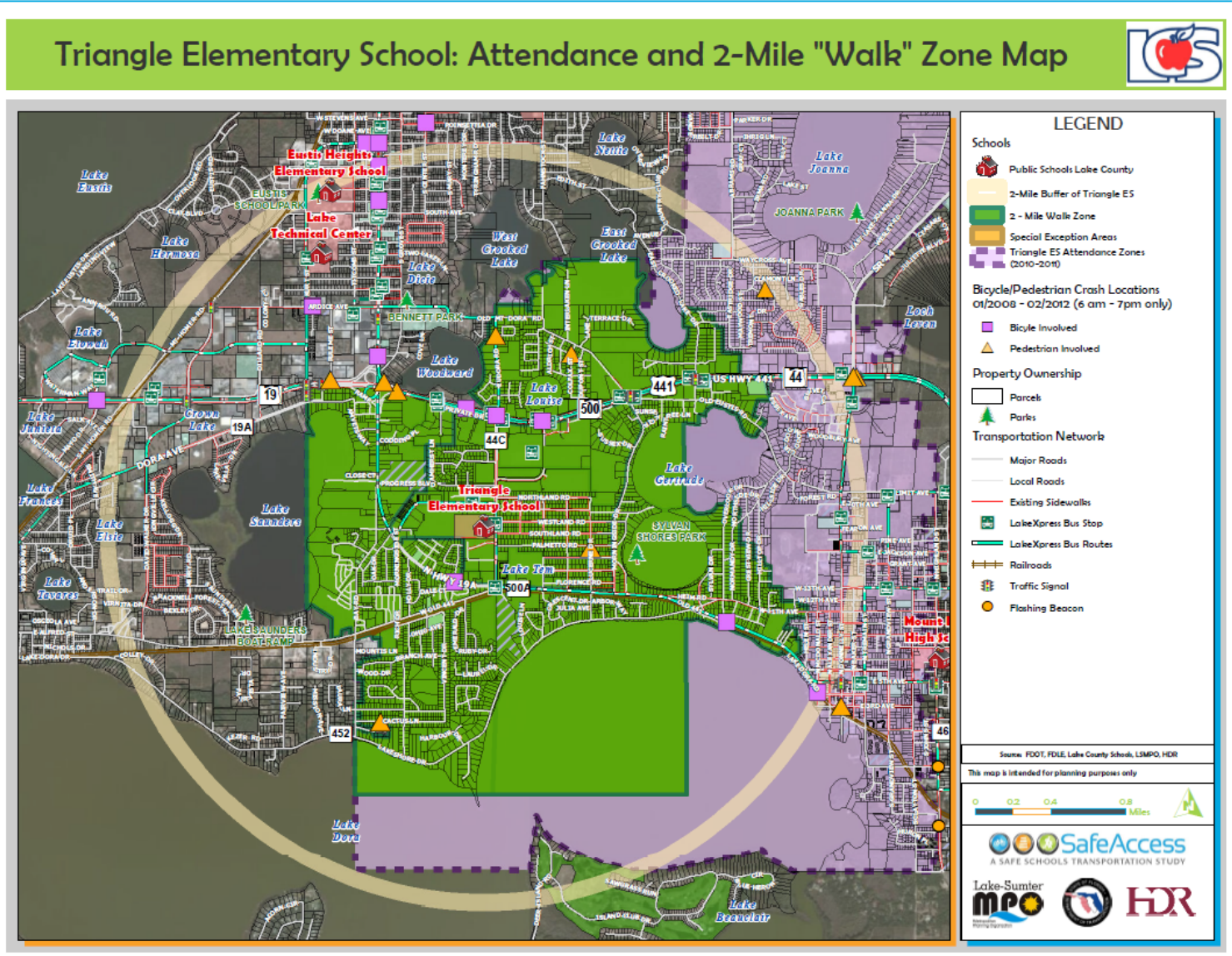
Triangle Elementary School

Findings:

- ✓ Walkers / bikers exit onto Eudora Rd at 2 locations
- ✓ Crossing guards at Southland Rd (controls traffic for car queue) and at Mary Ln (off map)
- ✓ Bus Loop on northern school boundary
- ✓ Car queue is along Southland Rd for K-5th Grade
- ✓ Pre-K pick-up is via small loop on north side.
- ✓ 5 daycare buses; 2 pick up in bus loop; 3 vans pick up in car loop

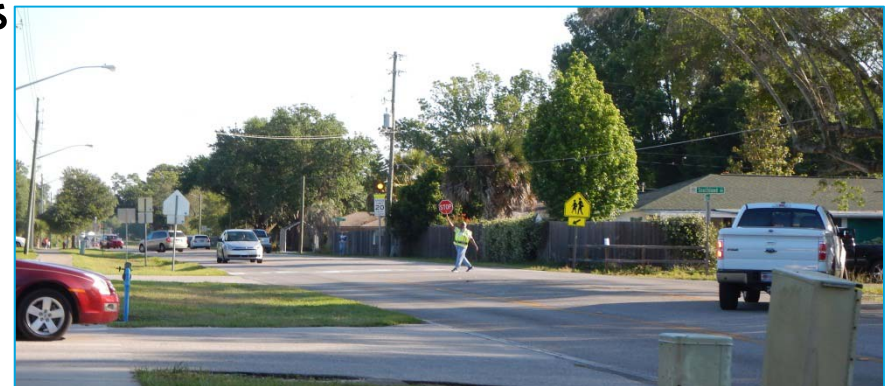


Attendance and 2-Mile "Walk" Zone Map



Arrival and Dismissal Schedule

- 7:30 am:** ELC drop-offs start
- 8:00 - 8:30 am:** Regular student drop off & buses unload; Breakfast served (all students eligible)
- 8:10 am:** First bell rings; Students allowed in classrooms
- 8:30 am:** School starts; Tardy bell rings
- 2:50 pm:** ESE / special needs dismissal
- 3:00 pm:** Walker / general dismissal
- 4:00 pm:** School office closes



Note: Students are released one hour early on Wednesdays



Findings:

- ✓ 6 regular service buses and 7 ESE buses (13 total)
- ✓ Bus riders released as buses arrive in afternoon
- ✓ Long bus loop more than adequately accommodates total number of buses at school
- ✓ Bus area has 4 gates (including 1 accessible) – added last year
- ✓ Bus operations were observed to be well-run and efficient



Findings:

- ✓ Car riders dismissed all together; 5 loaded at one time in PM; 4/5 unloaded at one time in AM
- ✓ School utilizes gates; They are new this year and all gates are not used due to lack of staff
- ✓ 25 adults assist in AM; all teachers / staff assist in PM (58)
- ✓ Car queue is mostly on Southland Rd, directed by crossing guard (hired through City Police)
- ✓ PM queue observed to extend down Southland Rd to Magnolia Dr; There have been fender benders in queue
- ✓ Queue did not extend off campus until 7 minutes before dismissal, queue began at 2:05 PM
- ✓ Queue area is missing signage, crossing guard noted some try to exit from entrance driveway
- ✓ Parents are issued map and directions at beginning of each school year for queuing instructions
- ✓ Parents / adults have numbers / security codes for pick up
- ✓ Parking for office pick-up in separate loop



Recommendations:

- ✓ Update striping and signage in car loop
- ✓ Consider adding loop for car queue through parking if queue on local streets (Southland Rd) becomes an issue
- ✓ Develop and implement new gate procedure: for example color code gates and have a staff member stand at queue entrance and direct each parent to a certain color gate and communicate that to gate area so children are queued up waiting at the gates, a similar system has been used at Groveland and Treadway Elementary Schools
- ✓ Add reminder to letter sent home to parents that the drop-off / pick-up has one way entrance and exit



PM Car Queue Gates



Treadway ES Color gates



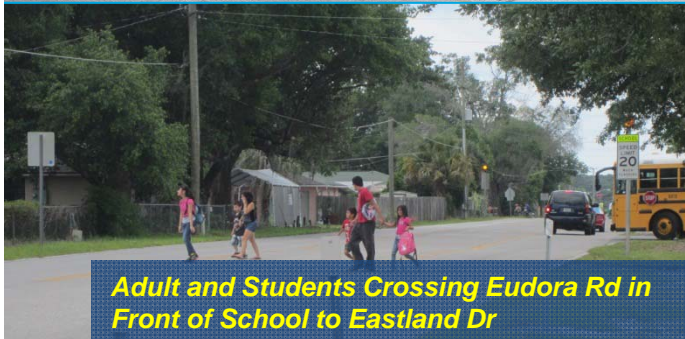
Groveland Number Gates



Afternoon Release of Walkers



Student Walking North from Crosswalk to Westland or Eastland Rd



Adult and Students Crossing Eudora Rd in Front of School to Eastland Dr

Findings:

- ✓ Walkers, bikers and car riders released at same time
- ✓ Walkers and bikers exit from two main areas onto Eudora Rd, 1 north, 1 south, sidewalk is wider in front of school
- ✓ There is no sidewalk on the east side of Eudora Rd, some parents cross directly at Westland Rd to avoid walking in grass (previously had crosswalk, but was removed due to safety issues); limited right of way along Eudora Rd, the crossing guard mentioned she had gotten someone to mow the shoulder on Eudora due to walkers coming from crosswalk north to Westland or Eastland Rd or south to Palmetto Rd
- ✓ No connection to apartments south of school on east side of Eudora Rd, parents walk children to and from school but cross at unmarked location closer to apartment complex
- ✓ 2 Crossing Guards on Eudora Rd, 1 at Southland Rd (directs traffic), 1 at Mary Ln
 - ✓ Generally vehicles were observed to yield to pedestrians, due in part to presence of crossing guard
- ✓ No sidewalks on CR 19A or Old 441 connecting to Eudora Rd

Findings:

- ✓ 18 bikes, 2 scooters and 1 skateboard, all but 2 had helmets (including a couple of students who carried their helmets with them); School provides helmets (when available) and requires their use if student **wants to ride** (note: exposure to UV rays in direct sunlight can damage the protective material in bicycle helmets, students should be encouraged to bring their helmets inside with them)
- ✓ School occasionally does Sheriff's bike rodeo program
- ✓ Bicycle parking is on concrete pad within gate, but racks are older style and pad is showing some wear

Recommendations:

- ✓ Update bicycle parking to inverted "U" or ribbon style parking, maintain concrete as needed



Existing Bicycle Parking



Ribbon Racks at Sawgrass Bay ES

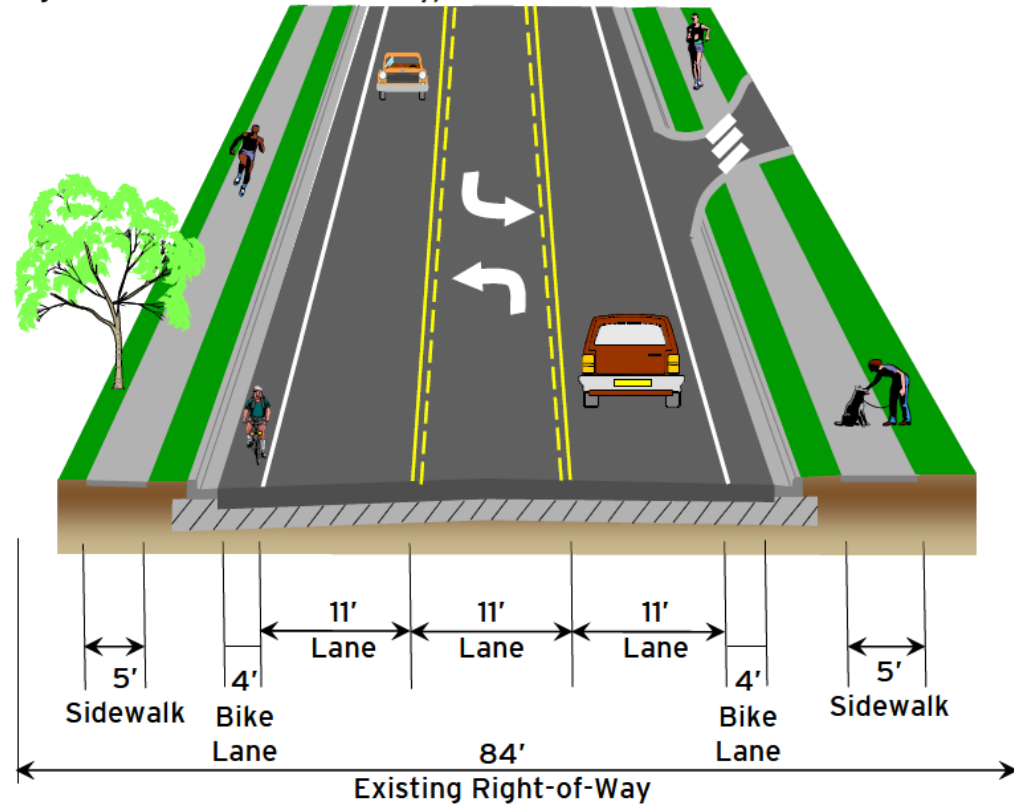


Students walking bicycles into school

Findings:

- ✓ In 2008 Lake County completed a conceptual plan development analysis for CR 19A from Old US 441 / Eudora Rd to US 441
- ✓ The preferred alternative was a three lane roadway, with a two way center left turn, bike lanes and a 5-ft sidewalk on both sides of the road
- ✓ The preferred alternative includes a roundabout at CR 19A / Eudora Rd / and Old US 441 (pictured next slide) but defers design details to future
- ✓ The preferred alternative includes a proposed signal at Lake Center Drive and CR 19A

Figure 32: Preferred Alternative Typical Section

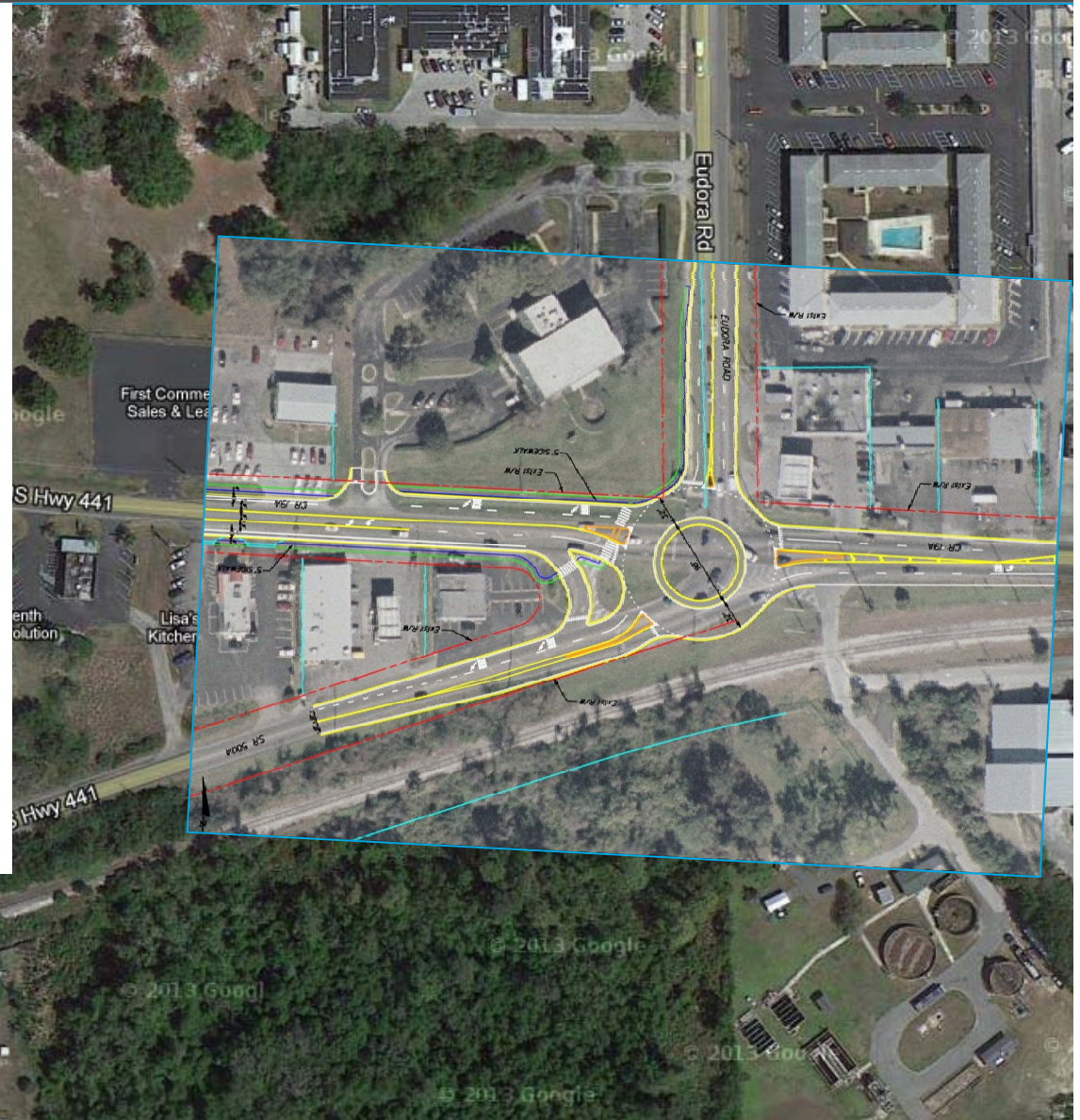


Recommendations:

- ✓ Coordinate with Lake County Public Works, Lake~Sumter MPO and the City of Mt. Dora on future plans for these projects to ensure the needs of students living in the area are incorporated into the design

Findings:

- ✓ The preferred alternative includes a roundabout at CR 19A / Eudora Rd / and Old US 441
- ✓ Pedestrian safety and Including pedestrian features at the roundabout is one of the schools biggest concerns
- ✓ Although design details were deferred to the future, the concepts lacked many safety features that are important in roundabout design, and lacked pedestrian facilities on most of the intersection
- ✓ Future design of the roundabout should consider the proximity to the school, and needs of the walking public



Findings:

- ✓ The preferred alternative includes a proposed signal at Lake Center Dr and CR 19A
- ✓ With the completion of the sidewalks on Lake Center Dr, it could become a major walking corridor connecting students from west of Old US 441 to the school
- ✓ Future design of the intersection should consider the proximity to the school, the use of Lake Center Dr as a student walking corridor and needs of the walking public in general
- ✓ In the future a crossing guard may be needed at this location



Triangle Elementary School: Existing Conditions Map



- Schools**
- Public Schools Lake County
 - Crossing Guard Locations
 - Libraries
 - 2-Mile Buffer of Triangle ES
 - 2-Mile Walk Zone
 - Special Exception Areas
 - Triangle ES Attendance Zones (2010-2011)
- Bicycle/Pedestrian Crash Locations 01/2008 - 02/2012 (6 am - 7pm only)**
- Bicycle Involved
 - Pedestrian Involved
- Property Ownership**
- Parcels
 - School Property
 - Lake County Owned Property
 - City Owned Property
 - Church Owned Property
 - COLF Owned Property
 - Parks
- Transportation Network**
- Major Roads
 - Local Roads
 - Existing Sidewalks
 - Existing Trails
 - LakeXpress Bus Routes & Stops
 - Railroads
 - Traffic Signal
 - Flashing Beacon

Source: FDOT, FDLE, Lake County Schools, LSMPO, HDR

This map is intended for planning purposes only.



Findings:

- ✓ On June 24, 2013 the Lake County School Board voted to formally discontinue all courtesy busing for elementary and middle school students who live within 2-mile walk zone of the school
 - This essentially makes the new parent responsibility zone equal to the 2-mile walk zone, except for schools with identified Hazardous Walking Areas
- ✓ 86 Students were courtesy bused last year within the 2-mile walk zone for Triangle Elementary School
- ✓ Crossing guards at Eudora Rd (CR 44C) / Old US 441 / CR 19A intersection and at the CR 19A / Lake Center Dr intersection will assist in getting many of these students safely to school; A crossing guard may also be needed on US 441 at Morningside Dr
- ✓ Sidewalk connections on Old US 441 to Golden Isle, on Eudora Rd to US 441 , on Lake Center Dr and on Morningside Dr would also facilitate allowing these students to walk / bike
- ✓ It is likely most of these children will be brought to school by car; Additional car queue issues and wait times should be anticipated
- ✓ The Board is also considering combining middle and high school students on the same bus for the 2014-2015 school year.
 - This would involve moving middle school start times earlier from their existing 9:05 to 9:15 time frame to the proposed 7:35
 - This would also cause the elementary schools to be moved back almost 25 minutes to start around 8:55 in the morning

Transportation Access Master Plan

Triangle Elementary School: Transportation Access Master Plan



LEGEND

Schools

- Public Schools Lake County
- Crossing Guard Locations
- Libraries
- 2-Mile Buffer of Triangle ES
- 2-Mile Walk Zone
- Special Exception Areas
- Triangle ES Attendance Zones (2010-2011)
- 01/2008 - 07/2011 Bicycle/Pedestrian Crash Locations (School Pickup/Dropoff Times)
 - Bicycle Involved
 - Pedestrian Involved

Property Ownership

- Parcels
- School Property
- Lake County Owned Property
- City Owned Property
- Church Owned Property
- Golf Owned Property
- Parks

Transportation Network

- Major Roads
- Local Roads
- Existing Sidewalls
- Existing Trails

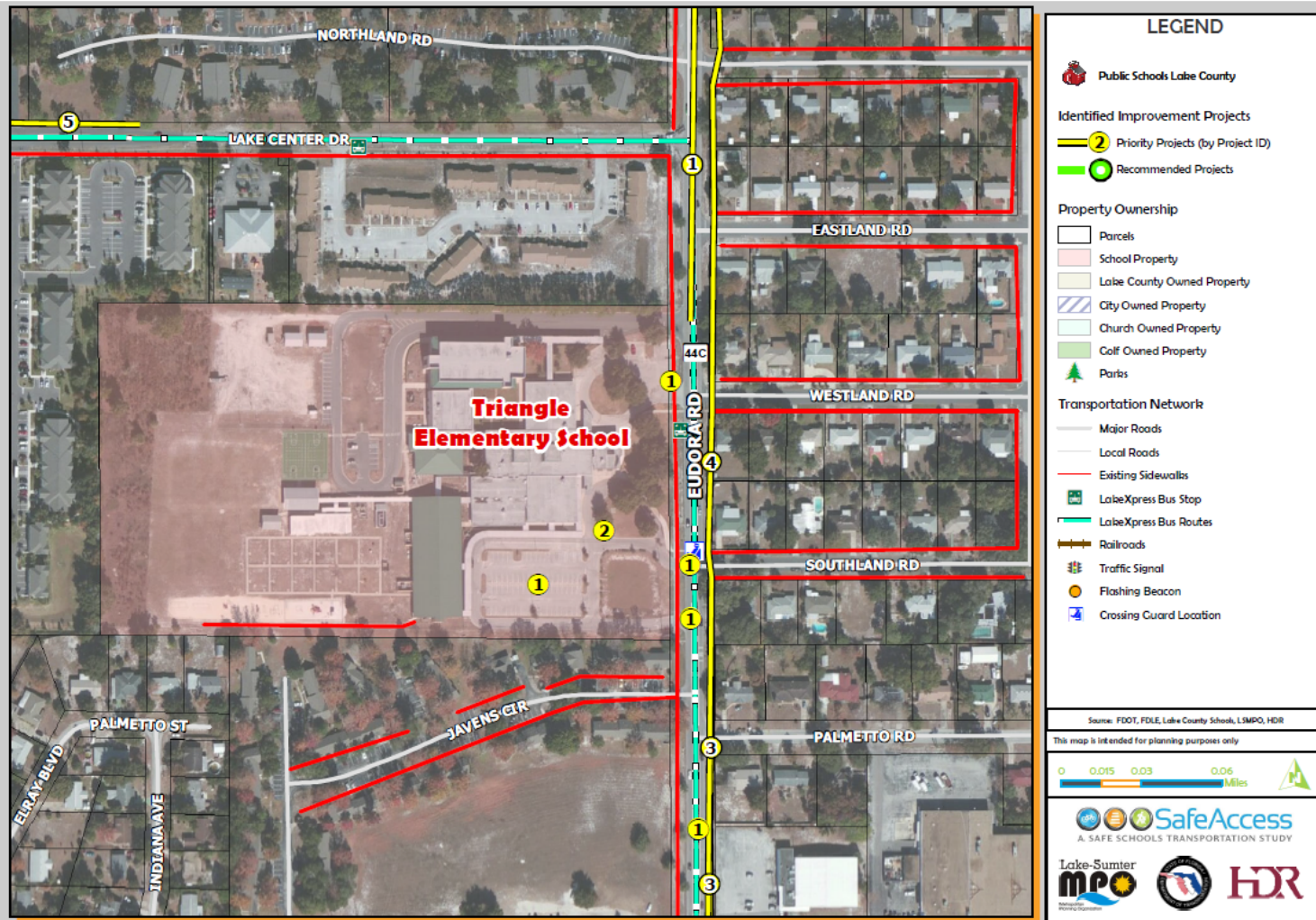
Identified Improvement Projects

- Priority Projects (by Project ID)
- Recommended Projects

This map is intended for planning purposes only.

0 0.2 0.4 0.8 Miles

Triangle Elementary School: Priority Projects



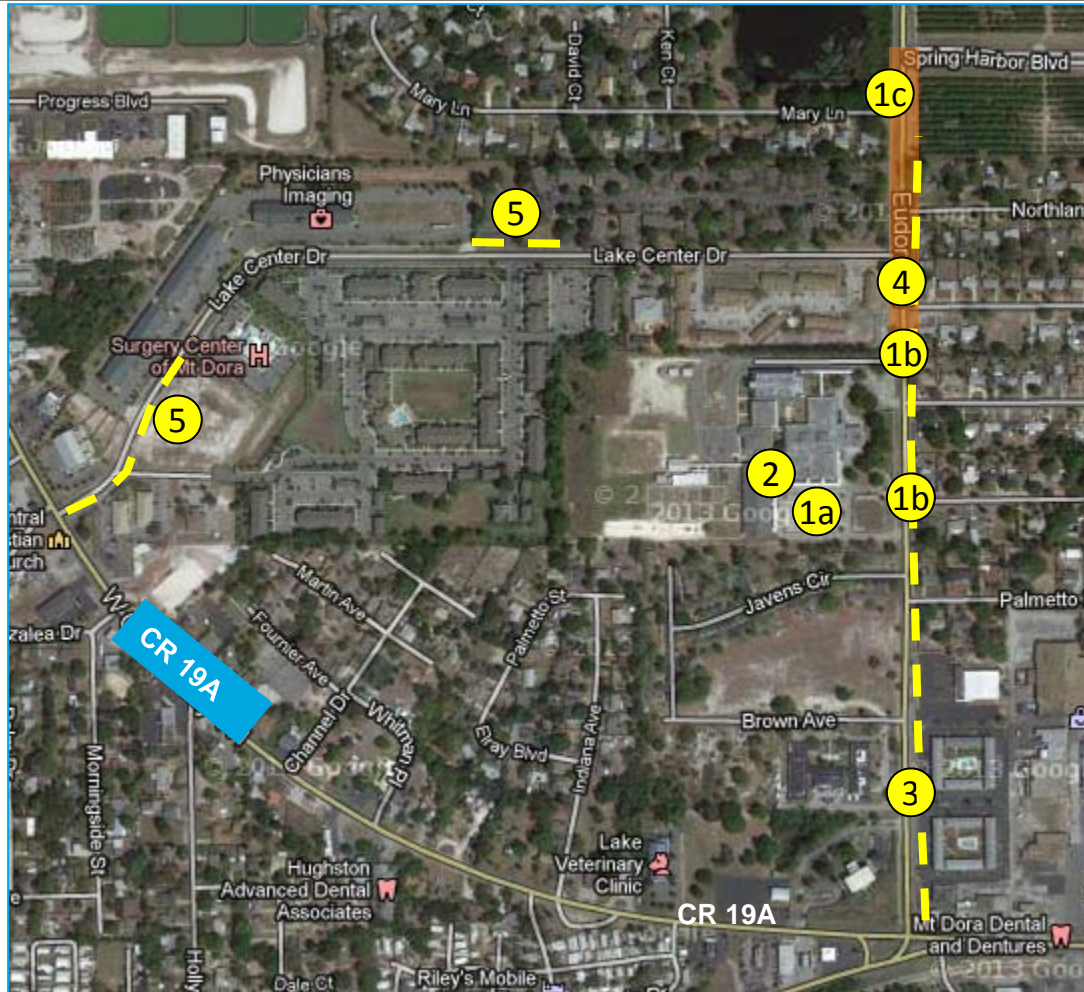


SafeAccess

A SAFE SCHOOLS TRANSPORTATION STUDY

Triangle Elementary School

Recommended Priority Projects



Recommendations:

1. Update striping and crosswalks
 - a) Car Loop - add internal striping and signage to note entrance is one way and add queue space
 - b) Update all crosswalks to FDOT ladder style as needed, update bicycle parking
 - c) Remove duplicate crosswalk at Spring Harbor Blvd; Extend school speed zone
2. Color code gates in the car loop and begin staging closer to road
3. Provide connection from apartments south of school
4. Add sidewalk on the east side for Eudora Rd from Old US 441 to north of Northland Rd
5. Complete sidewalks on both sides of Lake Center Dr from CR 19A to Eudora Rd

Recommended Project List

Project Number	Roadway	Location	Project
1	Car Loop		Add internal striping and signage to note entrance is one way
	School Driveways		Update all crosswalks and bicycle parking
	Eudora Road	Mary Ln / Spring Harbor Blvd	Remove one of two closely-spaced marked crosswalks (preferably at Spring Harbor Blvd); Extend existing 20 mph School Speed Zone to the north to incorporate the existing marked School crossing
2	Car Loop		Color code gates and begin staging closer to road
3	Eudora Road	From School to CR 19A	Provide connection from apartments south of school: Option 1 - mid-block crossing at apartments or bowling alley to existing sidewalk, Option 2 - add sidewalk on east side of Eudora Road to a mid-block crossing at / before Palmetto Road; Option 3 - add sidewalk on Eudora Road east side to crossing guard
4	Eudora Road	Old US 441 to Northland Rd	Add sidewalk on east side
5	Lake Center Drive	CR 19A to Eudora Rd	Complete sidewalks on both sides



A SAFE SCHOOLS TRANSPORTATION STUDY

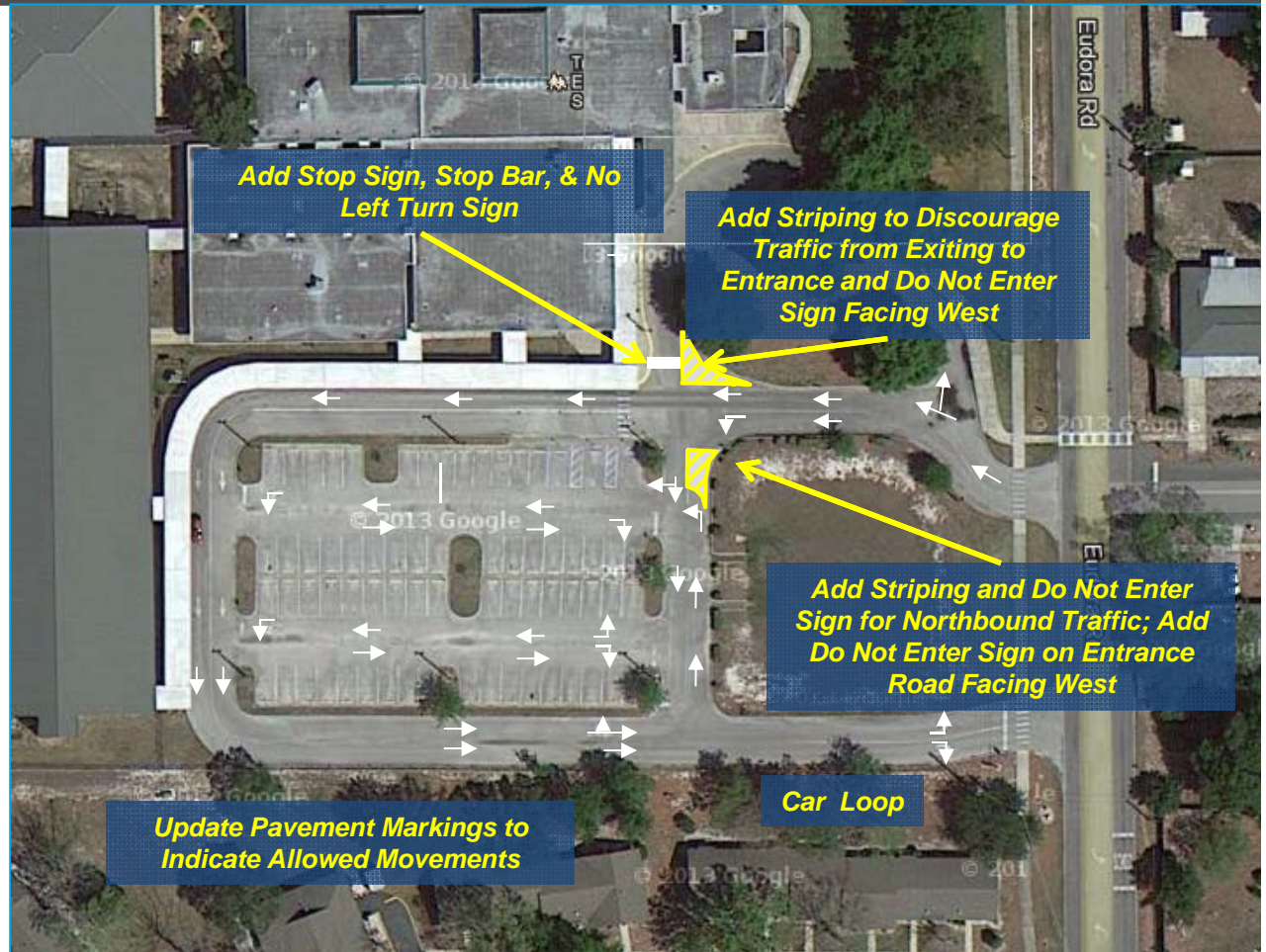
Triangle Elementary School

Recommended Project #1

a) Restripe Car Loop to encourage one way entrance / exit compliance

Recommendations:

- ✓ Add a stop sign, stop bar and no left turn sign from short term parking area
- ✓ Stripe corner by short term parking exit to discourage vehicles from turning left (long term add curbing)
- ✓ Repaint directional arrows in parking lot; Install Do Not Enter signs at entrance road
- ✓ Add striping and Do Not Enter signs to restrict northbound traffic coming from parking lot towards entrance road



Recommended Project #1

b) Update crosswalks and bicycle parking

Recommendations:

- ✓ Repaint all crosswalks to FDOT ladder style
- ✓ Upgrade bicycle parking to inverted 'U' or Ribbon style racks



Recommended Project #1

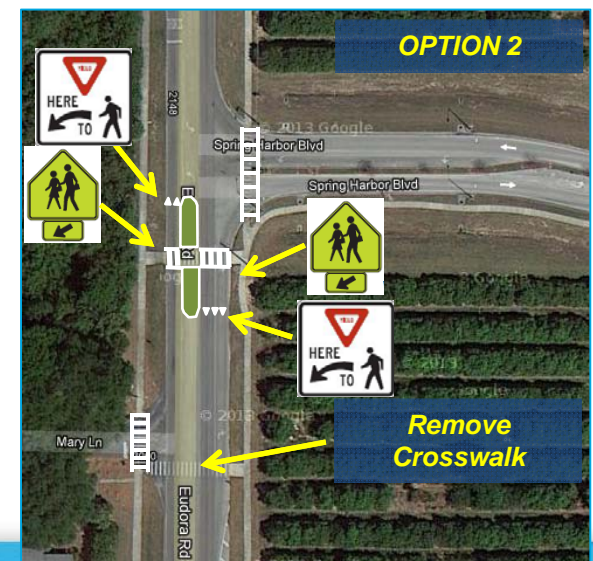
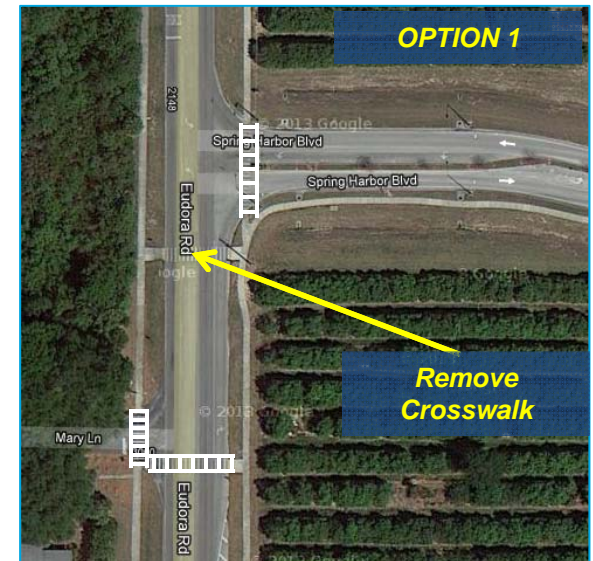
c) Remove 'dueling' crosswalks

Findings:

- ✓ There are two marked crosswalks on Eudora Rd north of the school within 150 feet of each other, one at Mary Ln and one at Spring Harbor Blvd; Both are signed as school crossings
- ✓ The school crossing guard uses the southern crosswalk at Mary Ln
- ✓ According to the crossing guard, the northern crosswalk is newer (added about 2 years ago)

Recommendations:

- ✓ Option 1: Remove the northern crosswalk at Spring Harbor Blvd to focus pedestrian activity at the Mary Ln crossing
- ✓ Option 2: Remove the southern crosswalk at Mary Ln, but add raised median island with at-grade pedestrian pass through at the northern crosswalk



Recommended Project #1

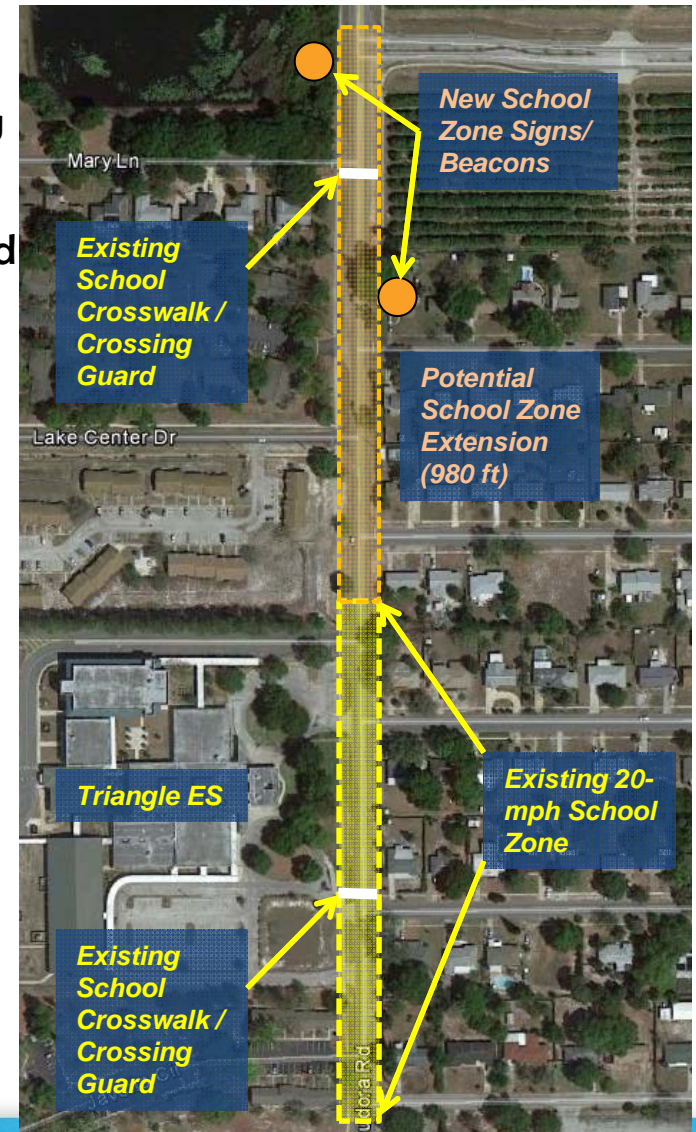
d) Extend School Zone

Findings:

- ✓ Existing 20-mph School Zone does not extend north to the existing school crosswalk / crossing guard location at Mary Ln
- ✓ Crossing guard reported difficulty at times with traffic yielding and safety concerns due to higher speeds (posted speed = 35 mph)
- ✓ Some students / parents cross outside of marked crosswalks to residential streets on the east side of Eudora Rd
- ✓ Extension of School Zone would have minimal impact on traffic – 14 sec. of additional delay at 20 mph vs. 35 mph

Recommendations:

- ✓ Extend School Zone by 980 ft to the north (to 200 ft north of existing crosswalk at Mary Ln); Keeping Mary Ln crosswalk would shorten extension by about 150 ft compared to keeping Spring Harbor Blvd crosswalk
- ✓ Add additional School Speed Zone flashing beacon signage at beginning / end of the revised speed zone (keep existing signs / beacons)



Recommended Project #2

Color Code Gates and Begin Staging Closer to Road

Recommendations:

- ✓ Assign colors (or numbers) to each gate
- ✓ Station a staff member early in the queue to direct parents to a specific color / gate, this staff person also radios someone in the gate area who tells each child which color gate to go to (using loud speaker or bull horn or radios)



Recommended Project #3

Connection to Apartments South of School

Findings:

- ✓ There is not a pedestrian crosswalk to the apartments south of the school on the east side of Eudora Rd
- ✓ There are several students / parents that walk this way and currently cross mid-block at apartments
- ✓ There is limited right of way for additional sidewalk on Eudora Rd



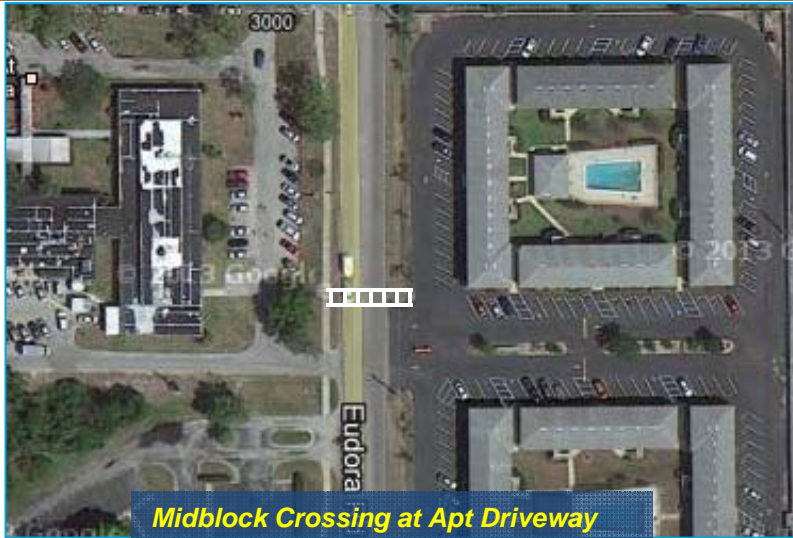


A SAFE SCHOOLS TRANSPORTATION STUDY

Triangle Elementary School

Recommended Project #3

Connection to Apartments South of School



Midblock Crossing at Apt Driveway



Drainage Ditch at Apt Driveway



Connection to Apt from Bowling Alley

Recommendations:

- ✓ Option 1: Mid-block crossing at apartments to existing sidewalk with curb cuts and ADA ramps
- ✓ At the apartment driveway there is a drainage ditch along the roadway that would require the crosswalk to connect to the driveway or to have a structure; One concern is that right turning traffic exiting the complex may not look for pedestrians to the right
- ✓ The bowling alley driveway is large and could be narrowed to provide a shorter crossing distance with a short paved connection provided to the apartment parking lot

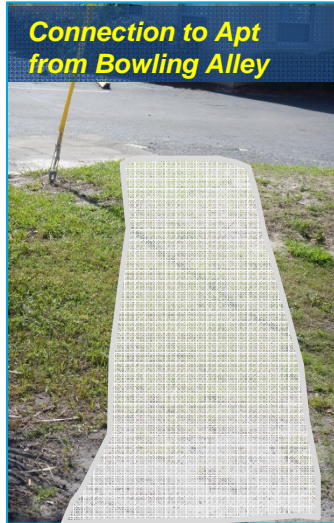


A SAFE SCHOOLS TRANSPORTATION STUDY

Triangle Elementary School

Recommended Project #3

Preferred: Connection to Apartments South of School



Connection to Apt from Bowling Alley



Recommendations:

- ✓ Option 2: Add sidewalk on east side of Eudora Rd to a mid-block crossing at / before Palmetto
 - ✓ Includes narrowing bowling alley driveway from 52 feet in width to 30 feet

Recommended Project #3

Connection to Apartments South of School

Recommendations:

- ✓ Option 3: Add sidewalk on the east side of Eudora Rd from apartment complex to Southland Rd
- ✓ From just south of Palmetto Rd to Southland Rd the right of way is limited and the sidewalk would be 4 ft wide and would begin at the edge of the roadway, unless additional right of way is acquired



Limited Right of Way on East Side



6.5 Feet of Space From Road to Pole



Recommended Project #4

Add Sidewalk on Eudora Rd from Old US 441 to North of Northland Rd

Findings:

- ✓ A number of students / parents walk in the grass on the east side of Eudora Rd to reach Palmetto Rd, Westland Rd, Eastland Rd and Southland Rd

Recommendations:

- ✓ Add sidewalk on the east side of Eudora Rd from Old US 441 to the end of the existing sidewalk just north of Northland Rd
- ✓ Another option is to shift the road alignment to the west (major reconstruction), or eliminate the center turn lane in this section to provide space for a sidewalk.



Parents and Students Walking in the Grass or Crossing Mid-block to Routes on the East Side of Eudora Rd



Recommended Project #5

Lake Center Drive Sidewalk Completion

Findings

- ✓ The sidewalk is partially complete on both sides of Lake Center Dr

Recommendations:

- ✓ Complete the sidewalk on both sides of Lake Center Dr from Old US 441 to Eudora Rd



Priority #	Item	Quantity	Units	Total
1	Striping	350	ft	\$350.00
1	Parking Lot Signage	5	Signs	\$1,500.00
1	Arrows	40	Arrow	\$4,000.00
1	Stop Bar	15	ft	\$60.00
1	Crosswalk Signage	4	Signs	\$1,200.00
1	Crosswalk	215	ft	\$480.00
1	Detector Mats	2	Mats	\$700.00

ESTIMATE BASIS AND ASSUMPTIONS:

- Costs are in 2012 dollars
- Sidewalk estimates based on estimating tool developed for Phase 1, Estimates for all other improvements based on Unit Costs per FDOT Lake County (Area 7) averages (07/2011 - 06/2012).
- Estimate does not include design costs, CEI costs, or utility relocation costs, utility relocation assumed by others.
- The mobilization costs are based on 15% of the construction cost and estimates include maintenance of traffic costs (15% of construction costs).
- Regular excavation & embankment to 1 ft depth is assumed
- No R/W costs included
- No specialized landscaping (beyond sodding) is included.
- Sidewalk is assumed to be 5 feet wide, unit given is in linear feet.

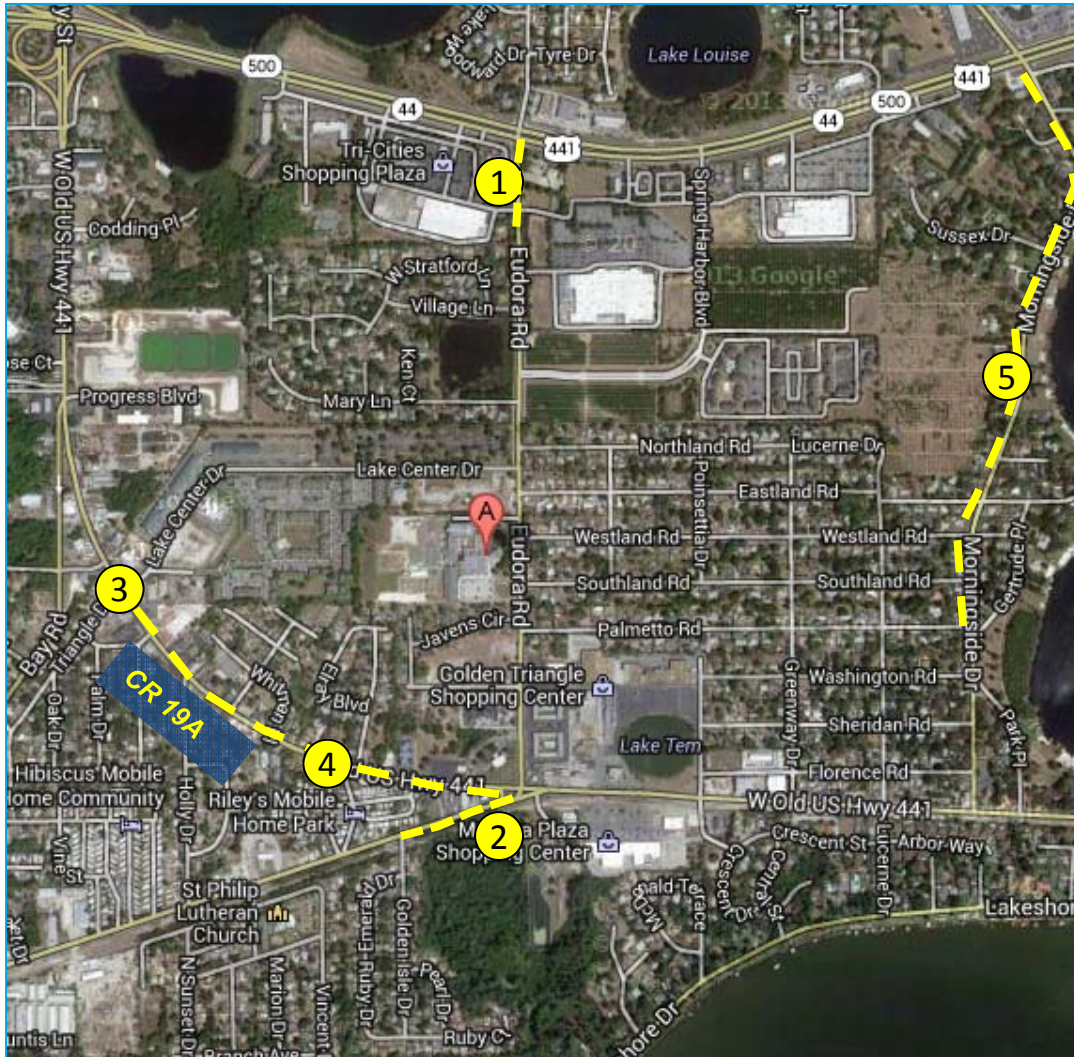
Priority #	Item	Quantity	Units	Total
3 option 2	Island	1	Island	\$43,200.00
3 option 2	Crosswalk	55	ft	\$125.00
3 option 2	Ramps	2	Ramps	\$1,140.00
3 option 2	Detector Mats	4	Mats	\$1,400.00
3 option 2	Crosswalk Signage	4	Signs	\$1,200.00
3 option 2	Stop Bar	25	ft	\$100.00
3 option 2	Sidewalk	190	ft	\$36,800.00
3 option 2	Driveway Reduction	625	sq ft	\$31,700.00
4	Sidewalk	2,600	ft	\$230,300.00
4	Crosswalk	220	ft	\$490.00
5	Sidewalk	1,180	ft	\$115,300.00

ESTIMATE BASIS AND ASSUMPTIONS:

- Costs are in 2012 dollars
- Sidewalk estimates based on estimating tool developed for Phase 1, Estimates for all other improvements based on Unit Costs per FDOT Lake County (Area 7) averages (07/2011 - 06/2012).
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- The mobilization costs are based on 15% of the construction cost and estimates include maintenance of traffic costs (15% of construction costs).
- Regular excavation & embankment to 1 ft depth is assumed
- No R/W costs included
- No specialized landscaping (beyond sodding) is included.
- Sidewalk is assumed to be 5 feet wide, unit given is in linear feet.

Project Number	Roadway	Location	Project
1	Eudora Road	Wal-mart Supercenter / K Mart Driveways to US 441	Add sidewalks, both sides
2	Old US 441	Golden Isle Dr to Eudora Road	In conjunction with existing concept plans, include sidewalks from roundabout to Golden Isle Drive
3	CR 19A	At Lake Center Drive	Add crosswalks - note this location noted for signalization with CR 19A concept plans
4	CR 19A	Both sides from Eudora Rd / Old US 441 to Lake Center Drive	Add sidewalk (note in existing concept plans for CR 19A)
5	Morningside Drive	US 441 to Palmetto Drive	Add sidewalk, west side





Recommendations:

1. Add sidewalk on both sides of Eudora Rd from end of existing sidewalk at about northern Wal-mart driveway to US 441
2. Provide pedestrian connection from planned roundabout at CR 19A / Old US 441 / Eudora Rd to Golden Isle Rd
3. Provide crosswalks and pedestrian features at planned Lake Center Dr / CR 19A signalized intersection (CR 19A Concept Plans)
4. Add sidewalk on the north side of CR 19A from Eudora Rd to Lake Center Drive (included in CR 19A Concept Plans)
5. Add sidewalk on Morningside Dr from US 441 to Palmetto Rd

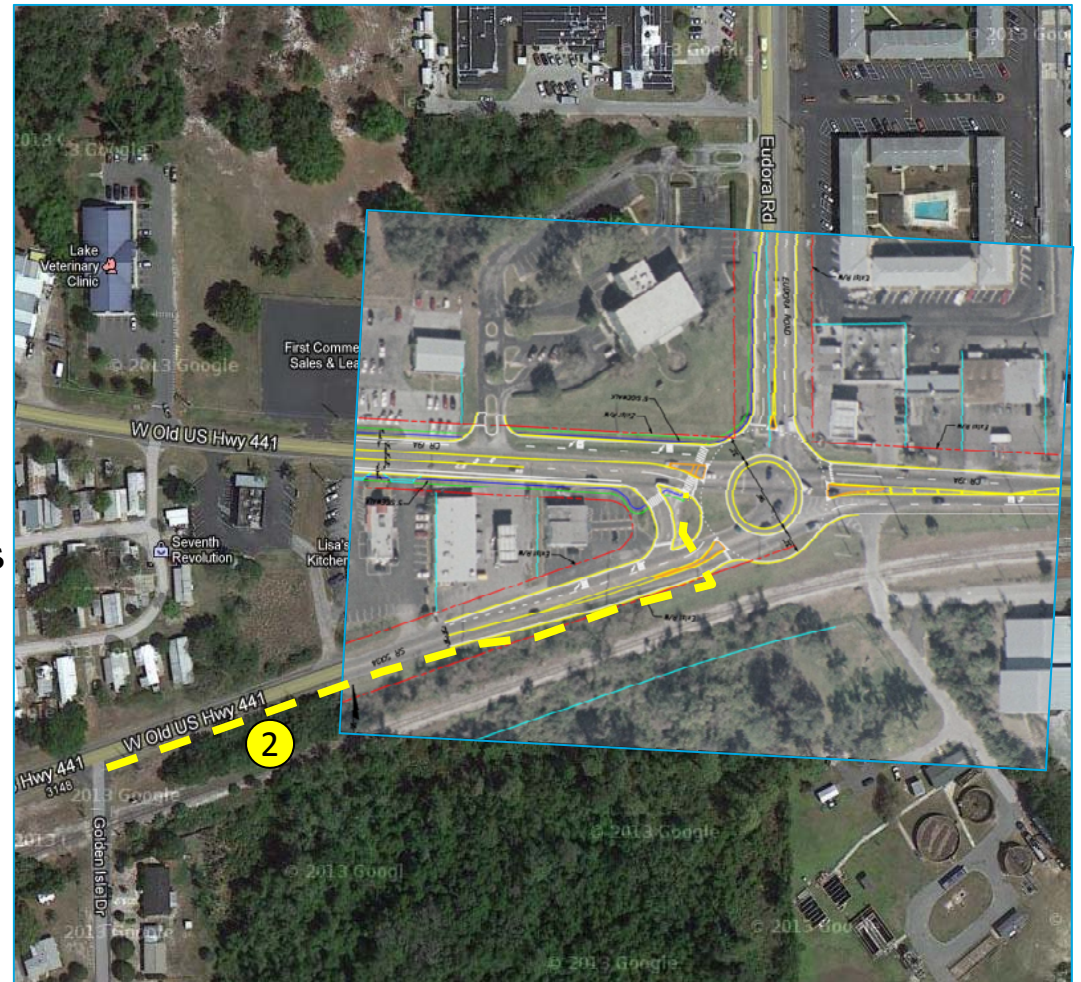
Recommendations:

- ✓ Complete sidewalk on the both sides of Eudora Rd From K-Mart / Wal-mart Supercenter driveways to US 441



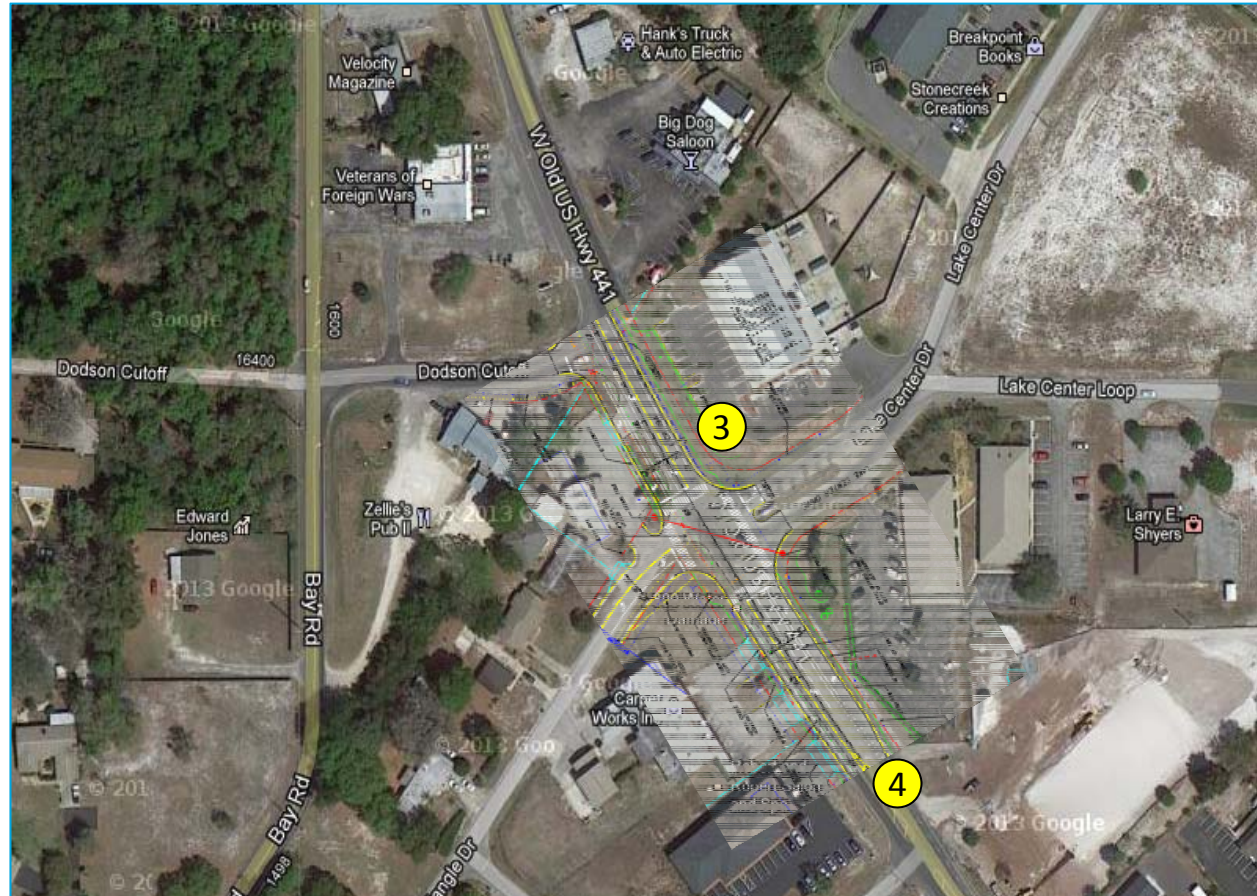
Recommendations:

- ✓ Coordinate with Lake County, Lake~Sumter MPO, and the City of Mt. Dora to include a pedestrian crossing of the western Old US 441 leg of the roundabout, and to include a sidewalk along Old US 441 to Golden Isle Dr
- ✓ Address roundabout design concerns:
 - ✓ Limit to single circulating lane
 - ✓ Limit / eliminate multilane exit points
 - ✓ If multilane roundabout required, enlarge central island for proper vehicle deflection and design entries to avoid “entry path overlap”
 - ✓ Properly locate ped crossings
 - ✓ Close southern-most gas station driveway on Eudora Rd and access road to water treatment plant from CR 19A



Recommendations:

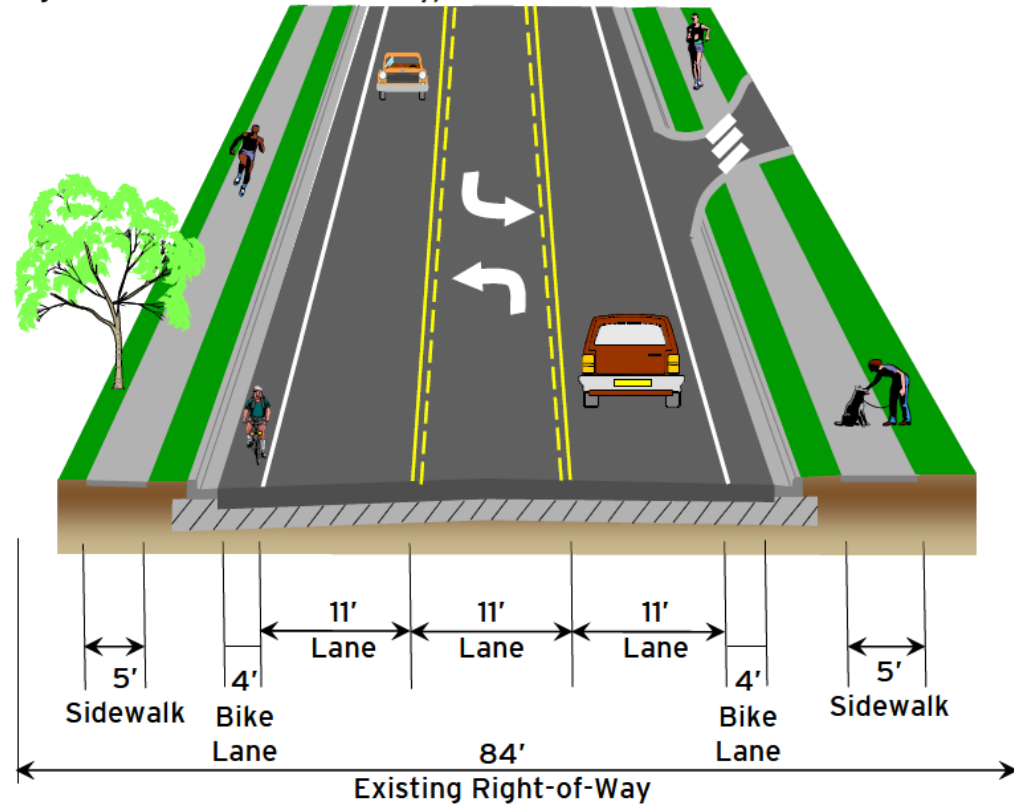
- ✓ Coordinate with Lake County, Lake~Sumter MPO, and the City of Mt. Dora to include pedestrian signal heads and amenities at the Lake Center Dr / CR 19A intersection
- ✓ Based on student location data at the time of construction, consider if an additional crossing guard is needed



Findings:

- ✓ In 2008 Lake County completed a conceptual plan development analysis for CR 19A from Old US 441 / Eudora Rd to US 441
- ✓ The preferred alternative was a three lane roadway, with a two way center left turn, bike lanes and a five ft sidewalk on both sides of the road
- ✓ The preferred alternative includes a round-about at CR 19A / Eudora Rd and Old US 441 (pictured next slide) but defers design details to future
- ✓ The preferred alternative includes a proposed signal at Lake Center Dr and CR 19A

Figure 32: Preferred Alternative Typical Section



Recommendations:

- ✓ Coordinate with Lake County Public Works, Lake~Sumter MPO and the City of Mt. Dora on future plans for these projects to ensure the needs of students living in the area are incorporated into the design



A SAFE SCHOOLS TRANSPORTATION STUDY

Triangle Elementary School

Other Projects

Morningside Dr Sidewalk

Recommendations:

- ✓ Construct sidewalk on the west side of Morningside Dr from US 441 to Palmetto Rd





Triangle Elementary School

Contact Information

This website represents an ongoing commitment to increase safe access to schools within the Lake~Sumter Metropolitan Planning Organization Planning Area.

Updates to data, and suggestions for programming and project ideas are welcome from all agencies and the general public.

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*Promoting Regional
Transportation Partnerships*