



# **Illinois Department of Transportation**

2300 South Dirksen Parkway / Springfield, Illinois / 62764

## **Safety Engineering Policy Memorandum**

### **SAFETY 2-13**

### **Automated Traffic Law Enforcement Systems: Red Light Running (RLR) Camera Enforcement Systems and Automated Railroad Grade Crossing (RGC) Enforcement Systems**

**Effective March 1, 2007**

**Revised November 1, 2013**

### **INTRODUCTION**

Public Act 94-0795 (See Attachment A), which was signed on May 22, 2006, and took effect upon signature of the Governor, provides that a governmental agency in a municipality or county may establish an automated traffic law enforcement system that produces a recorded image of a motor vehicle entering an intersection against a red signal indication and is designed to obtain a clear recorded image of the vehicle and the vehicle's license plate. The installation of RLR Camera Systems may be established only in the counties of Cook, DuPage, Kane, Lake, Madison, McHenry, St. Clair and Will, and in municipalities located within those counties.

Public Act 94-0771 (See Attachment B), which was signed on May 16, 2006, and became effective on January 1, 2007, allows local agencies to work with the Illinois Commerce Commission (ICC), the Illinois Department of Transportation (IDOT), and local law enforcement officials, to establish an automated RGC enforcement system (photo or video enforcement system) at highway railroad grade crossings designated by local agency ordinance. The system shall produce a clear recorded image of the vehicle, driver, and vehicle registration plate. The installation of the automated RGC enforcement systems is not restricted to specific counties or municipalities.

This document has been prepared by IDOT to assist local jurisdictions in the procedures required for the installation of automated traffic law enforcement systems which shall encompass RLR Camera Systems by IDOT Permit at signalized intersections that include State marked and unmarked routes and automated RGC enforcement systems on State and Local routes.

## **OVERVIEW**

Enhanced traffic safety is the principal aim of the Automated Traffic Law Enforcement Systems Program. RLR Camera Systems should be installed only where a safety problem with red light running has been documented and alternative countermeasures have been implemented. There may be occasions where automated enforcement is utilized as an interim safety countermeasure until a more long term infrastructure safety improvement such as an intersection reconstruction or add-lanes project can be implemented to fully address the broader identified safety issues at a location. Typically a minimum of 3 years of crash data is needed to fully evaluate the effectiveness of such a safety improvement. If such safety improvement has been completed, and recognizing that continued enforcement of red light running may be needed in the interim, the RLR Camera System may be reinstalled at the location on an interim basis at the written request of the local agency highway authority and subject to the approval of the Department. The written request shall include a letter of support by the local law enforcement agency. The RLR Camera System may remain in place for a period no longer than 24 months after re-installation at which point the local agency highway authority shall submit to the Department a safety analysis report evaluating the safety effectiveness of the RLR Camera System. This report shall include as a measure of safety performance the number of red light running violations pre- and post-safety improvement and corresponding crash data analysis. If it is determined by the Department that the RLR Camera System is not effective as a safety countermeasure, the RLR Camera System shall be removed.

Federal Highway Administration (FHWA) has developed the publication, "Making Intersections Safer: A Toolbox for Engineering Countermeasure to Reduce Red Light Running." It is available at the following link [http://safety.fhwa.dot.gov/intersection/redlight/cameras/rlr\\_report/](http://safety.fhwa.dot.gov/intersection/redlight/cameras/rlr_report/). In addition, implementation guidance can be found at FHWA's site <http://safety.fhwa.dot.gov/intersection/redlight/outreach/>. These tools may be used to assist in determining appropriate locations for RLR enforcement. Automated RGC enforcement systems should only be utilized at public highway railroad grade crossings experiencing excessive gate violations or significant crash histories and when other safety measures such as automatic flashing light signals and gates, constant warning time circuitry and enforcement by local law enforcement officials have not been effective.

The Permit Applicant is the municipality or county requesting authorization to install and operate a RLR Camera System at signalized intersections that include State marked and unmarked routes. For automated RGC enforcement systems on State marked and unmarked routes, the local agency shall obtain a permit from IDOT.

## **RED LIGHT RUNNING (RLR) CAMERA ENFORCEMENT SYSTEMS**

### **RLR CAMERA SYSTEM DESCRIPTION**

RLR Cameras monitor the movement of traffic at designated traffic signal locations and the status (or color) of the traffic signal indication on the approach. Movement detectors, typically video detectors, check for the passage of vehicles into the intersection and if the traffic signal phase condition is red, cause pole-mounted cameras to record pictures of the vehicle position and license plate.

RLR Camera Systems shall differentiate between vehicles running a red light and those vehicles stopping slightly beyond the stop bar or those vehicles, after stopping, making a legal turn against a red indication.

### **RLR CAMERA SYSTEM ELIGIBLE LOCATIONS**

Signalized intersections that are eligible for RLR Cameras include all the following characteristics:

- Crashes attributable to red light violations.
- Documented history of red light violations where corrective actions have been previously implemented.
- Traffic signal heads have 12-inch displays with LED optics and backplates.
- Mast arm poles are used to mount signal heads on the far side of each approach leg.
- A minimum of three (3) signal displays exist for through movements and two (2) signal displays for left-turning movements.
- Sight distance meets MUTCD minimums.

Signalized intersections that do not meet the above red light running crash and violation criteria may be considered for RLR Camera Systems if the local agency submits a letter. The letter should be signed by the local agency highway authorities and the chief of the local law enforcement agency certifying that there is a perceived safety problem due to red light running and requesting RLR Camera Systems at the specific location. The Department shall have the authority to deny this request if the RLR Camera System may negatively impact the intersection operations and safety.

Signalized intersections that do not meet the traffic signal requirements, including the traffic signal head requirements, may be considered as potential candidates for RLR Camera Systems if the Permit Applicant agrees to make the appropriate upgrades at the intersection at their cost within nine (9) months of camera installation. Signal head upgrades shall be on all legs of the intersection and at the Permit Applicant's cost within nine (9) months of camera installation. The Permit Applicant shall request and justify in writing an exception to the eligible location requirements listed above. The

## **SAFETY 2-13**

**Effective: March 1, 2007**

**Revised: November 1, 2013**

**Page 4**

Department shall review and make final approval of the appropriateness of RLR Camera Systems at these locations and the necessary upgrades. The Permit Applicant shall sign a Commitment Letter agreeing to make the upgrades within the allotted timeframe and at their cost. If the local agency is unable to make the required upgrades within the allotted timeframe, the Permit Applicant shall submit to the Secretary of Transportation a formal request for a time extension.

### **RLR CAMERA SYSTEM RESTRICTED LOCATIONS**

Signalized intersections that are ineligible for RLR Cameras may include the following characteristics:

- Traffic signal is interconnected to railroad crossing controlled devices.
- Installation of RLR Camera equipment reduces existing sight distance of traffic signal devices, signage or adversely impacts pedestrian facilities.
- Where installation of RLR Camera equipment cannot meet IDOT roadway set-back minimums, or other IDOT construction requirements.
- Installations of RLR that would negatively impact intersection operations.

The Department may approve installation of RLR Cameras and video detection equipment to signal mast arm poles or signal poles in order to reduce roadside clutter and eliminate additional camera poles. This shall be subject to detailed traffic signal design plan review and may require additional modifications in order to facilitate the installation.

Additional restrictions may be identified at a later date. The Department may notify the Permit Applicant of changes that may affect them.

### **RLR CAMERA SYSTEM JUSTIFICATION**

A Justification Report shall be prepared by the Permit Applicant for the locations in which the local agency wishes to establish a RLR Camera System. The Justification Report shall include the following:

- Intersection location(s), including street names, municipality and county.
- Brief geometric description of the intersection(s) and land usage.
- Crash data and collision diagrams should be submitted, if available. It is recommended that the most recent three (3) years of available crash data be used and include the crash type, specifically left turn, angle and rear end crashes.
- Average daily and peak period traffic volumes, if available.
- Approach angles and speed limits.
- Existing traffic control devices, including signal head displays, location, phasing, if the traffic signal is part of a closed loop system or interconnected to adjacent railroad crossing control devices.
- Information concerning bicycle and pedestrian conditions at the intersection.

## **SAFETY 2-13**

**Effective: March 1, 2007**

**Revised: November 1, 2013**

**Page 5**

- A letter of concurrence for the use of RLR Cameras from a representative from the roadway authority having jurisdiction of the intersecting local roadway, when RLR cameras are proposed for installation for enforcement of RLR violations on the local roadway legs of the intersection.
- A letter from the chief of the local law enforcement agency certifying that the intersections proposed for RLR Camera Systems experience red light violations and crashes resulting from such. This letter shall also include a statement of concurrence for the use of automated RLR Camera Systems.  
For signalized intersections that do not meet the red light running crash and violation criteria to be considered for RLR Camera Systems, the local agency shall submit a letter signed by the local agency governing official and the chief of the local law enforcement agency concurring that there is a perceived safety problem due to red light running and requesting RLR Camera Systems at the specific location. The Department shall have the authority to deny this request if the RLR Camera System may negatively impact the intersection operations and safety.
- A letter from the Permit Applicant requesting Department approval of exceptions of criteria set forth in this policy.

### **SUBMITTAL REQUIREMENTS FOR APPROVED RLR CAMERA SYSTEM INSTALLATION**

The Permit Applicant shall submit to the Department the following items for consideration:

- The Justification Report for the RLR Camera System installation.
- Detailed construction plans showing all proposed RLR Camera System and existing traffic signal equipment, as outlined in the Department's Traffic Signal Design Guidelines, including the electrical service plans and disconnect location.
- Signing plans.
- Manufacturer literature and wiring diagrams.
- Description of how the RLR Camera System will be operated and maintained.
- The Permit Applicant shall obtain an ordinance or resolution agreeing to indemnify the State of Illinois for any claims brought forth as a result of the RLR Camera System, its installation, operation, maintenance and removal (See Attachment C). A copy of the local ordinance for an automated traffic law enforcement system program.

Once the Justification Report with the appropriate documentation is submitted to the Department, the location will be reviewed according to the RLR Process Flow Chart (See Attachment F). The Department's maintained traffic signal clearance intervals shall meet or exceed minimums set by the MUTCD. The Department will verify clearances upon request. Yellow change and all-red clearance interval timings are determined by the

## **SAFETY 2-13**

**Effective: March 1, 2007**

**Revised: November 1, 2013**

**Page 6**

Department and subject to change as warranted by the Department without notification.

### **SIGNING REQUIREMENTS**

Signs (See Attachment D) (R10-I104) shall be posted in advance of each intersection approach, and within the RLR enforcement intersection, typically on the far side traffic signal pole, indicating the presence of RLR Cameras at the intersection. The Permit Applicant shall provide, install and maintain the signs and shall coordinate with the Department prior to any installations.

### **OPERATIONAL REQUIREMENTS**

To minimize the impact on the state highway system, RLR Camera Systems shall not affect the operation of any traffic control device. The following items will be required:

- Electrical service for RLR Camera System equipment should come from the local electric utility company, not from traffic signal equipment or other State facilities. The electrical service may come from a private source if the system is designed by a licensed electrical engineer to current National Electric Code (NEC) requirements and has an IDOT-approved service disconnect that is readily visible and accessible. If the disconnect is off Right of Way (ROW), the permit applicant shall provide to the Department written permission from the property owner.
- To obtain status of the traffic signals, miniature current transformers may be installed on yellow and red signal circuits. RLR Camera System circuitry shall not be connected to traffic signal cables by cutting, splicing, sharing terminations or other means. No other RLR circuitry will be allowed in traffic signal facilities, including but not limited to the traffic signal cabinet, associated electrical conduit, junction boxes and handholes.
- The Department may grant installation of RLR Cameras and video detection equipment to signal mast arm poles or signal poles in order to reduce roadside clutter and eliminate additional camera poles (this shall be subject to detailed traffic signal design plan review and may require additional modifications in order to facilitate the installation).
- RLR vehicle detection shall utilize video or laser technology. Pavement loops may be considered on a location by location basis, subject to approval by the Department. Consideration will be based on pavement type and condition, existing and preferred traffic signal detection methods and designs, and consideration of potential countermeasures for saw cutting such as milling and resurfacing.
- All work inside the IDOT traffic signal controller cabinet or other IDOT facilities, shall be done by an IDOT-approved contractor.
- All RLR Camera System settings shall be reviewed and approved by the Department prior to the scheduled "Turn-On." Post "Turn-On" adjustments may be necessary and shall be monitored and approved by the Department prior to implementation. The intent is to ensure that there is no negative impact to the Department's traffic signal operations.

## **SAFETY 2-13**

**Effective: March 1, 2007**

**Revised: November 1, 2013**

**Page 7**

- Tickets shall not be issued for legal right turn on red.
- The Permit Applicant shall certify that the system is operating correctly and shall make all adjustments necessary to ensure it operates correctly and does not negatively impact the traffic operations of the intersection.

### **COSTS AND MAINTENANCE**

All costs for the materials, installation, operation, maintenance, repair and removal of the RLR Camera System shall be the responsibility of the Permit Applicant. Federal funds are not permitted for automated enforcement systems. All RLR Camera System materials shall be reviewed and approved by the Department prior to installation. RLR Camera System equipment installed in or on the Department's traffic signal equipment shall be completed in accordance with the appropriate district electrical maintenance policies. If the Department improves an intersection where a RLR Camera System is installed, the removal and re-installation shall be the responsibility of the Permit Applicant and shall be completed in a timely manner. All costs for this work shall be the responsibility of the Permit Applicant.

The RLR Camera System shall be inspected and "Turned-On" as detailed in the Department's Traffic Signal Specifications.

### **PUBLIC INFORMATION CAMPAIGN**

The Permit Applicant shall hold well-publicized kickoff events and issue periodic press releases about the proposed locations and effectiveness of RLR Camera enforcement within their jurisdictions. This campaign should provide information and data that defines the red light running problem, explains why red light running is dangerous, and identifies the actions that are currently being undertaken to reduce the incidence of red light running. For the first week of live RLR camera enforcement, the Permit Applicant shall take measures to bring attention to the intersections where the RLR camera systems are in use. At a minimum, an orange or red flag shall be attached to the RLR signs.

The Permit Applicant should also consider the issuance of warning citations to likely violators for a limited period, and publicize the date on which warning citations will be halted and actual enforcement citations will begin.

### **FOLLOW UP EVALUATION**

An Evaluation Report shall be prepared by the Permit Applicant one year after the installation and shall be prepared every three years thereafter. The Evaluation Report shall include the following:

- Intersection location(s);
- Date of implementation;
- RLR Camera System manufacturer and contractor name;
- Crash data specific to RLR location(s) for the three (3) year period prior to and for the period post RLR Camera installation;

**SAFETY 2-13**

Effective: March 1, 2007

Revised: November 1, 2013

Page 8

- An analysis of the crash data, including a summary of any increase in crash types;
- Signal timing and other settings before and after RLR Camera installation;
- Traffic volumes before and after RLR Camera System installation;
- Recommendations to further reduce red light violations and severe crashes and to improve the operations of the intersection(s); and,
- Summary of adjudication experience and results.

The permit may be revoked during this annual review or at any time where the Department determines it is in the best interest of the motoring public of Illinois or if the RLR Camera System is having a detrimental effect on the operations of the existing traffic signal system.

## **Automated Railroad Grade Crossing (RGC) Enforcement Systems**

### **AUTOMATED RGC ENFORCEMENT SYSTEM DESCRIPTION**

Automated RGC enforcement systems monitor the movement of traffic at designated highway railroad grade crossings and the status of the crossing gate or barrier on the approach. Movement detectors, typically video detectors, check if the gate or barrier is closed or is being opened or closed and check for the passage of vehicles into the crossing area and cause pole-mounted cameras to record pictures of the vehicle position and license plate.

Automated RGC enforcement systems shall differentiate between vehicles violating gate crossing warning devices and vehicles already in and clearing the crossing zone.

### **CAMERA SYSTEM ELIGIBLE LOCATIONS**

An automated RGC enforcement system may be utilized at public highway railroad grade crossing locations experiencing excessive gate violations or significant crash histories when other safety measures such as automatic flashing light signals and gates, constant warning time circuitry and enforcement by local law enforcement officials have not been effective. Additionally, safety improvement projects to install an automated RGC enforcement system will only be considered at highway railroad grade crossing locations having a minimum of 1,000 vehicles per day and a crash history of at least five (5) crashes in a five (5) year period, or upon a recommendation from a diagnostic team review finding that photo enforcement is appropriate at that location. Documentation of local law enforcement efforts will be required.

## **APPLICATION PROCESS**

A representative from the roadway authority having jurisdiction at the highway railroad grade crossing location where automated RGC enforcement is being proposed should provide a written notice to the ICC showing interest in the concept of automated RGC enforcement. This notice shall include concurrence of the concept by the local law enforcement agency. All requests should be directed to:

Michael E. Stead  
Rail Safety Program Administrator  
Illinois Commerce Commission  
527 East Capitol Avenue  
Springfield, Illinois 62701

Upon receipt of the request for automated RGC enforcement systems, the ICC will direct the local agency to schedule an on-site diagnostic team review to determine if installation of an automated RGC enforcement system is appropriate at that location. The diagnostic review team shall as a minimum, include representatives from the ICC, IDOT, the railroad company, the respective roadway authority, and a representative from the local law enforcement agency. The ICC will include IDOT in all correspondence received from local agencies regarding automated RGC enforcement systems; IDOT will do the same.

If an automated RGC enforcement system is deemed to be appropriate by the diagnostic review team, the local agency must pass a local ordinance requesting the creation of such a system. The Permit Applicant shall also obtain an ordinance or resolution agreeing to indemnify the State of Illinois for any claims brought forth as a result of the automated RGC enforcement system, its installation, operation, maintenance and removal (See Attachment C). Once these ordinances are in place, potential funding sources should be identified, and operation and maintenance responsibilities clarified. After these issues have been resolved, the ICC will issue a Stipulated Agreement for the parties to review. Following execution of the Stipulated Agreement by all of the parties involved, the ICC will issue an Order authorizing the proposed safety improvement.

## **COSTS AND MAINTENANCE**

Subject to availability of funding, funds for automated RGC enforcement may be provided only upon recommendation by a diagnostic review team. Potential sources of funding for photo enforcement systems may include the Grade Crossing Protection Fund (GCPF) or Local funds. Funding for automated RGC enforcement systems will be limited to a maximum contribution of 50 percent of the cost of the materials and installation only, not to exceed \$200,000, with all remaining costs, including all future maintenance and operation of the photo enforcement system to be funded and operated by the local agency.

**SAFETY 2-13**

**Effective: March 1, 2007**

**Revised: November 1, 2013**

**Page 10**

Federal funds are not permitted for automated enforcement systems.

For projects to install automated RGC enforcement systems at highway railroad grade crossings located on the local road system, written requests for assistance from the Grade Crossing Protection Funds should be submitted to:

Mr. Michael Stead  
Rail Safety Program Administrator  
Illinois Commerce Commission  
527 East Capitol Avenue  
Springfield, Illinois 62701

Requests for assistance from IDOT for projects to install automated RGC enforcement systems at highway railroad grade crossings should be submitted in writing to:

Priscilla Tobias, PE.  
Illinois State Safety Engineer  
Illinois Department of Transportation  
2300 South Dirksen Parkway, Room 323  
Springfield, Illinois 62764

## **SIGNING REQUIREMENTS**

Signs (See Attachment E) (R10-I105) shall be posted in advance of each approach to the highway railroad grade crossing indicating the presence of automated RGC enforcement at the site. The signs shall include verbiage that citations will be issued and include the amount of the fine for the violation. The Permit Applicant shall provide, install and maintain the signs, and shall coordinate with the IDOT prior to any installations on State routes.

## **OPERATIONAL REQUIREMENTS**

To minimize the impact on the State highway system, automated RGC enforcement systems shall not affect the operation of any traffic control devices. The following items will be required:

- Electrical service for automated RGC enforcement system equipment shall come from the local electric utility company, not from traffic signal equipment or other State facilities.
- Automated RGC enforcement systems shall utilize video or laser technology for vehicle detection. Pavement loops are not acceptable for vehicle detection for automated RGC enforcement systems located on any State routes.
- All automated RGC enforcement system settings shall be reviewed and approved by the ICC and IDOT (State routes only) prior to the scheduled "Turn-On."

## **PUBLIC INFORMATION CAMPAIGN**

The Permit Applicant shall hold well-publicized kickoff events and issue periodic press releases about the proposed locations and effectiveness of automated RGC enforcement within their jurisdictions. This campaign should provide information and data that defines the highway railroad gate violation problem, explains why running around railroad crossing gates is dangerous, identifies the actions that are currently being undertaken to reduce the incidence of violations of down railroad crossing gates, and includes the penalties for violation of the law. For the first week of live RGC enforcement, the Permit Applicant shall take measure to bring attention to the intersections where the RGC camera systems are in use. At a minimum, an orange or red flag shall be attached to the RGC signs.

The Permit Applicant should also consider the issuance of warning citations to likely violators for a limited period, and publicize the date on which warning citations will be halted and actual enforcement citations will begin.

## **FOLLOW UP EVALUATION**

An Evaluation Report shall be prepared by the Permit Applicant one year after the installation of an automated RGC enforcement system and shall be prepared every three years thereafter. The report shall include the following:

- Location,
- Date of implementation,
- Automated RGC enforcement system's manufacturer and contractor name,
- Crash data specific to highway railroad grade crossings with automated RGC enforcement systems for the three (3) year period prior to and after automated RGC enforcement system installation,
- An analysis of the crash data, including a summary of any increase in crash types, and
- Summary of adjudication experience and results.

The permit may be revoked during this annual review or at any time where the Department determines it is in the best interest of the motoring public of Illinois or if the automated RGC enforcement system is having a detrimental effect on the operations of the specific state roadway.



---

Priscilla A. Tobias, P. E.  
State Safety Engineer