SAFETY

Safety and security are critical concerns for transportation. The vitality of transportation infrastructure is compromised if it is dangerous to travel on or if there are real or perceived security risks. Safety and security are universal concerns, for passengers and freight, across all modes of transportation, from rural areas to major cities. A safety risk or security breach in the region can be as devastating as one anywhere else in the nation. With that in mind, local policymakers must consider how to improve transportation safety and enhance the security of the transportation system for all modes and infrastructure.

Iowa Crash Background

The main safety focus considered in this LRTP is motor vehicle crashes (hereafter, “crash” denotes a traffic crash). Safety concerns for other modes are briefly discussed in their individual chapters. While safety is a concern across all modes of transportation, traffic crashes account for, by far, the most property damage, injuries, and deaths. According to the National Highway Traffic Safety Administration (NHTSA), in 2013 there were 32,719 people killed in traffic crashes, including 317 in Iowa. While this total has been declining – national fatalities are around 10,000 fewer than ten years ago – safety remains a paramount concern for transportation planning.

Figure 7.1 shows the fatality rate per 100 million vehicle miles traveled for Iowa, the U.S., and the state with the lowest rate from 2003 to 2013. All rates have declined over this period of time. In 2013, Iowa’s rate was below the national average for the first time since 2004. Both Iowa and the U.S. are about twice as high as the state with the lowest rate.

Figure 7.1 – Fatality Rate per 100 Million Vehicle Miles Traveled, 2003-2013

Table 7.1 shows the number of crash fatalities in Iowa and the U.S. over the last seven years. Both have seen significant declines in this timeframe, with Iowa’s total fatalities dropping by 28.9 percent and the U.S. total fatalities dropping by 20.7 percent. Table 7.2 shows Iowa fatalities by crash type. The crash types shown are not mutually exclusive, meaning a crash can appear in multiple categories. The list helps provide context for the types of fatal crashes occurring most often in Iowa. The categories shown with the highest percentage of fatalities involved a rollover or a driver with blood alcohol content (BAC) of 0.8 or higher. Most crash types do not have clear patterns over time, though those involving high BAC have trended upward by 8.3 percent. Fatalities involving an ejection trended downward by 5.5 percent with a noteworthy decline in 2013.

Table 7.1 – Total Fatalities, U.S. and Iowa, 2007-2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Fatalities, U.S.</th>
<th>Total Fatalities, Iowa</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>41,259</td>
<td>446</td>
</tr>
<tr>
<td>2008</td>
<td>37,423</td>
<td>412</td>
</tr>
<tr>
<td>2009</td>
<td>33,883</td>
<td>371</td>
</tr>
<tr>
<td>2010</td>
<td>32,885</td>
<td>390</td>
</tr>
<tr>
<td>2011</td>
<td>32,367</td>
<td>360</td>
</tr>
<tr>
<td>2012</td>
<td>33,561</td>
<td>365</td>
</tr>
<tr>
<td>2013</td>
<td>32,719</td>
<td>317</td>
</tr>
</tbody>
</table>

Source: National Highway Traffic Safety Administration

Table 7.2 – Iowa Fatalities by Crash Type, 2007-2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Involving a Large Truck</th>
<th>Involving Speeding</th>
<th>Involving a Rollover</th>
<th>Involving an Ejection</th>
<th>Driver/Operator with BAC 0.8 or Higher</th>
<th>Involving Motorcyclists</th>
<th>Involving Non-motorists</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>15.9%</td>
<td>8.5%</td>
<td>29.1%</td>
<td>26.0%</td>
<td>24.2%</td>
<td>13.9%</td>
<td>7.0%</td>
</tr>
<tr>
<td>2008</td>
<td>17.7%</td>
<td>10.0%</td>
<td>28.4%</td>
<td>20.9%</td>
<td>21.6%</td>
<td>13.3%</td>
<td>6.7%</td>
</tr>
<tr>
<td>2009</td>
<td>17.5%</td>
<td>16.7%</td>
<td>34.8%</td>
<td>25.6%</td>
<td>26.4%</td>
<td>13.2%</td>
<td>6.2%</td>
</tr>
<tr>
<td>2010</td>
<td>22.6%</td>
<td>16.9%</td>
<td>27.9%</td>
<td>18.7%</td>
<td>21.8%</td>
<td>15.4%</td>
<td>7.2%</td>
</tr>
<tr>
<td>2011</td>
<td>16.7%</td>
<td>17.8%</td>
<td>38.1%</td>
<td>22.2%</td>
<td>23.1%</td>
<td>10.0%</td>
<td>8.6%</td>
</tr>
<tr>
<td>2012</td>
<td>16.4%</td>
<td>14.7%</td>
<td>36.7%</td>
<td>25.6%</td>
<td>26.3%</td>
<td>16.2%</td>
<td>6.6%</td>
</tr>
<tr>
<td>2013</td>
<td>19.2%</td>
<td>16.1%</td>
<td>32.2%</td>
<td>20.5%</td>
<td>32.5%</td>
<td>12.9%</td>
<td>7.3%</td>
</tr>
</tbody>
</table>

*A fatality can be in more than one category
Source: National Highway Traffic Safety Administration

Of particular concern at the regional planning level is the fact that 235 of the 317 Iowa crash fatalities in 2013 occurred on rural roadways. Figure 7.2 shows that this has been an ongoing trend. With 75 percent of fatalities occurring outside urban areas, planning for and mitigating roadway safety concerns is a vitally important endeavor for regions, counties, and cities.
Safety Planning at the State Level

Crashes are clearly a concern at the state level, and the Iowa Department of Transportation (Iowa DOT) has been involved in several initiatives related to improving safety. There is a wealth of crash information and several tools for users located on the Iowa DOT website, as well as documents and plans outlining safety efforts. Multiple planning efforts are outlined below.

**Safety Conscious Planning**

TEA-21, SAFETEA-LU, and MAP-21 have encouraged safety consciousness in a comprehensive, system-wide, multimodal context. The Iowa DOT responded to this by encouraging Safety Conscious Planning and holding the Iowa Safety Conscious Planning Forum and Peer Exchange in 2003. Participants of the conference concluded that it is highly advisable for all segments of the road safety community to work collaboratively by establishing common safety goals, sharing information, and designing complementary programs. Additionally, safety planning should be multidisciplinary including planning, education, engineering, enforcement, and emergency management, encompassing all modes of transportation.

The 2003 forum was well attended with participants from the Iowa DOT, Federal Highway Administration (FHWA), Federal Transit Administration, Iowa Metropolitan Planning Organizations (MPOs), Iowa Regional Planning Affiliations (RPAs), and other organizations. The ultimate outcome was several future initiatives including:

- Find methods for providing more safety planning support to the MPOs and RPAs.
- Provide training such as a management workshop for Multidisciplinary Safety Teams (MDST); presentations on low cost safety improvements for the public and law enforcement; and access management materials for developers and land use planners.
- Stimulate the development of MDSTs in at least the larger cities through problem identification, peer exchange, training, and other activities.
- Encourage the use of analysis tools and add new tools and services to the current format.

**Figure 7.2 – Traffic Fatalities in Iowa, 2007-2013, Urban vs. Rural**

![Graph showing traffic fatalities in Iowa, 2007-2013, comparing urban vs. rural areas.](image)

*Source: National Highway Traffic Safety Administration – Fatality Analysis Reporting System*
Many of these initiatives have been implemented. There are multiple MDSTs across the state including the Black Hawk County MPO’s MDST. Low cost safety improvement workshops are offered annually throughout the state. Safety Conscious Planning should continue to be embodied at all levels of government when conducting transportation planning. Another Safety Conscious Planning Forum was held in 2008 to update participants on safety strategies and initiatives. One way that Safety Conscious Planning has been manifested is through the Iowa DOT’s Strategic Highway Safety Plan.

Iowa Strategic Highway Safety Plan

One method states are to conduct safety planning is to develop a highway safety plan. The Iowa Comprehensive Highway Safety Plan (CHSP) was published in 2006. The CHSP has the philosophy that “one death is one too many” and sets the specific goal of reducing the annual death toll from crashes from 445 to 400 by the year 2015. While there have already been a few years with less than 400 fatalities, it remains to be seen whether this is a long-term trend. To achieve a lasting reduction in fatalities, the CHSP has a top five safety policy (legislative) areas to focus on, and a top eight safety program (administrative) areas of attention. These strategies were based on multidisciplinary collaboration and data supported by Iowa traffic records, data tools, and practices.

The top five safety policy strategies were young drivers, occupant protection, motorcycle safety, traffic safety enforcement, and traffic safety improvements. The top eight safety program strategies were lane departure, safety corridors, intersections, local roads, state traffic records, senior mobility, safety training and education, and unpaved rural roads. There have been a number of accomplishments since the CHSP was adopted. New legislation includes that all passengers age 17 or under must use a safety belt or child seat, all drivers are prohibited from texting while driving, and young drivers with provisional licenses are prohibited from using any electronic devices while driving. The Iowa DOT has also initiated program strategies to enhance safety including adopting several design standards aimed at decreasing the likelihood of lane departure crashes, identifying safety corridor sites, and providing roundabout education and consultant services to local jurisdictions. The CHSP underwent a peer review in 2011 which involved several state and federal agencies as well as other State DOTs. The peer review included hearing about safety planning efforts from other states, reviewing the strengths and weaknesses of Iowa’s CHSP, and identifying opportunities for improvement in the updated CHSP.

In 2013, the Iowa DOT released its 2013-2016 Strategic Highway Safety Plan (SHSP). As described in the document, the SHSP was written using a data-driven, innovative, and proactive planning process that addresses not only the Four E’s of roadway safety (engineering, education, enforcement, and emergency medical services), but also a fifth E – everyone. The last E is a reminder that safety is everyone’s responsibility. Iowa is adopting the national vision for highway safety – Toward Zero Deaths. The vision of the Toward Zero Deaths effort is to eliminate all traffic fatalities and is consistent with the vision in the 2006 CHSP – “one death is one too many”. The national goal is to reduce traffic fatalities by half by the year 2030. The 2013 SHSP has the goal to achieve a 15 percent reduction in fatalities and major injuries on Iowa highways by the year 2020. The SHSP outlines key strategies the Iowa DOT intends to deploy over the next three years and sets targets to move toward the 2020 goal.
Safety strategies were developed for several areas with the priority strategies outlined in the categories below:

- Education – Multimedia education campaign
- Education – Enhance driver education
- Enforcement – High visibility enforcement
- Enforcement – Deploy state-of-the-art technology
- Enforcement – Expand impaired enforcement programs
- Engineering – Prevent lane departure crashes
- Engineering – Improve intersections
- Policy – Enhance multiagency collaborative efforts
- Policy – Strengthen legislative policies
- Research and data – Safety data improvement

Traffic Safety Culture in Iowa

A report was issued in 2011 by the Institute for Transportation (InTrans) at Iowa State University called *Improving Traffic Safety Culture in Iowa*. This report examined areas for improvement that aligned with the CHSP’s top five safety policies and top eight safety program strategies, summarized best practices from other states, and presented recommendations to the Iowa DOT to improve traffic safety culture in Iowa. Some of the report’s findings include:

- Young drivers only represent a small portion of the licensed driver population in Iowa but are disproportionately represented in traffic crashes. (pg. 6)
- The median age of Iowa’s population is increasing and so is the age of Iowa’s drivers. In 2010, one in six Iowa drivers was 65 or older. (pg. 7)
- Alcohol use is one of the leading causes of traffic crashes both in Iowa and in the nation. GTSB statistics show that 23 percent of all fatalities in Iowa are alcohol-related. Of this number, 30 percent involved drivers under age 25. (pg. 8)
- In Iowa, speed is the third highest contributing factor in fatal crashes behind alcohol and stop sign/traffic signal violations. (pg. 10)
- Educating drivers can be a challenging task to undertake. The changing media and generation gaps may lead to some people being missed because they use different forms of media. With the rise of social media, many people, especially younger people, use electronic rather than traditional media sources used by their parents. Being able to use this media is important to getting the message out to these groups. The message must be communicated in a way that will get through to them. More work is needed to keep up with ever changing social media and to use the proper medium for the intended demographic. (pg. 12)
- In Iowa, 50 percent of all fatalities happen at night when only 12 percent of the traffic is present. (pg. 13)

Local Crash Background

RTA Crash History

The number of crashes that have occurred in the RTA in the past ten years can be viewed on Table 7.3, and the number of fatal crashes per county can be viewed on Table 7.4. Map 7.1 depicts fatal crashes
that have occurred in the region in the past ten years. While there was a peak in 2011 and 2012, the overall trend during the last ten years has been downward. Also, the majority of crashes are property damage only – the percent of crashes resulting in injuries or fatalities ranges from 11 to 14 percent.

In addition to projects and locations already discussed individually, many other intersections and corridors merit review with regard to safety. While there may be specific locations where engineering improvements can help decrease the number of crashes, the largest factor in many crashes is human error, often due to inattentive/distracted driving. Public awareness and education coupled with better driving practices will likely do more to reduce the number of crashes and their severity than any engineering solution. That being said, it is important to examine high crash locations to ensure that the roadway design of those areas is optimal and to determine whether any safety improvements should be made.

Figures 7.3-7.8 show the number of fatal, major injury, and minor injury crashes by county from 2003-2012. Bremer and Grundy Counties show a continual decline for total injury and fatality crashes over the ten year period while others tend to vary more from year to year.

### Table 7.3 – Crash Statistics for the Iowa Northland Region, 2003-2012

<table>
<thead>
<tr>
<th></th>
<th>Total Crashes</th>
<th>Fatal Crashes</th>
<th>Fatal % of Total</th>
<th>Major Injury Crashes</th>
<th>Major Injury % of Total</th>
<th>Minor Injury Crashes</th>
<th>Minor Injury % of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>4055</td>
<td>32</td>
<td>0.79%</td>
<td>99</td>
<td>2.44%</td>
<td>325</td>
<td>8.01%</td>
</tr>
<tr>
<td>2004</td>
<td>4024</td>
<td>33</td>
<td>0.82%</td>
<td>113</td>
<td>2.81%</td>
<td>338</td>
<td>8.40%</td>
</tr>
<tr>
<td>2005</td>
<td>3798</td>
<td>26</td>
<td>0.68%</td>
<td>71</td>
<td>1.87%</td>
<td>350</td>
<td>9.22%</td>
</tr>
<tr>
<td>2006</td>
<td>3357</td>
<td>22</td>
<td>0.66%</td>
<td>101</td>
<td>3.01%</td>
<td>343</td>
<td>10.22%</td>
</tr>
<tr>
<td>2007</td>
<td>3835</td>
<td>23</td>
<td>0.60%</td>
<td>106</td>
<td>2.76%</td>
<td>346</td>
<td>9.02%</td>
</tr>
<tr>
<td>2008</td>
<td>4212</td>
<td>23</td>
<td>0.55%</td>
<td>101</td>
<td>2.40%</td>
<td>366</td>
<td>8.69%</td>
</tr>
<tr>
<td>2009</td>
<td>3840</td>
<td>12</td>
<td>0.31%</td>
<td>80</td>
<td>2.08%</td>
<td>329</td>
<td>8.57%</td>
</tr>
<tr>
<td>2010</td>
<td>3418</td>
<td>17</td>
<td>0.50%</td>
<td>77</td>
<td>2.25%</td>
<td>299</td>
<td>8.75%</td>
</tr>
<tr>
<td>2011</td>
<td>3124</td>
<td>27</td>
<td>0.86%</td>
<td>77</td>
<td>2.46%</td>
<td>264</td>
<td>8.45%</td>
</tr>
<tr>
<td>2012</td>
<td>3134</td>
<td>16</td>
<td>0.51%</td>
<td>83</td>
<td>2.65%</td>
<td>290</td>
<td>9.25%</td>
</tr>
</tbody>
</table>

*Source: Iowa DOT CMAT Data*

### Table 7.4 – Number of Fatal Crashes per County, 2003-2012

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Hawk</td>
<td>16</td>
<td>16</td>
<td>13</td>
<td>9</td>
<td>9</td>
<td>12</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>6</td>
<td>111</td>
</tr>
<tr>
<td>In Metro Area</td>
<td>10</td>
<td>12</td>
<td>11</td>
<td>4</td>
<td>9</td>
<td>8</td>
<td>5</td>
<td>9</td>
<td>9</td>
<td>4</td>
<td>81</td>
</tr>
<tr>
<td>Outside of Metro Area</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>Bremer</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Buchanan</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Butler</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>Chickasaw</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>Grundy</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>28</td>
</tr>
<tr>
<td>RTA Total*</td>
<td>21</td>
<td>21</td>
<td>15</td>
<td>18</td>
<td>14</td>
<td>15</td>
<td>7</td>
<td>8</td>
<td>18</td>
<td>12</td>
<td>149</td>
</tr>
</tbody>
</table>

*Source: Iowa DOT CMAT Data

*RTA total excludes crashes within jurisdictions of the MPO*
Figure 7.3 – Number of Fatal, Major Injury, and Minor Injury Crashes in Black Hawk County*, 2003-2012

Source: Iowa DOT CMAT Data
*Excludes crashes within jurisdictions of the MPO

Figure 7.4 – Number of Fatal, Major Injury, and Minor Injury Crashes in Bremer County, 2003-2012

Source: Iowa DOT CMAT Data
Figure 7.5 – Number of Fatal, Major Injury, and Minor Injury Crashes in Buchanan County, 2003-2012

Source: Iowa DOT CMAT Data

Figure 7.6 – Number of Fatal, Major Injury, and Minor Injury Crashes in Butler County, 2003-2012

Source: Iowa DOT CMAT Data
Figure 7.7 – Number of Fatal, Major Injury, and Minor Injury Crashes in Chickasaw County, 2003-2012

Source: Iowa DOT CMAT Data

Figure 7.8 – Number of Fatal, Major Injury, and Minor Injury Crashes in Grundy County, 2003-2012

Source: Iowa DOT CMAT Data
Map 7.1
Fatal Injury Crashes in the Iowa Northland Region 2004-2014

Fatalities

1  Highways  MPO Study Area
2  County Roads  City Boundary

Crash Data Source:
Crash Mapping Analysis Tool data from 2004 to 10-12-2014
Iowa DOT Top 200 Safety Improvement Candidate Locations

The Iowa DOT routinely updates a list of the top 200 Safety Improvement Candidate Location (SICL) intersections and targets these locations as eligible for funding assistance to develop safety improvements under the Iowa Traffic Safety Fund Program. The list is developed by analyzing all intersections in Iowa with at least one crash. The intersections are then ranked by a detailed methodology that focuses on the number of crashes, the severity of the crashes, and the rate at which the crashes occur per average daily traffic. The DOT utilizes crash reports filed by city police departments, county sheriffs, the Iowa State Patrol, and individual drivers in determining the listings.

The most recent listing used crash data from 2009-2013. The RTA had five intersections ranked in the Top 200. These locations are of particular concern when it comes to safety improvements as they have been rated as among the worst crash locations on a statewide level. Planning and mitigation efforts are discussed in Table 7.5.

Table 7.5 – RTA Intersections Included on the Iowa DOT Top 200 Safety Improvement Candidate Location List

<table>
<thead>
<tr>
<th>Statewide Ranking</th>
<th>County</th>
<th>Intersection</th>
<th>Mitigation Efforts</th>
</tr>
</thead>
<tbody>
<tr>
<td>53</td>
<td>Black Hawk</td>
<td>IA-281/N. Canfield Rd. and C-57/E. Cedar Wapsi Rd.</td>
<td>Red flashing warning beacons were added atop each stop sign for east and westbound traffic on Cedar Wapsi Rd.</td>
</tr>
<tr>
<td>87</td>
<td>Buchanan</td>
<td>IA-150/3rd Ave SE &amp; Enterprise Dr</td>
<td>No mitigation efforts planned</td>
</tr>
<tr>
<td>102</td>
<td>Black Hawk</td>
<td>US-218 &amp; C-57/W Cedar Wapsi Rd.</td>
<td>Interchange construction</td>
</tr>
<tr>
<td>135</td>
<td>Black Hawk</td>
<td>I-380 &amp; D-38/Poyner Rd.</td>
<td>No mitigation efforts planned</td>
</tr>
<tr>
<td>190</td>
<td>Chickasaw</td>
<td>B-22/120th St &amp; V-46/Randolf Ave</td>
<td>No mitigation efforts planned</td>
</tr>
</tbody>
</table>

Source: Iowa DOT

Five Percent Safety Report

Under SAFETEA-LU, states were required to submit annual reports describing not less than five percent of their highway locations exhibiting the most severe safety needs. The 2009 5 Percent Most Severe Safety Needs Report from the Iowa DOT analyzed crashes from 2001-2009 and determined that Iowa’s most severe safety needs related to crashes involved:

- Single vehicles running off the road
- Vehicles crossing the centerline on two-lane highways
- Vehicles crossing the median on freeways
- Horizontal curves
- Intersections
- Unbelted drivers and passengers
- Impaired drivers
- Speeding
The report identified the top five percent of safety needs at specific locations for each of these categories. The following are corridors in the RTA that were included in the report, and recent projects that have taken place to help improve that particular roadway are noted.

- Single vehicles running off the road
  - IA-57 in Butler County from the east city limit of Parkersburg to the Butler/Grundy County line.

- Vehicles crossing the centerline on two-lane highways
  - IA-150 in Buchanan County from just south of Hazleton to just north of Independence
    - In 2013, two curves in this section of roadway were realigned
  - IA-150 in Buchanan County from the Buchanan County/Benton County line to south of Independence
  - Baxter Ave. (V-62) in Buchanan County from one mile north of Jesup to south of Fairbank
  - IA-14 in Grundy County from north of Conrad to one mile west of Grundy Center

- Horizontal curves
  - Fairbank-Amish Blvd. (W-13) in Buchanan County at 170th St.
    - Shoulder paving project took place in 2010

Local Safety-Related Input and Issues

PUBLIC INPUT SURVEY

In April 2012, a public input survey was conducted to gather public opinion for the LRTP. There were questions on several transportation topics as well as opportunities to submit written comments. A total of 194 surveys were submitted. Some safety-related findings include:

- When asked how important safety improvements are as a planning area for the LRTP, 46 percent said very important and 44 percent said moderately important.
- When asked about roundabouts, 46 percent felt they could work in some areas and 30 percent felt they were an innovative design.
- Improving on- and off-road accommodations for bicyclists was either moderately important or very important to over half the respondents.
- Completing missing segments of sidewalks along major roads was very important to 48 percent of the respondents and moderately important to 22 percent.
- Improving crosswalk safety on major roads was very important to 46 percent of the respondents and moderately important to 32 percent.

SAFETY FOCUS GROUP

The RTA’s Safety Focus Group consisting of local planners, engineers, and law enforcement, met in 2007 and 2009 to discuss safety from a regional perspective. Topics involved a variety of issues including traffic crashes, paved shoulders, education efforts, unsigned rural intersections, and several others. Issues noted at the focus groups as particularly important in the region included:
• Road Issues
  o Curves can be particularly dangerous.
  o Farm equipment causes problems due to size and slower speed.
  o Roundabouts should be considered with new construction or reconstruction.
  o Uncontrolled rural intersections are a significant problem – not clear guidance on when signs are warranted; unwarranted signs lead to a lack of compliance.
  o Concerns with high volume rural intersections and at-grade rail crossings.
  o Paved shoulders are a large issue including where they should be implemented and whether they should be bike-friendly.
  o It is important to consider roadway safety along commuter corridors including cross-county and cross-region routes.

• Driver Issues
  o We’ve already picked most of the low-hanging fruit – need to focus on education. Roads and vehicles can only be improved so much – drivers also need to improve.
  o Inject driver safety into Drive Safe Cedar Valley media campaign – consider expansion of that type of campaign to the region.
  o Support enforceable policy changes – stronger seat belt laws, helmet laws.
  o Alcohol-related crashes are a problem locally.
  o Young driver issues – school permits, lack of experience on gravel, etc.
  o Should reach out to students by encouraging engineers and law enforcement visiting schools and driver’s education classes.
  o Amish and Mennonite communities are a consideration in the region and should be kept in mind in road design.

• Funding Issues
  o Lack of funding.
  o Difficulty to fund improvements like paved shoulders when there is not enough funding for needed travel lane improvements.
  o Should utilize safety funding whenever possible.

Several consensus points were reached through the focus group meetings including the following:

• The region should focus on public outreach and education. Law enforcement personnel and County Engineers should work to educate youth on safe driving practices through presentations at schools and to driver’s education classes. The metro-area traffic safety media campaign should be expanded to the region with a focus on encouraging safe driving practices in adults.
• Paved shoulders should be implemented when funding is available for them. First efforts should be to pave shoulders on curves, hills, or areas that have a history of run-off-road crashes. When appropriate, shoulders should be paved in a manner that is bicycle friendly.
• A regional methodology should be discussed for signage at rural intersections, as the Manual on Uniform Traffic Control Devices (MUTCD) and other guidance ultimately defer to engineering judgment. The trade-off between perceived safety benefits of signed intersections versus lack of compliance when signed intersections do not meet warrants should be examined.
• Safety funding should be sought for projects whenever possible.
• Projects involving new construction or major reconstruction should consider roundabouts for intersection design.
• The region should support the recommendations made in the Iowa Comprehensive Highway Safety Plan including the top five safety policy strategies and top eight program strategies.

**MULTI-DISCIPLINARY SAFETY TEAM**

There is a Multi-Disciplinary Safety Team (MDST) active in Black Hawk County as part of the MPO. This group has been involved in many activities including:

• Working with the Iowa DOT and a consultant to develop Incident Management Plan for I-380 reconstruction
• Sponsoring several crash analysis workshops
• Working with the Drive Safe Cedar Valley educational campaign
• Discussing ongoing planning and construction projects from a safety aspect

There is some crossover between this group and the RTA and topics discussed at the MDST often impact the region. One way to enhance safety planning in the region would be to either expand the MDST to a regional focus or create an MDST under the RTA which would focus on issues specific to the region.

**UNIQUE POPULATIONS**

Northeast Iowa is fortunate to be an area of diverse populations including a significant number of Amish and Mennonite communities. The area most impacted by these populations in the RTA is Buchanan County. As many of these communities do not use modern technology and equipment, they present a special challenge to transportation planning. Areas with a high number of horses and buggies may require more shoulder maintenance or fully paved shoulders to ensure safety for all types of traveling vehicles. Recent court cases have developed in other counties regarding the use of steel wheels by some Mennonite communities and concerns over their impact on county roads. Ensuring communication with these and other groups that use alternative modes of transportation is important to keep a safe and functioning transportation system for all.

**ROAD SAFETY AUDITS**

One way to help address intersections or corridors with known safety problems is to conduct a road safety audit (RSA). These are interdisciplinary efforts that typically include local engineers and law enforcement, the Iowa DOT, the FHWA, the Governor’s Traffic Safety Bureau, and InTrans. Two recent RSAs were conducted in the RTA in 2009, and their findings are described below.

**US-218 and C-57**

At the time of the study, this intersection was ranked seventh in Iowa for the highest number of at-grade expressway intersection crashes. Two daylight reviews were conducted for this safety audit; the first was performed during the afternoon peak hour traffic period, and the second was conducted during the morning peak hour. Vehicles passing through the intersection on C-57 were observed to experience
delays while waiting for acceptable gaps in traffic on US-218. Occasionally, vehicles traveling westbound on C-57 waiting to cross US-218 block left-turning traffic in the median resulting in a backup of several vehicles. Traffic was also observed to be congested when southbound semi-trucks turning east completely blocked the intersection while waiting for gaps in traffic on US-218. A nighttime review was conducted for the site as well. Significantly reduced traffic volume resulted in improved operations during nighttime hours.

Considering field review observations, comments from the safety audit team, and data gathered for the review, multiple recommendations for addressing safety and congestion at this intersection were presented for consideration. Several of these improvements were acted on as part of a safety project constructed in 2011 including:

- The existing right-turn lane on northbound US-218 was reconstructed to an offset design which keeps turning vehicles in a dedicated lane and makes it easier for C-57 traffic to see oncoming vehicles.
- A northbound acceleration lane was constructed on US-218 for westbound C-57 traffic that turns north to make it easier to get up to speed.
- The left turn lanes on US-218 at the intersection were extended so turning vehicles have more room for deceleration and storage.

As discussed in Chapter 3, an interchange for US-218/C-57 is now under construction and is anticipated to be complete by 2016.

**IA-150**

The IA-150 corridor was targeted for an RSA from I-380 in Benton County north to the Minnesota border including the stretch of roadway in Buchanan County and through Independence. This roadway corridor had become a particular concern because of crash histories, congestion through cities, and the potential for economic development in the area. The aim of the RSA was to identify where low-cost improvements could be applied to address safety concerns. Several recommendations were developed by the RSA team including:

- Concentrations of animal crashes should be reviewed for possible mitigation improvements.
- Considerations should be given to systematically replace all warning signs and chevrons with higher grade microprismatic, fluorescent yellow signs. Larger size chevrons should be considered for curves with significant run-off-road crash history.
- Removal of raised concrete islands at intersections should be considered with any future resurfacing and restoration projects.
- A review of other paved road intersections for right-turn lane needs should be completed as part of future improvements in the corridor.
- Areas where frequent run-off-road crashes and/or edge rutting have occurred should be reviewed for the beneficial installation of partially paved shoulders with rumble strips/stripes.
- Intersection radii in urban areas that present an insufficient turning path for commercial vehicles should be reviewed for the feasibility of widening.
As discussed previously, the curves on IA-150 north of Independence were realigned in 2013. A study of the corridor with a focus on the highway in Independence has been included in past Transportation Improvement Programs but has yet to be conducted.

**Potential Safety Improvements**

There are many safety improvements, techniques, and countermeasures that can be used to try to mitigate existing safety problems or prevent safety issues from developing. The information below is from the FHWA (http://safety.fhwa.dot.gov/provencountermeasures/) and outlines techniques that can be used in certain situations to improve safety. Examples are also provided where these techniques have been used or are planned in the region.

**ROUNDABOUTS**

The modern roundabout is a type of circular intersection that can be used to manage speed and create a transition area that moves traffic from high-speed to a low-speed environment. A roundabout is defined primarily by three basic operational principles:

- Geometry that results in a low-speed environment creating substantial safety advantages.
- Entering traffic yields to vehicles in the circulatory roadway leading to excellent operational performance.
- Channelization at the entrance and deflection around a center island are designed to be effective in reducing conflict.

Roundabouts have demonstrated substantial safety and operational benefits compared to most other intersection forms and controls with especially significant reductions in fatal and injury crashes. By converting from a two-way stop control mechanism to a roundabout, a location can experience, on average, an 82 percent reduction in severe crashes and a 44 percent reduction in overall crashes. By converting from a signalized intersection to a roundabout, a location can experience, on average, a 78 percent reduction in severe crashes and a 48 percent reduction in overall crashes.

Examples of roundabouts in the region:

- A roundabout was constructed in 2008 at Independence Ave. and Raymond Rd. east of Waterloo in Black Hawk County; this intersection had been listed on the state’s Top 200 SICL list.
- A roundabout was constructed in 2012 at C-57/V-62 south of Fairbank in Buchanan County; this intersection has been ranked as the most dangerous intersection in the county.
- Roundabouts were constructed on C-50 in 2012 as part of the interchange design at US-218 and C-50 near Janesville. Traffic entering or existing US-218 at C-50 flows through roundabouts rather than stop-controlled intersections.
**CORRIDOR ACCESS MANAGEMENT**

Access management is a set of techniques to control access to highways, major arterials, and other roadways. Some of the more common access management treatments include driveway closure, consolidation or relocation, restricted-movement designs for driveways and intersections, raised medians, and adding auxiliary turn lanes. The benefits include improved movement of traffic, reduced crashes, and fewer vehicle conflicts.

Access management techniques are designed to manage the frequency and magnitude of conflict points at intersections and driveways by altering access patterns. Developing and implementing effective access management strategies can significantly improve safety for both pedestrians and motorists. Per the Highway Safety Manual, areas where effective access management has been implemented experienced a 5-23 percent reduction in all crashes along two-lane rural highways and a 25-31 percent reduction in severe crashes along urban/suburban arterials.

Since opening in 1995, the segment of US-218 between Cedar Falls and Waverly has experienced substantial traffic growth. Consequently, safety and operational issues have become readily apparent. In 2005, the Iowa DOT initiated a corridor study of US-218 from West Mt. Vernon Rd. in Black Hawk County to the interchange south of Waverly. The purpose of the study was to focus on safety improvements and options for access control for the corridor. In 2012, a new interchange was constructed at C-50, and the intersections at Marquis Rd. and North Main St. were permanently closed. An interchange at C-57 is under construction which will include permanent closures at Gresham Rd., Bennington Rd., and Mt. Vernon Rd. Future projects may include an interchange at 260th St. north of Janesville and additional roadway closures at North Maple St. and 260th St. The end result would be a controlled-access highway corridor stretching from Cedar Falls to Waverly.

**LONGITUDINAL RUMBLE STRIPS AND STRIPES ON TWO-LANE ROADS**

Longitudinal rumble strips are milled or raised elements on the pavement intended to alert inattentive drivers through vibration and sound that their vehicles have left the travel lane. There are a number of possible applications that can be used:

- **Shoulder rumble strips** – installed on a shoulder near the edge of the travel lane; these significantly reduce run-off-road crashes.
- **Edge line rumble stripes** – similar to shoulder rumble strips, but placed at the edge of the travel lane, typically in line with the edge line pavement marking.
- **Center line rumble strips** – installed at or near the center line of an undivided roadway and may be comprised of either a single or double line of rumbles. They reduce cross center line crashes.
- **Rumble stripes** – either edge line or center line rumble strips where the pavement marking is placed over the rumble strip. This countermeasure increases nighttime visibility of the pavement marking.

Roadway departure crashes account for approximately 53 percent of fatal crashes each year on the Nation’s highways. Rumble strips are designed primarily to address the subset of driver error crashes.
caused by distracted, drowsy, or otherwise inattentive drivers who unintentionally drift from their lane. Continuous rumble strips can be applied on many miles of roads in a cost-effective manner.

In 2008, a research project was undertaken by InTrans to demonstrate the effectiveness of edge line rumble stripes on lower-volume rural paved roads with unpaved shoulders. Six project sites in Iowa were selected including W-13/Amish Blvd. in Buchanan County. The project involved milling narrow width rumble strips along the pavement edge with a painted edge line applied directly over the milled area.

**Enhanced Delineation and Friction for Horizontal Curves**

Horizontal curves are a change in roadway alignment that creates a more demanding environment for the driver, vehicle, and pavement. The challenges associated with safe navigation of horizontal curves are compounded with the addition of a nighttime driving environment or inclement weather. Recent data analysis shows that 28 percent of all fatal crashes occur on horizontal curves.

Enhanced delineation and applied friction for horizontal curves can greatly improve the safety of the curve. There are a number of possible applications that can be used to improve horizontal curve safety. For example:

- Installing chevron signs, curve warning signs, and/or sequential flashing beacons can result in a 38-43 percent reduction in all fatal and injury crashes.
- Installing chevron signs on horizontal curves can produce a 16 percent reduction in non-intersection fatal and injury crashes.
- Installing new fluorescent curve signs or upgrading existing curve signs to fluorescent sheeting can result in 25 percent reduction in non-intersection fatal and injury crashes.
- Providing static combination horizontal alignment/advisory speed signs can generate a 13 percent reduction in all injury crashes.
- Refinishing pavement with microsurfacing treatment can bring about a 43 percent reduction in all fatal and serious injury crashes.

**Safety Edge**

Vertical pavement edges are a recognized detriment to safety, contributing to severe crashes that frequently involve rollovers or head-on collisions. Studies have shown that crashes involving edge drop-offs are two to four times more likely to include a fatality than other crashes on similar roads. The safety edge is one of the innovative technologies being utilized in mitigating the severity of crashes. A safety edge shapes the edge of a paved roadway at approximately 30 degrees from the pavement cross slope during the paving process. This safety feature eliminates tire scrubbing, a phenomenon that contributes to losing control of a vehicle. Black Hawk County now routinely uses the safety edge on projects.
**ROAD DIET**

The classic roadway reconfiguration, commonly referred to as a “road diet”, involves converting an undivided four-lane roadway into three lanes made up of two through lanes and a center two-way left turn lane. The reduction of lanes allows the roadway to be reallocated for other uses such as bike lanes, pedestrian crossing islands, and/or parking. Road diets have multiple safety and operational benefits for vehicles as well as pedestrians, such as:

- Decreasing vehicle travel lanes for pedestrians to cross, thereby reducing the multiple-threat crash for pedestrians.
- Providing room for pedestrian crossing islands.
- Improving safety for bicyclists when bike lanes are added.
- Providing the opportunity for on-street parking.
- Reducing rear-end and side-swipe crashes.
- Improving speed limit compliance and decreasing crash severity when crashes do occur.

Midblock locations tend to experience higher travel speeds, contributing to increased injury and fatality rates. When modified from four travel lanes to two travel lanes with a two-way left-turn lane, roadways have experienced a 29 percent reduction in all roadway crashes. The benefits to pedestrians include reduced crossing distance and fewer midblock crossing locations which account for more than 70 percent of pedestrian fatalities.

**Funding Programs for Safety Projects**

There are a variety of state and federal funding programs available through the Iowa DOT to help fund safety improvements. RTA jurisdictions are encouraged to consider the programs outlined below to implement safety improvements.

1. **SMALL TOWN SIGN REPLACEMENT PROGRAM**

   This program provides funding to communities to replace damaged, obsolete, or substandard signs and signposts. The program will provide up to $5,000 of signs and signposts per applying community on a first-come, first-served basis.

   [www.iowadot.gov/traffic/smalltownsign.htm](http://www.iowadot.gov/traffic/smalltownsign.htm)

2. **TRAFFIC SAFETY IMPROVEMENT PROGRAM (TSIP)**

   TSIP is funded by one half of one percent of the Road Use Tax Fund. Cities, counties, and the Iowa DOT can apply for three types of projects. Site specific projects account for $5-6 million per year, and a maximum of $500,000 can be awarded to a project. The other two project types are traffic control devices and traffic safety studies; both programs have $500,000 to distribute per year.

   [www.iowadot.gov/tsip.htm](http://www.iowadot.gov/tsip.htm)
**Horizontal Curve Sign Program**

The intent of this program is to provide funding to counties for the purchase of curve warning and chevron signs. The program receives $400,000 annually in funding. A maximum of $10,000 per county, per year may be awarded for materials to install, replace, or upgrade curve signage.

[www.iowadot.gov/traffic/horizontalcurve.html](http://www.iowadot.gov/traffic/horizontalcurve.html)

**Iowa Traffic Engineering Assistance Program (TEAP)**

TEAP provides traffic engineering expertise to local cities and counties without the resources of a staff traffic engineer. The purpose is to identify cost-effective traffic safety and operational improvements as well as potential funding sources to implement the recommendations. The program receives $125,000 annually in funding.

[www.iowadot.gov/traffic/teap.html](http://www.iowadot.gov/traffic/teap.html)

**Highway Safety Improvement Program – Secondary (HSIP – Secondary)**

The Iowa DOT has collaborated with the Iowa County Engineers Association to provide the HSIP – Secondary Program. The HSIP – Secondary Program provides $2 million set-aside from the HSIP. Counties may receive up to 90 percent federal reimbursement, and a 10 percent local match is required; using matching funds from the Traffic Safety Improvement Program can result in a net zero funding requirement for the county. This program focuses on low cost, systemic safety improvements along an entire corridor.

[www.iowadot.gov/traffic/sections/HSIP.html](http://www.iowadot.gov/traffic/sections/HSIP.html)

**Grade Crossing Surface Repair Program (GCSRP)**

The GCSRP helps in the cost to rebuild and maintain a safe and smooth crossing surface at highway-railroad crossings. This program will pay 60 percent of the cost of repairs with the responsible roadway jurisdiction and the railroad company each paying 20 percent.

[www.iowadot.gov/iowarail/assistance/surface/surfacerepair.htm](http://www.iowadot.gov/iowarail/assistance/surface/surfacerepair.htm)

**Federal-Aid Highway/Rail Crossing Safety Program**

This program helps fund safety improvements at highway-railroad grade crossings. These funds are used to install new crossing signal devices, to upgrade existing signals, to improve crossing surfaces, and to provide low-cost improvements.

[www.iowadot.gov/iowarail/assistance/130/federalaid.htm](http://www.iowadot.gov/iowarail/assistance/130/federalaid.htm)

**Iowa’s Grade Crossing Safety Program**

Assists railroads with funding for the maintenance of crossing signals installed since 1973.

[www.iowadot.gov/iowarail/assistance/crossingassist.htm](http://www.iowadot.gov/iowarail/assistance/crossingassist.htm)
The security of the transportation system is a primary concern at the federal, state, and local levels. Security is essential for every mode of transportation, and for both freight and passengers. Natural disasters such as floods, blizzards, or tornadoes, and manmade accidental or intentional incidents such as industrial plant emergencies or acts of terrorism can cause serious disruption and danger to the transportation system. Conversely, the transportation system is also what provides a means for exit during an emergency when people need to evacuate or be routed around an area. There are efforts underway at all levels of government to prepare for and respond to incidents. Transportation considerations are important throughout all levels of emergency management and planning. These include preventing incidents when possible, preparing for potential events, quickly and efficiently responding to events when they happen, and recovering from incidents and applying lessons from them to future planning.

**National Level**

**U.S. DOT Strategic Plan**

The U.S. DOT’s *Strategic Plan for Fiscal Years 2014-2018* (www.dot.gov/dot-strategic-plan) discusses the importance of transportation security. Objectives discussed range from system-level to ones applicable to individual modes such as air and public transit. A few of these objectives that are applicable to RTA transportation security planning include the following:

- *Mitigate the impacts to transportation due to all hazards by developing effective response planning and training for leaders and responders.*
- *Meet transportation needs for national security through interagency cooperation with the Departments of Defense, State, Homeland Security, and State and local agencies.*

**National Response Framework and National Incident Management System**

The National Response Framework (NRF) was issued by the Department of Homeland Security in 2008. It contains guiding principles to enable all response partners to prepare for and provide a unified response to disasters and emergencies. It defines principles, roles, and structures that organize incident response and describes how various government and private partners can apply these principles for a coordinated and effective national response. Key principles include:

- Engaged Partnership – Communication by leaders at all levels to ensure times of crisis are effectively handled.
- Tiered Response – Manage incidents at the lowest possible jurisdictional level.
- Scalable, Flexible, and Adaptable Operational Capabilities – Incidents can be dynamic, and response should be adapted as needed.
- Unity of Effort Through Unified Command – There needs to be a clear understanding of the roles and responsibilities of each agency to ensure effective unified command.
- Readiness to Act – Balance readiness to act with an understanding of risk.
While the NRF provides the structure for national-level policy for incident management, the National Incident Management System (NIMS) provides the template for the management of incidents. NIMS provides a set of scalable concepts, principles, terminology, and organizational processes for all types of hazards including those affecting transportation. Homeland Security Presidential Directive 5 required adoption of NIMS by state and local organizations as a condition for federal preparedness assistance. NIMS focuses on five key areas:

- Preparedness
- Communications and Information Management
- Resource Management
- Command and Management
- Ongoing Management and Maintenance

The framework provided by the NRF and NIMS has led to many state and local security planning efforts, often specifically involving transportation security. Staff members from many RTA jurisdictions have attended NIMS training, and due to recent natural disasters have had experience using it.

**State Level**

The Iowa DOT has a Statewide Emergency Operations (SEOP) section which includes the Operations Support Center (OSC) and Homeland Security and Emergency Management. The OSC is a 24-hour operation center which monitors transportation issues statewide and maintains the 511 system (described below). Two-way communication between the OSC and local law enforcement can help ensure that incidents are dealt with quickly and diversions or other measures are implemented when needed to protect the traveling public. The Homeland Security and Emergency Management section of the SEOP has several roles including coordinating the Iowa DOT’s response to disasters and overseeing recovery activities.

There are a number of intelligent transportation system (ITS) safety and security activities undertaken by the Iowa DOT. This includes the 511 Traveler Information System which provides citizens with real-time information on roadway travel conditions, incidents, and construction activities. The 511 system can be accessed via phone, web, or mobile application, and provides a way to quickly communicate with the traveling public. Some metropolitan areas also have cameras on major routes and speed sensors that monitor congestion. The MPO saw its first installation of both cameras and speed sensors as part of the I-380 reconstruction project in 2012. Since then, the DOT has expanded both systems to include US-218 from the US-20/I-380 interchange north to the US-63 interchange. At present, there is one camera installed in the region outside of the MPO which is located on US-218 south of Plainfield.

Another ITS activity undertaken by the Iowa DOT is the use of dynamic message signs (DMS). Large overhead signs can be found throughout the state on many interstate and primary highways. These signs can be used in an emergency to communicate information to drivers on weather, incidents, diversions, Amber Alerts, and other topics. Overhead signs are currently installed in the MPO at the
following locations: US-218 southbound at the Lone Tree Rd. interchange; US-20 eastbound, west of the Hudson Rd. interchange with US-20; I-380 northbound/westbound, east of the Evansdale Dr. interchange; and I-380 southbound/eastbound at the Raymond Rd. interchange. At present, there are no overhead signs within the region outside of the MPO.

**Local Level**

**Planning Efforts**

Iowa code has established the requirement for local Emergency Management Agencies (EMA) to oversee emergency management functions in each county. EMAs have several functions including maintaining an emergency plan and conducting emergency drills. Each county in the RTA has an EMA and EMA Coordinator which focus on emergency management involving four concepts:

- Preparedness – Planning, training, and exercising to respond quickly and efficiently to natural and manmade emergencies and disasters.
- Response – Actions taken during and after an emergency or disaster.
- Recovery – Coordinated efforts to assist residents and communities in the short-term and long-term after an emergency or disaster.
- Mitigation – Taking efforts to reduce or eliminate future risk from hazards.

Other planning efforts have included developing Hazard Mitigation Plans (HMP) which outlines the potential for natural and manmade disasters and the potential impact of those disasters. The counties in the RTA have been developing multi-jurisdiction HMPs which are approved by each jurisdiction in the county. Black Hawk, Bremer, Buchanan, Butler, and Grundy Counties have FEMA-approved multi-jurisdiction HMPs covering all local governments. Chickasaw County’s document is under development. The development of the HMPs involves a local planning committee reviewing potential hazards and threats from these hazards. This review includes an assessment of the potential effects of hazards on the transportation system. Transportation is also assessed as a hazard itself due to the potential for vehicular and other types of crashes or events.

Incident management (IM) plans are another planning effort that can be undertaken to improve the safety and security of the traveling public. The Black Hawk County MPO’s Multi-Disciplinary Safety Team (MDST) facilitated an IM planning effort for the I-380 reconstruction in 2012-2013. This effort involved coordination of a variety of state and local entities including the OSC; DOT and local planning, engineering, and maintenance staff; state and local law enforcement and emergency responders; the local communications center; and tow truck companies. This effort helped establish how incidents would be handled, how the public would be notified of incidents, and what diversion routes would be utilized if necessary. This enabled the placement of advanced emergency detour signage and the creation of an interactive mapping system that enabled responders to quickly determine what detour route to use based on the location and severity of the incident. While this plan was developed for a specific project, similar efforts could be undertaken to develop city or county-level plans to establish preferred diversion routes for incidents in particular areas.
In addition to IM plans, city or county-level evacuation plans can be developed. An evacuation plan for Black Hawk County was developed in 2009 which includes maps of primary and secondary evacuation routes and evacuation pick up points. The document follows an outline provided by the Department of Homeland Security and is primarily an after-the-event type approach. A range of mapping functions and various layers such as infrastructure, flood levees, schools, and hazardous waste sites were utilized for the document.

A particular transportation security concern that requires planning and preparation is the transport of hazardous materials. In 2009, the Hazardous Materials Regional Training Center in Waterloo conducted a Hazardous Materials Commodity Flow Study to determine what types of materials were traveling through Black Hawk County on US-20. In 445 hours of observation, 28,389 straight truck and semi tractor-trailers were counted. There were 931 placarded hazardous material loads in this count. In addition, 795 trailers were not marked with placards identifying hazards but were types of tanks typically used to carry petroleum, flammable or combustible liquids, corrosives, and other types of liquid chemicals or hazardous materials. Given the volume of hazardous materials transported on highways and rail lines, it is important for local jurisdictions to be prepared to respond should there be a crash, spill, or derailment involving these materials. There are two hazardous materials teams that cover the RTA. Waterloo is the base for the Northeast Iowa Response Group which responds to hazmat incidents in an 11 county area, including Black Hawk, Bremer, Butler, Chickasaw, and Grundy counties; Buchanan County is covered by the Linn County Hazmat Team.

**Other Considerations**

Other transportation-related security efforts are occurring at the local level but are primarily mode-specific. The Regional Transit Commission (RTC) has security cameras on ten of its buses which provide a record of any on-board or traffic incidents and serve as a security measure for the vehicles. Local airports have a number of security measures in place, from fencing and lighting to security plans. The Waterloo Regional Airport complies with guidelines from the Transportation Security Administration for the screening of passengers and freight. Local officials work to ensure that training for potential incidents is up-to-date including events such as an emergency landing at the airport. Rail companies and first responders have worked to ensure that teams know the correct way to deal with any type of ethanol spill or issue, as trainloads of it are now common within the region. Some additional items to consider and efforts that could be undertaken to improve transportation security include:

- A consideration for RTC, as well as local schools and other groups that own buses, to establish formal or informal agreements for the transportation of people in an emergency.
- Ensuring that transportation facilities, such as airports and bus garages, have appropriate lighting and fencing to help secure the property.
- Buses possessing automatic vehicle locators, to enable vehicles to be tracked while in service and in the event they were stolen.
- Expanded ITS efforts, such as additional traffic cameras and dynamic message signs, could help improve the detection of and recovery from incidents.
• Ongoing training of emergency personnel and cross-jurisdiction planning such as the I-380 IM planning efforts of the MDST to improve response and recovery.
• Evacuation plans and diversion mapping to prepare responders and jurisdictions following an incident or disaster. Emergency exercises test the system and keep involved personnel prepared.
• The evolution of technology has resulted in additional security concerns. Transportation security involves not only infrastructure but the threat of programs like 511 or GPS units being hacked. Cyber security is now a major consideration for transportation.