

# Yellow Timing Research

## Blowing the Whistle on a Dangerous Crime

Exposing Red Light Camera and Speed Ticket Camera Fraud

(To: President Obama, Congress, FBI and Attorney General), September 2009

by *Greg Mauzy*

One of the biggest lies is: "Cameras only target deliberate, dangerous red-light runners." Over 70% of RLV [tickets] occur less than 1 second into the red signal. These violations are invisible and would NOT be ticketed by a live officer. These unethically fined, fraction of a second RLVs are NOT dangerous and NOT done deliberately but the pre-planned result from illegally/immorally short yellows. Entrapment for profit, NOT a driver behavioral problem.

**For the record: traffic engineering-even when done honestly- is not an exact science. Expecting fallible humans to respond perfectly to an imperfect science is extremely unreasonable. But to entrap, demonize and fine people, while violating their rights and causing more crashes, injuries and fatalities is UNCONSCIONABLE.**

There are over 15 documented problems with the [yellow] timing of traffic signals. Read: "Camera Enforcement – A Picture of Fraud" (52 pages, Chapter: Truth at [www.bhspi.org/mauz/](http://www.bhspi.org/mauz/)). Extensive yellow time research is contained in "Camera Enforcement – Developing the Factual Picture" (96 pages, 2001, Mauzy).

To summarize. The Institute of Transportation Engineers-from 1989-1994 (just in time for RLTCs)- lowered yellow times by replacing yellow clearance time with red, deterring lengthening time (SOP for decades) and incredulously recommending that enforcement can be used instead. Several ITE members are known camera promoters (Richard Retting).

Intersections previously employing 5 seconds of proper, safe yellow, now contain only 3.6 seconds. Hence, a manufactured increase (100%+) in red light violations. Camera companies to the rescue! Less yellow equals more ticket money but, unfortunately, more crashes, injuries and fatalities. Serious negligent, criminal malpractice.

Institute of Transportation  
Engineers  
Formulas to Determine  
Minimum Yellow Interval  
Lengths.

<u>Kinematic Model</u>		<u>Rule of Thumb</u>		<u>Uniform Value</u>	
<u>Approach</u>	<u>Speed</u>	<u>Approach</u>	<u>Speed</u>	<u>Approach</u>	<u>Speed</u>
	<u>Seconds</u>		<u>Seconds</u>		<u>Seconds</u>
25 MPH	3.0	Up to 35MPH	3.0	All signals = same	
30 MPH	3.3	35 to 50 MPH	4.0	yellow interval length.	
35 MPH	3.6	50+	5.0	Not recommended by	
40 MPH	3.9			most traffic engineers.	
45 MPH	4.3	<u>Palm Beach County, FL</u>		However, 5.5 seconds	
50 MPH	4.7	Up to 45 MPH	4.0	at all signals would be	
55 MPH	5.0	50+	5.0	fair, reasonable and safe.	
60 MPH	5.4	left turns	4.0	(Dornsife Study 2002).	

All above yellow minimums apply to level intersections and contain 1 second of driver perception/reaction time (PRT).

The Kinematic Model bases yellow timing on a complicated formula determined by vehicle (car) velocity, deceleration, 1 second PRT, grade of roadway, intersection width and speed of approach (supposed to be 85th %ile).

All yellow formulas (Kinematic, Rule of Thumb, Uniform Value) contain the following [admitted] limitations:

- ❖ Driver perception/reaction time (PRT) of one second is too short for 47% of the motorists' population. Proper PRT minimum should be over 2 seconds. Proper engineering is based upon the 85<sup>th</sup> %ile rule NOT the 53<sup>rd</sup> rule. Several studies prove 1 second PRT is dangerously wrong! (AASHTO, Hooper/McGee, etc.).
- ❖ Yellow times do NOT accommodate slower than average drivers, the elderly or people with disabilities. This probably violates the Americans With Disabilities Act and is certainly unethical.
- ❖ Yellow times are set for dry weather only. Wet requires longer stops and increases PRT. Camera companies boast that their machines catch clear pictures of violators in all weather.
- ❖ Large truck guidelines are not available or required. Does anyone honestly think a loaded semi or dump truck can stop as short or quickly as a passenger car? Yet, no law requires extra yellow even along established truck routes. See crash photos (page 11, "Picture of Fraud") for what happens because of short yellows/cameras versus cars and trucks.

- ❖ Minimum stopping distance times are too aggressive. Who can safely and smoothly stop in 3.6 seconds (includes 1 second PRT) from 35 MPH? Maybe Jeff Gordon? These minimum stopping times-with no yellow clearance anymore-FORCE people to violate the red signal. Entrapment! Even with authorized minimums! But greed drives most camera company/local governments to further cheat by using less than minimum (illegally short) yellows. See next.
- ❖ All jurisdictions, for expediency, use the posted speed limit as the approach speed, which fails to provide an accurate value to determine amber change intervals. Yellow times (for SAFETY) must be determined by the 85<sup>th</sup> %ile speed of traffic. A 5 year, 27 states, Federal Highway Administration Speed Limit Survey found over 90% of U.S. speed limits are posted too LOW! (Enclosed). Since lower SL's do not reduce traffic speeds and 85<sup>th</sup> %ile speed limits are safest and required by law [Manual on Uniform Traffic Control Devices, Section 2B.11] there can be NO VALID EXCUSE to maintain a lower limit. Lower limits CAUSE more crashes by increasing speed variance between vehicles, confusing yielding traffic, increasing tailgating and decreasing yellow times at traffic signals. For SAFETY reasons, speed limits (and yellow times) must reflect the speed of traffic NOT the other way around. Greed has perverted traffic engineering controls into revenue generation devices that entrap and punish reasonable drivers while causing more crashes, injuries and fatalities. EVERY camera enforced speed limit is under-posted.

If traffic flows at 50 MPH (85<sup>th</sup> %ile) the speed limit is typically under posted at 40 or maybe 45. The minimum yellow of about 4-4.5 seconds falls .5 -1 second short, or enough to entrap 50-100% more drivers, while increasing crashes by a conservative estimate of +25%. Extra crashes always lead to extra injuries and sometimes fatalities. Also see Armeey.

Humble, Houston and Dallas have all been caught with 3.6 second yellows at 45-50 MPH approach speed limits. These limits require by law 4.3-5.0 seconds of yellow, minimum. Houston extorted \$21 million while causing over 315 extra crashes, with 120 injuries, after placing RLTCs at 50 intersections. When Dallas corrected (added more yellow) to their 21 illegally timed intersections, the cameras became unprofitable and were removed. Legislated extra yellow in Georgia reduced RLVs 60-80% and ended camera programs in 7 cities.

- ❖ Minimum yellows are just that – minimums. It's supposed to be a starting point, NOT an ending point. ALL yellow timing research agrees: more yellow (+1 second) reduces violations by 40-75% and reduces crashes 30-50% (See: Truth and Conclusion in "Picture of Fraud" for 7 studies). These real results trounce even the fantasy claims of what cameras can do! In fact, more yellow seriously reduces RLVs immediately while cameras require months of ticketing to produce only 20-30% less violations. **Honest yellows are kryptonite to dishonest cameras.**

In over 12 years of research, I have yet to find camera sites using more than minimum yellows. In fact, MOST use even less than minimum to increase profits, in clear contradiction to established safety regulations. An honest safety program would maximize yellows (and speed limits) to reduce crashes, injuries and fatalities. Camera programs are an enforcement for profit scam causing more crashes, injuries and fatalities.

U.S. Law “requires” an absolute minimum yellow of no less than 3.0 seconds AND only qualifies at a 25 MPH approach speed intersection with few lanes of traffic. The “suggested” maximum is 6 seconds. Texas minimum is 3.5 seconds. **For safety and compliance, 4.0 seconds (below 40 MPH) should be the absolute shortest yellow allowed by State or U.S. Law.** Three seconds is way too short, at any intersection, for PRT and time to safely stop, forcing motorists to violate the red. “Smoking gun documents” (camera company’s confidential contract memos) encourage camera sites using only 3 seconds of yellow, downhill approaches, high volume/unsynchronized traffic and other blatantly dangerous tricks to maximize red light violations for maximum profit. See: San Diego RLC Court case where my 2001 book was presented as evidence against RLTCs ([www.thenewspaper.com](http://www.thenewspaper.com)).

Chicago and New York City employ over 100 RLTCs each and unethically employ extremely inadequate 3.0 second yellows. Chicago contains some intersections as low as 2.9 seconds (Fagel). Big city intersections often contain 14 lanes of cross traffic and approach speeds over 40 MPH. Three seconds is deadly short and heinous entrapment for profit! All large city, multiple lane intersections should-by force of law-contain 5-6 seconds of yellow.

**If the honest goal is safety, why would any reasonable human being employ or endorse the absolute minimum (or even less) yellow? Yellow is the key to safety NOT ticket cameras.**

In 2002, during a rare moment of 80% conscience, the father of U.S. ticket cameras, Richard Retting of the Insurance Institute for Highway Safety, admitted to the yellow timing malpractice, entrapping and ticketing [invisible] non-dangerous violators and that money (profits) encouraged these frauds upon the driving public.

These revelations were revealed in a New York Times article, “Are Red-Light Cameras Aimed at Safety or Fines,” dated October 23, 2002 (<http://www.nytimes.com/2002/10/23/automobiles/23BIED.html?scp=1&sq=richard%20retting%20red%20light%20cameras&st=cse>).

Retting said, “Using 3 seconds of yellow everywhere probably creates red light runners out of the otherwise law abiding drivers.” “Probably”? Try definitely.

Retting admitted that “most people who received a ticket through photo enforcement had missed the light by less than a second. Yet, he said collisions are more likely to occur when vehicles enter intersections more than a second after the light turns red.”

Note. More than 70% of camera tickets are for <1 second into the red. Crashes occur more than 3 seconds into the red.

Retting concurred that these RLVs were NOT dangerous and wrongly ticketed. “We don’t ticket drivers going 3 or 4 miles over the speed limit, but with red light cameras we do that.”

Note. Again an understatement. These RLV, <1 second tickets are like receiving a speeding ticket for only 1 mph over the limit. Remember, even proper engineering is NOT an exact science. And speedometers can be inaccurate by 3-4 mph.

“To avoid a backlash, which he fears might be gathering, he would like to see cities ignore violations of under one second. But, he said it might be hard for cities and their contractors [camera companies] to do that if they become too mired in revenue.”

Ironic. The IIHS guidelines for installing red light [ticket] cameras – written by Retting in the late 1990’s – call for a ½ second grace period into the red (or .4 seconds) before ticketing. Right away camera companies began whittling the delay down to .2-.3 seconds. New York City, where Retting helped establish the nation’s first RLTC program in 1993, then and now unethically uses 3 second yellows at ALL camera sites and only .3 seconds delay, if any.

Currently, the greed for increased revenue has all but eliminated grace periods. In fact, according to an engineer I spoke to, the camera company sales people recommend NO grace period to increase profits. He thought that was “unconscionable.” Amen!

A camera test site in Boca Raton, Florida (December 1999) averaged 42 daily RLVs. However, if a .4 second delay was applied, the violations dropped to 29 daily. That’s 31% less tickets to profit from or 13 RLVs x \$125 = \$1,625. Camera companies only see the lost revenue potential. So, unethically, having NO delay increases profits by over 30%.

California issues \$400+ camera tickets with NO delay into the red. And points are applied. Excessive fines imposed. So much for the Constitution, again!

**NOTE: In 2004, the ITE acknowledged the epidemic of engineering malpractice across the U.S. by grading themselves a D. Biased engineers – grading their own job performance – could only judge themselves one notch above failure. Houston, we have a very serious problem!**

**CORRECTING THIS ENGINEERING MALPRACTICE IS SIMPLE: REQUIRE 1-1 ½ SECOND LONGER MINIMUM YELLOWS AND HONEST 85<sup>TH</sup> PERCENTILE SPEED LIMITS. LIVES WILL BE SAVED.**

Camera promoters deceived the public into believing “red light running” was “the leading cause of urban crashes and fatalities” (Deceptions #2-#8). For the record: RLVs cause a very minor 1.5% of ALL US crashes and only 2% of fatalities (about 900 of 43,000). Urban wise, <5%, NOT 22% as dishonest camera promoters claim. For perspective, an American is 20 times more likely to be murdered (18,000 murders annually) than killed by a red light violator. True speeding numbers and percentages are similarly low, but even more ridiculously exaggerated to condone excessive enforcement.

Targeting invisible, non-dangerous violations for a very minor cause of crashes is bad enough. But now, camera promoters are exploiting legal right turns on red. Another very questionable, not even remotely dangerous, letter of the law versus spirit of the law violation. Improper right turns on red caused only 2,378 crashes of 6.33 million U.S. collisions in 1998 (US DOT Report). That is a MICROSCOPIC .037% of ALL crashes or only one of every 2,662 accidents. Again “safety” isn’t even in the picture.