

Evaluation of Sioux City's Automated Traffic Enforcement Report - Primary Highway System

Introduction:

Automated traffic enforcement (ATE) is one of many safety countermeasures that can be used to enhance roadway safety. Automated enforcement may involve the enforcement of red-light running violations and speed limit violations. The city of Sioux City uses ATE systems to enforce red-light running at four signalized intersections on the primary highway system. In addition, they use two portable ATE units to enforce speed violations on I-29.

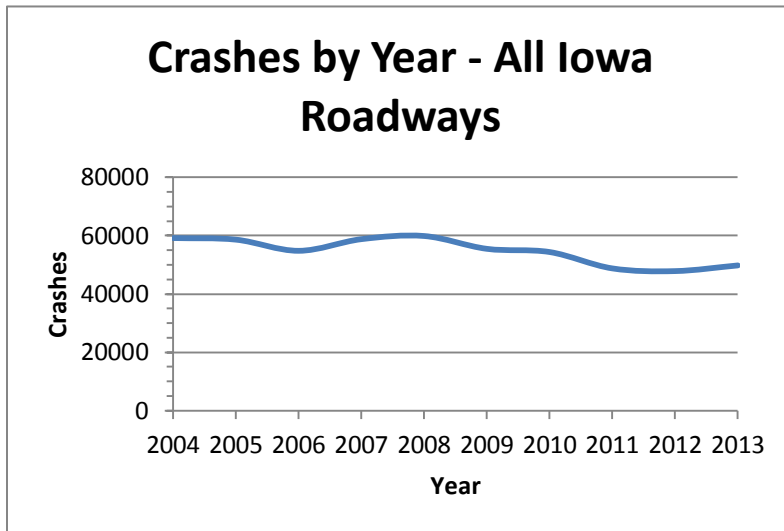
In 2012 Iowa State University developed a report titled, "Toolbox of Countermeasures to Reduce Red Light Running". The report documented that at signalized intersections, red-light running crashes make up 24.5% of all crashes and account for 31.7% of all fatal and major injury crashes. This toolbox is to aid practitioners in ways to identify and address red-light crashes at signalized intersections. The report primarily focuses on engineering and enforcement solutions. The report has two main parts; 1.) Guidelines to identify problem intersections and the causes of red-light running, and 2.) Roadway-based and enforcement countermeasures. This second part details 20 potential safety countermeasures that can be used at signalized intersections to address these types of crashes. Automated enforcement is one of those potential countermeasures.

The National Highway Traffic Safety Administration (NHTSA) conducted one of the most comprehensive reports to date on the causation of crashes in the United States. This report titled, "National Motor Vehicle Crash Causation Survey – Report to Congress" was published in 2008 and documents the investigation of 6,950 crashes nationwide. This study involved researchers being at the crash scene to assess relatively undisturbed information pertaining to the events and factors that led up to the crash and the opportunity to discuss the circumstances of the case with drivers, passengers, and witnesses while it was still fresh in their minds. The researchers on the scene were in an ideal position to gather first-hand information related to the vehicle, the roadway, the environmental conditions, and the human behavior factors. Some of the critical findings include:

- 95% of all crashes were caused by the drivers, 2.5% were caused by the vehicles, and 2.5% were caused by roadway/weather
- Of the 95% that were attributed to drivers:
 - o 40.6% was driver recognition error (inadequate surveillance, internal/external distraction, inattention, etc.)
 - o 34.1% was driver decision error (too fast for conditions, too fast for curve, false assumptions, illegal maneuver, misjudgment, etc.)
 - o 10.3% was driver performance error (overcompensation, poor control, etc.)
 - o 7.1% was driver non-performance error (sleep, heart attack/other physical impairment, etc.)
 - o 7.9% was other/unknown driver error

This report helps us better understand the primary causation of crashes. The speed at which a driver chose to drive was a primary cause in some of the crashes. Specifically, 8.4% were driving too fast for conditions and 4.9% were driving too fast for a curve. However, speed was not the primary causation in 86.7% of crashes caused by the driver, nor the crashes caused by vehicles or roadway/weather.

On a statewide basis, crashes in Iowa have been decreasing. Specifically, over a 10 year period, crashes have decreased 15.6% from 59,192 in 2004 to 49,968 in 2013. Below is a chart showing the total number of crashes in Iowa.



Review of Sioux City’s Annual Report:

We have completed our review of your automated traffic enforcement (ATE) report as required in Iowa Administrative Code 761--144. The following documents were considered by the DOT in connection with this review:

- “ATE Information Request” from the City of Sioux City to the Iowa Department of Transportation, April 29, 2014 from Doug Young;
- September 25, 2014 e-mail from Melvin Williams to Steve Gent;

Intersection red light cameras:

The city has red-light violation cameras at four intersections on the primary highway system. DOT's findings and resulting action for these locations are set forth below.

Gordon Drive and Fairmount

Findings:

- Camera activated 6/26/2009.
- Westbound approach subject to traffic camera enforcement.
- Crash data: 9.5 annual average before activation (2007/2008); 3.0 annual average after activation (2010/2011/2012/2013) – from city provided crash data.

Resulting Action:

- Continue operation of speed and red-light cameras at this location.

Gordon Drive and Nebraska Ave

Findings:

- Camera activated 7/01/2009.
- Westbound approach subject to traffic camera enforcement.
- Crash data: 19.5 annual average before activation (2007/2008); 3.25 annual average after activation (2010/2011/2012/2013) – from city provided crash data.
- The number of red-light citations at this location is high: 2,158 in 2010, 1,757 in 2011, 1,835 in 2012 and 2,112 in 2013.
- This camera was removed as part of a construction project to reconstruct Gordon Drive in this area including the intersection of Nebraska Ave and Gordon Drive. Much of this project has been completed. New traffic signals will be installed this summer.

Resulting Action:

- The camera shall not be reinstalled at this location without a justification report as described in Iowa Administrative Code 761—144.5.
 - o Iowa Administrative Code 761—144.8(1) states that continued use of an ATE system will be contingent on the effectiveness of the system, appropriate administration of it by the local jurisdiction, the continued compliance with these rules, changes in traffic patterns, *infrastructure improvements*, and implementation of other identified safety countermeasures.

Gordon Drive and Palmetto

Findings:

- Camera activated 6/26/2009.
- Westbound approach subject to traffic camera enforcement.
- Crash data: 3.5 annual average before activation (2007/2008); 1.75 annual average after activation (2010/2011/2012/2013) – from city provided crash data.
- The number of crashes at this intersection has decreased; however, there were very few crashes at this intersection prior to the camera installation.

Resulting Action:

- Continue operation of this red-light camera at this location.

Lewis Blvd and Outer Drive

Findings:

- Cameras activated 4/30/2010.
- Northbound and southbound approaches are subject to traffic camera enforcement.
- Crash data: 5.5 annual average before activation (2007/2008); 6.5 annual average after activation (2010/2011/2012/2013) – from city provided crash data.

Resulting Action:

- Remove the northbound and southbound cameras at this intersection
 - o Crashes increased after the cameras were installed.

Mobile Speed Cameras on I-29:

The city typically places two mobile speed cameras on I-29, one in the northbound direction and one in the southbound direction. DOT's findings and resulting action as to each location are set forth below.

Findings:

- City began using these speed cameras in 2011 and they are moved periodically by the Sioux City Police
- Interstate 29 is undergoing a multi-year reconstruction; the first mainline work began in 2009.
- Crash data: before camera activation, 244 in 2009 and 215 in 2010, after camera activation, 155 in 2012 and 143 in 2013 – from city provided data.
- Crash data:
 - 101 in 2004
 - 70 in 2005
 - 54 in 2006
 - 115 in 2007
 - 171 in 2008
 - 132 in 2009 -- mainline construction began
 - 125 in 2010
 - 107 in 2011 -- camera use initiated
 - 71 in 2012
 - 84 in 2013
- o From DOT crash records, all mainline crashes from just north of US 20 to South Dakota border.
- o Number of crashes varies greatly with decreasing trend from 2004 to 2006, increasing trend from 2006 to 2008, and decreasing trend from 2008 to 2012.
- Two work zone speed feedback signs were purchased by the DOT and used in the construction zones in both 2013 and 2014.
- Except for 2011, DOT contracted for extra enforcement in I-29 work zones every year since 2009.
- The number of speed citations is moderately high: 8,692 in 2011 (partial year), 33,818 in 2012 and 26,418 in 2013
- Having two interstate cameras is significant compared to other cities in Iowa and USA.
 - o Des Moines has one set of cameras on I-235 and Cedar Rapids has four sets on I-380. Other than the aforementioned cities, no other speed cameras exist on any rural or urban interstate in Iowa. Iowa is the only state in the nation, that we are aware of, that has permanent speed cameras on the interstate system.
- Iowa Administrative Code 761-144.4(1)(c) provides that automated enforcement should only be considered in extremely limited situations on interstate roads because they are the safest class of any roadway in the state and they typically carry a significant amount of non-familiar motorists.
 - o Local drivers are typically aware of speed cameras and therefore monitor their speed accordingly. Non-familiar drivers often do not see/read the photo enforced signs and therefore may not monitor their speed accordingly.
- The city has said they plan to remove the speed trailers once construction on I-29 is complete.

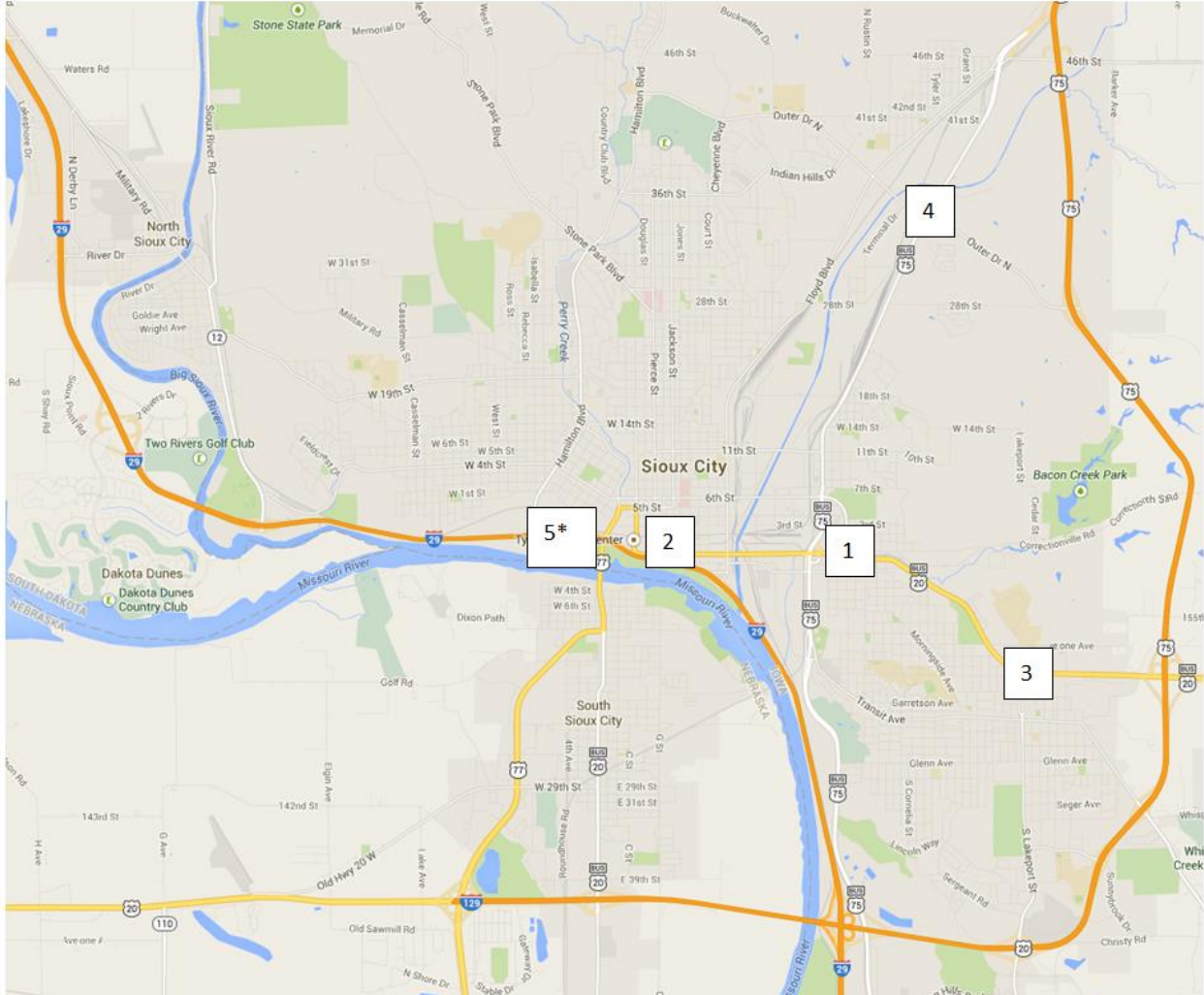
Resulting Action:

- Remove the speed cameras from I-29.
 - o The number of annual crashes varies greatly over the past 10 years with specific trends both upward and downward. It is difficult to determine the effect the speed trailers have had on the number of crashes.
 - o The reconstruction project is in the process of building a new and safer freeway system throughout Sioux City.
 - o Other safety countermeasures have been implemented.
 - o Iowa Administrative Code 761-144.4(1)(c). Limited use on interstate roadways.

Timeframe:

The city shall implement the resulting actions by April 17, 2015. The city may appeal this decision pursuant to Iowa Administrative Code 761—144.9(307). Such an appeal should be submitted to the Iowa Department of Transportation Director within 30 days of the date of this decision.

Map of Sioux City's ATE systems on the primary highway system:



1. Gordon Drive and Fairmount
2. Gordon Drive and Nebraska Ave
3. Gordon Drive and Palmetto
4. Lewis Blvd and Outer Drive
5. * Two portable speed trailers...placed on I-29, various locations