

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

TRAFFIC ENGINEERING REPORT

February 13, 2009

Pleasant Hill Road at Peachtree Industrial Boulevard

Reason for Investigation: The above referenced intersection has a red light running photo enforcement system.

Topography: Pleasant Hill Road is an urban principal arterial. It runs from Lawrenceville Highway/US 29/SR 8, in Lilburn, northeast to the Chattahoochee River, where it becomes State Bridge Road and continues to Alpharetta. Pleasant Hill Road has two through lanes, a right turn lane, and a left turn lane with protected/permitted phasing on both the eastbound and westbound approaches to the study intersection.

Peachtree Industrial Boulevard is also an urban principal arterial. It runs north from Chamblee through Buford. Peachtree Industrial Boulevard becomes Peachtree Road south of Chamblee, and it is called McEver Road north of Buford. On both the northbound and southbound approaches at the study intersection, Peachtree Industrial Boulevard has three through lanes, included a shared through/right turn lane, and a protected only left turn.

Vehicle Volumes: Pleasant Hill Road ADT = 41,690
Peachtree Industrial Boulevard ADT = 35,740

Vehicle Speeds: Both Pleasant Hill Road and Peachtree Industrial Boulevard have posted speed limits of 45 miles per hour.

Pedestrian Movements: Pedestrian movements were observed during this study.

Existing Traffic Control: The subject intersection is controlled by a traffic signal.

Adjacent Traffic Signals: Pleasant Hill road is signalized 1,000 feet west of the study intersection at Peachtree Hill Shopping Center/North River Professional Park, and 2,400 feet east of the study intersection at McClure Bridge Road/Howell Ferry Road.

Peachtree Industrial Boulevard is signalized 840 feet north of the subject location at Peachtree Hill Shopping Center, and 1,880 feet south at Howell Ferry Road.

Crash Analysis: Red light running cameras were installed at the study intersection in March of 2005. Crash records at the intersection indicate that there were 12 red light running crashes in the 27 months leading up to the red light running photo enforcement

system installation. In the 27 months following the installation of the cameras there were 8 red light running crashes. These records indicate that red light running cameras may have helped contribute to a 33% reduction in red light running crashes at the study intersection.

Red Light Running Countermeasures: There are several measures in place at the intersection of Peachtree Industrial Boulevard at Pleasant Hill Road to help prevent red light running. The following is a summary of red light running countermeasures at the intersection;

To help improve signal visibility:

- The placement and number of signal heads has been determined based on Georgia Department of Transportation (GDOT) guidance.
- The signal display uses 12-inch signal lenses.
- The line of sight from any approach is over 800 feet.
- The signal heads are placed an appropriate distance from the stop line.

To help increase the likelihood of stopping:

- SIGNAL AHEAD signs have been installed on all approaches.
- Crosswalk and stop bar pavement markings are in fair condition.
- Set-back loops have been placed 400 feet from the stop bars on Peachtree Industrial Boulevard, corresponding to 6 seconds away at 45 miles-per-hour, to provide dilemma-zone protection.
- No advance warning flashers are in use as the signal heads are clearly visible from a sufficient distance.
- There are no left turn signal signs.
- There is some pavement rutting which would not prevent vehicles from stopping.

To help improve signal conspicuity:

- There are redundant signal heads on all signalized phases except permitted/protected left turn phases.
- All signal heads employ LED signal lenses.
- Backplates are not in use.
- There are no strobe lights at the intersection.

Signal Warrants: N/A

Signal Clearance Intervals: The yellow clearance intervals of the photo enforced traffic signal phases must be equal to the calculated minimum yellow clearance intervals, plus one second. The following table shows the existing clearance intervals, and the required minimum clearance intervals.

Signal Phase	Existing Clearance Intervals		Required Clearance Intervals	
	Yellow Time (s)	Red Time (s)	Yellow Time (s)	Red Time (s)
Phase 1	4.3	2.5	4.3	2.3
Phase 2	5.4	1.5	4.4	2.3
Phase 3	4.2	2.5	4.2	2.1
Phase 4	5.3	1.5	4.3	2.4
Phase 5	4.3	2.5	4.3	2.3
Phase 6	5.4	1.5	4.3	2.5
Phase 7	4.2	2.5	4.2	2.2
Phase 8	5.3	1.5	4.3	2.4

As can be seen from the table, the yellow clearance intervals at the intersection are at least equal to the minimum calculated yellow clearance intervals, plus one second, for all phases that employ Red Light Running Photo Enforcement.

Conclusions: The results of this study indicate red light running photo enforcement is reducing the number of right angle accidents at this intersection.

Recommendations: The City of Duluth requests a permit to continue operating red light running photo enforcement at this location.

Attachments: Location Map
 Crash Data
 Camera System Design

PREPARED BY: _____ DATE: _____
 Street Smarts Traffic Engineer

RECOMMENDED BY: _____ DATE: _____
 District Traffic Engineer

APPROVED BY: _____ DATE: _____
 State Traffic Engineer



Traffic Engineering Report

May 18, 2009 (Updated from 2/6)

Beaver Ruin Road (S.R. 378) at Steve Reynolds Boulevard

Reason for Investigation: The above referenced intersection was studied for possible red light running photo enforcement.

Topography: S.R. 378 is an east/west arterial beginning at Buford Highway/S.R. 13 and ending at Lawrenceville Highway (S.R. 8). S.R. 378 has two through lanes northbound and two through lanes with dual left turn lanes westbound. Steve Reynolds Boulevard has dual left turn lanes, two through lanes and a single right turn lane. S.R. 13 is a north/south arterial beginning at Indian Trail Road and ending at Pleasant Hill Road.

Vehicle Volumes: Beaver Ruin Road
ADT = 39,507 (07)

Steve Reynolds Boulevard
ADT = 26,336 (07)

Vehicle Speeds: Beaver Ruin Road and Steve Reynolds Boulevard have posted speed limit of 45 mph.

Pedestrian Movements: No Pedestrian movements were observed during this study.

Existing Traffic Control: The subject intersection is controlled by a traffic signal.

Adjacent Traffic Signals:

Beaver Ruin Road

- Park Drive is signalized 2200 feet west of the subject location.
- I-85 Northbound Ramp is signalized 4700 feet west of the subject location.
- I-85 Southbound on S.R 13 is signalized 5100 feet west of the subject location.

Steve Reynolds Boulevard

- Meadow Creek High School is signalized 3500 feet south of the subject location.
- International Blvd is signalized 1600 feet north of the subject location.

Accident Analysis: Gwinnett County reviewed the past three years (2006-2008) of crashes at the intersection to determine the number of right angle accidents over the last three years. The accident history available (01/01/06-12/31/08) was reviewed to determine this intersection had over 5 accidents per year caused by red light violators. A total of sixteen right (RA) and left angle (LA) accidents were reported for the thirty-six (36) month period with eight resulting injuries. All of the reported angle accidents were caused by red light violators.

Year	Red Light Running History				
	Crash	Inj	Fatal	RA	LA
2006	6	6	0	3	3
2007	5	1	0	3	2
2008	5	1	0	2	3
Total	16	8	0	8	8

Attached is a crash report that was prepared for the Gwinnett County Police Department (PD) dated Nov 30, 2007. The PD was tasked with managing the RLR program in Gwinnett County and this included choosing the intersections for the cameras. The report shows the number of injuries for intersection in the county from July 1, 2006 to June 30, 2007. The Gwinnett County PD choose the intersection based on it being the third highest county location (the other 5 intersection in the top eight were located in incorporated areas in the county).

Signal Warrants: N/A, Existing Signal

Signal Clearance Intervals:

	<u>Yellow</u>	<u>Red</u>
Phase 1	4.6	2.0
Phase 2	5.8	1.5
Phase 3	4.1	2.0
Phase 4	5.2	2.0
Phase 5	4.6	2.0
Phase 6	5.8	1.5
Phase 7	4.1	2.0
Phase 8	5.2	2.0

See attached spreadsheet for calculations – all yellow clearances were set with at least an additional second above the ITE yellow clearance formula.

Counter Space Measures:

This list of countermeasures is from the ITE/FHW report titled “Making Intersections Safer: A Toolbox of Engineering Countermeasures to Reduce Red Light Running: An Informational Report (2003). All countermeasures in the report are shown below as tried or not tried.

Improve Signal Visibility/ Conspicuity

Tried:

1. There are two signal heads for each approach to the intersection.

2. All traffic signal heads are 12" in size.
3. All traffic signal heads are mounted overhead.
4. All approaches to the intersection meets the MUTCD sight distance requirements.
5. Signal head design in accordance to MUTCD.
6. All signal heads have LED signal lenses.
7. Intersection has street lights.

Not Tried:

1. Programmable signal heads or louvered lens – don't have a sight distance issue
2. Backplates – no sun problems at intersection
3. Rumble strips – too noisy for businesses in area and require too much maintenance on high volume roads
4. Installing near side signal heads – overhead signal heads working well
5. Install double red signal heads – not used in Georgia

Increase Likelihood of Stopping

Tried:

1. There are signal ahead signs for the intersection.
2. There are stop bars on each approach.
3. All approaches have operating loop detectors.
4. Pavement surface in good condition

Not Tried:

1. No advance warning flasher – no sight distance problem
2. Left turn sign for left turn lanes – not used in county

Address Intentional Violations

Tried:

1. Signal timing was last optimized in 1998 but we anticipate having the S.R. 378 corridor optimized in 2009.
2. Signal cycle length varies from 100-140 seconds depending on time of day.
3. Yellow change interval is per the ITE proposed recommended practice with one additional second per Georgia Law.
4. All red clearance intervals is per ITE proposed recommended practice.
5. Signal is designed with dilemma zone loops on S.R. 378.
6. Signals on S.R. 378 are in a signal system with six intersections, no system on Steve Reynolds Boulevard.

Not Tried:

1. None

Eliminating the Need to Stop

Tried:

1. Signal is warranted

Not Tried:

- 1. This intersection is not a good candidate for a roundabout because of the high traffic volume at the intersection

Citations Issued:

From 1/10/06 to 3/31/09 1417 (All Citations written by GCPD for the intersection, all approaches)

From 1/15/09 to 4/27/09 618 (Warnings by camera for both approaches)

The number of motorists running the red lights at the intersection is significantly high for the approach with the red light running camera. The camera was installed in Jan 2009.

Approach Monitored: The red light cameras monitor red light running violations for the approach on Steve Reynolds Blvd (both approaches). The cameras were operational on Jan 15, 2009.

Conclusions: The results of this study indicate red light running photo enforcement would reduce the number of right angle accidents and injuries at this intersection. There are many motorists running the redlights on the approaches that are monitored.

Recommendations: Gwinnett County requests approval to install red light photo enforcement at this location.

Attachments: Location Map
Accident Data
RLC Design

PREPARED BY: _____
County Traffic Studies Engineer

DATE: _____

RECOMMENDED BY: _____
County Traffic Engineer (Director)

DATE: _____

RECOMMENDED BY: _____
District Traffic Engineer

DATE: _____

APPROVED BY: _____
State Traffic Engineer

DATE: _____

**GWINNETT COUNTY DEPARTMENT OF TRANSPORTATION
TIMING PARAMETER WORKSHEET**

LOCATION: SR 378 / BEAVER RUIN RD @ STEVE REYNOLDS BLVD INT #: 163

CALC DATE: 12/18/08 BY: 5853 RMS Location? Y

INPUT DATE: 12/26/09 BY: 5853

PHASE	1	2	3	4	5	6	7	8
STREET	<i>Bvr Ruin</i>	<i>Bvr Ruin</i>	<i>SRB</i>	<i>SRB</i>	<i>Bvr Ruin</i>	<i>Bvr Ruin</i>	<i>SRB</i>	<i>SRB</i>
MOVEMENT	<i>EBL</i>	<i>WB</i>	<i>NBL</i>	<i>SB</i>	<i>WBL</i>	<i>EB</i>	<i>SBL</i>	<i>NB</i>
SPEED (mph)	30	45	30	45	30	45	30	45
% GRADE	-4.6	2.9	1.1	5.1	3.6	-4.2	5.1	1.1
CLEARANCE WIDTH, W (ft)								
LOOP LENGTH (ft)	40	6	40	40	40	6	40	40
LOOP PRESENCE (s)	0.9	0.1	0.9	0.6	0.9	0.1	0.9	0.6
Y calc	3.6	4.0	3.1	3.8	3.0	4.8	3.0	4.2
Y USE	4.6	5.8	4.1	5.2	4.6	5.8	4.1	5.2
R USE	2.0	1.5	2.0	2.0	2.0	1.5	2.0	2.0
PED		2		4		6		8
CROSSING LEG								
CROSSING WIDTH (ft)								
PED WALK								
PED CLEARANCE								

Ycalc = $t + V / (2a + 64.4g)$; table look-up used; if no % GRADE, 0 assumed

Yuse = Max (2&6, 1&5, 4&8, 3&7) [plus 1 second if RMS location]

Rcalc = $(W+L)/V$ where L=veh length(ft), V=speed(mph)

Ruse = Max (2&6, 1&5, 4&8, 3&7)

PED CLEARANCE = CROSSING WIDTH / 3.5 ft/sec

PED WALK = 7 sec by default, 5 sec for congested corridors with few peds

NOTES: *New RMS law into effect 01/01/09. Only Ys recalculated at this time. Rs based on existing values.
%GRADE based on field measurements.
See Excel file (below) for previous values.*