

## Evaluation of Cedar Rapids 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 Cedar Rapids uses ATE systems to enforce red-light running and speed violations at three signalized intersections on the primary highway system. In addition, they use ATE systems to enforce speed violations at four locations along I-380.

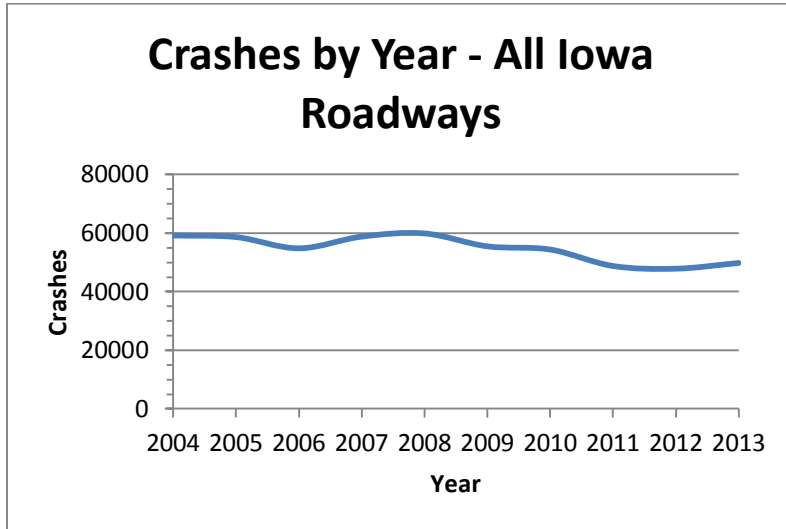
In 2012 Iowa State University developed a report titled, "Toolbox of Countermeasures to Reduce Red Light Running". The report documented that at signalized intersections, red-light running crashes make up 24.5% of all crashes and account for 31.7% of all fatal and major injury crashes. This toolbox is to aid practitioners in ways to identify and address red-light crashes at signalized intersections. The report focuses primarily 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 Cedar Rapids 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:

- "Report to Iowa Department of Transportation, City of Cedar Rapids Automated Traffic Enforcement on Primary Roadway 2013" of May 2014;
- "Evaluating the Effectiveness of Red Light Running Camera Enforcement in Cedar Rapids and Developing Guidelines for Selection and Use of Red Light Running Countermeasures, Final Report – 2011" by Center for Transportation Research and Education (CTRE) at Iowa State University (including the Technical Report Documentation Page for project 10-386 and pages 40-41 containing "Conclusions and Recommendations");
- September 8, 2014 e-mail from Mike Wallerstedt to Steve Gent;
- September 15, 2014 e-mail from Mike Wallerstedt to Steve Gent;
- I-380 Cedar Rapids Corridor Safety Initiatives – tracking document for 2009 Safety Audit.

### **Intersection speed and red light cameras:**

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

#### 1<sup>st</sup> Ave and 10<sup>th</sup> St East

##### Findings:

- Cameras activated 3/14/2010.
- Eastbound and westbound approaches are subject to traffic camera enforcement.
- Crash data: 11 before activation (total for 2008 and 2009); 9 after activation (total for 2012 and 2013) – from city provided crash data.
- Crash data: 25 before activation (total for 2008 and 2009); 21 after activation (total for 2012 and 2013) – from city provided collision diagrams.
- The westbound cameras at 1<sup>st</sup> Ave and 10<sup>th</sup> Street are located approximately 300 feet after a lower speed limit sign (35 mph to 30 mph).
  - o Iowa Administrative Code 761-144.6(1)(b)(10) provides that automated enforcement should not be placed within the first 1,000 feet of a lower speed limit.

##### Resulting Action:

- Disable speed detection from the camera system at the 1<sup>st</sup> Ave. and 10<sup>th</sup> Street intersection for the following reason: the westbound speed camera is within the first 1,000 feet of a lower speed limit.

#### Williams Blvd and 16<sup>th</sup> Ave SW

##### Findings:

- Cameras activated 12/18/10.
- Northbound and southbound approaches are subject to traffic camera enforcement.
- Crash data: 14 before activation (total for 2008 and 2009 ); 4 after activation (total for 2012 and 2013).
- Crash data: 27 before activation (total for 2008 and 2009); 12 after activation (total for 2012 and 2013) – from city provided collision diagrams.

##### Resulting Action:

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

#### 1<sup>st</sup> Ave and L St SW

##### Findings:

- Cameras activated 6/1/2011.
- Eastbound and westbound approaches are subject to traffic camera enforcement.
- Crash data: 10 before activation (total for 2008 and 2009); 11 after activation (total for 2012 and 2013) – from city provided data.

- Crash data: 31 before activation (total for 2008 and 2009); 15 after activation (total for 2012 and 2013) – from city provided collision diagrams.
- Crash data: 24 before activation (total for 2008 and 2009); 20 after activation (total for 2012 and 2013) – from DOT crash records totaling all crashes within 150 feet of center of intersection.

Resulting Action:

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

### **Fixed Speed Cameras on I-380:**

Fixed speed cameras: The city has four sets of fixed speed cameras located on I-380; two northbound and two southbound. DOT’s findings and resulting action as to each location are set forth below.

### General Findings:

- Crash data: 82 before activation (total for 2008 and 2009); 59 after activation (total for 2012 and 2013) – from city provided data.
- Four sets of interstate cameras is a high number compared to other cities in Iowa and USA.
  - o Des Moines has one set of cameras on I-235 and Sioux City typically uses two portable speed cameras on I-29. Iowa is the only state in the nation, that we are aware of, that has permanent speed cameras on the interstate system.
- The primary safety concern on I-380 through Cedar Rapids is the “S” curve through downtown. Most of this “S” curve is located on an elevated structure which creates some additional safety concerns. Speeding motorists *entering* an “S” curve present an increased safety risk. This same risk is not present as motorists *leave* the “S” curve.
- 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.
- Many safety countermeasures have been added to this section of roadway as a result of the I-380 Safety Audit conducted in late 2008 (final report March 2009), and other safety projects.

### I-380 Northbound near Diagonal Dr

Findings:

- Cameras activated 6/12/10.
- The number of speed citations at this location is moderate: 9,190 in 2011, 10,109 in 2012 and 4,218 in 2013.

- This set of cameras is located 859 feet beyond a speed limit reduction from 60 mph to 55 mph.
  - o Iowa Administrative Code 761-144.6(1)(b)(10) provides that automated enforcement should not be placed within the first 1,000 feet of a lower speed limit.

Resulting Action:

- Move the northbound interstate speed cameras located south of Diagonal Drive to the next truss north; located near 1<sup>st</sup> Ave.
  - o This allows this camera location to comply with the 1,000 foot requirement of Iowa Administrative Code 761-144.6(1)(b)(10) and will locate the camera closer to the beginning of the critical “S” curve.

I-380 Northbound near J Ave

Findings:

- Cameras activated 8/27/10.
- This camera is located well beyond (approximately 3,800 feet) where a driver has exited the “S” curve.
- The number of speed citations at this location is extremely high: 36,775 in 2011, 35,327 in 2012 and 36,069 in 2013.

Resulting Action:

- Remove or disable the northbound I-380 cameras near J Ave.
  - o The location of the camera is well beyond the “S” curve and therefore beyond the area of concern.
  - o Iowa Administrative Code 761-144.4(1)(c). Limited use on interstate roadways.

I-380 Southbound near J Ave

Findings:

- Cameras activated 10/16/10.
- This set of cameras is located 896 feet beyond a speed limit reduction from 60 mph to 55 mph.
- The number of speed citations at this location is extremely high: 44,775 in 2011, 38,052 in 2012 and 44,529 in 2013.

Resulting Action:

- Move the southbound interstate speed cameras located near J Ave to the next truss south; located near G Ave.
  - o This allows this camera location to comply with the 1,000 foot requirement of Iowa Administrative Code 761-144.6(1)(b)(10) and will locate the camera closer to the beginning of the critical “S” curve.

## I-380 Southbound near 1<sup>st</sup> Ave Ramp

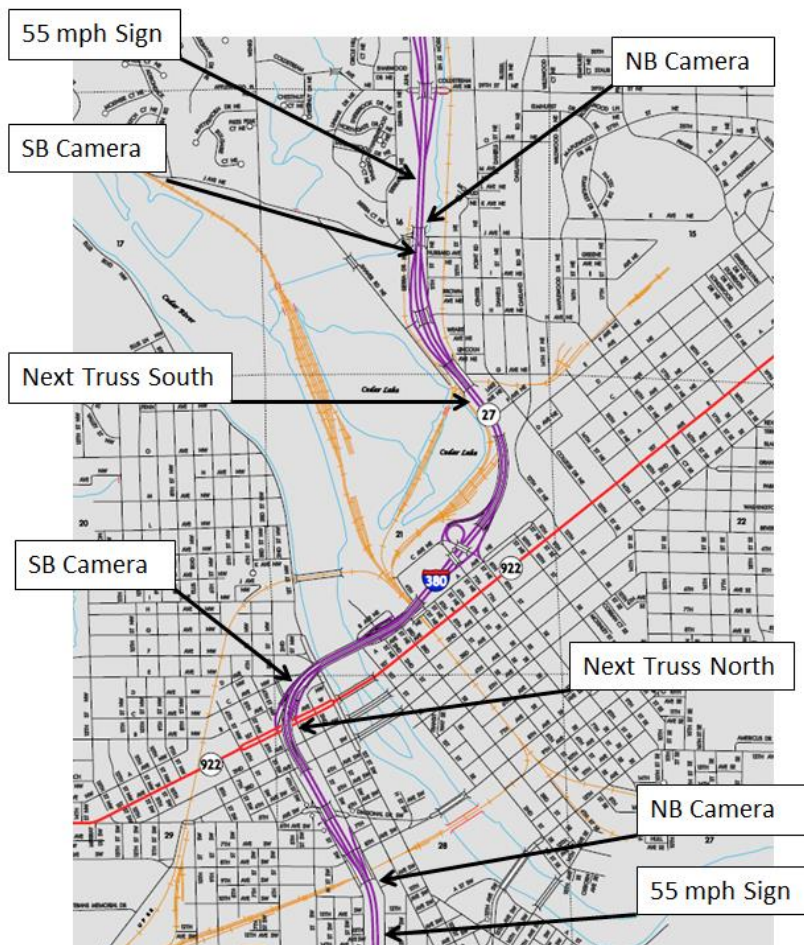
### Findings:

- Cameras activated 12/18/10.
- This camera is located near where a driver exits the “S” curve.
- The number of speed citations at this location is low: 1,226 in 2011, 986 in 2012 and 1,234 in 2013.
- This camera is located where a driver exits, or has exited, the “S” curve.

### Resulting Action:

- Remove or disable the southbound I-380 cameras near 1<sup>st</sup> Ave. ramp.
  - o The location of the camera is beyond most of the “S” curve and therefore beyond most of the area of concern.
  - o Iowa Administrative Code 761-144.4(1)(c). Limited use on interstate roadways.

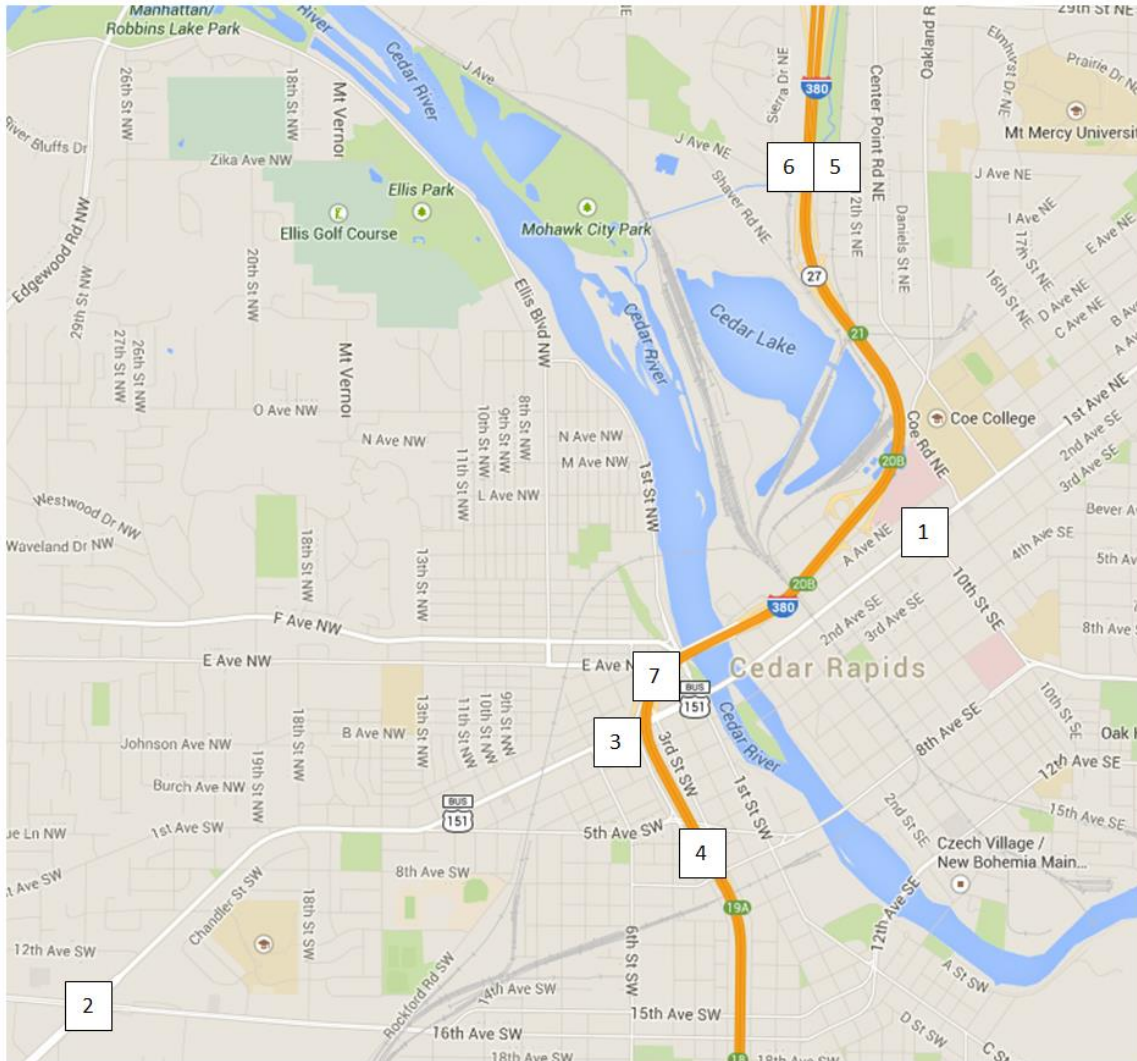
## Map showing I-380 speed camera locations, existing and proposed



**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 Cedar Rapids ATE systems on the primary highway system:**



1. 1<sup>st</sup> Ave and 10<sup>th</sup> St East
2. Williams Blvd and 16<sup>th</sup> Ave SW
3. 1<sup>st</sup> Ave and L St SW
4. I-380 NB near Diagonal Dr
5. I-380 NB near J Ave
6. I-380 SB near J Ave
7. I-380 SB near 1<sup>st</sup> Ave Ramp

## Evaluation of Muscatine'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 Muscatine uses ATE systems to enforce red-light running and speed violations at four signalized intersections on the primary highway system.

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 focuses primarily 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.

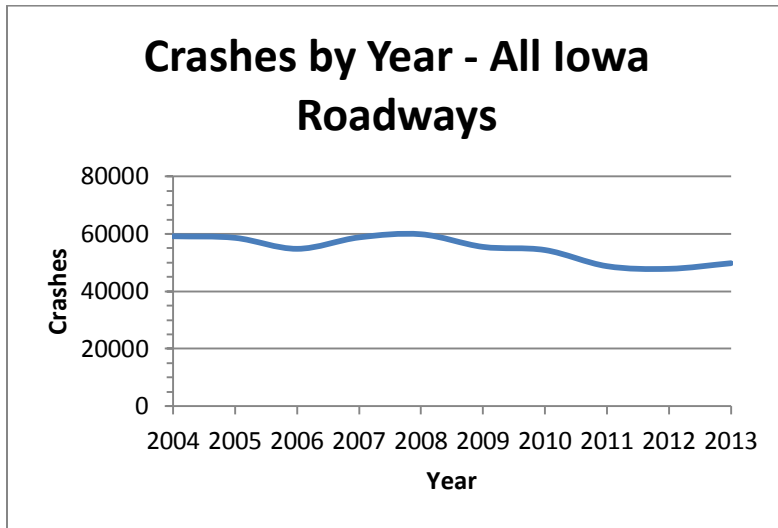
The National Highway Traffic Safety Administration (NHTSA) conducted one of the most comprehensive reports to date on the causation of crashes in the United States. This report titled, "National Motor Vehicle Crash Causation Survey – Report to Congress" was published in 2008 and documents the investigation 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 Muscatine’s Annual Report:**

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

- “City of Muscatine Automated Traffic Enforcement Report” covering calendar year 2013
- September 10, 2014 email and attached information from Phil Sargent to Steve Gent.

**Intersection speed and red light cameras:**

The city has speed and 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.

### University Dr. at US 61

#### Findings:

- Camera activated 3/18/2011.
- Westbound approach subject to traffic camera enforcement.
- Crash data: 10 before activation (total for 2009 and 2010); 11 after activation (total for 2012 and 2013) – from city provided crash data.
- The westbound camera on US 61 is located approximately 830 feet after a lower speed limit sign (55 mph to 45 mph).
  - o Iowa Administrative Code 761-144.6(1)(b)(10) provides that automated enforcement should not be placed within the first 1,000 feet of a lower speed limit.
- The number of speed citations at this location is high: 8,992 in 2012 and 7,262 in 2013.
- The DOT is interested in working with the city to review the concept of adding advance signal warning flashers (Be Prepared to Stop When Flashing) similar to some other signalized intersections on the US 61 Muscatine bypass.

#### Resulting Action:

- Permanently remove the westbound camera at University Drive and US 61
  - o Crashes have increased since the camera was installed
  - o High number of speed violations
  - o Camera is within 1,000 feet of a lower speed limit

### Mulberry Ave at US 61

#### Findings:

- Camera activated 3/18/11.
- Westbound approach subject to traffic camera enforcement.
- Crash data: 15 before activation (total for 2009 and 2010 ); 12 after activation (total for 2012 and 2013) – from city provided crash data

#### Resulting Action:

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

### Cleveland and Park Ave (Business US 61)

#### Findings:

- Cameras activated 3/18/2011.
- Northbound and southbound approaches are subject to traffic camera enforcement.
- Crash data: 13 before activation (total for 2009 and 2010); 9 after activation (total for 2012 and 2013) – from city provided data.

#### Resulting Action:

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

Washington and Park Ave (Business US 61)

Findings:

- Cameras activated 5/21/11.
- Northbound and southbound approaches are subject to traffic camera enforcement.
- Crash data: 15 before activation (total for 2009 and 2010); 7 after activation (total for 2012 and 2013) – from city provided crash data.

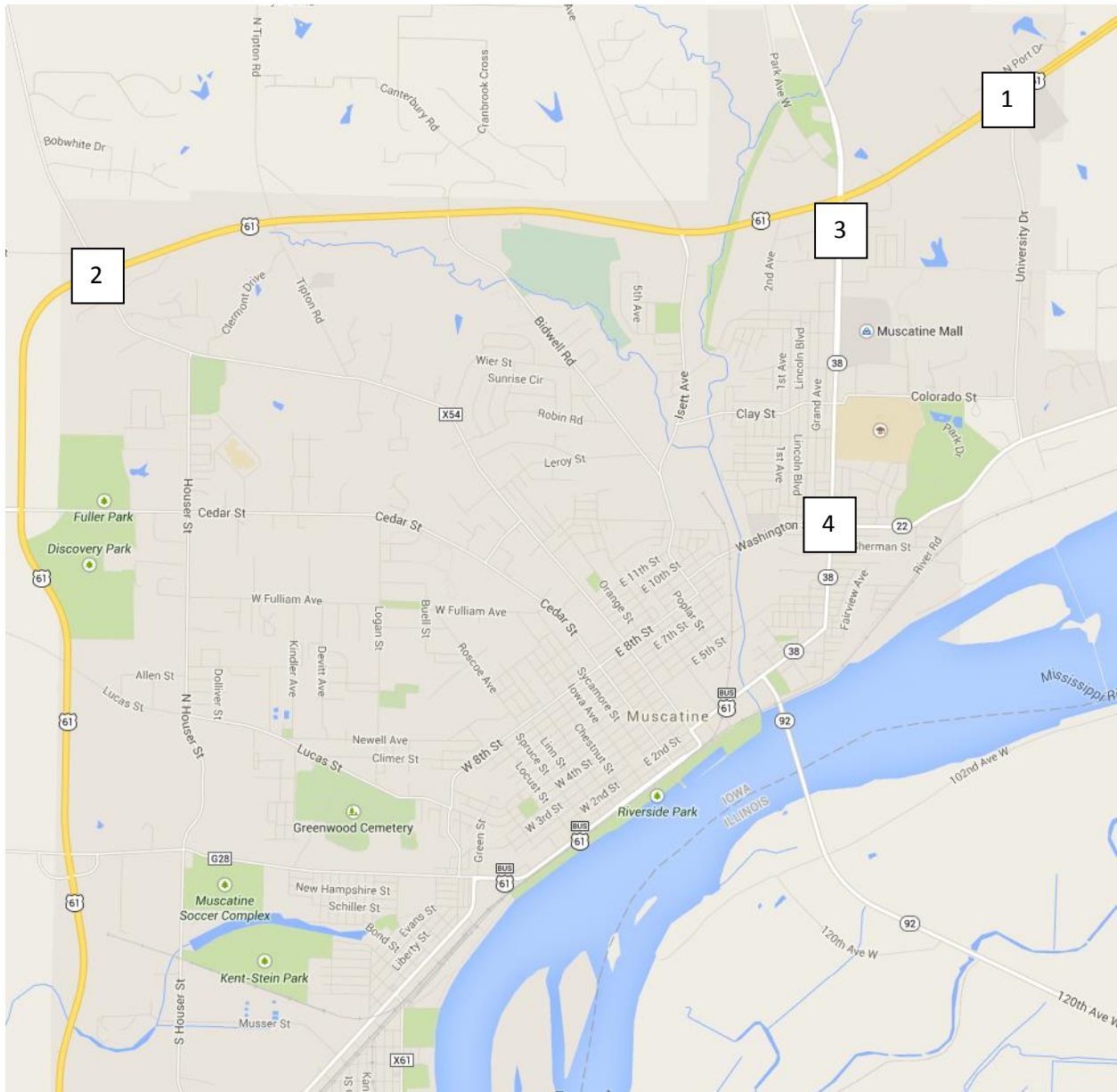
Resulting Action:

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

**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 Muscatine's ATE systems on the primary highway system:**



1. University Drive and US 61
2. Mulberry Ave. at US 61
3. Cleveland and Park Ave (Business US 61)
4. Washington and Park Ave (Business US 61)

## Evaluation of Des Moines 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 Des Moines uses ATE systems to enforce red-light running violations at two signalized intersections on the primary highway system. In addition, they use an ATE system to enforce speed violations at one location along I-235.

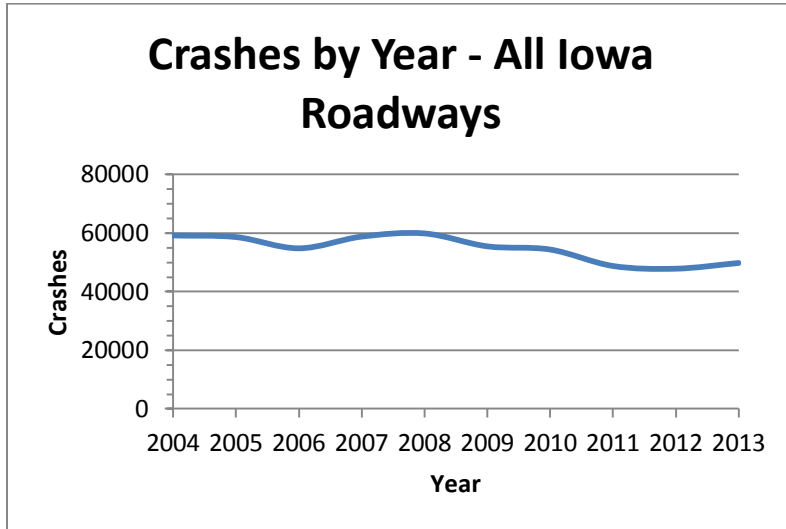
In 2012 Iowa State University developed a report titled, "Toolbox of Countermeasures to Reduce Red Light Running". The report documented that at signalized intersections, red-light running crashes make up 24.5% of all crashes and account for 31.7% of all fatal and major injury crashes. This toolbox is to aid practitioners in ways to identify and address red-light crashes at signalized intersections. The report focuses primarily 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 Des Moines 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:

- "2013 Annual Report, Automated Traffic Enforcement on Primary Highways in Des Moines", April 2014;
- August 26, 2014 email from David Seybert to Steve Gent;
- I-235 Safety Audit, conducted November 24, 2014.

#### **Intersection speed and red light cameras:**

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

### East 15<sup>th</sup> Street and Maple Street

#### Findings:

- Camera activated 7/2011.
- Northbound approach subject to traffic camera enforcement.
- Crash data: 26 before activation (total for 2009 and 2010); 11 after activation (total for 2012 and 2013) – from city provided crash data.

#### Resulting Action:

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

### Martin Luther King and School Street

#### Findings:

- Camera activated 7/2011.
- Eastbound approach subject to traffic camera enforcement.
- Crash data: 28 before activation (total for 2009 and 2010 ); 16 after activation (total for 2012 and 2013).
- This is an intersection of two, one-way streets. Traffic enters from the west and the north only.
  - o Approximately 90% of all crashes are a right-angle crash involving an eastbound and southbound vehicle
- The number of red-light citations at this location is extremely high: 5,040 in 2012 and 6,146 in 2013.
  - o A majority of the citations are from the far right lane involving drivers turning right on red, over 5,000 of 6,146 citations in 2013.
- The “photo enforced” sign is 650+ feet from the intersection
- The DOT wants to work with the city to conduct an operational analysis of the intersection to determine if prohibiting all right-turn-on-red movements, for eastbound School Street to southbound MLK Blvd, would improve the overall safety of this area.

#### Resulting Action:

- Continue operation of red-light camera at this location.
- Place an additional “photo enforced” sign on School Street/exit ramp closer to MLK Blvd.

**Fixed Speed Cameras on I-235:**

Fixed speed cameras: The city has one set of fixed speed cameras located on I-235 near Waveland Golf Course. DOT's findings and resulting action as to each location are set forth below.

I-235 Eastbound near Mile Marker 4.9:

- Cameras activated 10/2011.
- Crash data: 14 before activation (total for 2009 and 2010); 9 after activation (total for 2012 and 2013).
  - o Crash data for 0.7 miles (mile marker 4.8 – 5.5) – city provided data
  - o This location experiences a low crash rate -- as per I-235 Safety Audit.
- The number of speed citations at this location is extremely high: 36,202 in 2012 and 42,156 in 2013.
- 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.

**Resulting Action:**

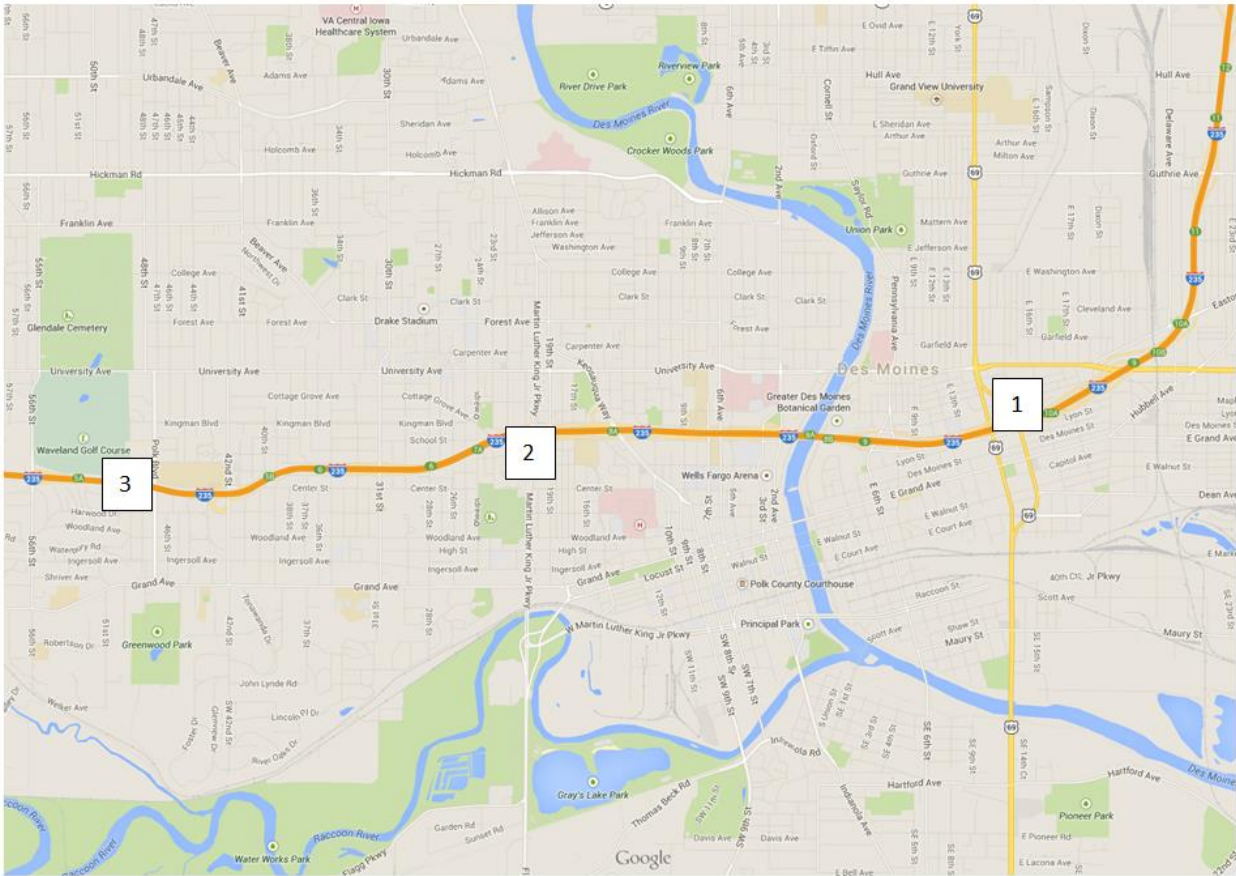
- Remove the eastbound I-235 cameras near Mile Marker 4.9.
  - o Crash rate was low before the cameras were installed
  - o Iowa Administrative Code 761-144.4(1)(c). Limited use on interstate roadways.

**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 Des Moines ATE systems on the primary highway system:**



- 1. East 15<sup>th</sup> St and Maple St
- 2. MLK and School St
- 3. I-235 EB near Waveland Golf Course

## Evaluation of Davenport'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 Davenport uses ATE systems to enforce red-light running and speed violations at four signalized intersections on the primary highway system. In addition, they use ATE systems to enforce speed violations along two urban arterials on the primary highway system.

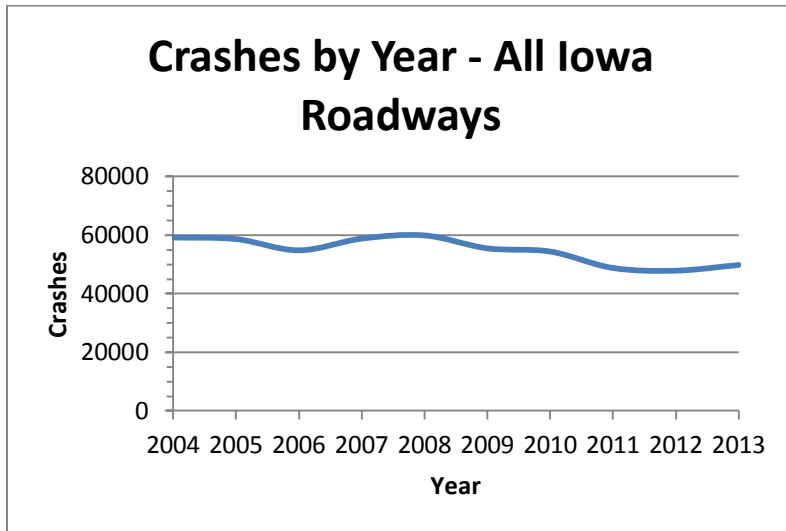
In 2012 Iowa State University developed a report titled, "Toolbox of Countermeasures to Reduce Red Light Running". The report documented that at signalized intersections, red-light running crashes make up 24.5% of all crashes and account for 31.7% of all fatal and major injury crashes. This toolbox is to aid practitioners in ways to identify and address red-light crashes at signalized intersections. The report focuses primarily 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.)
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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 Davenport'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:

- "Automated Traffic Enforcement Evaluation Report" City of Davenport, to Tim Crouch, April 30, 2014;
- "The Effectiveness of Iowa's Automated Red Light Running Enforcement Programs, Final Report, 2007" by Center for Transportation Research and Education (CTRE) at Iowa State University;
- October 8, 2014 e-mail from Gary Statz to Steve Gent;

### **Intersection speed and red light cameras:**

The city has speed and 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.

#### 35<sup>th</sup> Street and Harrison Street

##### Findings:

- Red light camera activated in 2004, Speed camera activated in 2007.
- Southbound approach subject to traffic camera enforcement.
- Crash data: Broadside crashes only -- 9 in 2001, 3 in 2002, 4 in 2003, 0 in 2011, 1 in 2012, 1 in 2013 – from city provided crash data.
- Crash data:
  - 11 in 2004 – red light camera activated
  - 11 in 2005
  - 8 in 2006
  - 16 in 2007 – speed camera activated
  - 16 in 2008
  - 9 in 2009
  - 10 in 2010
  - 8 in 2011
  - 6 in 2012
  - 9 in 2013
  - From DOT crash records, all crashes within 150 feet from middle of intersection.
- Total intersection crash data: 11.68 average crashes per year before activation (3 years of data); 7 average crashes per year after activation (2 years of data) – from CTRE/ISU study.
- The number of speed citations at this location is extremely high: 7,633 in 2011, 3,040 in 2012 and 4,977 in 2013.

##### Resulting Action:

- Continue operation of speed and red-light cameras at this location.
- The city shall install additional signage and/or more visible signage for the southbound approaching vehicles to assist motorists in driving an appropriate speed. Changes to be approved by DOT prior to installation.

#### Kimberly Road and Brady Street

##### Findings:

- Red light cameras activated in 2004, Speed cameras activated in 2007.
- Northbound, eastbound and westbound approaches are subject to traffic camera enforcement.
- Crash data: Broadside crashes only -- 3 in 2001, 4 in 2002, 3 in 2003, 1 in 2011, 1 in 2012, 1 in 2013 – from city provided crash data.

- Crash data: 19 in 2004 – red light camera activated  
19 in 2005  
22 in 2006  
27 in 2007 – speed camera activated  
17 in 2008  
17 in 2009  
18 in 2010  
16 in 2011  
25 in 2012  
17 in 2013
  - o From DOT crash records, all crashes within 150 feet from middle of intersection.
- Total intersection crash data: 18.32 average crashes per year before activation (3 years of data); 16 average crashes per year after activation (2 years of data) – from CTRE/ISU study.

Resulting Action:

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

Kimberly Road and Elmore Ave

Findings:

- Red light cameras activated in 2004, Speed cameras activated in 2007.
- Eastbound and westbound approaches are subject to traffic camera enforcement.
- Crash data: Broadside crashes only -- 5 in 2001, 7 in 2002, 11 in 2003, 1 in 2011, 1 in 2012, 1 in 2013 – from city provided crash data.
- Crash data: 16 in 2004 – red light camera activated  
20 in 2005  
18 in 2006  
15 in 2007 – speed camera activated  
11 in 2008  
20 in 2009  
14 in 2010  
11 in 2011  
12 in 2012  
23 in 2013
  - o From DOT crash records, all crashes within 150 feet from middle of intersection.
- Total intersection crash data: 10.32 average crashes per year before activation (3 years of data); 15.52 average crashes per year after activation (2 years of data) – from CTRE/ISU study.

Resulting Action:

- Permanently remove the cameras at this intersection
  - o ISU study showed crash increase and DOT crash data continues to reflect that trend

## Kimberly Road and Welcome Way

### Findings:

- Red light camera activated in 2004, Speed camera activated in 2007.
- Southbound approach subject to traffic camera enforcement.
- Crash data: Broadsides crashes only -- 6 in 2001, 10 in 2002, 3 in 2003, 3 in 2011, 2 in 2012, 3 in 2013 – from city provided crash data.
- Crash data:
  - 22 in 2004 – red light camera activated
  - 23 in 2005
  - 11 in 2006
  - 15 in 2007 – speed camera activated
  - 19 in 2008
  - 20 in 2009
  - 20 in 2010
  - 14 in 2011
  - 19 in 2012
  - 21 in 2013
  - o From DOT crash records, all crashes within 150 feet from middle of intersection.
- Total intersection crash data: 21.68 average crashes per year before activation (3 years of data); 15.52 average crashes per year after activation (2 years of data) – from CTRE/ISU study.

### Resulting Action:

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

## **Fixed Speed Cameras on Urban Arterials:**

Fixed speed cameras: The city has two fixed speed cameras, one located in the 2600 block of Brady Street and one in the 1200 block of East River Drive. DOT's findings and resulting action as to each location are set forth below.

### 2600 Block of Brady Street

#### Findings:

- Cameras activated in 2007.
- Northbound traffic subject to automated enforcement.
- The number of speed citations at this location is very high: 8,274 in 2011, 6,351 in 2012 and 7,117 in 2013.
- Crash data: The city did not provide any crash data for years prior to camera activation. For after camera activation, they provided: 1 crash in 2011, 0 crashes in 2012, and 0 crashes in 2013.
- Crash data:
  - 15 in 2004
  - 7 in 2005
  - 9 in 2006
  - 2 in 2007 – speed camera activated

5 in 2008  
1 in 2009  
4 in 2010  
3 in 2011  
3 in 2012  
3 in 2013

- From DOT crash records -- all crashes on Brady between and including intersections with East Columbia Avenue, and north to East 29<sup>th</sup> Street.

Resulting Action:

- Continue operation of this speed camera at this location.
- The city shall install additional signage and/or more visible signage for approaching vehicles to assist motorists in driving an appropriate speed. Changes to be approved by DOT prior to installation.

1200 Block of East River Drive

Findings:

- Cameras activated in 2007.
- Westbound traffic subject to automated enforcement.
- Crash data: The city did not provide any crash data for years prior to camera activation. For after camera activation, they provided: 6 crashes in 2011, 4 crashes in 2012, and 1 crash in 2013.
- Crash data:
  - 18 in 2004
  - 16 in 2005
  - 13 in 2006
  - 9 in 2007 – speed camera activated
  - 13 in 2008
  - 10 in 2009
  - 12 in 2010
  - 6 in 2011
  - 8 in 2012
  - 4 in 2013
- From DOT crash records -- all crashes on East River Drive between and including intersections with College Avenue east to Oneida Avenue.

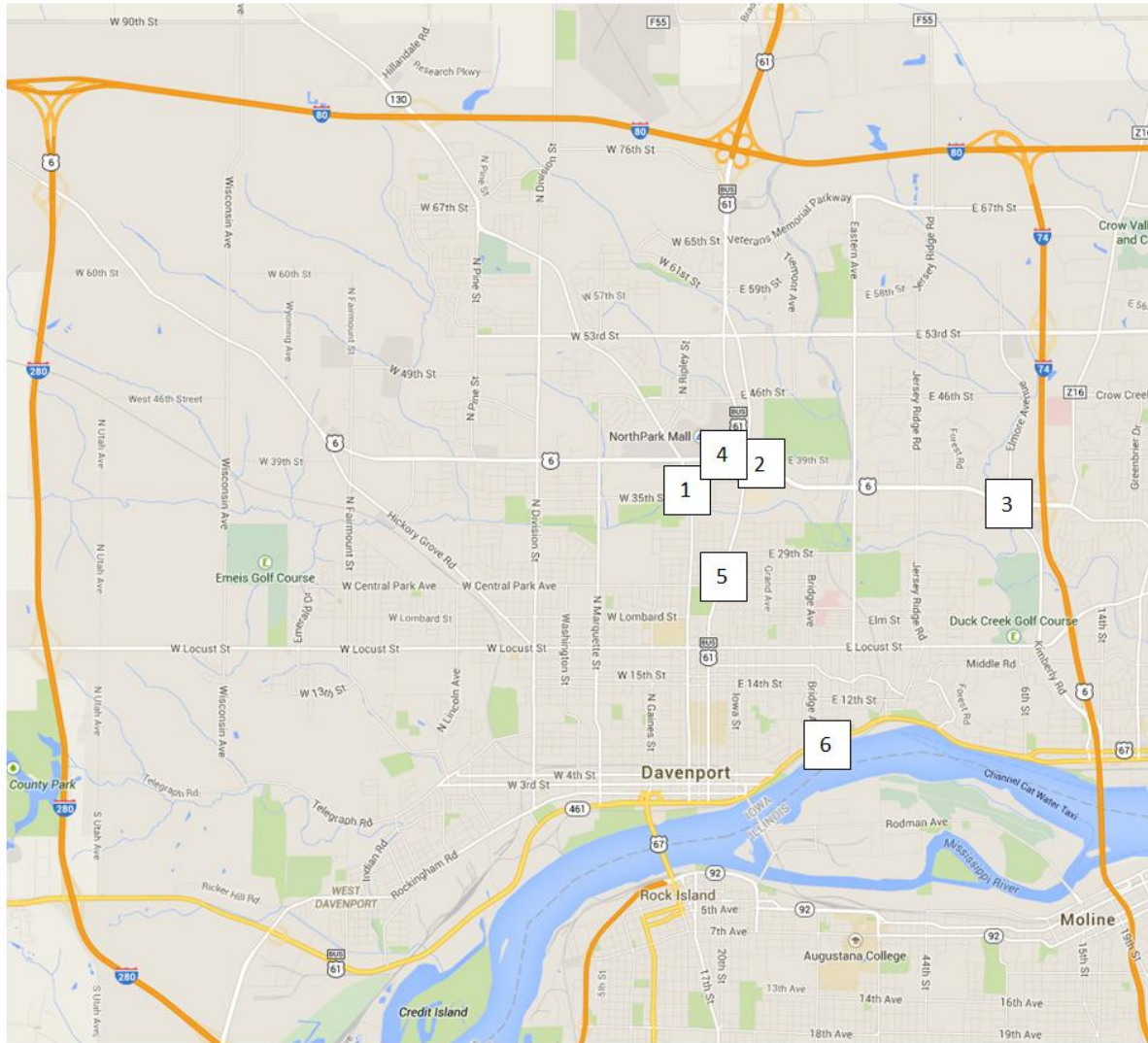
Resulting Action:

- Continue operation of this speed camera at this location.

**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 Davenport's ATE systems on the primary highway system:**



1. 35<sup>th</sup> St and Harrison St
2. Kimberly Road and Brady St
3. Kimberly Road and Elmore Ave
4. Kimberly Road and Welcome Way
5. 2600 block of Brady St
6. 1200 block of East River Drive



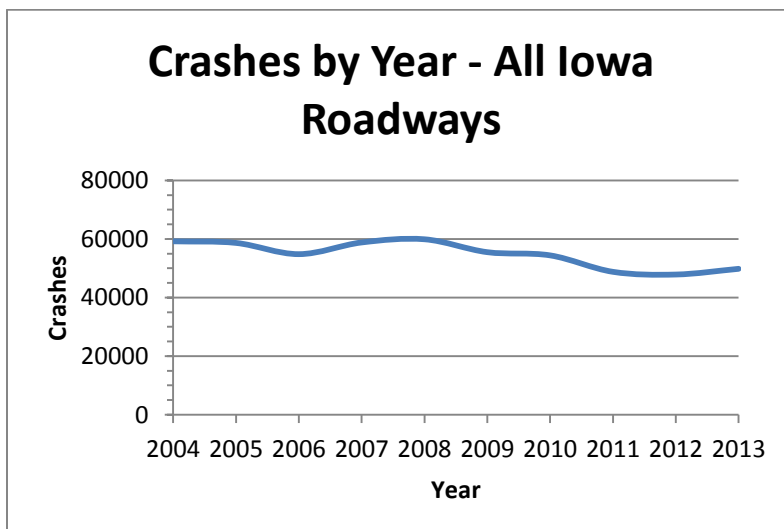
## Evaluation of Council Bluffs Automated Traffic Enforcement Report - Primary Highway System

### 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 Council Bluffs uses ATE systems to enforce red-light running violations at eight signalized intersections on the primary highway system.

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 focuses primarily 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.

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 Council Bluffs 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:

- "2013 Annual Report, Automated Traffic Enforcement for the City of Council Bluffs", April 2014;
- "The Effectiveness of Iowa's Automated Red Light Running Enforcement Programs, Final Report, 2007" by Center for Transportation Research and Education (CTRE) at Iowa State University;
- September 19, 2014 e-mail from Greg Reeder to Steve Gent;
- November 21, 2014 e-mail from Greg Reeder to Tim Crouch.

**Intersection red light cameras:**

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

8<sup>th</sup> Street and West Kaneshville Blvd/West Broadway

Findings:

- Cameras activated 2005.
- Eastbound and westbound approaches are subject to traffic camera enforcement.
- Crash data:
  - 11 in 2004
  - 21 in 2005– red light camera activated
  - 6 in 2006
  - 14 in 2007
  - 7 in 2008
  - 8 in 2009
  - 0 in 2010
  - 0 in 2011
  - 5 in 2012
  - 2 in 2013
  - o From city provided crash data –crash data provided is only for the intersection approaches monitored with ATE cameras.
- Total intersection crash data: 19.32 average crashes per year before activation (3 years of data); 10 average crashes per year after activation (1 year of data) – from CTRE/ISU study.

Resulting Action:

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

## 16<sup>th</sup> Street and West Broadway

### Findings:

- Cameras activated 2005.
- Eastbound and westbound approaches are subject to traffic camera enforcement.
- Crash data:
  - 11 in 2004
  - 10 in 2005– red light camera activated
  - 7 in 2006
  - 4 in 2007
  - 9 in 2008
  - 7 in 2009
  - 2 in 2010
  - 0 in 2011
  - 5 in 2012
  - 10 in 2013
  - From city provided crash data –crash data provided is only for the intersection approaches monitored with ATE cameras.
- Total intersection crash data: 16 average crashes per year before activation (3 years of data); 8 average crashes per year after activation (1 year of data) – from CTRE/ISU study.

### Resulting Action:

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

## 21st Street and West Broadway

### Findings:

- Camera activated 2005.
- Westbound approach subject to traffic camera enforcement.
- Crash data:
  - 8 in 2004
  - 6 in 2005– red light camera activated
  - 1 in 2006
  - 2 in 2007
  - 1 in 2008
  - 2 in 2009
  - 0 in 2010
  - 0 in 2011
  - 0 in 2012
  - 2 in 2013
  - From city provided crash data –crash data provided is only for the intersection approaches monitored with ATE cameras.
- Total intersection crash data: 9 average crashes per year before activation (3 years of data); 3 average crashes per year after activation (1 year of data) – from CTRE/ISU study.

### Resulting Action:

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

### 35<sup>th</sup> Street and West Broadway

#### Findings:

- Camera activated 2005.
- Eastbound approach subject to traffic camera enforcement.
- Crash data:
  - 4 in 2004
  - 3 in 2005– red light camera activated
  - 5 in 2006
  - 6 in 2007
  - 7 in 2008
  - 0 in 2009
  - 2 in 2010
  - 2 in 2011
  - 0 in 2012
  - 1 in 2013
  - From city provided crash data –crash data provided is only for the intersection approaches monitored with ATE cameras.
- Total intersection crash data: 11.32 average crashes per year before activation (3 years of data); 10 average crashes per year after activation (1 year of data) – from CTRE/ISU study.

#### Resulting Action:

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

### 7<sup>th</sup> Street and Willow Ave

#### Findings:

- Camera activated 2005.
- Southbound approach subject to traffic camera enforcement.
- Crash data:
  - 1 in 2004
  - 1 in 2005– red light camera activated
  - 1 in 2006
  - 2 in 2007
  - 0 in 2008
  - 1 in 2009
  - 1 in 2010
  - 0 in 2011
  - 4 in 2012
  - 3 in 2013
  - From city provided crash data –crash data provided is only for the intersection approaches monitored with ATE cameras.
- Total intersection crash data: 3.32 average crashes per year before activation (3 years of data); 2 average crashes per year after activation (1 year of data) – from CTRE/ISU study.

#### Resulting Action:

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

### Harrison Street and East Kanesville Blvd

#### Findings:

- Cameras activated 2009.
- Eastbound and westbound approaches are subject to traffic camera enforcement.
- Crash data:
  - 6 in 2007
  - 5 in 2008
  - 3 in 2009 – red light camera activated
  - 1 in 2010
  - 5 in 2011
  - 2 in 2012
  - 7 in 2013
- o From city provided crash data –crash data provided is only for the intersection approaches monitored with ATE cameras.

#### Resulting Action:

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

### 25<sup>th</sup> Street and West Broadway

#### Findings:

- Cameras activated 2009.
- Eastbound and westbound approaches are subject to traffic camera enforcement.
- Crash data:
  - 6 in 2007
  - 4 in 2008
  - 7 in 2009 – red light camera activated
  - 1 in 2010
  - 2 in 2011
  - 2 in 2012
  - 2 in 2013
- o From city provided crash data –crash data provided is only for the intersection approaches monitored with ATE cameras.

#### Resulting Action:

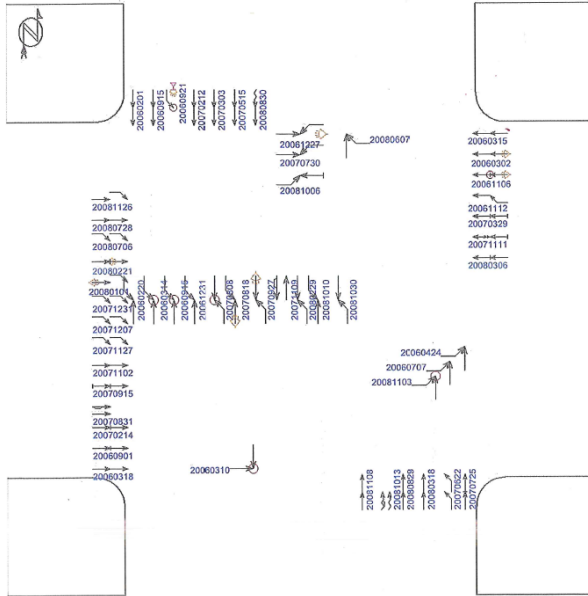
- Continue operation of red-light cameras at this location.

## South Expressway and 30<sup>th</sup> Ave

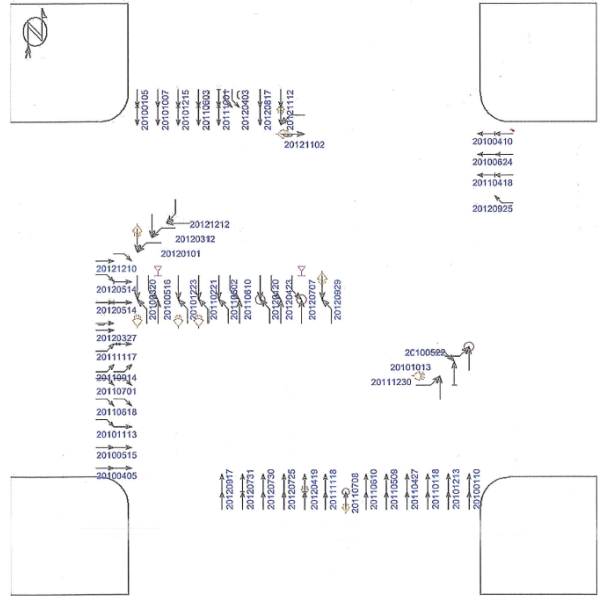
### Findings:

- Camera activated 2005.
- Eastbound approach subject to traffic camera enforcement (primary highway).
- Northbound approach also being enforced, however it is a local roadway
- Crash data:
  - 8 in 2007
  - 11 in 2008
  - 9 in 2009 – red light camera activated
  - 5 in 2010
  - 4 in 2011
  - 9 in 2012
  - 11 in 2013
  - From city provided crash data –crash data provided is only for the intersection approaches monitored with ATE cameras.
- Crash data:
  - 23 in 2004
  - 17 in 2005
  - 17 in 2006
  - 20 in 2007
  - 17 in 2008
  - 23 in 2009 – red light camera activated
  - 15 in 2010
  - 17 in 2011
  - 22 in 2012
  - 23 in 2013
  - From DOT crash records, all crashes within 75 feet of the intersection.
- The number of red-light running citations at this location is extremely high: 11,436 in 2010, 7,026 in partial year 2011, 3,054 in partial year 2012 and 9,203 in 2013. These citation numbers are combined from both the eastbound and northbound camera with the eastbound camera accounting for 53% of the citations. Most of these are right-turn-on-red violations which are clearly not a safety concern, see crash diagrams below.
- Crash diagrams from 2006 – 2008 (before camera activation) is little changed from the 2010 – 2012 crash diagram. See crash diagrams on next page.

2006 - 2008 Reportable Crashes



2010 - 2012 Reportable Crashes



- (1) crashes could not be placed in this schematic
- |              |                  |              |                  |
|--------------|------------------|--------------|------------------|
| ← Straight   | ▭ Parked         | ⊗ Pedestrian | □ Fixed objects: |
| ← Stopped    | ⤴ Erratic        | ⊗ Bicycle    | □ General        |
| ← Unknown    | ⤴ Out of control | ○ Injury     | □ Pole           |
| ← Backing    | ↶ Right turn     | ⊙ Fatality   | ▣ Signal         |
| ← Overtaking | ↷ Left turn      | ⊙ Nighttime  | ▣ Curb           |
| ← Sidewipe   | ↶ U-turn         | ⊙ DUI        | ▣ Tree           |
|              |                  |              | ⊙ Animal         |
|              |                  |              | ◁ 3rd vehicle    |
|              |                  |              | ⋯ Extra data     |
- 33

- (1) crashes could not be placed in this schematic
- |              |                  |              |                  |
|--------------|------------------|--------------|------------------|
| ← Straight   | ▭ Parked         | ⊗ Pedestrian | □ Fixed objects: |
| ← Stopped    | ⤴ Erratic        | ⊗ Bicycle    | □ General        |
| ← Unknown    | ⤴ Out of control | ○ Injury     | □ Pole           |
| ← Backing    | ↶ Right turn     | ⊙ Fatality   | ▣ Signal         |
| ← Overtaking | ↷ Left turn      | ⊙ Nighttime  | ▣ Curb           |
| ← Sidewipe   | ↶ U-turn         | ⊙ DUI        | ▣ Tree           |
|              |                  |              | ⊙ Animal         |
|              |                  |              | ◁ 3rd vehicle    |
|              |                  |              | ⋯ Extra data     |
- 34

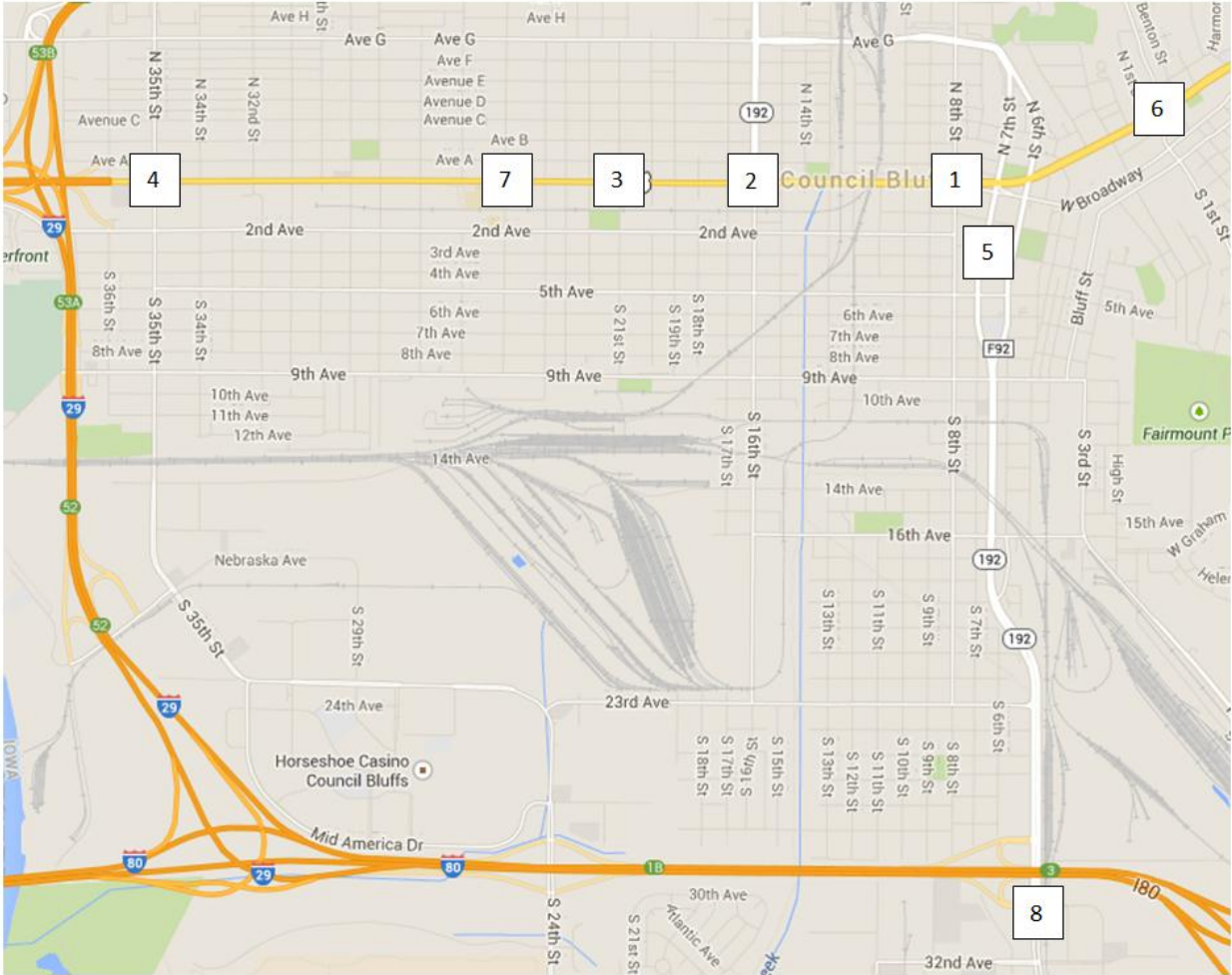
Resulting Action:

- Permanently remove the eastbound camera at this location.
  - o Crashes essentially stayed the same.

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 Council Bluffs ATE systems on the primary highway system:**



1. 8<sup>th</sup> St and West Kanesville Blvd/West Broadway
2. 16<sup>th</sup> St and West Broadway
3. 21<sup>st</sup> St and West Broadway
4. 35<sup>th</sup> St and West Broadway
5. 7<sup>th</sup> St and Willow Ave
6. Harrison St and East Kanesville Blvd
7. 25<sup>th</sup> St and West Broadway
8. South Expressway and 30<sup>th</sup> Ave



## 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.

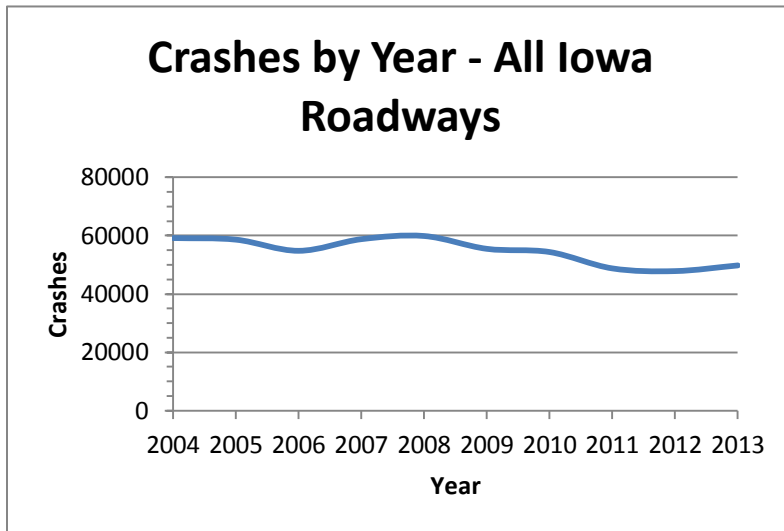
In 2012 Iowa State University developed a report titled, "Toolbox of Countermeasures to Reduce Red Light Running". The report documented that at signalized intersections, red-light running crashes make up 24.5% of all crashes and account for 31.7% of all fatal and major injury crashes. This toolbox is 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.

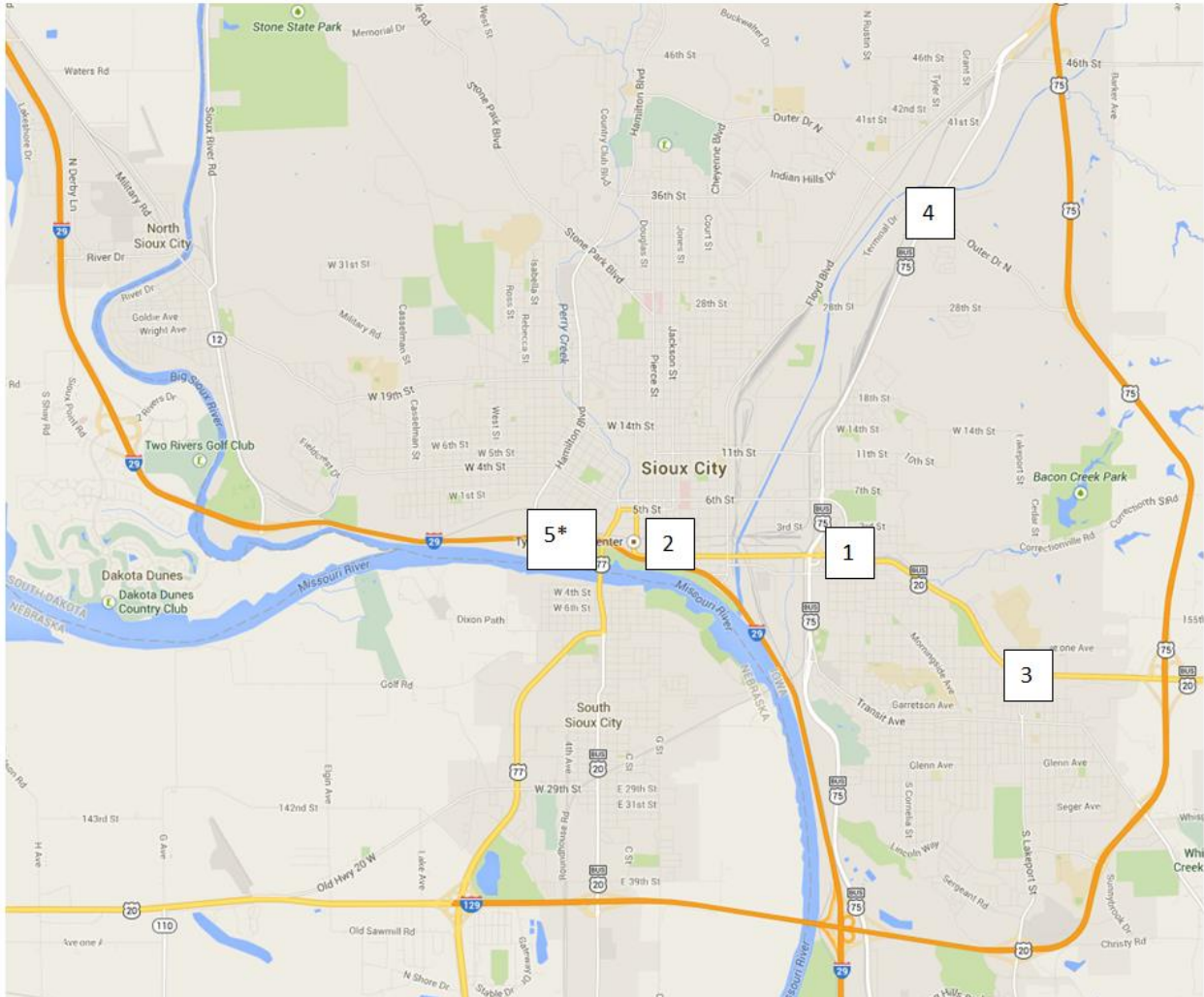
**Resulting Action:**

- 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