

**NORTHWEST ORANGE COUNTY  
TRAFFIC SAFETY AUDIT  
ORANGE COUNTY DISTRICT 2**



**PUBLIC WORKS DEPARTMENT  
TRAFFIC ENGINEERING DIVISION**

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**AUDIT TEAM:**

Ching Yang, P.E., Senior Engineer

Christine Lofye, P.E., Engineer III

Darryl Johnson, Assistant Project Manager

Krista Barber, Engineer I

FEBRUARY 2010

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## **I. Introduction**

The Orange County Traffic Engineering Division conducted a comprehensive traffic safety audit in the northwest region of District 2. Members of the audit team were:

Ching Yang, P.E., Senior Engineer  
Christine Lofye, P.E. Engineer III  
Darryl Johnson, Assistant Project Manager  
Krista Barber, Engineer I

The safety audit consisted of daytime and night-time drives of the identified study area roadways, a review of past citizen complaints in the study area, analysis of crash records for study area roadways and intersections, the collection of citizen concerns at two community meetings, and input from District 2 County Commissioner Fred Brummer and the City of Apopka staff.

Identified traffic safety issues were evaluated and appropriate improvements were determined. The improvements were classified as either short-term high priority safety risk, short-term low and medium priority safety risk, or long-term capital improvements. The results of the audit are presented herein.

## **II. Purpose**

The purpose of this traffic safety audit is to evaluate the rural roads in Northwest Orange County from a safety perspective and recommend improvement strategies.

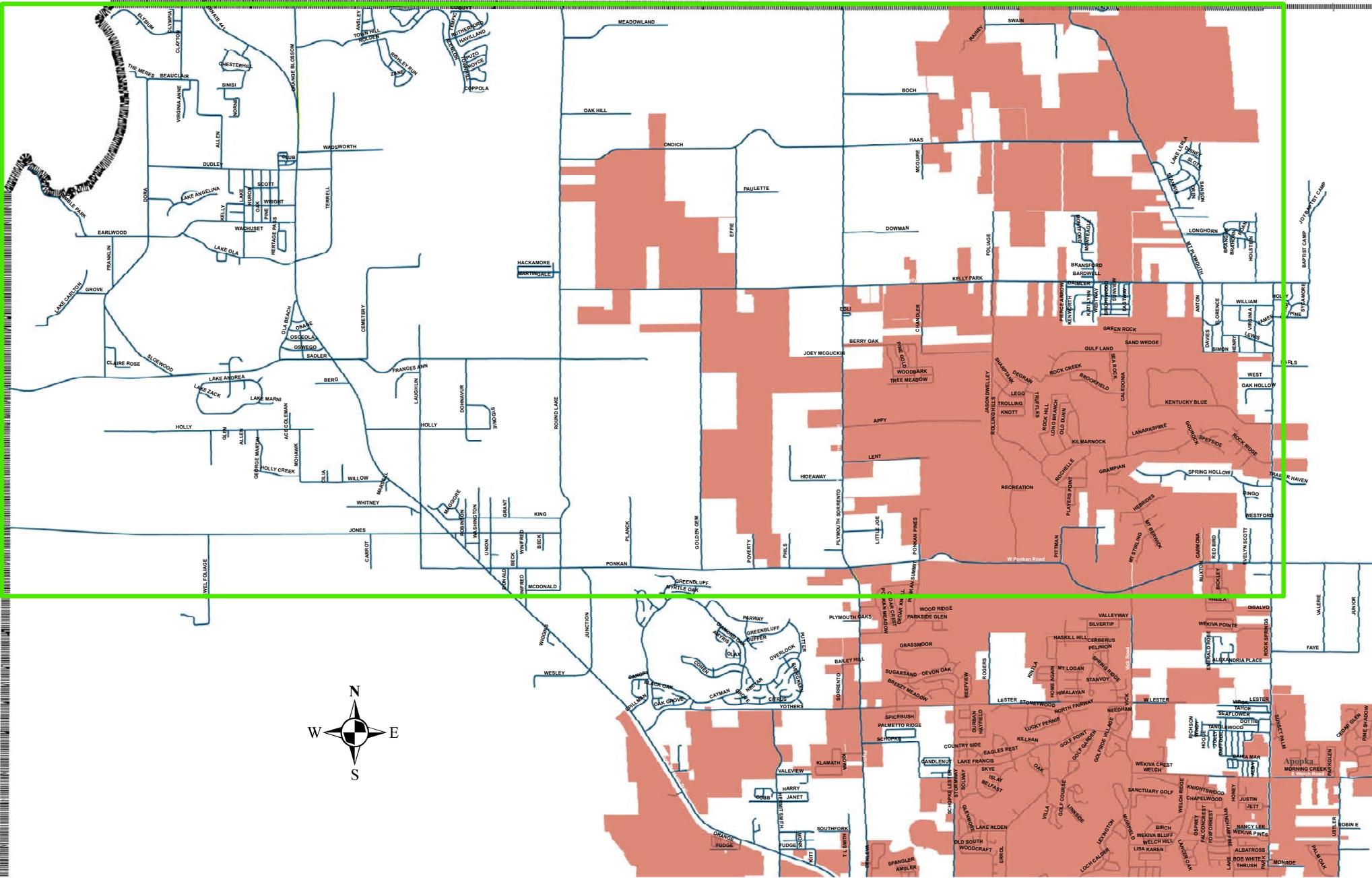
According to the Federal Highway Administration “a Road Safety Audit (RSA) is the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvement in safety for all road users.

The aim of an RSA is to answer the following questions:

- What elements of the road may present a safety concern: to what extent, to which road user, and under what circumstances?
- What opportunities exist to eliminate or mitigate identified safety concerns?”

## **III. Study Area**

The study area boundaries are Ponkan Road on the south, Rock Springs Road on the east, and the Lake County line on both the west and the north. The location of the study area is presented in Figure 1.



Legend:

- 
— Apopka City Limits- 
— Study Area

## Northwest Orange County Traffic Safety Audit Study Area

## Figure 1

The roads that were identified to be audited are listed in Table 1. The top section of the table lists roadways in the study area that are included in the Concurrency Management System (CMS). The bottom section of the table lists roadways in the study area that are not in the CMS, but are roadways for which the Traffic Engineering Division has received citizen complaints or otherwise provide for travel between CMS roadways.

Signalized intersections that were evaluated as part of the study are:

Jones Avenue & US 441

Plymouth Sorrento Road & Kelly Park Road

Ponkan Road & Plymouth Sorrento Road

Rock Springs Road & Kelly Park Road

Rock Springs Road & Ponkan Road

Rock Springs Road & Rock Ridge Boulevard

Sadler Road & US 441

## **IV. Data Collection**

### A. Citizen Complaint History

As part of the data collection process, citizen complaints from 2006 through the present were collected. The purpose was to identify areas of repeated traffic complaints and issues so that on-going issues in the area were not overlooked. These citizen complaints are summarized in Table 2 along with the resolution to the complaint.

### B. Crash History

Although the road safety audit process is intended to be proactive in its approach by anticipating safety hazards and implementing improvements prior to crashes occurring, the analysis of crash data is equally important in order to address existing safety problems.

Crash data for three years from 2006 to 2008 were collected and analyzed in order to identify patterns in crashes and areas for improvement. Crash data were separated into roadway segment crashes and intersection crashes. An intersection crash was defined to be a crash occurring within 500 feet of the intersection, as stated in the crash report. All other crashes were classified as roadway segment crashes.

Figure 2 shows the number of segment crashes and intersection crashes on study area roadways for years 2006 through 2008. An in-depth analysis of intersections with three or more crashes within the three-year analysis period was conducted, consisting of a crash summary table and a conflict diagram. The tables and conflict diagrams are included in Section V under the appropriate roadway.

### C. School Locations and School Safety Studies

Locations of schools within the study area are presented in Figure 3. School Safety Studies had previously been conducted for the schools within the study area as part of a

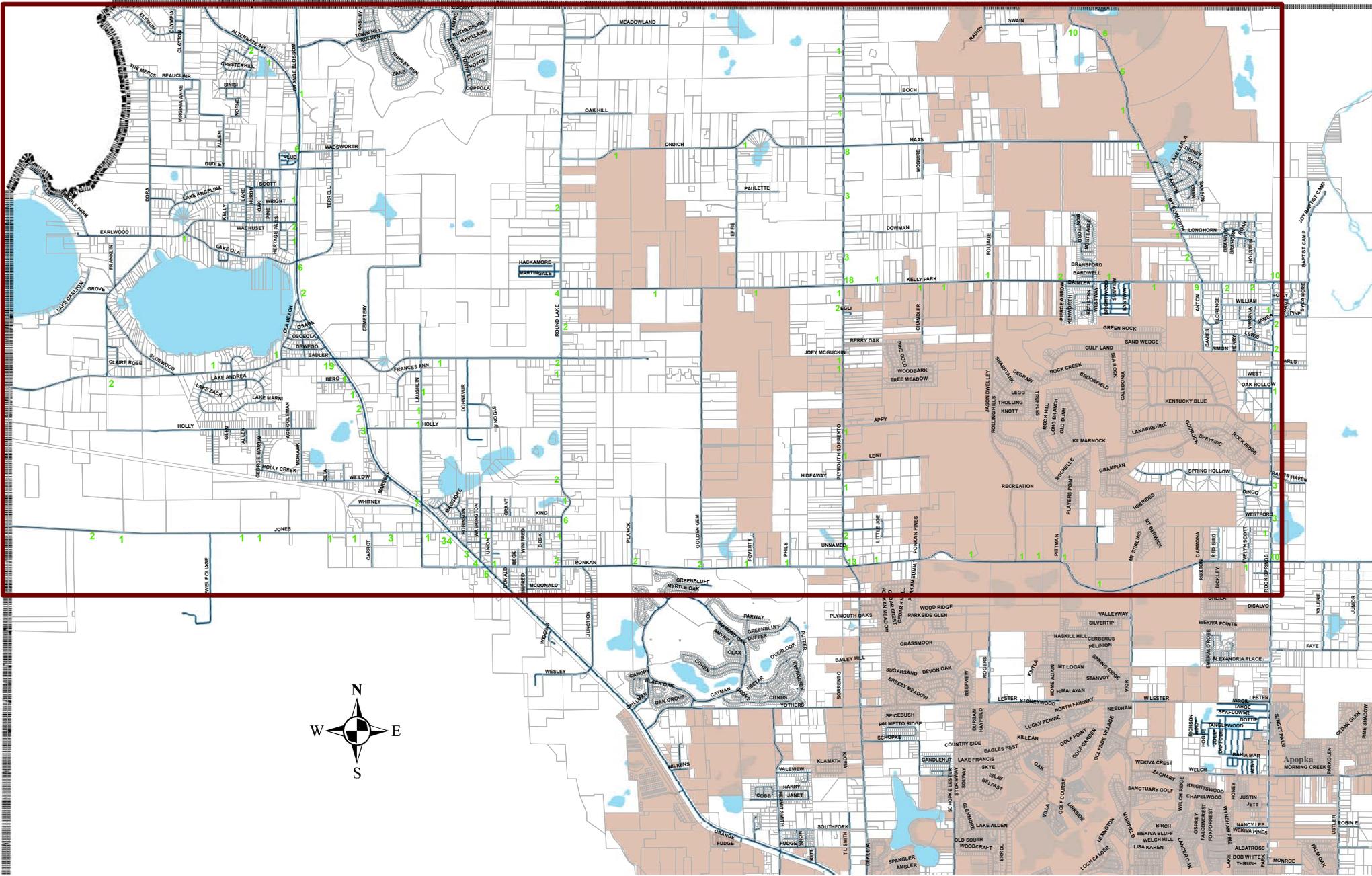
**Table 1**  
**Northwest Orange County Traffic Safety Audit**  
**Study Roadways**

Cnt Sta.	CMS	Roadway	From	To	Distance	Jrsdct	Func.	AT	Ln	2008 AADT	Spd
325	206	Jones Avenue	N. Orange Blossom Trail	Lake County Line	3.2	County	Collector	Rural	2	8,152	55
9	212	Kelly Park Road	Round Lake Road	Plymouth Sorrento Road	2.0	County	Collector	Rural	2	2,568	55
12	213	Kelly Park Road	Plymouth Sorrento Road	Rock Springs Road	3.1	County	Collector	Rural	2	10,408	45
17	286	Mt. Plymouth Road	Lake County Line	Kelly Park Road	2.3	County	Collector	Rural	2	7,493	45
405	321	Old 441	N. Orange Blossom Trail	Lake County Line	1.1	County	Collector	Rural	2	4,316	45
14	357.9	Plymouth Sorrento Road	Lake County Line	Kelly Park Road	2.0	County	Collector	Rural	2	7,671	55
11	358	Plymouth Sorrento Road	Kelly Park Road	Ponkan Road	2.0	County	Collector	Rural	2	8,308	55
13	360	Ponkan Road	N. Orange Blossom Trail	Plymouth Sorrento Road	2.6	County	Collector	Rural	2	4,093	45
326	361	Ponkan Road	Plymouth Sorrento Road	N. Rock Springs Road	3.2	County	Collector	Rural	2	5,039	35
18.1	383	Rock Springs Road	Ponkan Road	Kelly Park Road	2.0	County	Collector	Rural	4	not available	45
6	387.1	Round Lake Road	Lake County Line	W. Kelly Park Road	2.0	County	Collector	Rural	2	3,222	55
8	387	Round Lake Road	W. Kelly Park Road	W. Ponkan Road	2.0	County	Collector	Rural	2	3,618	50
324	391	Sadler Road	Lake County Line	N. Orange Blossom Trail	2.4	County	Collector	Urban	2	6,023	45
3	392	Sadler Road	N. Orange Blossom Trail	Round Lake Road	1.7	County	Collector	Urban	2	2,174	45

Cnt Sta.	CMS	Roadway	From	To	Distance	Jrsdct	Func.	AT	Ln	2008 AADT	Spd
N/A	N/A	Cemetery Road	Sadler Road	end of Cty maintenance	1.1	County			2	not available	n/a
N/A	N/A	Dora Drive	Sadler Road	Beauclair Avenue	2.2	County			2	not available	50
N/A	N/A	Golden Gem Road	Ponkan Road	Kelly Park Road	2.0	County			2	not available	30
N/A	N/A	Haas Road	Plymouth Sorrento Road	Mount Plymouth Road	2.1	County			2	not available	40
N/A	N/A	Jones Avenue	Round Lake Road	N. Orange Blossom Trail	0.8	County			2	not available	30
N/A	N/A	Lake Ola Drive	Earlwood Avenue	N. Orange Blossom Trail	0.9	County			2	not available	25
N/A	N/A	Laughlin Road	Jones Avenue	Sadler Road	1.3	County			2	not available	45
N/A	N/A	Ondich Road	Round Lake Road	Plymouth Sorrento Road	2.2	County			2	not available	30

**Table 2**  
**Northwest Orange County Traffic Safety Audit**  
**Citizen Concerns 2006-2009**

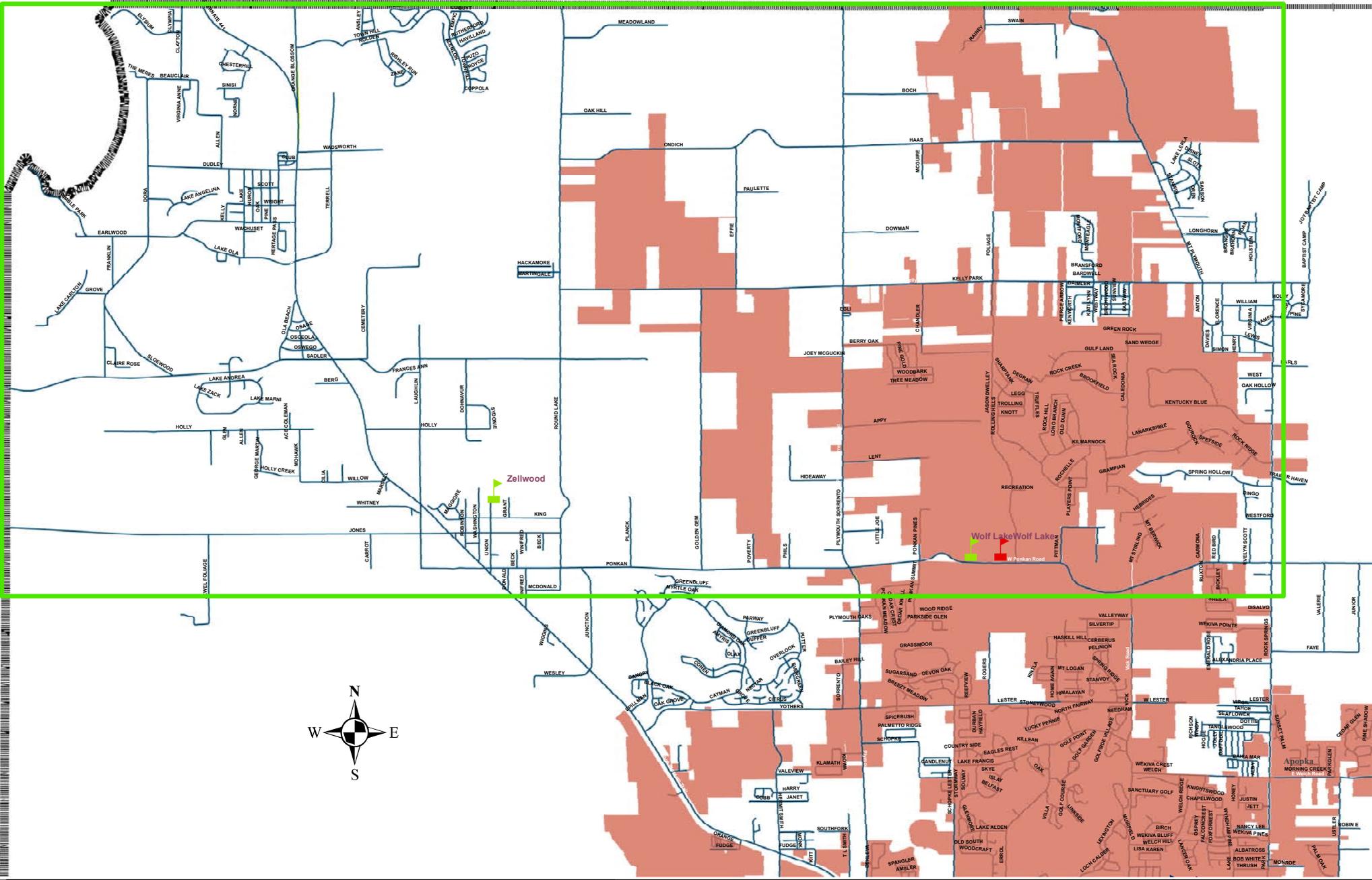
<b>Date</b>	<b>Main Street</b>	<b>Cross Street</b>	<b>Citizen</b>	<b>Concern</b>	<b>resolution</b>
Jun-07	Ponkan Rd	Rock Springs Rd to Plymouth Sorrento Rd	City of Apopka	Speed Limit review	Performed Speed Study
Jul-07	Ponkan Rd	Rock Springs Rd to Orange Blossom Tl		Speed Limit review	Performed Speed Study
Jun-09	Ponkan Rd	Ponkan Summit Dr		Accident	Performed Speed Study
Jun-08	Rock Springs Rd	Ponkan Rd to Kelly Park Rd		Night Time Evaluation	missing sign replaced
Dec-08	Rock Springs Rd	Spring Hollow Dr	Steve Madole, resident	Screen Wall blocked sight distance	redesign to improve sight distance
Jan-09	Rock Springs Rd	Kelly Park Rd	Shirley Sharpe-Terrell, commissioner aide	Signal Timing	reviewed timing
Jun-09	Rock Springs Rd	Rock Springs Ridge	Eric, resident	Signal	Signal installed as part of road project
Apr-09	Oak Hollow Dr	Rock Springs Rd	Larro Groebel, resident	Sight Distance	field review, met sight distance requirements
Apr-09	Kentucky Blue Circle	Rock Springs Rd	Fred Brummer, commissioner	Sight Distance	Under construction
Jun-06	Kelly Park Rd	e/o Rock Springs Rd		parking on roadway when park is full	Signs installed
Jan-07	Kelly Park Rd	Mt Plymouth Rd		Signal request	Not Warranted
Oct-07	Kelly Park Rd	Mt Plymouth Rd	Evan Gardner, resident	Illuminated stop sign	Flasher has been installed at this location
Jun-08	Kelly Park Rd	Rock Springs Rd to Round Lake Rd		Night Time Evaluation	missing sign replaced
Feb-09	Kelly Park Rd	e/o Mt Plymouth Rd		Remove "Use Turn Signal" sign	sign removed
Jun-09	Kelly Park Rd	near park entrance		sign request to notify when park is full	Reviewed, not warranted
Jul-09	Kelly Park Rd	at Mt Plymouth Rd	William, resident	Signal	Not Warranted
Aug-09	Kelly Park Rd	Kati Lynn Dr	James, resident	Signal	Not Warranted



Legend:  
 # — # of Crashes  
 — Apopka City Limits  
 — Study Area

Northwest Orange County Traffic Safety Audit  
 Crash History 2006-2008

Figure 2



**Legend:**

- Elementary School
- Middle School
- Apopka City Limits
- Study Area

**Northwest Orange County Traffic Safety Audit  
School Locations**

**Figure 3**

separate county contract, therefore an in-depth analysis of school routes and crossings was not required.

#### D. Field Data Collection

The audit team spent several days in the field driving study area roadways. Preparation for the field work included the development of forms and field notation sheets, a prompt list, and gathering of equipment.

Forms and field notation sheets were developed to make the data collection easier and to help organize the data collected. Straight line diagrams of study roadways, which consisted of distances to the tenth of a mile and cross streets, had been prepared in advance to use as field data collection forms. Aerial photographs of study area roadways were also prepared for use in locating and noting specific concerns. Photo log forms were developed to note the photo number and location of the photograph. A field prompt list was developed for reference in the field to ensure that important aspects were not overlooked. This field prompt list is included as Figure 4. An intersection field inspection form, Figure 5, was also used in auditing signalized intersections.

Equipment used included a county vehicle with a flashing rooftop hazard light, safety vests, camera, camcorder, memory cards, and clipboards. Video was recorded for all study area roadways for reference in the office.

#### E. Community Meetings

Two community meetings were conducted during the month of November 2009 to gather community input for the project. A community meeting notice, presented as Figure 6, was mailed to the mailing addresses of all parcels within the study area boundaries. The first meeting was conducted on November 9<sup>th</sup> at Zellwood Elementary School and the second meeting was conducted on November 11<sup>th</sup> at Wolf Lake Middle School. The sign-in sheets are included in the Appendix.

As part of the community meeting the study area was divided into six maps, with a different map provided at each table. Citizens were asked to sit at a table and note any safety concerns by completing a comment form describing the issue or concern. The comment form was to be numbered. The citizen was then asked to place a sticker with the same number at the location of the concern. The concerns submitted by citizens as part of the community meetings are summarized in Table 3.

Some citizens were not able to attend the community meetings, but phoned or emailed their concerns. The list of concerns submitted by citizens by phone or email is summarized in Table 4.

#### F. Speed Studies and Traffic Counts

Some of the comments from citizens were related to speeding and/or requests for changes to speed limits. In order to determine the proper countermeasures speed studies were conducted to determine the 85th percentile speed and the speed range.

**Figure 4**  
**Northwest Orange County Traffic Safety Audit**  
**Field Review Prompt List**

**I. Pavement**

- a. poor surface condition
- b. poor shoulder condition
- c. pavement edge deterioration/drop offs
- d. evidence of ponding and/or flooding
- e. need for pavement widening along curve

**II. Visibility**

- a. vegetation obstructing traffic control devices
- b. vegetation obstructing sight distance
- c. obstructions to the sight distance triangle
- d. inadequate stopping sight distance
- e. passing may need to be restricted
- f. hidden driveway

**III. Signing**

- a. poor sign face legibility
- b. poor sign face retroreflectivity
- c. poor condition of sign supports
- d. sign clutter
- e. need for advance warning sign
- f. need for advisory speed plate
- g. need for object markers/delineators
- h. need for chevrons
- i. need for guide signing
- j. need for regulatory signing
- k. not appropriate height, offset, or distance

**IV. Pavement Markings**

- a. need to be refreshed
- b. need edge line
- c. need RPM's
- d. need intersection markings
- e. need rumble strips
- f. not visible at night
- g. old pavement markings still visible

**V. Intersections**

- a. maneuvers/lane use not obvious
- b. insufficient length of auxiliary/turn lanes

**VI. Posted Speed**

- a. speed limit appropriate?
- b. advisory speed needed on curve
- c. traffic observed to be speeding
- d. improper transition between speed limits

**VII. Pedestrians and Bicyclists**

- a. high usage/need for facilities
- b. inadequate facilities
- c. need signing for facilities
- d. need pavement markings for facilities
- e. need maintenance of facilities

**VIII. Barriers and Clear Zone**

- a. need for guardrail
- b. poor condition of guardrail
- c. need for delineation of guardrail or barrier
- d. presence of fixed object within clear zone
- e. sign within clear zone not break-away
- f. barrier needs proper end treatment

# INTERSECTION FIELD INSPECTION FORM

## LOCATION INFORMATION

Intersection Identification: \_\_\_\_\_ with \_\_\_\_\_  
 Approach Name: \_\_\_\_\_ Direction Heading: \_\_\_\_\_

### PART 1. CHECK SIGNAL VISIBILITY

Type of Signal Mounting: **Span Wire Mast Arm Pole Structure** Sight Distance to the Signal: \_\_\_\_\_ feet  
 Requires Advance Warning Sign? **Y N** Advance Signal Warning Sign Present: **Y N**  
 Is anything blocking the view of the signals? **Y N** If yes, describe \_\_\_\_\_  
 Can signal faces on other approaches be seen? **Y N** If yes, do these signals have visors, shields, or programmable lenses? **Y N**

### PART 2. CHECK SIGNAL CONSPICUITY

Could visual clutter detract from the signal? **Y N** Signal Lens Size Adequate?:  
 Are the signal indications confusing? **Y N** Red signal lens size: **8 inch 12 inch**  
 If yes, explain: \_\_\_\_\_ Distance from stop line to signal: \_\_\_\_\_ feet  
 \_\_\_\_\_ Near side signal? **Y N**  
 Are backplates present? **Y N** Is existing size adequate? **Y N**  
 Are backplates necessary? **Y N** Number of Signal Heads Adequate?  
 Are other glare-reducing steps needed? **Y N** Total number of signal heads for major movement: \_\_\_\_\_  
 Signal lens type: **Incandescent LEDs** Total number of lanes for major movement: \_\_\_\_\_  
 Is existing number adequate? **Y N**  
 Signal Heads Placement Adequate? **Y N**

### PART 3. CHECK SIGNAL CONTROL PARAMETERS

Grade (as decimal)  $g =$  \_\_\_\_\_ (uphill is positive) Calculate the needed change period ( $CP$ ) for this approach using agency practice or the following equation:  
 Approach speed  $V =$  \_\_\_\_\_ mph  
 Cross street width  $W =$  \_\_\_\_\_ feet  

$$CP = 1.0 + \frac{\overbrace{1.47 * V}^{\text{Yellow}}}{(20 + 64.4g)} + \frac{\overbrace{W + 20}^{\text{All-red}}}{1.47 * V}$$

	Actual Value	Calculated Value	Is Existing Adequate?	
Yellow Interval	_____	_____	Y	N
All Red Interval	_____	_____	Y	N

### PART 4. CHECK OTHER FACTORS

Is horizontal location adequate? **Y N** Pavement condition on approach: **Adequate Polished Severely Rutted**  
 Should signal warranting study be conducted? **Y N** Other concerns: \_\_\_\_\_

### PART 5. IDENTIFY PROMISING COUNTERMEASURES

Visibility Deficiency	Conspicuity Deficiency	Signal Timing Operation Deficiency
_____ Install additional signals on near side	_____ Add signals to achieve one per lane	_____ Change yellow interval
_____ Change signal mounting	_____ Replace with LED lens type	_____ Add/change all-red interval
_____ Install SIGNAL AHEAD sign	_____ Replace with 12" signal head	<b>Other Measures</b>
_____ Install Advance Warning Flashers	_____ Install double red signal	_____ Determine if signal is warranted
_____ Remove/relocate sight obstruction	_____ Install/enhance backplates	_____ Consider roundabout or innovative design
_____ Install programmable lenses	_____ Install rumble strips on approach	_____ Improve pavement condition
_____ Install shields and visors	_____ Install near side signal	
_____ Other		

Inspection By: \_\_\_\_\_

Date: \_\_\_\_\_

# COMMUNITY MEETING



## Northwest Orange County Traffic Safety Audit

**November 9, 2009 at 6:00 pm**  
**Zellwood Elementary School cafeteria**  
**3551 N. Washington St., Zellwood, Florida 32798**

**OR**

**November 11, 2009 at 6:00 pm**  
**Wolf Lake Middle School cafetorium**  
**1725 W. Ponkan Rd., Apopka, Florida 32712**  
(select one meeting to attend)

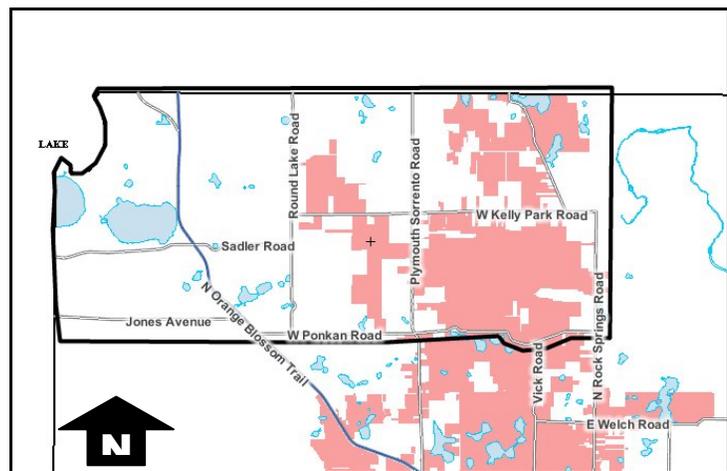
Orange County is conducting a traffic safety audit of northwest Orange County roads. Please join your County Commissioner, Orange County staff, and your neighbors at one of the two scheduled community meetings to discuss traffic safety issues and possible solutions within the study area.

### Study Area

#### Purpose:

The staff of the Orange County Traffic Engineering Division would like to receive input from you regarding traffic safety issues within the study area. At this meeting, representatives from Orange County will present the roads to be audited and the focus of the study. Property owners will have an opportunity to provide comments and ask questions. You are strongly encouraged to attend as your input is very important.

If you have questions regarding this community meeting, please call Christine Lofye, P.E. of the Orange County Traffic Engineering Division at (407) 836-8682 or via e-mail at [Christine.Lofye@ocfl.net](mailto:Christine.Lofye@ocfl.net).



**Para más información acerca de esta reunión, favor de comunicarse con Sr. Hector Bertran de la División de Ingeniería de Tránsito al número (407) 836 -7763.**

**This project is located in District # 2  
Commissioner Fred Brummer**

**Table 3  
Northwest Orange County Traffic Safety Audit  
Community Meeting Citizen Concerns (2009)**

Map	Main Street	Cross Street	Citizen	Concern	Jurisdiction
1	Lake Ola Drive	Dora Dr. to US 441	H Buckkee	requests sheriff's deputy to patrol for speeding	O.C. study roadway
1	Dora Dr	north of Sadler Rd	H Buckkee	requests sheriff's deputy to patrol for speeding	O.C. study roadway
1	OBT/441	Stoneybrook Hills Pkwy	Richard Welch	Need signal ahead advance warning sign	FDOT
1	Stoneybrook Hills Pkwy	OBT/US 441	Richard Welch	Magnolia trees need trimming	private roadway
1	US 441	Old 441	H Buckkee	NB left turn lane isn't long enough	FDOT
2	Effie Dr	not provided	Larry LaForest	increase speed limit 25 MPH to 40 MPH	O.C. non-study roadway
2	Effie Dr	Paulette St	Neil McKenzie	Speeding--should speed limit be increased? Requests speed trailer	O.C. non-study roadway
2	Effie Dr	Ondich Rd	Neil McKenzie	Is there a speed limit sign missing?	O.C. non-study roadway
2	Haas/Ondich Rd	Plymouth Sorrento Rd	not provided	Vehicles heading WB/EB can't see vehicles heading NB due to speed	O.C. study roadway
2	Kelly Park Rd	Plymouth Sorrento Rd	Willie Schultz	Need SB left turn lane onto Kelly Park	O.C. study roadway
2	Ondich Rd	Round Lake Rd	Bridget Dickens	Visibility reduced by trees on SE corner and by hill on Round Lake S. of Ondich Rd	O.C. study roadway
2	Ondich Rd	Effie Dr	David & Jean Emmel	Speed enforcement between 6-8am & 4-6pm	O.C. study roadway
2	Paulette St	Effie Dr	Rosa Lee Ondich	street needs to be paved	O.C. non-study roadway
2	Paulette St	Effie Dr	Larry LaForest	street needs to be paved	O.C. non-study roadway
2	Plymouth Sorrento Rd	US 441 to Lake County	Larry LaForest	pavement condition poor shoulders need widening	O.C. study roadway
2	Round Lake Rd	Ondich Rd	Rosa Lee Ondich	Visibility hindered by trees on SE corner	O.C. study roadway
2	Round Lake Rd	Kelly Park Rd	not provided	Trees need to be trimmed NB / add rumble strips prior to stop sign WB	O.C. study roadway
2	Round Lake Rd	Ponkan to Lake County Line	Bridget Dickens	Request Widening of Round Lake Road	O.C. study roadway
2	Round Lake Rd	Kelly Park Rd	Laurie Staples	Speeding--afraid to turn into my driveway	O.C. study roadway
2	Round Lake Rd	Kelly Park Rd	Laurie Staples	Need a speed zone in front of Valley Trailer Park for disabled children	O.C. study roadway
2	Round Lake Road	Kelly Park Road	Willie Schultz	need intersection sign/hard to know where Kelly Park Rd. is	O.C. study roadway
3	Kelly Park Rd	Holstein Rd	Diane Burkholder	Need a traffic light/poor visibility at "hilly" intersection	O.C. study roadway
3	Kelly Park Rd	Mt. Plymouth Rd	Karen Bowers	need a traffic light	O.C. study roadway
3	Kelly Park Rd	Plymouth Sorrento Rd	not provided	Need plants trimmed to improve view at light	O.C. study roadway
3	Kelly Park Rd	Mt. Plymouth Rd	not provided	Need a traffic light	O.C. study roadway
3	Ondich Rd	Plymouth Sorrento Rd	not provided	Dark at night--need flashing light to warn of stop.	O.C. study roadway
4	Dora Dr	Sadler/County Line	Margie Grinnell	Cyclists endangered by 2-way traffic and dips or holes	O.C. study roadway
4	Holly	OBT/US 441	Eugene Mason	High speed on OBT, hard to make right turn on Holly; request NB right turn lane	FDOT

**Table 3  
Northwest Orange County Traffic Safety Audit  
Community Meeting Citizen Concerns (2009)**

<b>Map</b>	<b>Main Street</b>	<b>Cross Street</b>	<b>Citizen</b>	<b>Concern</b>	<b>Jurisdiction</b>
4	Laughlin Rd	OBT/US 441	Rosa Lee Ondich	Bus Bench blocks view for SB left	O.C. study roadway
4	Sadler Rd	US 441 to Dora Dr.	H Buckkee	Lower speed limit to 35	O.C. study roadway
4	Sadler Rd	between Sloewood Dr and Sloewood Ct	John Henns	Cut Bamboo Trees back to ROW line	O.C. study roadway
4	Sadler Rd	Sloewood Dr	John Henns	SB on Sloewood Dr, Stop Sign visibility to west is limited	O.C. study roadway
4	Sadler Rd	OBT/US 441	John Henns	request right turn lane EB on Sadler @ OBT	O.C. study roadway
4	Sadler Rd	between Sloewood Dr and Sloewood Ct	Steve Mellich	Cut Bamboo Trees back to ROW line	O.C. study roadway
4	Sadler Rd	OBT/US 441	Steve Mellich	request right turn lane EB on Sadler @ OBT	O.C. study roadway
4	Sloewood Dr	near Dora Dr.	Margie Grinnell	vegetation blocks speed limit on west side of road	O.C. non-study roadway
4	Sloewood Dr	between Sadler Rd and Dora Dr	Steve Mellich	Sloewood used as a cut through--need speed control	O.C. non-study roadway
4	Sloewood Dr	Sadler Rd	Steve Mellich	Turning EB onto Sadler, vegetation needs to be trimmed	O.C. study roadway
5	3336 Round Lake Rd	King Ave	Margaret Shuman	Repaved road does not meet end of driveway- pot holes/tire damage	O.C. study roadway
5	5331 Jones Ave	Union St	Antoinette Valenson	Water from road washes away land owner dirt	O.C. non-study roadway
5	Jones Ave	OBT/US 441	Marvin Barrett	Limit trucks from cutting thru residential area to go to SR 46	O.C. study roadway
5	Kelly Park Rd	Round Lake Rd	not provided	Running stop sign due to horizontal sight distance	O.C. study roadway
5	Plymouth Sorrento	Ponkan Rd	Niles Urfer	speed on curve/straighten road/widen to 4 lanes	O.C. study roadway
5	Ponkan Rd	Junction St	not provided	Improve signage - people miss turn onto Junction	O.C. study roadway
5	Ponkan Rd	Round Lake Rd	Marvin Barrett	Stop sign use to have caution lights	O.C. study roadway
5	Round Lake Rd	north of King Ave	not provided	Difficult curve-speed limit too fast	O.C. study roadway
5	Round Lake Road	Ponkan Rd	Laurie Staples	Winding curve, lots of people lose control/speed limit	O.C. study roadway
6	Holstein Rd	Kelly Park Rd	Carolyn McCarty	Visibility- can't see cars on Kelly Park due to hill	O.C. study roadway
6	Jason Dwelley Pkwy	Kelly Park Road	Willie Schultz	Bike route sign blocks Stop Sign-poor visibility at intersection	City of Apopka
6	Kelly Park Rd	Foliage Way	Richard Brooks	County tore out driveway--sloppy repair in area	O.C. study roadway
6	Kelly Park Rd	Plymouth Sorrento Rd	Howard Washington	cannot see EB traffic when attempting NB "Right on Red"	O.C. study roadway
6	Kelly Park Rd	Foliage Way	Richard Brooks	Water remains in EB roadway after rain; fixed once before, but problem returned after UG utilities/shoulder work	O.C. study roadway
6	Kelly Park Rd	Plymouth Sorrento Rd	Latricia Even	Trees block visibility	O.C. study roadway
6	Kelly Park Rd	Jason Dwelley Pkwy	Latricia Even	Visibility- need sign warning of intersection w/ Jason Dwelley	O.C. study roadway
6	Mt. Plymouth Rd	Kelly Park Rd	Carolyn McCarty	Need traffic light-difficult to enter Kelly Park Rd.	O.C. study roadway

**Table 3**  
**Northwest Orange County Traffic Safety Audit**  
**Community Meeting Citizen Concerns (2009)**

Map	Main Street	Cross Street	Citizen	Concern	Jurisdiction
6	Pittman Rd	Ponkan Rd	Kenneth Peck	Rock Springs Ridge residents trespassing to get to Pittman Rd	City of Apopka
6	Plymouth Sorrento Rd	Berry Oak Dr	Howard Washington	flooding on SB lane after rain	O.C. study roadway
6	Plymouth Sorrento Rd	Berry Oak Dr	Howard Washington	Speeding	O.C. study roadway
6	Ponkan Rd	Pittman Rd to Vick Rd	Kenneth Peck	Dangerous curve (vehicles/school walkers) needs to be straightened	O.C. study roadway
6	Ponkan Rd	Pittman Rd	Kenneth Peck	Dangerous intersection	O.C. study roadway
6	Ponkan Rd	Pittman Rd	Annette Peck	No visual coming out from Stop-Straighten curve	O.C. study roadway
6	Ponkan Rd	Jason Dwelley Pkwy	Willie Schultz	Need street lighting for parks and schools	O.C. study roadway
6	Rock Springs Rd	Kelly Park Rd	Carolyn McCarty	speeding thru new intersection-warning signs/rumble strips down hill?	O.C. study roadway
6	Rock Springs Rd	Kelly Park Rd	Carolyn McCarty	enter/exit private driveways are concerns/some residents must cross rd to get mail	O.C. study roadway
6	Rock Springs Rd	throughout	Carolyn McCarty	speeding on new road	O.C. study roadway
6	Rock Springs Rd	Ponkan Rd	Howard Washington	view of SB Traffic is blocked by Utility Pole in NW corner- EB right on red issue	O.C. study roadway
6	Rock Springs Rd	Rock Ridge Blvd	Dale Blake	New Trees in median obstruct sight at intersection for NBL	O.C. study roadway
n/a	Vick Rd	Lester rd	E.T. Agard	Stop sign not clearly seen on SB approach; need warning	City of Apopka
n/a	Yothers Rd	Plymouth Sorrento Rd	Willie Schultz	poor visibility trying to cross Plymouth Sorrento heading EB	O.C. non-study roadway

**Table 4**  
**Northwest Orange County Traffic Safety Audit**  
**Citizen Concerns by Phone or Email (2009)\***

<b>Main Street</b>	<b>Cross Street</b>	<b>Citizen</b>	<b>Concern</b>	<b>Jurisdiction</b>
18th St	between Lake Ave and Central Ave	Alberta Gilbert	No Parking signs missing	O.C. non-study roadway
Kelly Park Rd	Mt. Plymouth Rd	William Uebel	Wants a signal for safety reasons	O.C. study roadway
Laughlin Rd	US 441	Alberta Gilbert	No speed limit sign	O.C. study roadway
Plymouth Sorrento Rd	Kelly Park Rd	Alberta Gilbert	NB 55 mph sign is missing	O.C. study roadway
Plymouth Sorrento Rd	Ponkan Rd and Kelly Park Rd	Alberta Gilbert	reduce speed signs are still posted	O.C. study roadway
Rock Springs Rd	Rock Ridge Blvd	Karen Bowers	Does not think the intersection should have a signal	O.C. study roadway
Round Lake Rd	King Ave	Raymond M. Strickland, Sr.	Round Lake Rd curves need to be straighted out	O.C. study roadway
Round Lake Rd	throughout	Rose Cloyd	Wants the speed limit reduced	O.C. study roadway
Round Lake Rd	throughout	Joan Holmes	Does NOT want the speed limit reduced	O.C. study roadway

\* Resulting from Community Meeting Notice

The following are locations where **speed studies** were conducted:

- Dora Dr, between Sloewood Drive and Claire Rose Court
- Effie Dr, between Kelly Park Rd and Ondich Rd
- Kelly Park Rd, between Mt. Plymouth Rd and Rock Springs Rd, west of Plymouth Sorrento Rd, and east of Plymouth Sorrento Rd
- Lake Ola Dr, west of Lake St
- Laughlin Rd, north of Jones Ave
- Ondich Rd, west of Effie Dr
- Plymouth Sorrento Rd, south of Berry Oak Rd, north of Kelly Park Rd, and north of Haas Rd
- Rock Springs Rd, just south of Kelly Park Rd
- Round Lake Rd, south of Sadler Rd (50 mph zone), between Sadler Rd and Kelly Park Rd (55 mph zone), and north of Oak Hill Street (55 mph zone)
- Sadler Rd, between US 441 and Dora Dr
- Sloewood Dr, north of Sadler Rd

**Volume approach counts** were taken at the following locations for determination of the proper improvement:

- Round Lake Rd/Ponkan Rd - Approach counts w/ breakdown for SB rights
- Dora Dr/Sadler Rd – Approach counts by direction (TMC's)

**Vehicle classification counts** were taken at the following location for determination of the types of vehicles using the roadway (passenger vehicles, motorcycles, trucks, busses, etc.):

- Jones Road – between Union Street and Winifred Avenue

## V. Findings and Recommended Countermeasures

This section includes a description of existing conditions for each study area roadway, a review of speed limits, and a summary of findings from the crash history and analyses. A spreadsheet was developed for each study area roadway which tabulates issues the audit team found while in the field, issues raised by citizens at the community meetings, and issues raised by citizens by phone or email. The description of the problem as well as the proposed solution is included.

Issues listed in the spreadsheet are rated by safety priority. The following describes the meaning of these ratings:

**High-Safety Risk** – Items where immediate safety improvements should be made

**Medium- and Low-Safety Risk** – Items where low-cost improvements could have a positive impact on safety and should be considered in a reasonable period of time

Following the sections for each roadway, capital improvements are listed for the long term. These are defined below:

**Capital Improvements** – Items that should be considered as funds become available for major reconstruction of the roadway or intersection.

## **A. Dora Drive**

### Existing Conditions

Dora Drive is a two-lane roadway running north-south from Sadler Road to Beauclair Avenue, entirely through unincorporated Orange County. The cross section is rural and serves mostly residential land uses, with some citrus rural land at the south end of Dora Drive. Lake Carlton and Lake Beauclair are located to the west of Dora Drive and Lake Ola is located to the east.

Pavement markings consist of double yellow centerline and edge line striping throughout, as well as reflective pavement markers on the centerlines. The speed limit is 50 mph throughout. Sidewalks exist on the east side of the road from Sadler Road to Dora Estates and center left turn lanes are provided at Claire Rose Court and at Laurel View Drive. There are no bike lanes.

Overhead utilities are provided beginning at Sloewood Drive on the east side of the road through to Beauclair Avenue with street lighting from Sloewood Drive to Franklin Road and on either side of the entrance to the subdivision at Laurel View Drive. Guardrail exists on the west side of the road for a short section between Dudley Avenue and Beauclair Avenue at approximately 6300 Dora Drive.

Trimble Park is located off of Dora Drive, after a left turn onto Earlwood Avenue.

### Crash History and Analysis

No crashes were reported for Dora Drive from 2006 to 2008.

### Recommended Countermeasures

The following table lists the areas for improvement for Dora Drive. Items believed to be a high priority were located at the north end of the roadway where a 90 degree curve turns into Beauclair Avenue. Pavement markings needed to be refreshed and visibility improved for warning signs. These items were addressed immediately.

At the south end of the roadway, there exists an unusual intersection configuration for the intersection of Dora Drive and Sadler Road. The improvements identified in the table should increase the understanding of the permitted traffic movements and improve compliance.

## Dora Drive

Rural Road Safety Audit

Road: Dora Drive from Sadler Road to Beauclair Avenue

Date: 11/5/09                      Number of lanes:                      2LU

Speed limit:                      50 mph

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
1	approaching Dora	n/a	from Beauclair Avenue	WB	Tree branch reduces visibility of turn warning sign just east of Dora Drive	Roads & Drainage	trim trees	high
2	turn to	n/a	Beauclair Avenue	both	Double yellow centerline and RPM's are completely faded and missing	Traffic Engineering Markings	re-stripe dbl yellow centerline and add RPM's	high
3	approaching	n/a	Sadler	SB	confusing intersection with split to EB and WB Sadler	Traffic Engineering Signing and Markings	Add yield lines at all yields. Remove W1-7 w/ object marker at island. Replace with W12-1, Double Arrow Sign. Install guide sign "Sadler Rd East" and "Sadler Rd West" w/ 45 degree arrows 200 ft in advance of split.	low
4	north of	n/a	Sadler	both	Citizen request - speed enforcement	OCSO	Request enforcement of posted speed limit. Speed study found minimal speeding.	low
5	Sadler	Beauclair	throughout	both	Citizen complaint - bicyclists endangered by 2-way traffic and dips and holes.	Traffic Engineering Admin	Pavement condition found to be adequate; edges recently reinforced; bike lanes are out of scope of study.	low
6	Sadler	Beauclair	throughout - except for portion recently resurfaced	both	Centerline markings are faded and RPM's missing sporadically	Traffic Engineering Markings	re-stripe centerline and add RPM's	medium

## **B. Golden Gem Road**

### Existing Conditions

Golden Gem Road is a two-lane rural roadway running north-south from Ponkan Road to Kelly Park Road. Golden Gem Road is the western border for part of the city limits for the City of Apopka. There is curb and gutter from Ponkan Road north to the Mid-Florida Materials Corporation driveway. From this point north, the cross section becomes rural, serving citrus rural land.

A double yellow centerline with reflective pavement markers exists throughout. Edge line striping is provided only through the section with curb and gutter and then the edge lines drop for the rural section. The speed limit is 30 mph throughout. There are no sidewalks or bike lanes, and no center left turn lanes.

Overhead utilities are provided on the east side of the road for the entire length.

### Crash History and Analysis

No crashes were reported for Golden Gem Road segments (not located within 500 feet of an intersection) from 2006 to 2008. Two crashes were reported for the intersection of Golden Gem Road and Ponkan Road during the three-year period.

### Recommended Countermeasures

The following table lists the areas for improvement for Golden Gem Road. The few improvements recommended were not considered to be high priority, but were low-cost, low-safety risk improvements.

## Golden Gem Road

Date Issued:  
 Requested By:  
 Prepared By:

Work Order Number:

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
1	in intersection	at	Ponkan Road	SB	road termination treatment is not standard	type W1-7	Replace center object marker with a double arrow sign and relocate object marker east of existing object marker.	low
2	75'	75' north of	Ponkan Road	SB	second to last "No Parking on R/W" sign is bent at an angle	Traffic Engineering signs	reset sign	low
3	in intersection	at	Kelly Park Road	NB	road termination treatment is not standard	type OM1-1	Install (2) object markers west of double arrow and relocate existing object marker north of double arrow.	low

## **C. Jones Avenue**

### Existing Conditions

Jones Avenue is a two-lane roadway running east-west and was audited from Round Lake Road to the Lake County line, entirely within unincorporated Orange County. West of US 441 the cross section is rural and serves mostly rural farmland and industrial land uses with a posted speed limit of 55 mph. East of US 441 the land use is residential in nature with a posted speed limit of 30 mph. The cross section is urban with curb from US 441 to Union Street, transitioning back to a rural cross section east of Union Street to Round Lake Road.

Pavement markings consist of yellow centerline and edge line striping throughout, as well as reflective pavement markers on the centerlines. Sidewalks exist on the east side of the road from US 441 to Round Lake Road. There are no bike lanes.

Overhead utilities are provided for the length of the roadway with no street lighting. There is a railroad crossing just west of US 441 and there are school crossings at US 441 and at Washington Street due to the proximity of Zellwood Elementary School.

### Crash History and Analysis

Ten crashes were reported along Jones Avenue segments (not located within 500 feet of an intersection) for the years 2006-2008. One crash was reported at the intersection of Jones Avenue and Round Lake Road.

Thirty-four crashes were reported at the intersection of Jones Avenue and US 441. The following pages include a detailed summary of the crashes at this skewed intersection and a collision diagram to show the approximate location and types of crashes. Thirty-two percent of the crashes were left turn crashes and 44% were rear-end collisions.

### Recommended Countermeasures

The following table lists the areas for improvement for Jones Avenue. Many of the recommended countermeasures were due to pavement conditions and faded pavement markings. Since the beginning of this project Jones Avenue has been resurfaced, which included the installation of new pavement markings and reflective pavement markers.

Crash Summary											
Location: JONES AVENUE						Intersection Control: Signalized					
Intersecting Route: US 441						M.P.:		Engineer: CNL			
Study Period From: 2006						To: 2008		County: Orange			
NO.	DATE	DAY	TIME	TYPE	FATAL	INJURY	PROPERTY DAMAGE	DAY/NIGHT	WET/DRY	CONTRIBUTING CAUSE	ACCIDENT REPORT #
1	1/21/2006	Sat	11:28 AM	Right angle	No	No	\$5,000	Day	Dry	Careless driving	FHPD06OFF007046
2	2/6/2006	Mon	1:35 PM	Left Turn	No	No	\$3,000	Day	Dry	Failed to Yield R/W	FHPD06OFF013065
3	4/1/2006	Sat	3:10 PM	Left Turn	No	No	\$11,000	Day	Dry	Failed to Yield R/W	FHPD06OFF034547
4	4/10/2006	Mon	8:18 AM	Left Turn	No	Yes	\$10,000	Day	Dry	Failed to Yield R/W; improper passing	FHPD06OFF038009
5	5/31/2006	Wed	11:59 AM	Left Turn	No	No	\$3,500	Day	Dry	Red light running	FHPD06OFF057737
6	8/28/2006	Mon	6:45 AM	Rear end	No	No	\$10,300	Day	Dry	Careless driving	FHPD06OFF092184
7	9/7/2006	Wed	12:48 PM	Rear end	No	Yes	\$2,050	Day	Dry	Careless driving	FHPD06OFF096183
8	9/26/2006	Tue	6:07 PM	Rear end	No	No	\$6,000	Day	Wet	Careless driving	FHPD06OFF103492
9	10/3/2006	Tue	8:05 AM	Rear end	No	No	\$600	Day	Dry	Careless driving	FHPD06OFF105845
10	11/2/2006	Thu	3:56 PM	Right Turn	No	No	\$10,000	Day	Dry	Failed to Yield R/W	FHPD06OFF116737
11	12/2/2006	Sat	10:16 AM	Rear end	No	Yes	\$12,500	Day	Dry	Careless driving	FHPD06OFF127784
12	2/16/2007	Fri	2:29 PM	Sideswipe	No	Yes	\$7,000	Day	Dry	Improper Lane Change; Failure to Yield R/W	FHPD07OFF016287
13	2/19/2007	Mon	8:21 AM	Rear end	No	No	\$125	Day	Dry	Careless driving	FHPD07OFF017256
14	2/20/2007	Tue	4:29 PM	Rear end	No	No	\$10,000	Day	Dry	Careless driving	FHPD07OFF017742
15	3/24/2007	Sat	4:25 AM	Run off road	No	No	\$3,500	Night	Dry	Unknown, hit house	FHPD07OFF030234
16	5/14/2007	Mon	9:42 AM	Sideswipe	No	No	\$10,000	Day	Wet	Improper Lane Change	FHPD07OFF049364
17	6/11/2007	Mon	1:51 PM	Sideswipe	No	No	\$2,200	Day	Dry	Improper Lane Change	FHPD07OFF059465
18	8/2/2007	Thu	6:51 PM	Right Angle	No	No	\$8,500	Day	Wet	Improper Turn	FHPD07OFF079061
19	8/8/2007	Wed	6:11 AM	Rear end	No	Yes	\$6,500	Night	Dry	Failed to Yield R/W; Careless	FHPD07OFF081088
20	8/23/2007	Thu	10:03 AM	Rear end	No	Yes	\$500	Day	Dry	Careless driving	FHPD07OFF086897
21	9/2/2007	Sun	8:58 PM	Rear end	No	No	\$2,000	Night	Dry	Careless driving	FHPD07OFF091095
22	10/18/2007	Thu	4:16 PM	Left Turn	No	No	\$7,000	Day	Dry	Failed to Yield R/W	FHPD07OFF107749

23	10/24/2007	Wed	6:39 AM	Rear end	No	Yes	\$6,000	Day	Dry	Careless driving	FHPD07OFF109983
24	11/5/2007	Mon	8:42 AM	Left Turn	No	No	\$1,500	Day	Dry	Failed to Yield R/W	FHPD07OFF114718
25	11/6/2007	Tue	3:16 PM	Other	No	No	\$3,000	Day	Dry	Tires came off axle and struck other car	FHPD07OFF115171
26	11/7/2007	Wed	10:31 PM	Rear end	No	No	\$1,000	Night	Dry	Careless driving	FHPD07OFF115604
27	11/11/2007	Sun	6:36 PM	Left Turn	No	Yes	\$3,000	Night	Dry	Failed to Yield R/W	FHPD07OFF116907
28	2/21/2008	Thu	9:00 AM	Rear end	No	Yes	\$2,500	Day	Wet	Careless driving	FHPD08OFF017267
29	2/22/2008	Fri	6:54 AM	Left Turn	No	Yes	\$16,000	Day	Dry	Failed to Yield R/W	FHPD08OFF017651
30	3/14/2008	Fri	2:09 PM	Left Turn	No	Yes	\$17,500	Day	Dry	Red Light Running	FHPD08OFF025324
31	7/25/2008	Fri	4:28 PM	Left Turn	No	Yes	\$17,000	Day	Dry	Both stated they had the green	FHPD08OFF071340
32	7/27/2008	Sun	10:25 AM	Rear end	No	Yes	\$3,000	Day	Dry	DUI, careless driving	FHPD08OFF071882
33	10/23/2008	Thu	7:51 PM	Rear end	No	No	\$1,200	Night	Dry	Careless driving	FHPD08OFF099026
34	12/13/2008	Sat	7:02 AM	Left Turn	No	No	\$5,000	Day	Dry	Both stated they had the green	FHPD08OFF114627
TOTAL											
TOTAL NO.	FATAL	INJURY	PROPERTY DAMAGE	ANGLE	LEFT TURN	RIGHT TURN	REAR END	SIDE SWIPE	HEAD ON		
34	0	13	34	2	11	1	15	3	0		
%	0%	38%	100%	6%	32%	3%	44%	9%	0%		
ONE VEHICLE	PED/BIKE	DAY	NIGHT	WET	DRY	EXCESS SPEED	FTY R/W	DUI			
0	0	28	6	4	30	0	10	1			
0%	0%	82%	18%	12%	88%	0%	29%	3%			
TOTAL VEHICLES ENTERING/ADT:					CRASH RATE:				MEV		

Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: US 441 and Jones Avenue

COUNTY: Orange

CITY: Unincorporated

PERIOD 2006

TO: 2008

PREPARED BY: CNL



COLLISION SYMBOLS

CONDITION CODES

 VEHICLE PATH  BACKING VEHICLE  NON-INVOLVED VEH.  PEDESTRIAN PATH  FIXED OBJECT  PARKED VEHICLE  PERSONAL INJURY  FATALITY	 REAR-END COLLISION  HEAD-ON COLLISION  SIDE SWIPE  OUT OF CONTROL  OVERTURNED VEHICLE  LEFT TURN COLLISION  RIGHT ANGLE COLLISION	PAVEMENT CONDITION: D=DRY W=WET I=ICY WEATHER CONDITION: C=CLEAR R=RAIN F=FOG S=SNOW LIGHT CONDITION: L=DAYLIGHT N=NIGHT (DARK) TIME OF DAY (MILITARY)
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CRASH SUMMARY

	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	17	12	0	29
NIGHTTIME	4	1	0	5
TOTAL	21	13	0	34

## Jones Avenue

Rural Road Safety Audit

Road: Jones Avenue from Round Lake Road to Lake County Line

Date: 10/29/09

Number of lanes:

2LU

Speed limit:

30 mph east of US 441, 55 mph west of US 441

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
1	100'	150' east of	US 441	WB	tree branch reduces visibility of outermost signal head	Roads & Drainage	trim tree branch	high
2	0'	west of	Union St	EB & WB	Water from road washes away dirt on citizen property	Roads & Drainage	Review water flow	low
3	300'	380' west of	US 441	WB	pavement edge crumbling	Roads & Drainage	reinforce pavement edge	high
4	250'	250'	US 441	WB	no speed limit sign	type R2-1 (55 mph)	add 55 mph speed limit sign	medium
5	in intersection	at	Laughlin Road	WB	pavement edge drop-off due to trucks running off pavement on NW corner.	Roads & Drainage	check radius, reinforce pavement edge	medium
6	125'	200' west of	US 441	EB	school, railroad crossing pavement markings are faded	Traffic Engineering Markings	refresh pavement markings	high
7	130'	130' west of	US 441	EB	stop bars before and after RR crossing are faded	Traffic Engineering Markings	refresh pavement markings	high
8	220'	325' west of	US 441	EB	pavement edge drop-off	Roads & Drainage	reinforce pavement edge	high
9	0'	at	Lake Co. line	EB	Speed limit sign too close to "Entering Orange County" sign	Traffic Engineering Signs	Relocate existing speed limit sign 50' east of current location.	low
10	0'	at	Lake Co. line	EB	Speed limit sign too low	Traffic Engineering Signs	set sign to proper height	low
11	0'	at	Lake Co. line	EB	Missing "Entering Orange County" sign. Post exists.	Traffic Engineering Signs	Install "Entering Orange County" sign opposite Lake County sign.	low
12	US 441	at	Round Lake Rd	EB & WB	High truck traffic travelling from US 441 to Round Lake Rd	Traffic Engineering Admin	Perform Classification Study; results show only approx. 4% trucks.	low
13	US 441	Lake Co. line	throughout	EB & WB	pavement surface is very rough	Roads & Drainage	needs re-surfacing	low
14	US 441	Lake Co. line	throughout	EB & WB	RPM's are missing sporadically throughout, mostly on double yellow lines.	Traffic Engineering Markings	replace RPM's	medium

## **D. Kelly Park Road**

### Existing Conditions

Kelly Park Road is a two-lane collector running east-west, audited from Round Lake Road to Rock Springs Road. Parts of the roadway are in the city limits and parts are in unincorporated Orange County. The cross section is rural except for a small section with curb and gutter from Holstein Road through Rock Springs Road. Kelly Park Road serves agricultural and residential land uses.

Pavement markings consist of centerline and edge line striping throughout, as well as reflective pavement markers on the centerlines. Rumble strips exist on a shoulder on only the north side of the road from Pierce Arrow Drive to Jason Dwelley Parkway. The speed limit is 55 mph from Round Lake Road to Pierce Arrow Drive, 45 mph from Pierce Arrow Drive to Holstein Road, and 30 mph from Holstein Road through the Rock Springs Road intersection. There are no sidewalks or bike lanes present. Center left turn lanes are provided at Jason Dwelley Parkway and Kati Lynn Drive.

Overhead utilities are provided on the north side of the road with street lighting throughout.

An interchange with the SR 429 extension is proposed on Kelly Park Road west of Plymouth Sorrento Road.

### Speed Limits

The current drop in posted speeds from 45 mph to 30 mph in the eastbound direction does not meet the MUTCD requirement of no more than a 10 mph reduction. Due to many citizen complaints related to speeding along Kelly Park Road between Rock Springs Road and Mt. Plymouth Road and visibility of oncoming vehicles from cross streets due to vertical alignment, a speed study was conducted and sight distance was evaluated. It was determined that speeding is occurring, with an 85th percentile speed of 49.03 mph, but that the hill west of Holstein Road decreases sight distance such that a speed limit of 40 mph is recommended. This speed is to be implemented from west of Mt. Plymouth Road to the 30 mph zone east of Holstein Road.

### Crash History and Analysis

Eight crashes were reported along Kelly Park Road segments (not located within 500 feet of an intersection) for the years 2006-2008. The following number of crashes was reported at each intersection:

Round Lake Road – 4  
Plymouth Sorrento Road – 18  
Chandler Road – 1  
Foliage Way – 1  
Pierce Arrow Drive – 2  
Mt. Plymouth Road – 9  
Florence Street – 2  
Holstein Road – 2

## Rock Springs Road – 10

The following pages include detailed summaries and collision diagrams for the intersections with three or more crashes during the three year analysis period.

At the intersection of Kelly Park Road with Round Lake Road three of the four crashes appear to be caused by drivers not stopping at the stop sign.

At the intersection of Kelly Park Road with Plymouth Sorrento Road 22 percent of the crashes are right angle crashes caused by red light running. Twenty-eight percent of the crashes are rear-end crashes.

At the intersection of Kelly Park Road and Mt. Plymouth Road 56 percent of the crashes were related to left turns and a failure to yield right of way; however, they occur on all approaches. Misjudging the speed of on-coming through traffic is likely a contributing cause of these crashes, as well as speeding for the through vehicles.

There have been several citizen requests for a signal at the intersection of Kelly Park Road and Mt. Plymouth Road. A signal warrant analyses was conducted in August of 2009 and the signal was not found to be warranted either for volumes or for crash history. It is anticipated that when the SR 429 extension is constructed with an interchange at Kelly Park Road volumes may meet warrants.

The intersection of Kelly Park Road with Rock Springs Road has been recently reconfigured. The previous intersection configuration was stop control on Rock Springs Road, but now the intersection is signalized with the main movement occurring between Kelly Park Road west of Rock Springs Road and Rock Springs Road. The crash analyses shown for this intersection is related to pre-construction conditions.

### Recommended Countermeasures

The following table lists the areas for improvement for Kelly Park Road. The identified high-priority safety risk issues are mainly related to pavement edge drop-offs and visibility of traffic control devices. These issues were corrected immediately. Most issues were classified as low-cost, low- or medium-priority safety risks.

Speed studies were conducted for all approaches to the Kelly Park Road/Plymouth Sorrento Road intersection to evaluate and adjust clearance timings in an effort to reduce high-priority right angle red light running crashes and rear-end crashes at this intersection. It was evident by field observation, and confirmed by citizens, that vehicles are leaving the pavement edge to maneuver around left turning vehicles waiting to turn. As the pavement edge deteriorates, it becomes a safety hazard that requires ongoing maintenance. As funds become available for intersection improvement projects it is recommended that turn lanes be added on all approaches.

A “Hill Blocks View” warning sign will be installed in the eastbound direction on the approach to Holstein Road. The reduction in the posted speed limit from west of Mt.

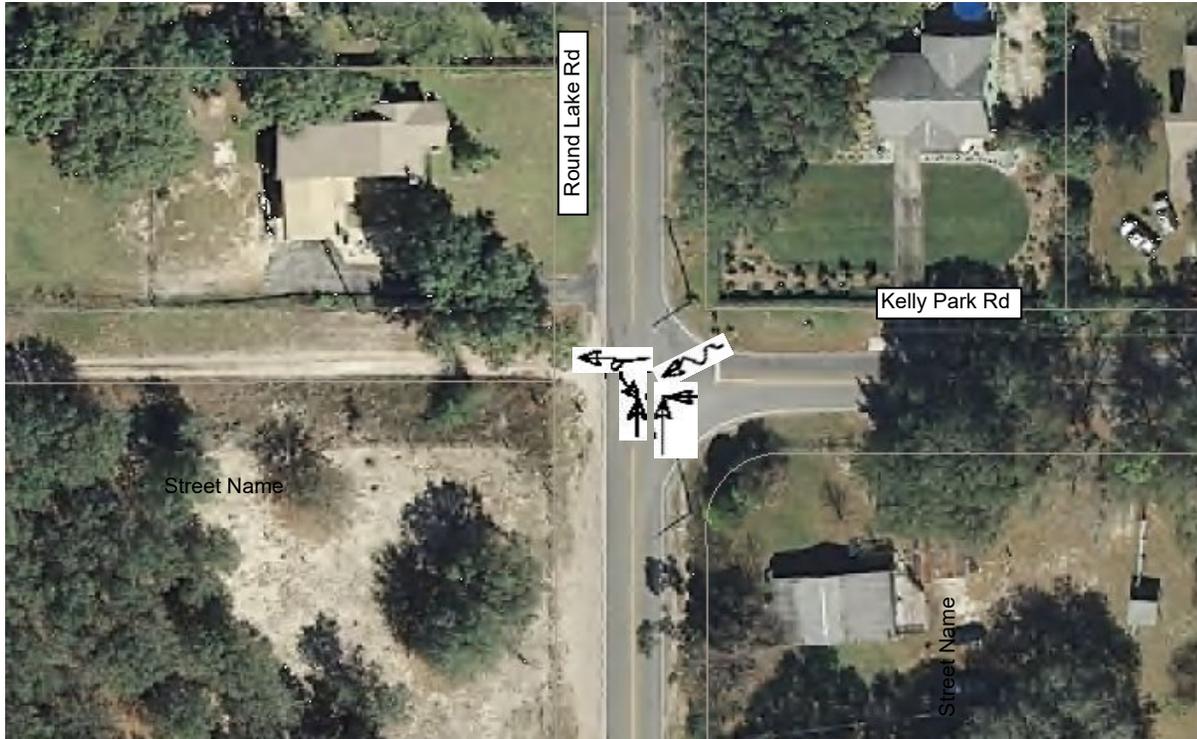
Plymouth Road to Holstein Road, along with the addition of the warning sign, should help to reduce speeds thought to contribute to left turn crashes at the Kelly Park Road/Mt. Plymouth Road intersection, as well as increase the safety of vehicles attempting to enter Kelly Park Road traffic from Holstein Road and from residential driveways west of Mt. Plymouth Road.



Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: Kelly Park Rd and Round Lake Rd

COUNTY: Orange                      CITY: Unincorporated  
PERIOD 2006                      TO: 2008                      PREPARED BY: CNL



COLLISION SYMBOLS

CONDITION CODES

       	<p>VEHICLE PATH</p> <p>BACKING VEHICLE</p> <p>NON-INVOLVED VEH.</p> <p>PEDESTRIAN PATH</p> <p>FIXED OBJECT</p> <p>PARKED VEHICLE</p> <p>PERSONAL INJURY</p> <p>FATALITY</p>	      	<p>REAR-END COLLISION</p> <p>HEAD-ON COLLISION</p> <p>SIDE SWIPE</p> <p>OUT OF CONTROL</p> <p>OVERTURNED VEHICLE</p> <p>LEFT TURN COLLISION</p> <p>RIGHT ANGLE COLLISION</p>	<p>PAVEMENT CONDITION: D=DRY W=WET I=ICY</p> <p>WEATHER CONDITION: C=CLEAR R=RAIN F=FOG S=SNOW</p> <p>LIGHT CONDITION: L=DAYLIGHT N=NIGHT (DARK)</p> <p>TIME OF DAY (MILITARY)</p>
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CRASH SUMMARY

	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	0	3	0	3
NIGHTTIME	0	1	0	1
TOTAL	0	4	0	4

Crash Summary											
Location: KELLY PARK ROAD						Intersection Control: Signalized					
Intersecting Route: PLYMOUTH SORRENTO ROAD						M.P.:		Engineer: CNL			
Study Period From: 2006				To: 2008				County: Orange			
NO.	DATE	DAY	TIME	TYPE	FATAL	INJURY	PROPERTY DAMAGE	DAY/NIGHT	WET/DRY	CONTRIBUTING CAUSE	ACCIDENT REPORT #
1	5/20/2006	Sat	8:49 PM	Rear End	No	No	\$5,000	Night	Dry	Careless Driving	FHPD06OFF053832
2	7/21/2006	Fri	3:56 PM	Rear end	No	No	\$3,600	Day	Wet	Careless Driving	FHPD06OFF077699
3	9/7/2006	Thu	5:20 PM	Rear end	No	Yes	\$3,000	Day	Wet	Careless Driving	FHPD06OFF096329
4	11/04/2006	Sat	9:53AM	Left turn	No	No	\$1,000	Day	Dry	Failure to Yield R/W	FHPD06OFF117348
5	11/29/2006	Wed	8:30AM	Out Of Control	No	Yes	\$7,000	Day	Wet	Careless driving/brakes locked	FHP06OFF126466
6	12/28/2006	Thu	6:43 AM	Right Angle	No	Yes	\$19,000	Day	Dry	Red Light Running	FHPD06OFF137169
7	3/31/2007	Sat	1:05 AM	Left turn	No	No	\$5,000	Night	Dry	Failure to Yield R/W	FHPD07OFF033034
8	7/15/2007	Sun	5:02 PM	Right Angle	No	Yes	\$20,000	Day	Dry	Red Light Running	FHPD07OFF071968
9	8/31/2007	Fri	8:17 PM	Right Angle	No	No	\$8,000	Day	Dry	Red Light Running	FHPD07OFF090339
10	9/28/2007	Fri	8:33PM	Rear end	No	Yes	\$6,000	Night	Dry	Careless Driving	FHPD07OFF100567
11	12/12/2007	Wed	7:57 AM	Right Turn	No	No	\$2,000	Day	Dry	Failure to Yield R/W	FHPD07OFF127364
12	12/30/2007	Sun	7:42 AM	Out Of Control	No	No	\$200	Day	Wet	Unknown/single motorcycle	FHPD07OFF133901
13	5/5/2008	Mon	5:22 PM	Left turn	No	Yes	\$10,000	Day	Dry	Failure to Yield R/W	FHPD08OFF044185
14	8/3/2008	Sun	2:05 AM	Out Of Control	No	Yes	\$0	Night	Dry	Careless/hit pedestrian	FHPD08OFF073954
15	8/23/2008	Sat	6:30 PM	Rear end	No	No	\$250	Day	Wet	Careless Driving	FHPD08OFF080648
16	8/27/2008	Wed	11:17 PM	Out Of Control	No	Yes	\$5,000	Night	Dry	Careless Driving	FHPD08OFF81981
17	10/24/2008	Fri	7:02 AM	Right Angle	No	Yes	\$12,500	Day	Wet	Red Light Running	FHPD08OFF099160
18	12/21/2008	Sun	12:23 PM	Side swipe	No	No	\$8,000	Day	Dry	Passing on shoulder	FHPD08OFF117106
TOTAL											
TOTAL NO.	FATAL	INJURY	PROPERTY DAMAGE	ANGLE	LEFT TURN	RIGHT TURN	REAR END	SIDE SWIPE	HEAD ON		
18	0	9	17	4	3	1	5	1	0		
%	0%	50%	94%	22%	17%	6%	28%	6%	0%		
ONE VEHICLE	PED/BIKE	DAY	NIGHT	WET	DRY	EXCESS SPEED	FTY R/W	DUI			
3	1	13	5	6	12	0	3	0			
	17%	6%	72%	28%	33%	67%	0%	17%			
TOTAL VEHICLES ENTERING/ADT:						CRASH RATE:			MEV		

Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: Kelly Park Rd and Plymouth Sorrento Rd

COUNTY: Orange                      CITY: 3 quadrants Unincorporated, SE quadrant in City  
PERIOD 2006                      TO: 2008                      PREPARED BY: CNL



COLLISION SYMBOLS

CONDITION CODES

	VEHICLE PATH		REAR-END COLLISION	PAVEMENT CONDITION: D=DRY W=WET I=ICY WEATHER CONDITION: C=CLEAR R=RAIN F=FOG S=SNOW LIGHT CONDITION: L=DAYLIGHT N=NIGHT (DARK) TIME OF DAY (MILITARY)
	BACKING VEHICLE		HEAD-ON COLLISION	
	NON-INVOLVED VEH.		SIDE SWIPE	
	PEDESTRIAN PATH		OUT OF CONTROL	
	FIXED OBJECT		OVERTURNED VEHICLE	
	PARKED VEHICLE		LEFT TURN COLLISION	
	PERSONAL INJURY		RIGHT ANGLE COLLISION	
	FATALITY			

CRASH SUMMARY

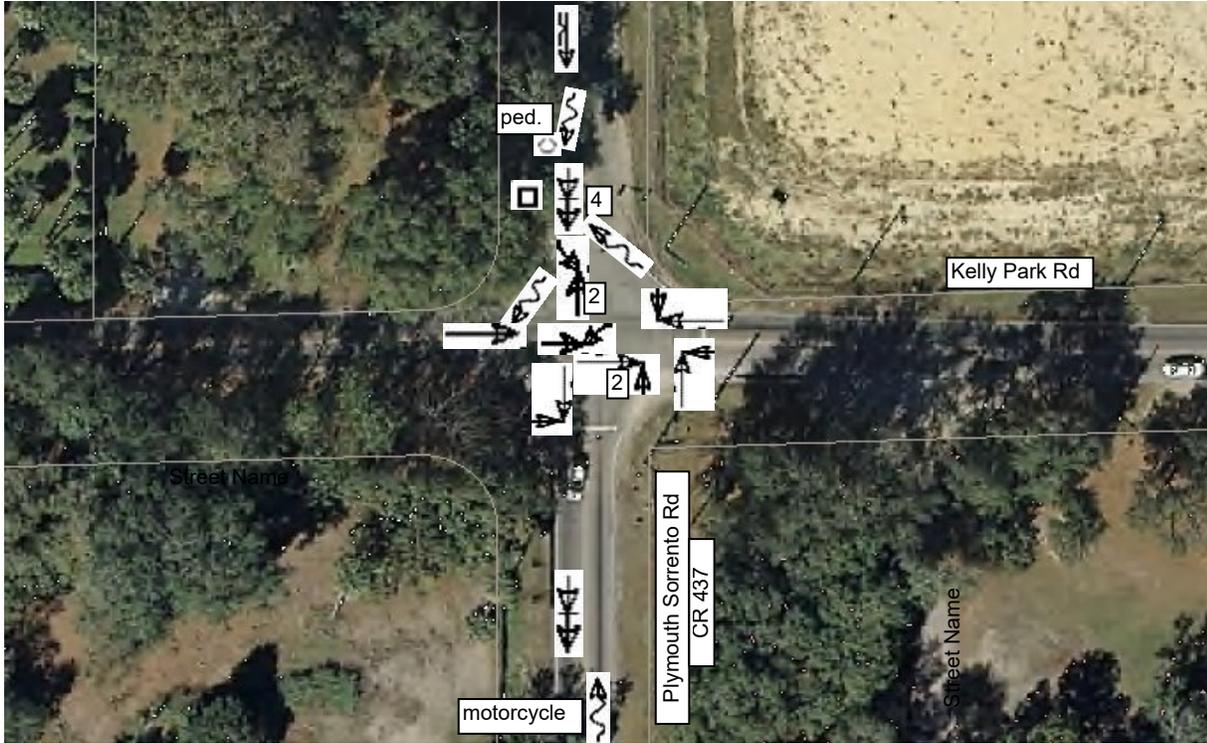
	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	5	6	0	11
NIGHTTIME	4	3	0	7
TOTAL	9	9	0	18



Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: Kelly Park Rd and Plymouth Sorrento Rd

COUNTY: Orange                      CITY: 3 quadrants Unincorporated, SE quadrant in City  
 PERIOD 2006                      TO: 2008                      PREPARED BY: CNL



COLLISION SYMBOLS



VEHICLE PATH  
 BACKING VEHICLE  
 NON-INVOLVED VEH.  
 PEDESTRIAN PATH  
 FIXED OBJECT  
 PARKED VEHICLE  
 PERSONAL INJURY  
 FATALITY



REAR-END COLLISION  
 HEAD-ON COLLISION  
 SIDE SWIPE  
 OUT OF CONTROL  
 OVERTURNED VEHICLE  
 LEFT TURN COLLISION  
 RIGHT ANGLE COLLISION

CONDITION CODES

PAVEMENT CONDITION:  
 D=DRY W=WET I=ICY  
 WEATHER CONDITION:  
 C=CLEAR R=RAIN F=FOG S=SNOW  
 LIGHT CONDITION:  
 L=DAYLIGHT N=NIGHT (DARK)  
 TIME OF DAY (MILITARY)

CRASH SUMMARY

	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	5	6	0	11
NIGHTTIME	4	3	0	7
TOTAL	9	9	0	18

Crash Summary											
Location: ROCK SPRINGS ROAD						Intersection Control: Stop sign on Rock Springs Rd					
Intersecting Route: KELLY PARK ROAD						M.P.:		Engineer: CNL			
Study Period From: 2006						To: 2008		County: Orange			
NO.	DATE	DAY	TIME	TYPE	FATAL	INJURY	PROPERTY DAMAGE	DAY/NIGHT	WET/DRY	CONTRIBUTING CAUSE	ACCIDENT REPORT #
1	6/22/2006	Thu	6:18 AM	Side Swipe	No	No	\$250	Night	Dry	Careless driving, Bike sharing roadway; foggy	FHPD06OFF066021
2	7/15/2006	Sat	4:03 PM	Right Angle	No	Yes	\$7,000	Day	Dry	Careless driving, improper U-turn	FHPD06OFF075495
3	1/20/2007	Sat	9:24 PM	Out Of Control	No	No	\$3,100	Night	Dry	Unknown	FHPD07OFF006824
4	3/16/2007	Fri	10:18 PM	Right Angle	No	No	\$6,000	Night	Dry	DUI	FHPD07OFF027555
5	7/4/2007	Sat	12:33 AM	Rear End	No	Yes	\$3,000	Night	Dry	Careless driving	FHPD07OFF067510
6	9/10/2007	Mon	1:37 AM	Out Of Control	No	No	\$500	Night	Dry	Did not stop at stop sign; run off road	FHPD07OFF093504
7	9/21/2007	Fri	11:48 AM	Left Turn	No	Yes	\$11,000	Day	Dry	Failure to Yield R/W	FHPD07OFF097752
8	11/3/2007	Sat	10:56 AM	Side Swipe	No	No	\$2,000	Day	Dry	Obstructing traffic; improper passing	FHPD07OFF114126
9	6/25/2008	Tue	8:46 AM	Left Turn	No	Yes	\$3,500	Day	Dry	Did not stop at stop sign; failure to yield R/W	FHPD08OFF061441
10	7/18/2008	Thu	6:46 PM	Out Of Control	No	Yes	\$1,000	Day	Dry	Careless driving; run off road	FHPD08OFF069152
TOTAL											
TOTAL NO.	FATAL	INJURY	PROPERTY DAMAGE	ANGLE	LEFT TURN	RIGHT TURN	REAR END	SIDE SWIPE	HEAD ON		
10	0	5	10	2	2	0	1	2	0		
%	0%	50%	100%	20%	20%	0%	10%	20%	0%		
ONE VEHICLE	PED/BIKE	DAY	NIGHT	WET	DRY	EXCESS SPEED	FTY R/W	DUI			
2	1	5	5	0	10	0	2	1			
20%	10%	50%	50%	0%	100%	0%	20%	10%			
TOTAL VEHICLES ENTERING/ADT:						CRASH RATE:			MEV		

Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: Kelly Park Road and Rock Springs Road

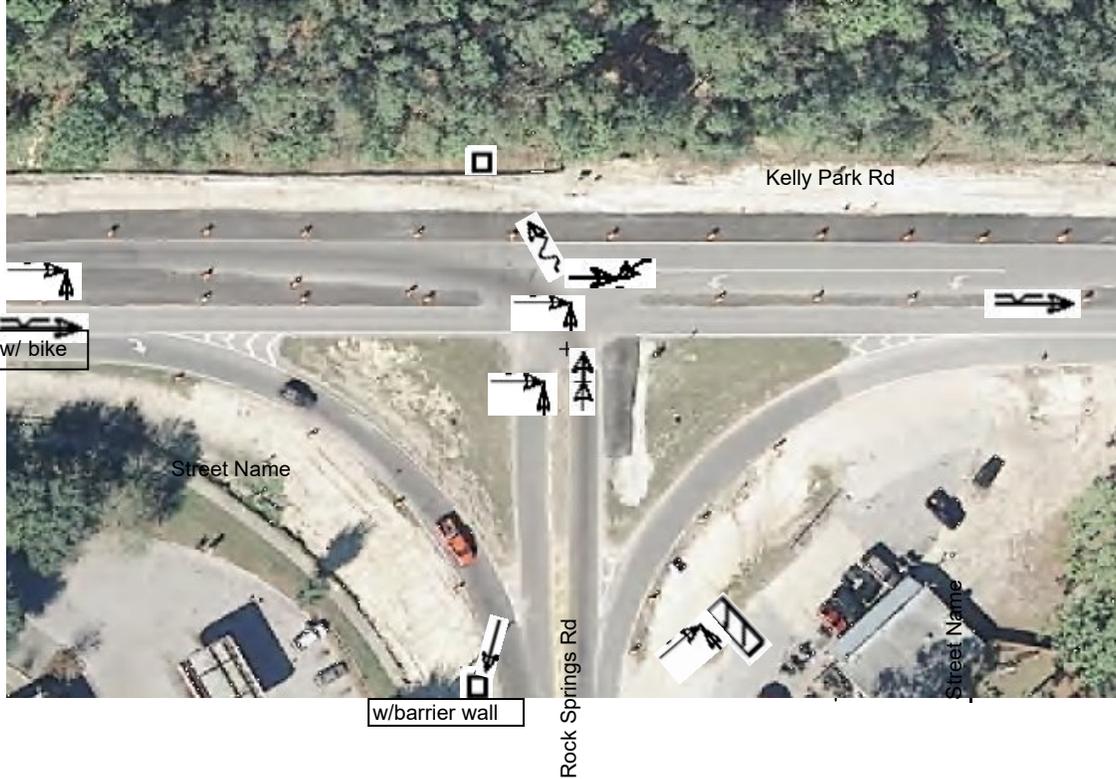
COUNTY: Orange

CITY: Unincorporated

PERIOD 2006

TO: 2008

PREPARED BY: CNL



COLLISION SYMBOLS

CONDITION CODES

       	VEHICLE PATH BACKING VEHICLE NON-INVOLVED VEH. PEDESTRIAN PATH FIXED OBJECT PARKED VEHICLE PERSONAL INJURY FATALITY	      	REAR-END COLLISION HEAD-ON COLLISION SIDE SWIPE OUT OF CONTROL OVERTURNED VEHICLE LEFT TURN COLLISION RIGHT ANGLE COLLISION	PAVEMENT CONDITION: D=DRY W=WET I=ICY WEATHER CONDITION: C=CLEAR R=RAIN F=FOG S=SNOW LIGHT CONDITION: L=DAYLIGHT N=NIGHT (DARK) TIME OF DAY (MILITARY)
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CRASH SUMMARY

	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	2	4	0	6
NIGHTTIME	3	1	0	4
TOTAL	5	5	0	10

## Kelly Park Road

Rural Road Safety Audit

Road: Kelly Park Road from Round Lake Road to Rock Springs Road

Date: 10/15/09

Number of lanes:

2LU

Speed limit:

EB- 55 mph from Round Lake Road to Pierce Arrow Drive, 45 mph from Pierce Arrow Drive to before Rock Springs Road, 30 mph approaching Rock Springs

WB- 30 mph from Rock Springs Road to Mt. Plymouth Rd, 45 from Mt. Plymouth Rd to Pierce Arrow Drive, 55 mph from Pierce Arrow Drive to Round Lake Rd

No.	From	To	Cross Street	Dir.	Problem	Type of Work	Solution	Priority
1	650'	650' east of	Rock Springs Rd	WB	Cross street warning sign (W2-2 L) is not correct configuration after intersection redesign	Traffic Engineering signs-Type W3-3	Replace with (W3-3) signal ahead.	medium
2	650'	650' east of	Rock Springs Rd	WB	Cross street warning sign (W2-2 L) has a regulatory no parking sign on the same post.	Traffic Engineering Admin	Establish separate no parking zone if needed.	low
3	500'	500' west of	Rock Springs Rd	EB	Construction signing still in place after construction complete.	Highway Construction (message sent 11/11)	Remove "Speeding Fines Doubled" signs and O.C. BCC improvement sign	low
4	500'	500' east of	Rock Springs Rd	WB	Construction signing still in place after construction complete.	Highway Construction (message sent 11/11)	Remove "Speeding Fines Doubled" signs	low
5	100'	600' west of	Rock Springs Rd	EB	Signal ahead warning sign is placed 100' NW of Rock Springs; not adequate distance for advance warning sign.	Traffic Engineering signs	relocate signal ahead warning sign 100 ft to the west	high
6	200'	200' east of	Holstein Rd	WB	Hidden Driveway sign at Holstein Road	TE signs-Type W2-2R w/ W16-8 (sub) Holstein Rd	Replace hidden driveway sign with intersection sign.	low
7	in intersection	at	Holstein Rd	both	Citizen requested Traffic Light; poor visibility due to hill	TE signs - W7-6	Signal not warranted; Install advance "Hill Blocks View" warning sign 675' west of Holstein Rd in the EB direction. Remove existing 30 mph warning sign west of Holstein Rd.	medium
8	Mt. Plymouth	to	Holstein Rd	WB	Eastbound and westbound speed limits are inconsistent	TE signs - R2-1 (40 mph)	Install 40 mph speed limit sign WB 100 ft west of Holstein Rd	medium
9	100'	100' east of	Mt. Plymouth Rd	EB	Speed limit sign of 45 mph violates MUTCD 10 mph speed reduction rule.	TE signs - R2-1 (40 mph).	Remove existing R2-1 (45 mph) sign in the EB direction. Install 40 mph speed limit sign in the EB direction 700 ft west of Mt. Plymouth Rd.	medium
10	0'	670' west of	Mt. Plymouth Rd	WB	Vehicles have difficulty entering Kelly Park Rd from driveways west of Mt. Plymouth due to SB to WB ramp.	Traffic Engineering signs	Relocate existing WB R2-1 (45 mph) sign to 700 ft west of Mt. Plymouth Rd.	medium

## **E. Lake Ola Drive**

### Existing Conditions

Lake Ola Drive is a two-lane residential roadway running northwest-southeast from Earlwood Avenue to US 441, entirely through unincorporated Orange County. The cross section is rural for most of the roadway with a short section of curbing west of US 441 and from Lake Street to the east. Lake Ola is located to the south of Lake Ola Drive.

Pavement markings consist of double yellow centerline and edge line striping throughout, as well as reflective pavement markers directly on the centerlines (instead of to the outside of the centerlines). The speed limit is 25 mph throughout. There are no sidewalks or bike lanes on either side of the road.

Overhead utilities are provided for the length of the roadway. Also, a weight limit of 3 tons exists on Lake Ola Drive.

### Crash History and Analysis

No crashes are reported for Lake Ola Drive segments (not located within 500 feet of an intersection) from 2006 to 2008. During the three-year period six crashes were reported for the intersection of Lake Ola Drive and US 441 and one crash was reported for the intersection of Lake Ola Drive and Earlwood Avenue. The following pages include a detailed summary and a collision diagram of the crashes at the intersection of Lake Ola Drive and US 441 to show the approximate location and types of crashes. Thirty-three percent of the crashes were sideswipes and 33% were out of control vehicles in wet conditions.

### Recommended Countermeasures

The following table lists the areas for improvement for Lake Ola Drive. Only one area of a pavement edge drop-off was considered to be a high safety risk. This risk was addressed immediately. Most improvements recommended were not considered to be high-priority, but were low-cost, low-safety risk improvements.

Crash Summary											
Location: US 441						Intersection Control: stop control on Lake Ola/Terrell					
Intersecting Route: Lake Ola Drive/Terrell Road						M.P.:		Engineer: CNL			
Study Period From: 2006						To: 2008		County: Orange			
NO.	DATE	DAY	TIME	TYPE	FATAL	INJURY	PROPERTY DAMAGE	DAY/NIGHT	WET/DRY	CONTRIBUTING CAUSE	ACCIDENT REPORT #
1	1/11/2006	Wed	10:25 AM	sideswipe	No	No	\$7,000	Day	Dry	Improper Lane Change	FHPD06OFF003432
2	4/14/2006	Fri	11:00 AM	out of control	No	Yes	\$6,000	Day	Dry	Vehicle cut in front of	FHPD06OFF039536
3	9/7/2006	Thu	3:11 PM	out of control	No	No	\$5,000	Day	Wet	Careless Driving	FHPD06OFF096252
4	10/18/2006	Wed	3:11 PM	sideswipe	Yes	Yes	\$22,500	Day	Dry	Improper Lane Change	FHPD06OFF111148
5	10/22/2006	Sun	3:57 PM	right angle	No	Yes	\$10,000	Day	Dry	Failure to Yield R/W	FHPD06OFF112715
6	10/22/2007	Mon	7:31 AM	out of control	No	No	\$2,000	Day	Wet	Careless Driving	FHPD07OFF109277
TOTAL											
TOTAL NO.	FATAL	INJURY	PROPERTY DAMAGE	ANGLE	LEFT TURN	RIGHT TURN	REAR END	SIDE SWIPE	HEAD ON		
6	1	3	6	1	0	0	0	2	0		
%	17%	50%	100%	17%	0%	0%	0%	33%	0%		
ONE VEHICLE	PED/BIKE	DAY	NIGHT	WET	DRY	EXCESS SPEED	FTY R/W	DUI			
3	0	7	0	2	4	0	1	0			
50%	0%	117%	0%	33%	67%	0%	17%	0%			
TOTAL VEHICLES ENTERING/ADT:						CRASH RATE:			MEV		

Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: US 441 and Lake Ola Drive

COUNTY: Orange                      CITY: Unincorporated  
PERIOD 2006                      TO: 2008                      PREPARED BY: CNL



COLLISION SYMBOLS

CONDITION CODES

	VEHICLE PATH		REAR-END COLLISION	PAVEMENT CONDITION: D=DRY W=WET I=ICY WEATHER CONDITION: C=CLEAR R=RAIN F=FOG S=SNOW LIGHT CONDITION: L=DAYLIGHT N=NIGHT (DARK) TIME OF DAY (MILITARY)
	BACKING VEHICLE		HEAD-ON COLLISION	
	NON-INVOLVED VEH.		SIDE SWIPE	
	PEDESTRIAN PATH		OUT OF CONTROL	
	FIXED OBJECT		OVERTURNED VEHICLE	
	PARKED VEHICLE		LEFT TURN COLLISION	
	PERSONAL INJURY		RIGHT ANGLE COLLISION	
	FATALITY			

CRASH SUMMARY

	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	3	2	1	6
NIGHTTIME	0	0	0	0
TOTAL	3	2	1	6

## Lake Ola Drive

Rural Road Safety Audit

Road: Lake Ola Drive from Earlwood Avenue to US 441

Date: 11/5/09

Number of lanes:

2LU

Speed limit: 25 mph

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
1	0'	70' east of	US 441	EB	pavement edge drop-off	Roads & Drainage	reinforce pavement edge	high
2	35'	35' west of	Earlwood Avenue NB	WB	street name sign is missing from top of stop sign	Traffic Engineering Signs	add street name sign	low
3	50'	100' east of	Lake Ola	NE	flex stake is missing on NW side of Earlwood Av at drainage structure	Traffic Engineering Signs	add flex stake	medium
4	Dora Dr	US 441	throughout	EB & WB	citizen requests speed enforcement of area	OC Sheriff's Office	Forward to OCSO for response	medium
5	Lake Ola Dr	Earlwood Ave	throughout	both	RPM's on centerline are missing sporadically	Reflective Pavement Markers	add RPM's	medium

## **F. Laughlin Road**

### Existing Conditions

Laughlin Road is a two-lane roadway running north-south, which was audited from Ponkan Road to Sadler Road. Laughlin Road is a dirt road north of Sadler Road. The entire road is located in unincorporated Orange County.

The cross section is rural and serves industrial land uses south of US 441. Pavement markings consist of double yellow centerline and edge line striping, as well as reflective pavement markers on the centerlines south of US 441. There is no posted speed limit for this section.

Between US 441 to Holly Street the area is residential and has an urban cross section with curb and gutter. From Holly Street to Sadler Road the cross section is rural, serving agricultural land. For the section north of US 441, there are no pavement markings and the posted speed limit is 45 mph. There is a sidewalk on the west side of the road between US 441 to Holly Street and a Lynx bus stop at the intersection of Laughlin Road and Holly Street. There are no bike lanes.

Overhead utilities are provided for the length of the roadway.

### Crash History and Analysis

Two crashes were reported along Laughlin Road segments (not located within 500 feet of an intersection) for the years 2006-2008. One crash was reported at each of the intersections at Holly Street and at Jones Avenue.

Seven crashes were reported at the intersection of Laughlin Road and US 441. The following pages include a detailed summary of the crashes at this skewed intersection and a collision diagram to show the approximate location and types of crashes. Fifty-seven percent of crashes were left turn crashes and 86 percent were caused by a failure to yield right of way.

### Recommended Countermeasures

The following table lists the areas for improvement for Laughlin Road.

Since the speed limit is not posted for Laughlin Road between Jones Avenue and US 441 and the roadway is maintained by Orange County, a consent agenda was prepared to post a speed limit of 35 mph on this segment.

The high-priority risk concerns are related to pavement edge drop-offs and visibility of a stop sign. These problems were corrected immediately. All other safety issues were considered low-cost, low- or medium-risk concerns and these will be addressed.

Crash Summary											
Location: US 441						Intersection Control: stop control on Laughlin					
Intersecting Route: Laughlin Road						M.P.:		Engineer: CNL			
Study Period From: 2006						To: 2008		County: Orange			
NO.	DATE	DAY	TIME	TYPE	FATAL	INJURY	PROPERTY DAMAGE	DAY/NIGHT	WET/DRY	CONTRIBUTING CAUSE	ACCIDENT REPORT #
1	2/10/2006	Fri	1:38 PM	Left Turn	No	Yes	\$3,000	Day	Dry	Failure to Yield R/W	FHPD06OFF014464
2	10/3/2006	Tue	6:16 PM	Right angle	No	Yes	\$4,000	Day	Dry	Failure to Yield R/W	FHPD06OFF106076
3	4/14/2007	Sat	11:38 AM	Left Turn	No	No	\$13,000	Day	Dry	Failure to Yield R/W; unlicensed driver	FHPD07OFF038617
4	4/30/2007	Mon	11:47 AM	Rear End	No	No	\$5,500	Day	Dry	Failure to Yield R/W (vehicle not in collision); careless (collision)	FHPD07OFF044324
5	5/29/2007	Tue	7:06 AM	Left Turn	No	Yes	\$19,300	Day	Dry	Failure to Yield R/W	FHPD07OFF054594
6	9/25/2007	Tue	7:46 AM	Right angle	No	Yes	\$8,000	Day	Dry	Careless Driving	FHPD07OFF099221
7	8/12/2008	Tue	3:13 PM	Left Turn	No	Yes	\$15,000	Day	Wet	Failure to Yield R/W	FHPD08OFF076890
TOTAL											
TOTAL NO.	FATAL	INJURY	PROPERTY DAMAGE	ANGLE	LEFT TURN	RIGHT TURN	REAR END	SIDE SWIPE	HEAD ON		
7	0	5	7	2	4	0	1	0	0		
%	0%	71%	100%	29%	57%	0%	14%	0%	0%		
ONE VEHICLE	PED/BIKE	DAY	NIGHT	WET	DRY	EXCESS SPEED	FTY R/W	DUI			
0	0	7	0	1	6	0	6	0			
	0%	100%	0%	14%	86%	0%	86%	0%			
TOTAL VEHICLES ENTERING/ADT:						CRASH RATE:			MEV		

Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: US 441 and Laughlin Road

COUNTY: Orange

CITY: Unincorporated

PERIOD 2006

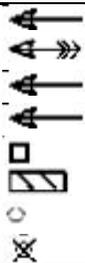
TO: 2008

PREPARED BY: CNL

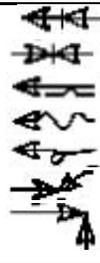


COLLISION SYMBOLS

CONDITION CODES



VEHICLE PATH  
BACKING VEHICLE  
NON-INVOLVED VEH.  
PEDESTRIAN PATH  
FIXED OBJECT  
PARKED VEHICLE  
PERSONAL INJURY  
FATALITY



REAR-END COLLISION  
HEAD-ON COLLISION  
SIDE SWIPE  
OUT OF CONTROL  
OVERTURNED VEHICLE  
LEFT TURN COLLISION  
RIGHT ANGLE COLLISION

PAVEMENT CONDITION:  
D=DRY W=WET I=ICY  
WEATHER CONDITION:  
C=CLEAR R=RAIN F=FOG S=SNOW  
LIGHT CONDITION:  
L=DAYLIGHT N=NIGHT (DARK)  
TIME OF DAY (MILITARY)

CRASH SUMMARY

	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	2	5	0	7
NIGHTTIME	0	0	0	0
TOTAL	0	0	0	0

## Laughlin Road

Rural Road Safety Audit

Road: Laughlin Road from Jones Avenue to Sadler Road

Date: 11/5/09

Number of lanes:

2LU

Speed limit:

45 mph SB from Sadler Road (no other speed limit signs)

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
1	35'	50' north of	Sadler Road	NB	stop sign is offset too far	Traffic Engineering Signing	reset stop sign at radius return	medium
2	200' south of	200' north of	Holly Street	both	Road is offset through intersection with no pavement markings or lighting	Traffic Engineering Markings	install dbl yellow 200 ft. on approach to and departure from Holly St. with yellow guideline through intersection	medium
3	at		Holly Street	both	stop sign for Holly Street is not perpendicular	Traffic Engineering Signing	reset stop sign	low
4	north of		US 441	NB	no speed limit posted	R2-1 (45 mph)	replace missing 45 mph speed limit sign	medium
5	approach to		US 441	SB	Citizen concern - bus bench blocks view of SB left	Traffic Engineering Admin	Field review indicates visibility is adequate	low
6	at		US 441	SB	crosswalk is faded	Traffic Engineering Markings	refresh crosswalk	low
7	approach to		US 441	SB	palm tree branch limits visibility of stop sign	Roads & Drainage	trim palm tree	medium
8	35'	50' south of	US 441	NB	stop bar for left/through movement is faded	Traffic Engineering Markings	refresh stop bar	medium
9	35'	50' south of	US 441	NB	stop signs have low retro-reflectivity	R1-1	replace stop signs	medium
10	just south of		US 441	SB	no speed limit posted	R2-1(35 mph)	install 35 mph speed limit sign	medium
11	south of		US 441	SB	pavement edge drop off for 65 ft south of 2nd driveway between US 441 and Jones	Roads & Drainage	eliminate drop-off	high
12	north of		Jones Avenue	NB	no speed limit posted	R2-1(35 mph)	install 35 mph speed limit sign	medium
13	in intersection	NW corner	Jones Avenue	SB	pavement edge drop-off on corner	Roads & Drainage	eliminate drop-off	high
14	at		Jones Avenue	NB	palm tree branches block visibility of stop sign	Roads & Drainage	trim palm tree	high
15	35'	50' south of	Jones Avenue	NB	stop sign has no retro-reflectivity	R1-1	replace stop sign	high
16	US441	Jones Avenue	throughout	both	pavement markings slightly faded	Traffic Engineering Markings	refresh pavement markings	low
17	US441	Jones Avenue	throughout	both	RPM's missing	Traffic Engineering Reflective Pavement Markers	replace RPM's	medium

## **G. Mt. Plymouth Road**

### Existing Conditions

Mt. Plymouth Road (CR 435) is a two-lane roadway running north-south, audited from Kelly Park Road to the Lake County line. The Apopka city limit borders the west side of the road for portions south of Haas Road. Most of the section north of Haas Road is within the city limits. The cross section is rural and serves residential and agricultural land uses.

Pavement markings consist of double yellow centerline and edge line striping throughout, as well as reflective pavement markers on the centerlines. The speed limit is 45 mph for the entire section and there are no sidewalks or bike lanes. North of Haas Road there is a reverse curve followed by a section of winding road and then a sharp turn. Guardrail is provided throughout the section of winding road and the sharp turn on the outside of the curves.

A center turn lane and right turn lane are provided at a stub-out to an unnamed dirt road between the reverse curve and the section of winding road.

Overhead utilities are provided for the length of the roadway.

The SR429 extension is proposed to cross Mt. Plymouth Road on the north end of the reverse curve before curving to the north into Lake County.

An improvement to Mt. Plymouth Road is listed in the Orange County Capital Improvement Program as a partnership project; however, no funding is identified to begin the Roadway Conceptual Analysis (RCA).

### Crash History and Analysis

Twenty-six crashes were reported along Mt. Plymouth Road segments (not located within 500 feet of an intersection) for the years 2006-2008, with twenty-two of these crashes occurring north of Haas Road through curves. The following number of crashes was reported at each intersection:

Haas Road – 1

Stanwin Drive – 1

Prevo Drive – 1

Longhorn Drive – 1

Kelly Park Road – 9

The crash summary table and collision diagram for the intersection of Mt. Plymouth Road and Kelly Park Road can be found under Kelly Park Road.

### Recommended Countermeasures

Due to the high number of crashes in the curves north of Haas Road safe curve speed studies were conducted using a ball-bank indicator. The advisory speeds on the curves

were reduced based on these studies. These high-priority safety risk issues were identified and addressed immediately.

In addition, previous to the start of this study and in response to citizen complaints, Orange County Traffic Engineering installed two advance stop warning signs and an oversized stop sign with a flasher for the southbound direction of Mt. Plymouth Road approaching Kelly Park Road.

The following table lists the areas for improvement for Mt. Plymouth Road.

## Mt. Plymouth Road

Rural Road Safety Audit

Road: Mt. Plymouth Road from Kelly Park Road to Lake County Line

Date: 10/15/09

Number of lanes:

2LU

Speed limit:

45 mph

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
1	85'	100' south of	Longhorn Road	SB	tree branch reduces visibility of 45 mph speed limit sign	Roads & Drainage	trim tree branch	low
2	280'	350' south of	Haas Road	SB	pavement edge drop-offs running approximately 80 ft between Haas Rd and 6528 Mt. Plymouth	Roads & Drainage	eliminate drop-off	high
3	900'	2260' north of	Haas Road	NB & SB	Speed of 45 mph cannot be comfortably maintained through reverse curve	Traffic Engineering signs	Add type W13-1 35 mph subplate to existing curve warning sign.	high
4	1000'	1000' north of	Haas Road	NB	Second chevron on west (left) side heading NB through curve is bent at an angle.	Traffic Engineering signs	reset chevron sign	medium
5	5000'	5000' north of	Haas Road	NB	Tree branch reduces visibility of advance right turn warning sign for last curve before entering Lake County	Roads & Drainage	trim tree branch	medium
6	4550'	4000' north of	Haas Road	NB & SB	25 mph advisory speed on curves is too high	Traffic Engineering signs	replace Type W13-1 25 MPH advisory speed with 15 MPH advisory speed	high
7	380'	1000' south of	Lake County Line	NB & SB	25 mph advisory speed on curves is too high	Traffic Engineering signs	replace Type W13-1 25 MPH advisory speed with 15 MPH advisory speed	high
8	1000'	1050' south of	Lake County Line	SB	Right turn warning sign is followed by more curves	Traffic Engineering signs	replace type W1-1R right angle warning sign with type W1-5R warning sign.	high

## **H. Old 441**

### Existing Conditions

Old 441 is a two-lane roadway running northwest-southeast from US 441 to the Lake County line entirely through unincorporated Orange County and leading into Mount Dora. The cross section is mostly rural and serves a mixture of residential, planned development, agricultural, and a small amount of commercial land uses.

Pavement markings consist of double yellow centerline and edge line striping throughout, as well as reflective pavement markers on the centerlines. The speed limit is 45 mph, changing to 40 mph just south of the Lake County line. No sidewalks or bike lanes are provided. A center turn lane is provided at Chesterhill Lane and the entrance to St. Patrick's Catholic Church. Curb and gutter exists for a short section of roadway between the beginning of the taper for the entrance to St. Patrick's Catholic Church and Chesterhill Lane.

Overhead utilities are located on the northeast side of the road throughout with no street lighting.

### Crash History and Analysis

Two crashes are reported for Old 441 segments (not located within 500 feet of an intersection) from 2006 to 2008. During the three-year period two crashes were reported for the intersection of Old 441 and Chesterhill Lane and one crash was reported for the intersection of Old 441 and US 441.

### Recommended Countermeasures

The following table lists the areas for improvement for Old 441. Only faded centerline pavement markings was considered to be a high safety risk. This risk was addressed immediately. Most improvements recommended were not considered to be high-priority, but were low-cost, low- or medium-priority safety risk improvements.

## Old 441

Rural Road Safety Audit

Road: Old 441 from US 441 to Lake County Line

Date: 11/5/09

Number of lanes:

2LU

Speed limit: 45 mph, changing to 40 mph just before Lake Co. line

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
1	700'	700' south of	Lake Co. line	NW	oversized 40 mph speed limit sign is faded, not reflective at night	40 mph R2-1 (oversized 36" X 48")	Replace 40 mph speed limit sign	medium
2	0'	at	Lake Co. line	SE	Entering Orange County sign is missing	Traffic Engineering Signs	install Entering Orange County sign	low
3	US 441	Lake Co. Line	throughout	both	pavement along centerline is cracked approx. 1/2 to 3/4 inch deep	Roads & Drainage	refer to Roads & Drainage	low
4	US 441	Lake Co. Line	throughout	both	Pavement markings are very faded on all but short newer sections	Traffic Engineering Markings	re-stripe yellow centerline striping	high

## **I. Ondich/Haas Road**

### Existing Conditions

Ondich/Haas Road is a two-lane roadway running east-west from Round Lake Road to Mt. Plymouth Road. It is named Ondich Road from Round Lake Road to Plymouth Sorrento Road, and Haas Road from Plymouth Sorrento Road to Mt. Plymouth Road. Portions of the roadway are within the city limits. The cross section is rural and serves farmland and citrus rural land uses. Ondich Road has a winding curve around Lake Chaudoin and a reverse curve east of Round Lake Road.

Pavement markings consist of yellow centerline and edge line striping throughout, as well as reflective pavement markers on the centerlines. The speed limit is 30 mph along Ondich Road and 40 mph along Haas Road. There are no existing sidewalks or bike lanes. Rumble strips and an advance stop warning sign exist on the westbound approach to Plymouth Sorrento Road.

Overhead utilities are provided throughout, mostly on the south side of the road. However, there is no street lighting.

The SR 429 extension is proposed to cross Ondich Road west of Plymouth Sorrento Road.

### Crash History and Analysis

Only two crashes are reported for Ondich/Haas Road segments (not located within 500 feet of an intersection) from 2006 to 2008. During the three-year period eight crashes were reported for the intersection of Ondich/Haas Road and Plymouth Sorrento Road and one crash was reported for the intersection of Haas Road and Mt. Plymouth Road. The following pages include a detailed summary and a collision diagram of the crashes at the intersection of Ondich/Haas Road and Plymouth Sorrento Road to show the approximate location and types of crashes. Sixty-three percent of the crashes were right angle crashes. Three of these were running the stop sign, two in the eastbound direction and one in the westbound direction. Two of the right angle crashes were due to not seeing an oncoming northbound vehicle.

### Recommended Countermeasures

Due to the high percentage of right angle crashes at the intersection of Ondich/Haas Road and Plymouth Sorrento Road the same treatment as the westbound approach to Plymouth Sorrento Road (signing and rumble strips) is recommended for the eastbound approach. Also, two crashes were due to not seeing an oncoming northbound vehicle, likely due to the vertical curve south of Ondich/Haas Road. Therefore, an advance warning sign with reduced advisory speed is recommended.

The following table lists the areas for improvement for Ondich/Haas Road. The need for warning to stop on the eastbound approach to the Plymouth Sorrento Road intersection was considered to be a high safety priority and was addressed immediately. Other

improvements recommended were not considered to be high-priority, but were low-cost, low- to medium-safety risk improvements.

Crash Summary											
Location: PLYMOUTH SORRENTO ROAD						Intersection Control: stop controlled on Ondich/Haas					
Intersecting Route: ONDICH/HAAS ROAD						M.P.:		Engineer: CNL			
Study Period From: 2006						To: 2008		County: Orange			
NO.	DATE	DAY	TIME	TYPE	FATAL	INJURY	PROPERTY DAMAGE	DAY/NIGHT	WET/DRY	CONTRIBUTING CAUSE	ACCIDENT REPORT #
1	1/22/2006		1:58 AM	right angle	No	No	\$5,000	Night	Dry	Ran stop sign/ drinking	FHPD06OFF007301
2	2/25/2006		11:48 AM	right angle	No	Yes	\$9,500	Day	Dry	Ran the stop sign	FHPD06OFF020381
3	4/1/2006		2:33 PM	out of control	No	Yes	\$8,000	Day	Dry	Unknown, motorcycle	FHPD06OFF034536
4	9/11/2006		3:20 PM	right angle	No	No	\$5,000	Day	Dry	Failure to Yield R/W; didn't see oncoming vehicle	FHPD06OFF097794
5	11/7/2007		11:59 AM	right angle	No	Yes	\$10,500	Day	Dry	Ran the stop sign	FHPD07OFF115428
6	3/3/2007		2:06 AM	out of control	No	No	\$11,500	Night	Wet	Possible drinking	FHPD07OFF021761
7	8/8/2008		11:36 AM	right angle	No	Yes	\$13,000	Day	Dry	Failure to Yield R/W; didn't see oncoming vehicle	FHPD08OFF094269
8	Nov-08		6:53 PM	sideswipe	No	No	\$2,500	Night	Dry	Attempted to pass on a double yellow line	FHPD08OFF109472
TOTAL											
TOTAL NO.	FATAL	INJURY	PROPERTY DAMAGE	ANGLE	LEFT TURN	RIGHT TURN	REAR END	SIDE SWIPE	HEAD ON		
8	0	4	8	5	0	0	0	1	0		
%	0%	50%	100%	63%	0%	0%	0%	13%	0%		
ONE VEHICLE	PED/BIKE	DAY	NIGHT	WET	DRY	EXCESS SPEED	FTY R/W	DUI			
2	0	5	3	1	7	0	2	0			
25%	0%	63%	38%	13%	88%	0%	25%	0%			
TOTAL VEHICLES ENTERING/ADT:						CRASH RATE:			MEV		

Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: Plymouth-Sorrento Road & Ondich Road/Haas Road

COUNTY: Orange

CITY: Unincorporated

PERIOD 2006

TO: 2008

PREPARED BY: CNL



COLLISION SYMBOLS



VEHICLE PATH  
BACKING VEHICLE  
NON-INVOLVED VEH.  
PEDESTRIAN PATH  
FIXED OBJECT  
PARKED VEHICLE  
PERSONAL INJURY  
FATALITY



REAR-END COLLISION  
HEAD-ON COLLISION  
SIDE SWIPE  
OUT OF CONTROL  
OVERTURNED VEHICLE  
LEFT TURN COLLISION  
RIGHT ANGLE COLLISION

CONDITION CODES

PAVEMENT CONDITION:  
D=DRY W=WET I=ICY  
WEATHER CONDITION:  
C=CLEAR R=RAIN F=FOG S=SNOW  
LIGHT CONDITION:  
L=DAYLIGHT N=NIGHT (DARK)  
TIME OF DAY (MILITARY)

CRASH SUMMARY

	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	1	4	0	5
NIGHTTIME	3	0	0	3
TOTAL	4	4	0	8

## Ondich/Haas Road

Rural Road Safety Audit

Road: Ondich/Haas Road from Round Lake Road to Mount Plymouth Road

Date: 10/21/09

Number of lanes: 2LU

Speed limit: 40 mph between Mount Plymouth and Plymouth Sorrento Road; 30 mph between Plymouth Sorrento Rd and Round Lake Rd

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
1	0'	at	Round Lake Road	WB	Sight distance to oncoming NB traffic is approx. 440 ft. due to hill south of Ondich; NB traffic posted speed is 55 mph	Traffic Engineering Signing	Post "Hill Blocks View" sign (W7-6) w/ oversized advisory speed subplate 24"X24" (W13-1), 45 mph, 600 ft in advance of Ondich Rd in the NB direction	medium
2	35'	50' east of	Plymouth Sorrento Rd	EB	Placement of stop sign is past radius return and only offset 4 ft from pavement edge.	Traffic Engineering signs	reset stop sign at radius return and proper offset	low
3	35'	50' east of	Plymouth Sorrento Rd	EB	Stop sign has a bullet hole	Traffic Engineering signs	replace stop sign	low
4	0'	at	Plymouth Sorrento Rd	EB	Sight distance to oncoming NB traffic is approx. 350 ft. due to hill south of Ondich; NB traffic posted speed is 45mph	Traffic Engineering Signing	Post "Hill Blocks View" sign (W7-6) w/ oversized advisory speed subplate 24"X24" (W13-1), 40 mph, 500 ft in advance of Ondich Rd in the NB direction	medium
5	35'	50' east of	Plymouth Sorrento Rd	EB&WB	Stop bar is faded	Traffic Engineering Pavement Markings	refresh stop bar	medium
6	near	n/a	Plymouth Sorrento Rd	EB&WB	skid marks on the pavement	OCSO	address possible street racing	medium
7	approach to	n/a	Plymouth Sorrento Rd	EB	history of right angle crashes due to not stopping at stop sign	Traffic Engineering Signing and Pavement Markings	treat approach same as WB: advance stop ahead (W3-1) w/high intensity stop in center of sign, distance subplate (600 ft) and 4 sets of rumble strips according to Index 518.	high
8	200' west of	200' east of	Effie Dr	EB & WB	Citizen request for speed enforcement	OCSO	address speeding concern	low
9	35'	50' east of	Mt. Plymouth Rd	EB	faded stop bar	Traffic Engineering Pavement Markings	refresh stop bar	medium
10	Round Lake Rd	Plymouth-Sorrento Rd	throughout	EB&WB	grass growing over the edgeline intermittently	Roads & Drainage	edge grass	low

## **J. Plymouth Sorrento Road**

### Existing Conditions

Plymouth Sorrento Road was audited from Ponkan Road to the Lake County line. It is a two-lane roadway running north-south with the city limits bordering portions of the roadway south of Kelly Park Road. The cross section is rural and serves mostly rural farmland, citrus, and agricultural residential land uses.

Pavement markings consist of yellow centerline and edge line striping throughout, as well as reflective pavement markers on the centerlines.

The current posted speed limit is:

Ponkan Road to Ponkan Pines Road – 45 mph

Ponkan Pines Road to Berry Oak Drive – 55 mph

Berry Oak Drive to south of Dowman Drive – 45 mph

Dowman Drive to the Lake County line – 45 mph northbound and 55 mph southbound

Sidewalks exist on the east side of the road from Ponkan Road to Ponkan Pines Road. A center turn lane is provided at Berry Oak Drive. No bike lanes are present.

Overhead utilities are provided on the east side of the road from Ponkan Road to Boch Road and on both sides of the road north of Boch. No street lighting exists for the length of the audited section. Guardrail exists on the east side of the road for five short sections north of Berry Oak Drive.

The SR 429 extension is proposed to run parallel to Plymouth Sorrento Road on the west side of the road and cross Plymouth Sorrento Road north of Ondich Road.

### Speed Limit

The speed limit for Plymouth Sorrento Road is inconsistent from south of Dowman Drive to the Lake County line, posted as 45 mph in the northbound direction and 55 mph in the southbound direction. It is likely that a 55 mph speed limit sign was missing for the northbound direction so a speed study was conducted north of Haas Road to confirm the correct speed limit. The 85th percentile speed at this location was found to be 57.45 mph, which confirms that the posted speed of 55 mph is correct for this section of roadway. A 55 mph speed limit sign will be posted in the northbound direction across from the 45 mph sign in the southbound direction near 5130 Plymouth Sorrento Road.

### Crash History and Analysis

Sixteen crashes were reported along Plymouth Sorrento Road segments (not located within 500 feet of an intersection) for the years 2006-2008. The following number of crashes was reported at each intersection:

Boch Road – 1

Ondich/Haas Road – 8

Kelly Park Road – 18

Saffell Loop – 2

Appy Lane – 1  
Lent Road – 1  
Joey McGuckin – 1  
Ponkan Pines Drive – 2  
Ponkan Road – 13

Intersections with three or more crashes during the three year period were analyzed in detail. The Ondich/Haas Road intersection information is included under Ondich/Haas Road and the Kelly Park Road intersection information is included under Kelly Park Road. The pages following include a detailed summary and collision diagram for the intersection of Plymouth Sorrento Road with Ponkan Road.

Thirty-eight percent, or five of the crashes at the intersection of Plymouth Sorrento Road and Ponkan Road were rear-end crashes. Four of the crashes occurred when vehicles lost control or otherwise departed the road and hit fixed objects.

#### Recommended Countermeasures

The following table lists the areas for improvement for Plymouth Sorrento Road. All of the high-priority safety risk issues along Plymouth Sorrento Road were related to the condition of the pavement edge. Plymouth Sorrento Road is scheduled to be milled and resurfaced from US 441 to the Lake County line. This maintenance project will correct these poor pavement conditions which contribute to roadway departure crashes.

In addition, at the intersection of Plymouth Sorrento Road with Ponkan Road severe pavement rutting was evident in all four corners. This is likely the result of heavy truck traffic and drivers leaving the pavement edge to navigate around queued left turning vehicles. As funds become available for intersection improvements it is recommended that turn lanes be added on all approaches.

All other safety risks were considered low-cost, low- to medium-priority safety risks.

Crash Summary											
Location: PONKAN ROAD						Intersection Control: signalized					
Intersecting Route: PLYMOUTH SORRENTO ROAD						M.P.:		Engineer: CNL			
Study Period From: 2006						To: 2008		County: Orange			
NO.	DATE	DAY	TIME	TYPE	FATAL	INJURY	PROPERTY DAMAGE	DAY/NIGHT	WET/DRY	CONTRIBUTING CAUSE	ACCIDENT REPORT #
1	5/17/2006	Wed	10:26 PM	Left turn	No	Yes	\$10,000	Night	Dry	Failure to Yield R/W	FHPD06OFF052588
2	6/12/2006	Mon	12:33 PM	Right angle	No	Yes	\$22,000	Day	Wet	Red light running	FHPD06OFF062270
3	10/17/2006	Tue	3:08 PM	Rear End	No	No	\$1,000	Day	Dry	Backing; caught in intersection after red light	FHPD06OFF110776
4	6/25/2007	Mon	12:22 AM	Right angle	No	Yes	\$13,000	Night	Wet	light out due to storm; did not stop before entering	FHPD07OFF064409
5	10/10/2007	Wed	11:05 AM	Rear End	No	Yes	\$2,500	Day	Dry	Careless Driving	FHPD07OFF104814
6	12/8/2007	Fri	1:10 PM	Out Of Control	No	No	\$2,500	Day	Dry	previous accident blocking road	FHPD07OFF126190
7	12/8/2007	Fri	1:26 PM	Rear End	No	Yes	\$8,500	Day	Dry	Speeding; unlicensed driver	FHPD07OFF126201
8	4/20/2008	Sat	2:29 AM	Out Of Control	No	No	\$6,000	Night	Dry	Careless Driving	FHPD08OFF038840
9	4/30/2008	Tue	4:07 PM	Left turn	No	No	\$9,100	Day	Dry	Failure to Yield R/W	FHPD08OFF042363
10	5/23/2008	Thu	8:27 PM	Rear End	No	Yes	\$3,000	Night	Wet	Drinking, careless driving, unlicensed drivers	FHPD08OFF050537
11	7/14/2008	Sun	1:31 PM	Right turn	No	No	\$1,000	Day	Dry	Failure to Yield R/W	FHPD08OFF067668
12	8/15/2008	Thu	2:02 AM	Out Of Control	Yes	Yes	\$8,000	Night	Dry	Unknown	FHPD08OFF077602
13	8/29/2008	Thu	9:39 PM	Rear End	No	Yes	\$2,500	Night	Dry	Careless Driving	FHPD08OFF082628
TOTAL											
TOTAL NO.		FATAL	INJURY	PROPERTY DAMAGE	ANGLE	LEFT TURN	RIGHT TURN	REAR END	SIDE SWIPE	HEAD ON	
	13	1	8	13	2	2	1	5	0	0	
%		8%	62%	100%	15%	15%	8%	38%	0%	0%	
ONE VEHICLE		PED/BIKE	DAY	NIGHT	WET	DRY	EXCESS SPEED	FTY R/W	DUI		
	3	0	7	6	3	10	1	3	0		
	23%	0%	54%	46%	23%	77%	8%	23%	0%		
TOTAL VEHICLES ENTERING/ADT:						CRASH RATE:			MEV		

Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: Ponkan Road and Plymouth Sorrento Road

COUNTY: Orange CITY: Unincorporated north quadrants, City south quadrants

PERIOD 2006 TO: PREPARED BY: CNL



COLLISION SYMBOLS

CONDITION CODES

	VEHICLE PATH		REAR-END COLLISION
	BACKING VEHICLE		HEAD-ON COLLISION
	NON-INVOLVED VEH.		SIDE SWIPE
	PEDESTRIAN PATH		OUT OF CONTROL
	FIXED OBJECT		OVERTURNED VEHICLE
	PARKED VEHICLE		LEFT TURN COLLISION
	PERSONAL INJURY		RIGHT ANGLE COLLISION
	FATALITY		

CRASH SUMMARY

	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	4	3	0	7
NIGHTTIME	1	5	0	6
TOTAL	5	8	0	13

## Plymouth Sorrento Road

Road: Plymouth Sorrento Rd from Ponkan Road to Lake Co. Line

Date: 9/25/2009

# Lanes: 2LU

Speed Limit:

NB-45 mph through curve, 55 mph north of Ponkan Pines Dr., 45 mph north of Berry Oak Dr to Lake Co. line

SB-55 mph from Lake Co. line to south of Dowman Dr., 45 mph south of Dowman Dr., 55 mph south of Berry Oak Dr., 45 mph south of Ponkan Pines Dr.

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
1	in intersection	at	Ponkan Rd	NB	countdown ped head on NE corner needs better visibility on crossing from SE corner	Traffic Engineering Signals	adjust/swivel head to align with crossing	low
2	at intersection	at	Ponkan Rd	both	pavement rutting in NE and NW corners of intersection	Roads & Drainage	reinforce pavement edge	high
3	0'	40' south of	Ponkan Rd	SB	stop bar is faded	Traffic Engineering markings	refresh stop bar	medium
4	300'	1000' north of	Ponkan Rd	SB	RPM's are missing from edge line	Reflective Pavement Markings	replace RPM's	medium
5	800'	500' north of	Ponkan Rd	SB	need to increase awareness of signal ahead	Type W3-3 w/ W16-2a (sub.)	add additional signal ahead sign with subplate for distance	medium
6	800'	500' north of	Ponkan Rd	SB	pavement edge drop offs	Roads & Drainage	reinforce pavement edge	high
7	800'	200' north of	Ponkan Rd	NB & SB	Citizen concern-dangerous curve	Traffic Engineering Admin	Ball bank study performed; confirms advisory speed is appropriate	low
8	0'	250' south of	Ponkan Pines Rd	SB	tree branch reduces visibility of curve warning sign	Roads & Drainage	trim tree branch	medium
9	320'	90' south of	Hideaway Rd	NB	pavement edge dropoff running 225 ft north from 3501 driveway	Roads & Drainage	reinforce pavement edge	high
10	550'	330' south of	Hideaway Rd	SB	pavement edge dropoff running 220 ft between 3560 and 3500 driveways	Roads & Drainage	reinforce pavement edge	high
11	600'	600' north of	Lent Rd	SB	tree branch reduces visibility of Lent Rd cross street warning sign	Roads & Drainage	trim tree branch	low
12	500'	500' south of	Kelly Park Rd	NB	tree branch reduces visibility of Red Light Running sign	Roads & Drainage	trim tree branch	low
13	500'	0' north of	Kelly Park Rd	SB	SB LT traffic blocks through traffic - Citizen concern	Traffic Engineering Admin	Perform warrant study for possible future intersection improvements.	medium
14	in intersection	at	Kelly Park Rd	NB	Citizen concern - difficulty seeing EB traffic to make right turn on red.	Traffic Engineering Admin	Sight distance evaluated. Vehicle must stop at stop bar and inch forward.	low

## Plymouth Sorrento Road

Road: Plymouth Sorrento Rd from Ponkan Road to Lake Co. Line

Date: 9/25/2009

# Lanes: 2LU

Speed Limit:

NB-45 mph through curve, 55 mph north of Ponkan Pines Dr., 45 mph north of Berry Oak Dr to Lake Co. line

SB-55 mph from Lake Co. line to south of Dowman Dr., 45 mph south of Dowman Dr., 55 mph south of Berry Oak Dr., 45 mph south of Ponkan Pines Dr.

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
15	in intersection	at	Kelly Park Rd	both	pavement rutting all four corners of intersection, evidence of drivers leaving pvmt.	Roads & Drainage	short term: reinforce pavement edge. Long term: investigate whether the radii can be increased to accommodate high truck traffic or turn lanes added	medium
16	in intersection	at	Kelly Park Rd	all bounds	crash history of red light running and rear-end crashes	Traffic Engineering Signals	Adjust clearance timings for 85th percentile speeds of 53.00 mph NB and 57.73 mph SB	high
17	200'	550' north of	Kelly Park Rd	SB	tree branches reduce visibility of red light running sign, signal ahead warning sign, and signal head	Roads & Drainage	trim tree branches	high
18	825'	825' north of	Kelly Park Rd	NB	missing speed limit sign	Type R2-1	install 55 mph speed limit sign	low
19	near		Berry Oak Dr	NB & SB	Speeding, citizen concern	OC Sheriff's Office	Enforce speed limit	low
20	200' south of	200 north of	Berry Oak Dr	SB	Flooding on SB lane after rain	Roads & Drainage	Review drainage water flow	medium
21	US 441	County line	throughout	NB & SB	Wants the current speed limit enforced. Citizen Concern.	OC Sheriff's Office	Enforce speed limit	low
22	US 441	County line	throughout	NB & SB	pavement condition poor, citizen concern	Roads & Drainage	Scheduled to be milled & resurfaced	low
23	in intersection	at	Ondich/Haas Rd	NB & SB	pavement rutting in the NW and SW corners	Roads & Drainage	reinforce pavement edges as was done in the SE and NE corners	medium

## **K. Ponkan Road**

### Existing Conditions

Ponkan Road was audited from US 441 to Rock Springs Road. It is a 2-lane rural collector that runs east-west through both unincorporated Orange County and the City of Apopka. The cross section is rural except for a small section where curb is provided at the “No Parking” zone near Golden Gem Road. Existing land uses abutting the road include residential, agricultural residential, citrus, and rural farmland. The Northwest Orange County Improvement Association (NOCIA) building is located on Ponkan Road and is the home of the Zellwood Sweet Corn Festival.

Pavement markings consist of centerline and edge line striping throughout, as well as reflective pavement markers on the centerlines. Center left turn lanes are provided at Ponkan Pines Road, the Wolf Lake school entrances, Vick Road, Florida Power Corp. entrance, and Raeth Road. No turn lanes are provided at signalized intersections except for Vick Road.

School zones exist at the western limits for Zellwood Elementary School and from west of Plymouth Sorrento Road to east of Vick Road for Wolf Lake Elementary School and Wolf Lake Middle School. Sidewalk is provided on the north side of the road from US 441 to east of Junction Road and from Plymouth Sorrento Road to Vick Road. From Vick Road to Rock Springs Road sidewalk is provided on the south side of the road. Across from the entrances to the Wolf Lake schools guardrail is located on the south side of the road. No bike lanes are present.

Overhead utilities with street lighting is provided from US 441 to east of Ponkan Pines Road. East of Jason Dwelley Parkway overhead utilities continue to Rock Springs Road with no street lighting.

The SR 429 extension is proposed to cross Ponkan Road west of Plymouth Sorrento Road.

### Speed Limits

As a major concern of Commissioner Brummer, a thorough review of speed limits along Ponkan Road was conducted. It was discovered that the existing 50 mph posted speed between Golden Gem Road and Ponkan Pines Road was inconsistent with the speed posted on adjacent segments, dropping to 35 mph east of Ponkan Pines Road and violating the 10 mph consistency in accordance with the Manual on Uniform Traffic Control Devices. It was also discovered that the posted speed from Rock Springs Road westbound was 50 mph, inconsistent with the posted speed of 35 mph in the eastbound direction and the 35 mph posted speed west of Carmona Road. As such, consent agenda items were prepared for approval by the Board of County Commissioners (BCC) to reduce the speed between Carmona Road and Rock Springs Road from 50 mph to 35 mph and to reduce the speed between Golden Gem Road and Ponkan Pines Road from 50 mph to 45 mph.

### Crash History and Analysis

Five crashes were reported along Ponkan Road segments (not located within 500 feet of an intersection) for the years 2006-2008. The following number of crashes was reported at each intersection:

US 441– 6  
Union Avenue – 1  
Round Lake Road – 2  
Planck Road – 2  
Golden Gem Road – 2  
Poverty Lane – 1  
Phils Lane – 1  
Plymouth Sorrento Road – 13  
Jason Dwelley Parkway – 1  
Pittman Road – 1  
Evelyn Scott Street – 1  
Rock Springs Road – 10

Intersections with three or more crashes during the three year period were analyzed in detail. The Ponkan Road/Plymouth Sorrento Road intersection information is included under Plymouth Sorrento Road. The pages following include detailed summaries and collision diagrams for the intersection of Ponkan Road with US 441 and Ponkan Road with Rock Springs Road.

Thirty-three percent of the crashes at the intersection of Ponkan Road and US 441 were sideswipe crashes caused by carelessness. One crash involved a pedestrian and one crash involved a bicyclist.

The intersection of Ponkan Road and Rock Springs Road has been recently improved with the widening of Rock Springs Road. The crash analyses shown for this intersection is related to pre-construction conditions. Crashes were related to a variety of types and causes. No clear pattern of crashes exists.

### Recommended Countermeasures

The following table lists the areas for improvement for Ponkan Road. All of the high-priority safety risk issues along Ponkan Road were related to visibility of traffic control devices due to tree branches. These high-priority safety risk issues were corrected immediately. All other safety risks were considered low-cost, low- to medium-priority safety risks.

Some citizens requested that Ponkan Road be re-aligned to remove the curves for the section of roadway within the city limits. Another citizen requested highway lighting in this area. This would be considered a major reconstruction project and is not within the scope or budget of this project. However, re-alignment to improve safety through this area should be considered during the Roadway Conceptual Analysis (RCA) phase of any future widening of Ponkan Road. In addition, highway lighting could be considered as part of a roadway improvement project.



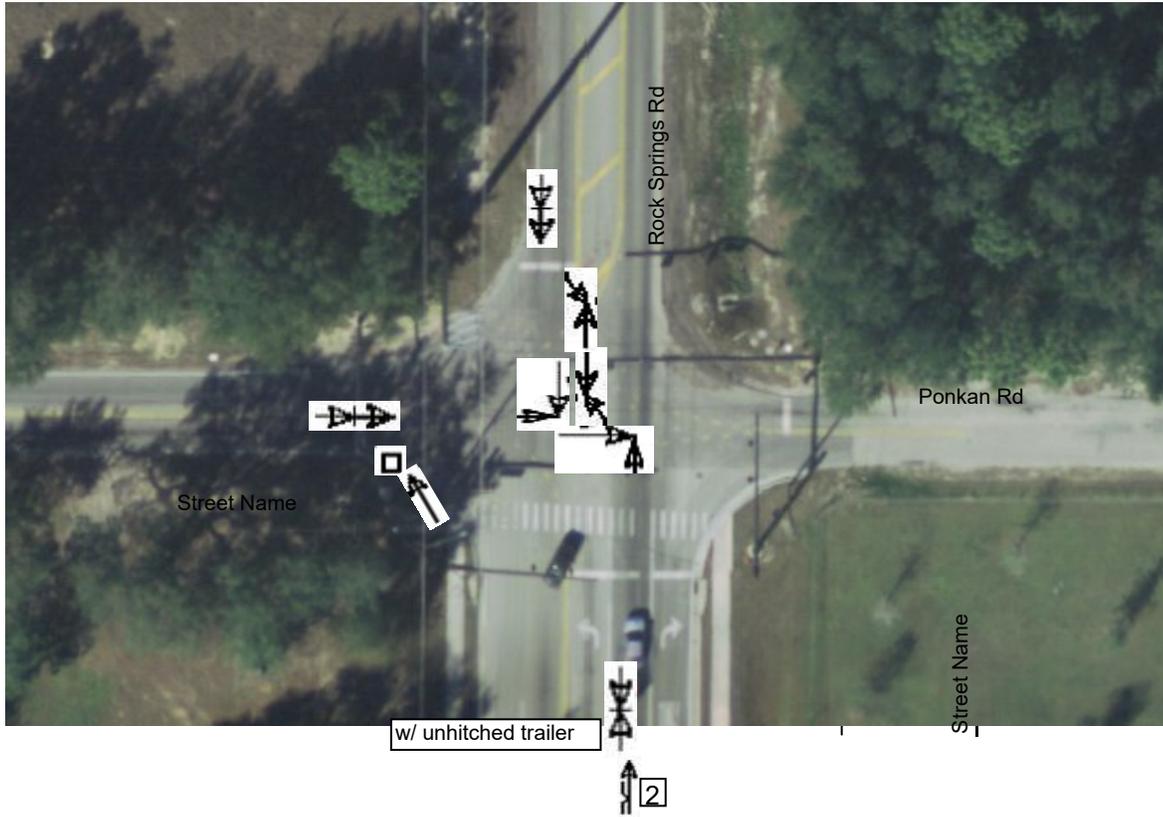


Crash Summary											
Location: ROCK SPRINGS ROAD						Intersection Control: Signalized					
Intersecting Route: PONKAN ROAD						M.P.:		Engineer: CNL			
Study Period From: 2006						To: 2008		County: Orange			
NO.	DATE	DAY	TIME	TYPE	FATAL	INJURY	PROPERTY DAMAGE	DAY/NIGHT	WET/DRY	CONTRIBUTING CAUSE	ACCIDENT REPORT #
1	3/13/2006	Mon	8:06 AM	Left turn	No	Yes	\$13,000	Day	Dry	Failure to Yield R/W	FHPD06OFF026836
2	6/19/2006	Tue	1:15 PM	Right Angle	No	Yes	\$45,000	Day	Dry	Red Light Running	FHPD06OFF065040
3	1/15/2008	Tue	10:24 PM	Side Swipe	No	No	\$3,000	Night	Dry	Improper lane change	FHPD08OFF004723
4	4/7/2008	Sun	1:23 PM	Out Of Control	No	No	\$9,000	Day	Dry	Improper passing	FHPD08OFF034445
5	5/22/2008	Sun	7:08 AM	Head On	No	No	\$1,700	Day	Dry	Trailer unhitched	FHPD08OFF049794
6	7/6/2008	Sat	4:24 PM	Rear End	No	No	\$10,500	Day	Dry	Careless driving/brakes locked	FHPD08OFF065190
7	7/25/2008	Thu	7:13 PM	Left turn	No	Yes	\$15,000	Day	Dry	Failure to Yield R/W; construction zone	FHPD08OFF071416
8	8/21/2008	Wed	3:34 PM	Side Swipe	No	No	\$2,500	Day	Wet	Construction zone; attempted to merge	FHPD08OFF079770
9	10/25/2008	Fri	4:20 PM	Right Angle	No	Yes	\$13,000	Day	Dry	Red Light Running	FHPD08OFF109083
10	10/27/2008	Sun	11:42 PM	Rear End	No	No	\$0	Night	Dry	Careless driving	FHPD08OFF109786
TOTAL											
TOTAL NO.	FATAL	INJURY	PROPERTY DAMAGE	ANGLE	LEFT TURN	RIGHT TURN	REAR END	SIDE SWIPE	HEAD ON		
10	0	4	9	2	2	0	2	2	1		
%	0%	40%	90%	20%	20%	0%	20%	20%	10%		
ONE VEHICLE	PED/BIKE	DAY	NIGHT	WET	DRY	EXCESS SPEED	FTY R/W	DUI			
1	0	8	2	1	9	0	2	0			
10%	0%	80%	20%	10%	90%	0%	20%	0%			
TOTAL VEHICLES ENTERING/ADT:						CRASH RATE:			MEV		

Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: Rock Springs Road and Ponkan Road

COUNTY: Orange                      CITY: Unincorporated  
PERIOD 2006                      TO: 2008                      PREPARED BY: CNL



COLLISION SYMBOLS

CONDITION CODES

       	VEHICLE PATH BACKING VEHICLE NON-INVOLVED VEH. PEDESTRIAN PATH FIXED OBJECT PARKED VEHICLE PERSONAL INJURY FATALITY	       	REAR-END COLLISION HEAD-ON COLLISION SIDE SWIPE OUT OF CONTROL OVERTURNED VEHICLE LEFT TURN COLLISION RIGHT ANGLE COLLISION	PAVEMENT CONDITION: D=DRY W=WET I=ICY WEATHER CONDITION: C=CLEAR R=RAIN F=FOG S=SNOW LIGHT CONDITION: L=DAYLIGHT N=NIGHT (DARK) TIME OF DAY (MILITARY)
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CRASH SUMMARY

	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	3	5	0	8
NIGHTTIME	2	0	0	2
TOTAL	5	5	0	10

## Ponkan Road

Road: Ponkan Road, from US 441 to Rock Springs Road

Date: 9/25/2009

# Lanes: 2LU

Speed Limit:

EB - 35 mph, just past Junction Rd increases to 45 mph, just past Golden Gem increases to 50 mph, past Ponkan Pines decreases to 35 mph

WB - 50 mph west of Rock Springs Rd, decreases to 35 mph past Evelyn Scott St., increases to 50 mph past Plymouth Sorrento, decreases to 45 mph past

Golden Gem, decreases to 35 mph past Planck Rd.

No.	From	To	Cross Street	Direction	Problem	Type of work	Solution	Priority
1	0'	40' east of	US 441	EB	vegetation blocking drainage in SE corner	Roads & Drainage	refer to Roads and Drainage division	low
2	0	200' east of	US 441	both directions	missing RPM's	Reflective Pavement Markings	replace RPM's	low
3	38' east of	38' east of	US 441	EB	School Crosswalk sign too low	type W11-2 sign	reset sign to minimum vertical clearance	low
4	in intersection	at	Beck Ct.	WB	standing water crossing Beck at crosswalk	Roads & Drainage	refer to Roads and Drainage division	medium
5	0'	400' east of	Beck Ct.	EB	grass covering edge line	Roads & Drainage	edge grass to expose the edge line	low
6	in intersection	at	Round Lake Rd.	center island	white/red RPM's are missing on the island striping	Reflective Pavement Markings	replace RPM's	medium
7	in intersection	at	Round Lake Rd.	center island	stop sign is very high and unprotected and is in back of the school crossing	type R1-1 sign	long-term: remove right turn lane, bring stop sign to stop bar.	medium
8	in intersection	at	Round Lake Rd.	center island	metal is sticking out of base of stop sign	sign installation	remove metal	medium
9	in intersection	at	Round Lake Rd.	SB right	stop sign for the SB right movement is too low and close to the sidewalk	type R1-1 sign	place stop sign at a minimum 6 ft offset from travel lane and minimum 7 ft clearance height.	low
10	0'	75' west of	Round Lake Rd.	SB right	poor drainage of NW corner of intersection	Roads & Drainage	refer to Roads and Drainage division	low
11	500' east of	500' west of	Junction Rd.	EB & WB	Cannot see Junction Rd, citizen concern	type W2-2 R sign w/ W16-8 (sub) EB, type W2-2 L sign w/ W16-8 (sub) WB	Install intersection warning sign with Junction Rd name plate, both bounds 500' from Junction Rd	medium
12	in intersection	at	Junction Rd.	EB right	rutting of pavement in the SW corner	Roads & Drainage	request Roads and Drainage division to increase turning radius to 50 ft.	medium
13	350' west of	50' west of	Plymouth Sorrento Rd.	EB	grass covering edge line	Roads & Drainage	edge grass to expose the edge line	low
14	100' west of	40' west of	Plymouth Sorrento Rd.	EB	tree branches reduce visibility of signal heads	Roads & Drainage	trim tree branch	high
15	40' east of	80' east of	Plymouth Sorrento Rd.	WB	tree branches reduce visibility of left signal head	Roads & Drainage	trim tree branch	high
16	34' east of	34' east of	Plymouth Sorrento Rd.	WB	school crossing sign is slanted	type S1-1	reset sign	low
17	n/a	n/a	Plymouth Sorrento Rd.	WB	signal ahead sign bent over	Traffic Engineering signs	reset with a 5 ft minimum vertical clearance	low
18	700' east of	750' east of	Plymouth Sorrento Rd.	EB	grass covering edge line	Roads & Drainage	edge grass to expose the edge line	low

## Ponkan Road

Road: Ponkan Road, from US 441 to Rock Springs Road

Date: 9/25/2009

# Lanes: 2LU

Speed Limit:

EB - 35 mph, just past Junction Rd increases to 45 mph, just past Golden Gem increases to 50 mph, past Ponkan Pines decreases to 35 mph

WB - 50 mph west of Rock Springs Rd, decreases to 35 mph past Evelyn Scott St., increases to 50 mph past Plymouth Sorrento, decreases to 45 mph past

Golden Gem, decreases to 35 mph past Planck Rd.

19	east of	n/a	Ponkan Pines Rd.	EB	speed limit drops from 50 mph to 35 mph; transition greater than 10 mph	type R2-1 45 MPH	Change 50 mph zone to 45 mph	low
20	1545' west of	1800' west of	Jason Dwelley Rd.	WB	35 mph speed limit sign 100 feet after winding road warning sign w/ 30 mph advisory speed	City of Apopka	recommend that City switch warning and regulatory speed limit signs	low
21	1700' west of	1700' west of	Jason Dwelley Rd.	EB	across from Wolf Lake Elem., speed limit sign is bent over	City of Apopka	notify City; recommend to reset speed limit sign	low
22	500' west of	500' west of	Jason Dwelley Rd.	EB	across from Wolf Lake Elem., signal ahead sign has reduced visibility from tree branch	City of Apopka	notify City; recommend to trim tree branch	medium
23	400' west of	100' west of	Jason Dwelley Rd.	EB	tree branch reduces visibility for right-most signal head	City of Apopka	notify City; recommend to trim tree branch	high
24	100' east of	200' east of	Pittman Rd	EB	two chevrons are not visible at all times along curve	City of Apopka	notify City; recommend to add 2 additional chevrons at beginning of curves in the EB direction	medium
25	in intersection	at	Pittman Rd	EB&WB	citizen concern; visibility from stop sign	Traffic Engineering Admin	Sight distance evaluated; found to be acceptable.	low
26	in intersection	at	Vick Rd.	all	intersection pavement markings are faded	Traffic Engineering Markings	refresh intersection pavement markings	medium
27	75' west of	75' west of	Vick Rd.	WB	Speed limit sign and curve warning sign mounted on the same post	City of Apopka	notify City; recommend to mount on separate posts	low
28	east of	n/a	Vick Rd.	WB	tree branches reduce visibility for "trucks entering highway" sign	City of Apopka	notify City; recommend to trim tree branch	low
29	in intersection	at	Vick Rd.	WB	bottom right green bulb on outside signal head is partially black	City of Apopka	notify City; recommend to replace bulb	medium
30	500' west of	2300' west of	Rock Springs Rd.	WB	speed limits are inconsistent; curve warning sign at 45 within 35 mph speed zone	City of Apopka	Notify City; recommend to remove advisory speed subplate on warning sign	low
31	500' west of	2300' west of	Rock Springs Rd.	WB	speed limits are inconsistent; 50 drops to 35	Type R2-1 35 MPH	Change 50 mph speed limit to 35.	medium
32	450' west of	50' west of	Rock Springs Rd.	EB	tree branch reduces visibility for overhead street name sign	Roads & Drainage	trim tree branch	low
33	50' east of	250' east of	Rock Springs Rd.	WB	tree branch reduces visibility for right-most signal head	Roads & Drainage	trim tree branch	high
34	in intersection	at	Rock Springs Rd.	WB	post-mounted street names signs show City; overhead street name signs show County	Traffic Engineering signs	remove City street name signs	low
35	in intersection	at	Rock Springs Rd.	EB	Right turn sight distance blocked by pole on NW corner of intersection, citizen concern	Traffic Engineering signs/signals	Install type R10-11a "No turn on red" sign overhead EB Ponkan Rd mast arm	medium

## **L. Rock Springs Road**

### Existing Conditions

Rock Springs Road was audited from Ponkan Road to Kelly Park Road and was recently widened from two to four lanes. It is a collector running north-south with portions of the city limits bordering the roadway. The cross section is urban curb and gutter and serves residential development, agricultural farmland and citrus land uses. There is a small amount of commercial land use at the intersections of Rock Springs Road with Kelly Park Road and Lewis Avenue.

From Ponkan Road to 1300 feet south of Kentucky Blue Circle and from Kentucky Blue Circle to West Road the typical section is a four-lane roadway with a raised landscaped median. Median openings are provided at Westford Drive, Spring Hollow Boulevard, Rock Ridge Boulevard, Oak Hammock Lane, and Oak Hollow Drive. There are signalized intersections at Ponkan Road, Rock Ridge Boulevard, and Kelly Park Road.

From 1300 feet south of Kentucky Blue Circle to Kentucky Blue Circle and from West Road to Kelly Park Road the cross section changes from four-lane divided to a five-lane section with a center bi-directional turn lane.

Pavement markings consist of dashed lane lines and yellow and white edge line striping throughout, as well as reflective pavement markers on the dashed lane lines. The speed limit is 45 mph throughout. Sidewalks and bike lanes exist on both sides of the road.

Overhead utilities are provided on the west side of the road with street lighting on both sides of the road throughout.

### Crash History and Analysis

Two crashes were reported along Rock Springs Road segments (not located within 500 feet of an intersection) for the years 2006-2008. The following number of crashes was reported at each intersection:

Ponkan Road – 10  
Westford Drive – 3  
Spring Hollow Boulevard – 3  
Kentucky Blue Circle – 1  
Oak Hollow Drive – 1  
Lewis Avenue – 2  
Pine Street – 2  
Kelly Park Road – 10

Intersections with three or more crashes during the three year period were analyzed in detail. The Rock Springs Road/Ponkan Road intersection information is included under Ponkan Road. The Rock Springs Road/Kelly Park Road intersection information is included under Kelly Park Road. The pages following include detailed summaries and collision diagrams for the intersections of Rock Springs Road with Spring Hollow Boulevard and Rock Springs Road with Westford Drive.

The crashes at the intersection of Rock Springs Road and Westford Drive consisted of one rear-end collision, one head-on collision, and one left turn collision. The crashes at the intersection of Rock Springs Road and Spring Hollow Boulevard were all road departure crashes, two being out of control vehicles and one attempting to avoid a collision with another vehicle. Both of these intersections were recently improved with the widening of Rock Springs Road. The crash analyses shown for these intersections are related to pre-construction conditions.

#### Recommended Countermeasures

The following table lists the areas for improvement for Rock Springs Road. Due to the completion of the widening of Rock Springs Road there were few needs for improvement, but most centered around the intersections of Rock Springs Road with Rock Ridge Boulevard and Kelly Park Road. Orange County must wait until the contractor is fully removed from the intersection with Kelly Park Road in order to implement solutions within that project's limits.





Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: Rock Springs Rd and Westford Dr

COUNTY: Orange                      CITY: Unincorporated  
PERIOD 2006                      TO: 2008                      PREPARED BY: CNL



COLLISION SYMBOLS

CONDITION CODES

       	VEHICLE PATH BACKING VEHICLE NON-INVOLVED VEH. PEDESTRIAN PATH FIXED OBJECT PARKED VEHICLE PERSONAL INJURY FATALITY	       	REAR-END COLLISION HEAD-ON COLLISION SIDE SWIPE OUT OF CONTROL OVERTURNED VEHICLE LEFT TURN COLLISION RIGHT ANGLE COLLISION	PAVEMENT CONDITION: D=DRY W=WET I=ICY WEATHER CONDITION: C=CLEAR R=RAIN F=FOG S=SNOW LIGHT CONDITION: L=DAYLIGHT N=NIGHT (DARK) TIME OF DAY (MILITARY)
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CRASH SUMMARY

	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	0	3	0	3
NIGHTTIME	0	0	0	0
TOTAL	0	3	0	3

## Rock Springs Road

### Rural Road Safety Audit

Road: Rock Springs Road from Ponkan Road to Kelly Park Road

Date: 11/5/09

Number of lanes: 4LD/5L

Speed limit: 45 mph

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
1	250'	150' north of	Ponkan Road	SB	tree branch reduces visibility of signal ahead warning sign	Roads & Drainage	trim trees	high
2	0'	5' west of	Rock Ridge Blvd	WB	driveway and signal heads line up with EB exiting traffic	Install R4-7 in median and R5-1 on north side of Rock Springs Ridge Rd	install Keep Right and Do Not Enter signs	medium
3	in intersection	at	Rock Ridge Blvd	all	Crosswalk has 12' between cross bars centerline to centerline.	Traffic Engineering pavement markings	Install additional crossbar in between existing crossbars.	low
4	0'	north of	Rock Ridge Blvd	NB	delineator on north median has green facing the wrong direction	Traffic Engineering Signs	rotate delineator 180 degrees	low
5	0'	100' south of	Rock Ridge Blvd	NB	Trees in median are obstructing sight distance off of NB left turn. Citizen concern	Traffic Engineering Admin	Sight Distance reviewed, no further action warranted at this time.	
6	0'	200' south of	Kelly Park Road	NB	signal heads are not visible an adequate distance and signal ahead warning sign is too close	Traffic Engineering Signs	In the median, relocate the 30 mph speed limit sign 60 ft south. Relocate the signal ahead warning sign to the previous location of the speed limit sign.	high
7	200'	300' south of	Kelly Park Road	NB	signal heads are not visible an adequate distance and signal ahead warning sign is too close	Add W3-3 sign	replace 2nd Right Lane Must Turn Right sign with Signal Ahead sign	high
8	175'	200' south of	Kelly Park Road	NB	tree branches from Kangaroo convenience store reduce visibility of signal heads	Roads & Drainage	trim trees	high
9	0'	200' south of	Kelly Park Road	NB	Speeding throughout curve, citizen concern	Traffic Engineering signs	replace standard 30 MPH sign on east side of Rock Springs with oversized speed limit sign.	medium
10	0'	200' south of	Kelly Park Road	NB	Citizens with driveways east of road, get mail from opposite side of roadway.	United States Post Office	Refer to US Post Office for resolution	medium
11	Ponkan Rd	Kelly Park Rd	Throughout	NB & SB	Speeding problem, citizen concern	OC Sheriff's Office	Request enforcement	low

## **M. Round Lake Road**

### Existing Conditions

Round Lake Road is a two-lane collector running north-south, audited from Ponkan Road to the Lake County line. It is mostly located in unincorporated Orange County; however, the city limits borders the east side of Round Lake Road in two places south of Ondich Road. The cross section is rural and serves mostly agricultural land uses, with some residential land near Ponkan Road. Curb and gutter exists through the curves north of King Avenue and for a short distance between Oak Hill Street and Meadowland Drive.

Pavement markings consist of yellow centerline and edge line striping throughout, as well as reflective pavement markers on the centerlines. The speed limit is 50 mph from Ponkan Road to Sadler Road and 55 mph from Sadler Road to the Lake County line. Sidewalks exist on the west side of the road from Ponkan Road to King Avenue. No bike lanes are present. There is a flashing red/yellow signal at the intersection with Sadler Road.

Overhead utilities exist on the east side of the road throughout with no street lighting.

There is a school crossing for Zellwood Elementary School at the intersection of Round Lake Road and Ponkan Road.

Round Lake is located on the west side of the road between Meadowland Drive and Oak Hill Street. Lake Zell is located on the west side of the road north of King Avenue.

### Speed Limits

As a recurring request of citizens, the speed limits along Round Lake Road were reviewed thoroughly. Speed studies were conducted at three locations along Round Lake Road: south of Sadler (50 mph zone), between Sadler and Kelly Park (55 mph zone), and north of Oak Hill Street (55 mph zone). Results of these speed studies confirm that the existing speed limits are correctly posted.

Safe speed studies were conducted using a ball bank indicator at both the curves north of King Avenue and south of the Lake County line. It was determined that the posted advisory speeds for the curves south of the Lake County line were too high. Recommended countermeasures include reducing the posted advisory speeds in this location from 35 mph to 25 mph. The posted advisory speeds of 30 mph for the curves north of King Avenue were found to be adequate.

### Crash History and Analysis

Seven crashes were reported along Round Lake Road segments (not located within 500 feet of an intersection) for the years 2006-2008. The following number of crashes was reported at each intersection:

Ponkan Road – 2

Jones Avenue – 1

King Avenue – 6

Sadler Road – 2  
Kelly Park Road – 4

Intersections with three or more crashes during the three year period were analyzed in detail. The Round Lake Road/Kelly Park Road intersection information is included under Kelly Park Road. The following pages include detailed summaries and collision diagrams for the intersections of Round Lake Road with King Avenue.

The crashes at the intersection of Round Lake Road and King Avenue are all located north of King Avenue within the curves. Eighty-three percent, or five out of the six crashes were single vehicle road departure crashes and three of them involved motorcycles. Four of the crashes involved vehicles that were out of control and overturned.

#### Recommended Countermeasures

The following table lists the areas for improvement for Round Lake Road. All of the high-priority safety risk issues along Round Lake Road were related to the southbound approach to the Ponkan Road intersection and speeds along Round Lake Road curves. These high-priority safety risk issues were corrected immediately. All other safety risks were considered low-cost, low- to medium-priority safety risks.

As funds become available for intersection improvement projects, it is recommended that the southbound right turn lane on Round Lake Road approaching Ponkan Road be removed. This would allow for proper placement of the stop sign at the stop bar and full visibility of the stop sign for all approach movements. The existing southbound right turning volume is only 20 vehicles in the AM peak hour and 19 vehicles in the PM peak hour so removing this turn lane will have minimal impact on capacity. The short term solution was to add an advance stop ahead warning sign to increase awareness of the stop.

Some citizens requested that Round Lake Road be re-aligned to remove the curves. Other citizens requested widening of Round Lake Road. These improvements would be considered a major reconstruction project and is not within the scope or budget of this project. However, re-alignment to improve safety through this area should be considered during the Roadway Conceptual Analysis (RCA) phase of any future widening of Round Lake Road.



Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: Round Lake Road and King Avenue

COUNTY: Orange

CITY: Unincorporated

PERIOD 2006

TO: 2008

PREPARED BY: CNL



COLLISION SYMBOLS

	VEHICLE PATH		REAR-END COLLISION
	BACKING VEHICLE		HEAD-ON COLLISION
	NON-INVOLVED VEH.		SIDE SWIPE
	PEDESTRIAN PATH		OUT OF CONTROL
	FIXED OBJECT		OVERTURNED VEHICLE
	PARKED VEHICLE		LEFT TURN COLLISION
	PERSONAL INJURY		RIGHT ANGLE COLLISION
	FATALITY		

CONDITION CODES

PAVEMENT CONDITION:  
D=DRY W=WET I=ICY  
WEATHER CONDITION:  
C=CLEAR R=RAIN F=FOG S=SNOW  
LIGHT CONDITION:  
L=DAYLIGHT N=NIGHT (DARK)  
TIME OF DAY (MILITARY)

CRASH SUMMARY

	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	1	5	0	6
NIGHTTIME	0	0	0	0
TOTAL	1	5	0	6

## Round Lake Road

Rural Road Safety Audit

Road: Round Lake Road from Ponkan Road to Lake County Line

Date: 10/21/09      Number of lanes:                      2LU

Speed limit:                      50 mph from Ponkan Road to Sadler Road; 55 mph from Sadler Road to Lake County Line

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
1	approaching	n/a	Ponkan Road	SB	Stop sign is in painted island behind cross walk. Stop sign for right turn not visible.	W3-3	Short term: Add stop ahead warning sign (W3-3) 300 ft in advance of Ponkan Rd. Long term: Remove right turn lane and provide 35' turning radius, relocate stop sign to stop bar in advance of cross walk.	high
2	200'	1300' north of	King Avenue	NB & SB	Difficult curve, advisory speed limit too high. Citizen concern	Traffic Engineering Admin	Safe Speed Study performed. Ball bank indicates advisory speed is appropriate.	high
3	40'	200' south of	King Av (3336 Round Lake Rd)	SB	Driveway does not meet roadway after repavement of Round Lake Rd, pot holes causing tire damage. Citizen Concern	Roads & Drainage	Review driveway connection to roadway.	medium
4	at intersection	of	Kelly Park Road	NB & SB	Speed zone requested in front of Valley Trailer Park for disabled child. Citizen request.	Traffic Engineering Admin	Speed zone is not warranted	low
5	in advance of	n/a	Kelly Park Road	NB & SB	Speeding problem	OC Sheriff's Office	Request area to be patrolled	medium
6	in advance of	n/a	Kelly Park Road	NB	Visibility of intersection due to trees. Citizen concern.	Traffic Engineering Admin	Visibility is adequate.	low
7	in advance of	n/a	Kelly Park Road	NB	citizen complaint - drivers miss Kelly Park Road turn; it is signed in the SB direction.	Traffic Engineering signs	Add Side Road warning sign (W2-2 R) w/ street name placque 300 ft in advance of Kelly Park Rd	low
8	in advance of	n/a	Kelly Park Road	SB	Side Road warning sign for Kelly Park Road does not have name placque (not required).	Traffic Engineering signs	Add street name placque to existing W2-2 L sign.	low
9	800'	900' south of	Ondich Road	SB	pavement edge drop-off	Roads & Drainage	eliminate drop-off	medium
10	in intersection	of	Ondich Road	NB	WB visiblity from side street is hindered by trees on SE corner of intersection. Citizen Complaint	Roads & Drainage	Trim Trees on SE corner	low
11	100'	n/a	Meadowland Road	SB	Speed limit sign is missing.	Traffic Engineering signs	Add 55 mph sign (R2-1) 100' south of Meadowland Rd	medium
12	0'	10' east of	Meadowland Road	WB	stop sign/street name sign is not perpendicular to approaching traffic	Traffic Engineering signs	reset sign	medium

## Round Lake Road

Rural Road Safety Audit

Road: Round Lake Road from Ponkan Road to Lake County Line

Date: 10/21/09      Number of lanes:      2LU

Speed limit:      50 mph from Ponkan Road to Sadler Road; 55 mph from Sadler Road to Lake County Line

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
13	1000'	800' north of	Meadowland Road	NB	Reverse curve sign should be winding road sign and advisory speed through curves is too fast.	Traffic Engineering signs	replace reverse curve sign w/winding road sign (W1-5 L); replace advisory speed panel with 25 mph advisory speed panel (W13-1).	high
14	Ponkan Road	Lake Co. line	throughout	NB & SB	Citizen request to widen road.	Orange County Public Works	Review for possible future roadway improvements	n/a - capacity issue
15	Ponkan Road	Lake Co. line	throughout	NB & SB	Citizen request to straighten out curves.	Orange County Public Works	Review for possible future roadway improvements	medium
16	Ponkan Road	Lake Co. line	throughout	NB & SB	Citizen requests to both reduce and maintain speed limit.	Traffic Engineering Admin	Speed studies confirm posted speed is valid.	low
17	Ponkan Road	Lake Co. line	throughout	NB & SB	intermittent grass growing over edge line	Roads & Drainage	edge grass to expose edge line	low

## **N. Sadler Road**

### Existing Conditions

Sadler Road is a two-lane collector running east-west, audited from Round Lake Road to the Lake County line. It is entirely located in unincorporated Orange County. The cross section is rural and serves mostly residential and agricultural land uses, with some commercial near US 441.

Pavement markings consist of yellow centerline and edge line striping throughout, as well as reflective pavement markers on the centerlines. The speed limit is 45 mph for the length of the roadway. Sidewalk is provided on the north side of the road from Dora Drive to the east for the length of the Dora Estates subdivision wall. No bike lanes are provided. There are center left turn lanes at Sloewood Court.

Overhead utilities exist for the length of the roadway with street lighting provided from US 441 to Sloewood Court

There is a 10-ton weight limit for Sadler Road west of US 441.

Lake Ola is located north of Sadler Road between Dora Drive and Ola Beach Drive. There is a reverse curve around Lake Poe, east of Cemetery Road.

### Speed Limits

At the request of a citizen for a speed reduction from 45 mph to 35 mph along Sadler Road, the speed limit was reviewed. A speed study was conducted on Sadler Road, east of Sloewood Drive. This speed study resulted in an 85th percentile speed of 54.70 mph, indicating that a speed reduction is not appropriate.

### Crash History and Analysis

Two crashes were reported along Sadler Road segments (not located within 500 feet of an intersection) for the years 2006-2008. The following number of crashes was reported at each intersection:

Dora Drive – 2

Ola Beach Drive – 1

US 441 – 19

Round Lake Road – 2

Intersections with three or more crashes during the three year period were analyzed in detail. The following pages include detailed summaries and collision diagrams for the Sadler Road/US 441 intersection.

Forty-two percent, or eight out of the nineteen crashes were rear-end crashes. Twenty-one percent of the crashes were left turn crashes and sixteen percent of the crashes were right angle crashes. Out of these left turn and right angle crashes, four of these were caused by red light running.

### Recommended Countermeasures

The following table lists the areas for improvement for Sadler Road. All of the high-priority safety risk issues along Sadler Road were related to poor pavement edge conditions. These high-priority safety risk issues were corrected immediately. All other safety risks were considered low-cost, low- to medium- priority safety risks.

It is likely that the reason the pavement edge is so severely rutted for the eastbound approach to US 441 is that vehicles are leaving the pavement edge to either turn into the convenience store on the southwest corner of the intersection or navigate around queued left-turning vehicles. For the short term, maintenance crews have reinforced the pavement edge. However, as funds become available for intersection improvement projects, it is recommended that an eastbound right turn lane be added at the intersection of Sadler Road and US 441.

Crash Summary											
Location: SADLER ROAD						Intersection Control: Signalized					
Intersecting Route: US 441						M.P.:		Engineer: CNL			
Study Period From: 2006				To: 2008				County: Orange			
NO.	DATE	DAY	TIME	TYPE	FATAL	INJURY	PROPERTY DAMAGE	DAY/NIGHT	WET/DRY	CONTRIBUTING CAUSE	ACCIDENT REPORT #
1	3/4/2006		2:26 PM	sideswipe	No	Yes	\$38,000	Day	Dry	improper left turn, FTY R/W	FHPD06OFF023206
2	5/20/2006		6:26 PM	rear end	No	Yes	\$8,000	Day	Dry	Careless driving	FHPD06OFF053792
3	7/22/2006		3:37 PM	rear end	No	No	\$300	Day	Dry	Careless driving	FHPD06OFF078098
4	8/13/2006		7:31 PM	rear end	No	No	\$2,000	Day	Wet	Careless driving	FHPD06OFF086583
5	8/22/2006		12:53 PM	rear end	No	Yes	\$4,500	Day	Dry	Careless driving	FHPD06OFF089848
6	2/13/2007		8:18 PM	rear end	No	Yes	\$500	Day	Dry	Careless driving	FHPD07OFF014986
7	4/8/2007		12:55 AM	sideswipe	No	No	\$1,000	Day	Dry	Improper left turn	FHPD07OFF036279
8	4/16/2007		12:11 AM	left turn	No	No	\$5,500	Day	Dry	Red light running	FHPD07OFF039341
9	7/25/2007		4:41 PM	rear end	No	No	\$100	Day	Dry	Careless driving	FHPD07OFF075718
10	8/21/2007		3:23 PM	head-on	No	Yes	\$10,000	Day	Dry	Drove left of center	FHPD07OFF086283
11	10/9/2007		7:35 AM	left/sideswipe	No	No	\$7,500	Day	Dry	careless/improper lane change	FHPD07OFF104397
12	11/24/2007		10:00 PM	right angle	No	No	\$4,500	Night	Dry	Careless driving	FHPD07OFF121390
13	11/24/2007		10:41 AM	left turn	No	Yes	\$8,000	Day	Dry	Red light running	FHPD07OFF121202
14	1/29/2008		7:51 AM	right turn	No	No	\$1,500	Day	Dry	Failure to Yield R/W	FHPD08OFF009122
15	2/15/2008		10:59 AM	right angle	No	Yes	\$6,000	Day	Dry	Red light running	FHPD08OFF015152
16	4/6/2008		6:43 AM	left turn	No	Yes	\$10,000	Day	Dry	Failure to Yield R/W	FHPD08OFF033985
17	5/6/2008		9:38 AM	right angle	No	Yes	\$4,000	Day	Dry	Red light running	FHPD08OFF044352
18	11/10/2008		7:06 AM	rear end	No	No	\$2,300	Day	Dry	Careless driving	FHPD08OFF104276
19	12/19/2008		2:20 PM	rear end	No	No	\$250	Day	Dry	Careless driving/DUI	FHPD08OFF116535
TOTAL											
TOTAL NO.	FATAL	INJURY	PROPERTY DAMAGE	ANGLE	LEFT TURN	RIGHT TURN	REAR END	SIDE SWIPE	HEAD ON		
19	0	9	19	3	4	1	8	3	1		
%	0%	47%	100%	16%	21%	5%	42%	16%	5%		
ONE VEHICL	PED/BIKE	DAY	NIGHT	WET	DRY	EXCESS SPEED	FTY R/W	DUI			
0	0	18	1	1	18	0	3	1			
	0%	0%	95%	5%	5%	95%	0%	16%	5%		
TOTAL VEHICLES ENTERING/ADT:						CRASH RATE:			MEV		

Orange County Traffic Engineering Division  
COLLISION DIAGRAM

LOCATION ID: Sadler Road and N. Orange Blossom Trail (US 441)

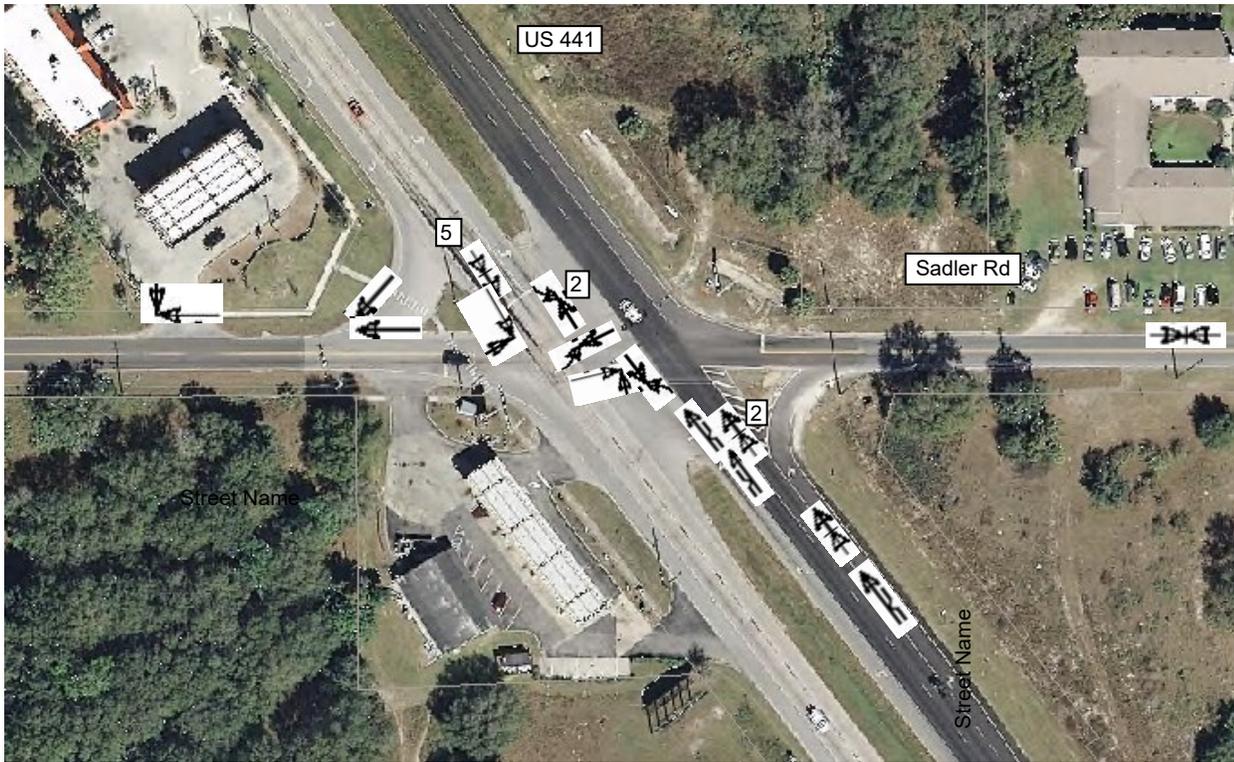
COUNTY: Orange

CITY: Unincorporated

PERIOD 2006

TO: 2008

PREPARED BY: CNL



COLLISION SYMBOLS

CONDITION CODES

	VEHICLE PATH		REAR-END COLLISION
	BACKING VEHICLE		HEAD-ON COLLISION
	NON-INVOLVED VEH.		SIDE SWIPE
	PEDESTRIAN PATH		OUT OF CONTROL
	FIXED OBJECT		OVERTURNED VEHICLE
	PARKED VEHICLE		LEFT TURN COLLISION
	PERSONAL INJURY		RIGHT ANGLE COLLISION
	FATALITY		

PAVEMENT CONDITION:  
D=DRY W=WET I=ICY  
WEATHER CONDITION:  
C=CLEAR R=RAIN F=FOG S=SNOW  
LIGHT CONDITION:  
L=DAYLIGHT N=NIGHT (DARK)  
TIME OF DAY (MILITARY)

CRASH SUMMARY

	PROP. DMG ONLY	INJURY	FATAL	TOTAL
DAYTIME	9	9	0	18
NIGHTTIME	1	0	0	1
TOTAL	10	9	0	19

## Sadler Road

Rural Road Safety Audit

Road: Sadler Road from Round Lake Road to Lake County Line

Date: 10/29/09

Number of lanes:

2LU

Speed limit:

45 mph

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
1	just west of	n/a	Round Lake Road	WB	speed limit sign is offset too far from the road and bent	Traffic Engineering signs	reposition sign	low
2	east of	n/a	Laughlin Road	EB&WB	double yellow centerline is faded and some RPM's missing for approx 120 ft. across from Monterey Mushrooms	Traffic Engineering markings	refresh centerline and replace missing RPM's	medium
3	40' east of	40' west of	Laughlin Road	EB&WB	double yellow centerline is faded	Traffic Engineering markings	refresh centerline	medium
4	east of	n/a	US 441	EB&WB	double yellow centerline is faded for approx. 40 ft.	Traffic Engineering markings	refresh centerline	medium
5	west of	n/a	US 441	EB&WB	double yellow centerline is faded for approx. 160 ft.	Traffic Engineering markings	refresh centerline	medium
6	at approach to	n/a	US 441	WB	stop bar is faded	Traffic Engineering markings	refresh stop bar	medium
7	at approach to	n/a	US 441	EB	pavement edge drop-off and soft sand on south side of road. Drivers may be leaving the pavement around queued vehicles.	Roads & Drainage	refer to Roads & Drainage	high
8	in intersection	at	US 441	EB	Request right turn lane onto US 441 from Sadler Rd. Citizen concern.	Orange County Public Works	Submit for possible intersection improvement	low
9	0'	35' east of	Ola Beach Drive	WB	pavement edge drop-off	Roads & Drainage	reinforce pavement edge	high
10	0'	130' west of	Ola Beach Drive	WB	pavement edge drop-off	Roads & Drainage	reinforce pavement edge	high
11	west of	n/a	Dohnavur Drive	WB	speed limit sign is offset too far from the road	Traffic Engineering signs	reposition sign	low
12	18'	93' east of	Bigler Lane	WB	pavement edge drop-off	Roads & Drainage	reinforce pavement edge	high
13	0'	250' west of	7435 address	WB	pavement edge drop-off	Roads & Drainage	reinforce pavement edge	high
14	east of	n/a	7751 driveway	EB	speed limit sign is too low - approx. 4.5 ft	Traffic Engineering signs	reset sign to proper vertical clearance	low
15	just east of	n/a	7751 driveway	EB&WB	object markers on either side of drainage structure are faded	Traffic Engineering markings type OM2-2V	replace object markers yellow/white back to back	medium
16	NW corner of	n/a	Sloewood Drive	WB	pavement edge drop-off	Roads & Drainage	reinforce pavement edge	high
17	at	n/a	Sloewood Drive	WB	object marker for drainage structure is bent and not perpendicular to approaching traffic on Sloewood Drive	Traffic Engineering signs	reset object marker	medium

## Sadler Road

Rural Road Safety Audit

Road: Sadler Road from Round Lake Road to Lake County Line

Date: 10/29/09

Number of lanes:

2LU

Speed limit:

45 mph

No.	From	To	Cross Street	Direction	Problem	Type of Work	Solution	Priority
18	0'	100' west of	Sloewood Drive	EB	Sight distance concern at SB Sloewood Dr, LT onto Sadler Rd.	Roads & Drainage	Trim trees west of Sloewood Dr, on north side of road.	low
19	west of	n/a	Sloewood Drive	WB	speed limit sign is bent/damaged	type R2-1	replace 45 mph speed limit sign	low
20	336' west of 7851 driveway	for 287'	west of Sloewood Drive	EB	pavement edge drop-off	Roads & Drainage	reinforce pavement edge	high
21	NW corner of	n/a	Dora Drive	WB	pavement edge drop-off	Roads & Drainage	reinforce pavement edge	high
22	US 441	to	Dora Drive	EB & WB	Lower speed limit to 35. Citizen Concern	Traffic Engineering Admin	Speed study performed. Speed limit is appropriate.	low
23	50'	1300' east of	Sloewood Drive	WB	Trim trees to improve sight distance backing out of driveways. Citizen concern.	Roads & Drainage	Trim Trees to right of way line.	low
24	Sloewood Ct.	US 441	intermittently throughout	EB	white edgeline is covered by grass	Roads & Drainage	edge grass to expose edgeline	low
25	east of Monterey Mushrooms at 5949 address	Lake Co. line	intermittently throughout	WB	white edgeline is covered by grass	Roads & Drainage	edge grass to expose edgeline	low

## **VI. Solutions to Citizen Concerns Outside the Study Area or Orange County Jurisdiction**

Citizen complaints received from the community meetings related to roadways outside the study area will be addressed and resolved through the usual Orange County Traffic Engineering Division citizen complaint procedures.

Safety issues found through the study field data collection process or through citizen complaints will be forwarded to the appropriate agency for resolution.

## **VII. Recommended Long-Term Capital Improvements**

As funds become available for major roadway or intersection improvements, the following projects should be considered:

- Kelly Park Road and Plymouth Sorrento Road – Add turn lanes in all directions.
- Ponkan Road and Plymouth Sorrento Road – Add turn lanes in all directions.
- Ponkan Road – Investigate roadway lighting warrants between Ponkan Pines Road and Vick Road as part of any future Ponkan Road widening project.
- Round Lake Road and Ponkan Road – Remove the southbound right (SBR) turn lane, providing 35' turning radius. Relocate stop sign to stop bar.
- Sadler Road and US 441 - Add an eastbound right (EBR) turn lane.

## **VIII. Conclusion**

Extensive data collection, including daytime drives and night-time drives, and community meetings for citizen input, were conducted to evaluate traffic safety conditions in this rural northwest Orange County study area. Speed limits were also reviewed, with changes to posted speeds implemented on Laughlin Road and Ponkan Road.

The results of the traffic safety audit indicate that many improvements are recommended to increase roadway safety. Most of the high-priority safety risk concerns were related to pavement edge condition and visibility of traffic control devices due to growth of vegetation. These concerns were addressed immediately. Low- to medium- priority safety risk concerns will be addressed and resolved according to standard scheduling. These consist mainly of improvements to faded pavement markings and replaced or revised roadway signs. Desirable long-term capital improvements were identified for implementation as funds become available.

**Appendix**  
**Community Meeting Sign-In Sheets**