

2013



## 2013 Highway Safety Improvement Program Annual Report

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### **Protection of Data from Discovery & Admission into Evidence**

Section 148(g)(4) of 23 USC stipulates that data compiled or collected for the preparation of the HSIP Report “...shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in an action for damages arising from any occurrence at a location identified or addressed in such reports...” This information is also protected by 23 USC 409 (discovery and admission as evidence of certain reports and surveys).

## Introduction

This is a report on the Iowa Highway Safety Improvement Program for the state fiscal year 2013. The time period covered by this report is from July 1, 2012 to June 30, 2013.

The Highway Safety Improvement Program (HSIP) is a Federal Highway Administration (FHWA) core program created under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). It is established as section 148 of Title 23, United States Code (23 U.S.C. 148) and regulated under 23 CFR 924. These regulations also created the High Risk Rural Roads Program (HRRRP) as a component of the HSIP, and continued a separate Rail Highway Grade Crossing Program (RHGCP). In 2012, the Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) directs states to maintain HSIP, update their SHSP, and discontinue HRRRP.

The federal regulations also require strategic plans and annual reports. Here is a list of the documents that Iowa maintains in accordance with the regulations:

- Strategic Highway Safety Plan (SHSP) -- Iowa wrote a Comprehensive Highway Safety Plan (CHSP) in 2006 and has completed writing a new SHSP in 2013
- Transparency (5%) Report – Annually updated until 2012, discontinued in 2013
- HSIP Report – Annually updated
- RHGCP Report – Annually updated
- SHSP Report – Annually updated

Included herein is information regarding the Iowa HSIP, including the final year of HRRRP. In this report, the HSIP is the focus of Parts A, B, and C, and Part D is reserved for the HRRRP.

At the Iowa DOT, two offices were responsible for different components of the HSIP. The Office of Local Systems administered the HRRRP, and the Office of Traffic and Safety administers the remainder of the HSIP. Each office has contributed to this report on the basis of their administrative responsibilities.

## A. HSIP Program Structure

### i. Program Administration

#### *Program Administrators*

The Iowa HSIP program is administered by the Iowa DOT Office of Traffic and Safety. It is a centrally-run program.

#### *Funding Allocation*

Available HSIP funding is generally allocated to the Primary Road System (state-owned roadways) in Iowa. Only an occasional local project receives HSIP funding.

Funding for safety initiatives on county- and city-owned roads, the Secondary Road System and Local Road System respectively, has come from two different programs.

The HRRRP was used exclusively for projects on the Secondary Road System.

The other program is a state based safety program known as the Traffic Safety Improvement Program (TSIP). In 1987, the Iowa Legislature enacted a state law requiring ½ percent of the state gas tax revenues be used to fund traffic safety projects. The TSIP is administered on a competitive application basis, and all road systems are eligible for funding. Historically, cities and counties receive the greatest portion of these funds. Projects completed with this program are not included in this report.

#### *Project Selection*

In Iowa, we aspire to select HSIP projects that emerge from the SHSP and the Safety Improvement Candidate Lists.

In the development of the SHSP, it was revealed that Iowa highway safety issues can be segregated into one of two engineering-based categories: intersections or lane departure.

In preparation of the Safety Improvement Candidate Lists, we look further at the data and the highway systems in Iowa (Primary, Secondary, and Local Road systems). The goal is to identify locations or corridors with a history of crashes. Mapping is the preferred choice to communicate the areas of concern, and the following maps were developed in 2010:

- Intersections
- Lane Departure
- Run off the road right
- Cross Median
- Cross Centerline
- Curves

These maps show locations with the greatest number of crashes in Iowa. Please note the maps **are not** trying to convey that these roads are hazardous, but that these roads experience a greater number of crashes than other like roads in Iowa.

While the maps described above have not been updated recently, Iowa is in the process of developing an updated network screening tool to produce new maps. Visual representation will continue to be used in project selection.

ii. Program Methodology

The Iowa HSIP Project Identification Process was established in 2003, and remains current today.

Here are some brief highlights of this process:

- Selected projects are aligned with the SHSP categories: intersections or lane departure.
- Locations identified in the Safety Improvement Candidate Lists are based on the number of fatal and major injury crashes over a ten year period.
- Prioritization of potential HSIP projects is first made on a benefit versus cost basis. By this, we are indicating that we try to implement projects and treatments that will provide the greatest reduction in crashes for a minimal cost.

However, actual project selection is affected by factors such as leveraging other program funding, maximizing statewide impact, and other programmed improvements. It is preferred to complete more small or moderate cost projects, in lieu of one or two high cost projects.

iii. Special Rules

*High Risk Rural Roads Special Rule*

The High Risk Rural Roads Special Rule does not apply to Iowa as of 2013. The rate of traffic fatalities and serious injuries on local roads has not increased.

*Older Driver and Pedestrian Special Rule*

The Older Driver and Pedestrian Special Rule does not apply to Iowa as of 2013. The 5-year average of the rate of traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65 did not increase by a statistically significant amount. The data and calculations for this rate can be found in Appendix B.

## B. HSIP Project Implementation Progress

### i. HSIP Funding

The following table shows the total HSIP funding obligated in state fiscal year 2013.

<b>HSIP Project Funding</b>			
<i>Estimates based on anticipated letting costs</i>			
State Fiscal Year:	2013		
Period:	7/1/12 to 6/30/13		
<i>Funding Category</i>		<i>Obligated</i>	<i>Notes</i>
HSIP	Section 148	\$29,378,993.35	
HES	Section 152		
Optional Safety			
Penalty Transfer	Section 154 & 164		
Seat Belt Performance	Section 406		
Incentive Grants	Section 157 & 163		
Other Federal-Aid Funds	STP, ARRA		
State and Local Funds		\$ 5,821,966.65	<i>match to HSIP</i>
<b>Total</b>		<b>\$ 35,200,960.00</b>	

For state fiscal year 2013, these funds were obligated across the following SHSP categories:

Intersections	\$ 252,084.00
Lane Departure	
Run off the road right	\$ 34,281,957.00
Cross median	\$ 666,919.00
Cross centerline	\$
<b>Total</b>	<b>\$ 35,200,960.00</b>

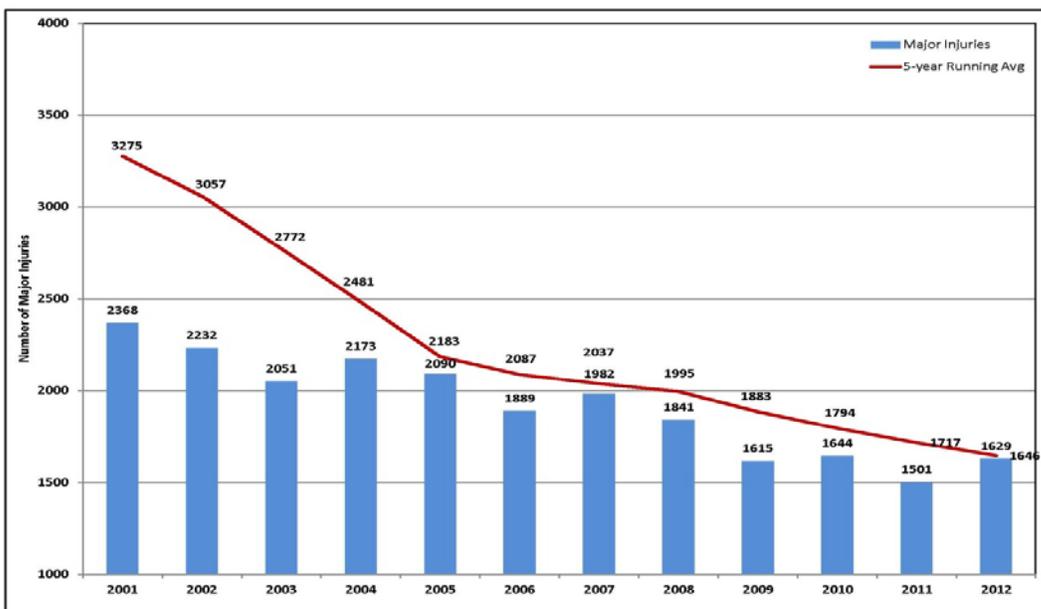
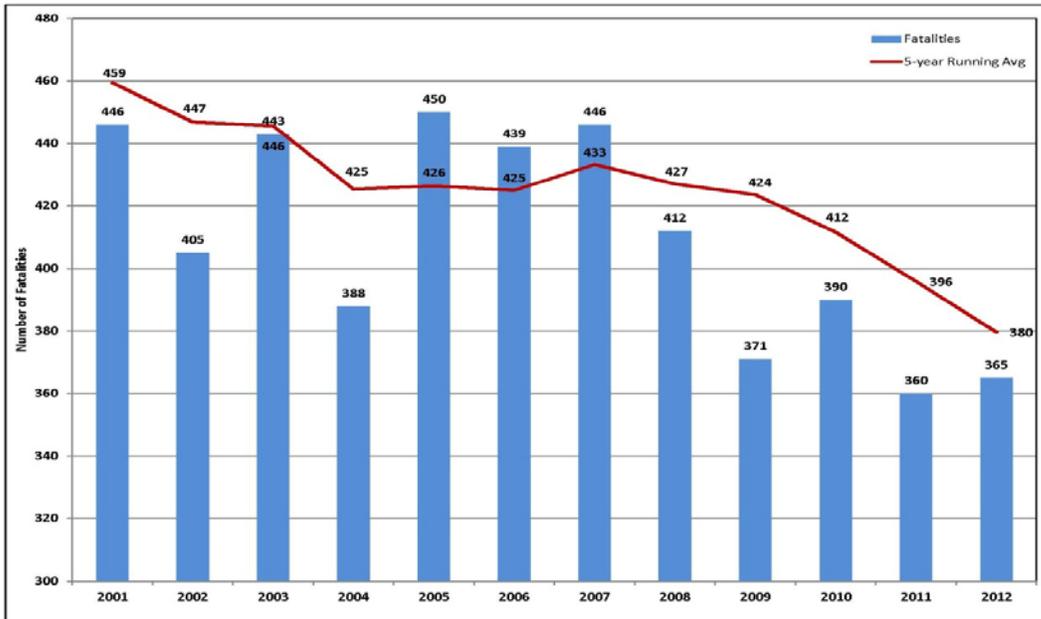
ii. General Listing of Projects

Project Number	County	Route	Roadway Description	Improvement Category (Source: 23 CFR 924)	Project Estimate at FHWA Authorization	Federal Share (Obligation Amount)	Emphasis Area	Strategy
HSIPX-086-1(8)--3L-10	Dickinson	Ia 86	South of MN border	Pavement and Shoulder Widening	\$ 2,129,783.00	\$ 1,128,651.30	Lane Departure	Run off road
HSIPX-086-1(14)--3L-10	Dickinson	Ia 86	South of MN border	Pavement and Shoulder Widening	\$ 67,918.00	\$ 61,126.20	Lane Departure	Run off road
HSIPX-150-3(65)--3J-10	Buchanan	Ia 150	170th St. 4.5 mi. N of Independence	Pavement and Shoulder Widening	\$ 3,293,837.00	\$ 2,496,656.70	Lane Departure	Run off road
HSIPX-067-1(134)--3L-82	Scott	US 67	Between LeClaire and Princeton	Pavement and Shoulder Widening	\$ 817,886.00	\$ 736,097.40	Lane Departure	Run off road
HSIPX-061-4(109)--3L-70	Muscatine	US 61	Iowa 38 to Scott Co Line (SBL)	Pavement and Shoulder Widening	\$ 1,775,005.00	\$ 1,549,925.79	Lane Departure	Run off road
HSIPX-330-1(30)--3L-64	Jasper, Story, Marshall	Ia 330	US 65 to US 30	Pavement and Shoulder Widening	\$ 2,615,600.00	\$ 2,249,321.40	Lane Departure	Run off road
HSIPX-151-3(140)--3L-57	Linn, Jones	US 151	Springville to Monticello	Pavement and Shoulder Widening	\$ 4,171,989.00	\$ 3,754,790.10	Lane Departure	Run off road
HSIPX-061-7(80)--3L-49	Jackson	US 61	Maquoketa to Dubuque Co Line	Pavement and Shoulder Widening	\$ 3,723,730.00	\$ 3,351,357.00	Lane Departure	Run off road
HSIPX-030-7(161)--3L-57	Linn	US 30	Kirkwood Blvd to US 151	Pavement and Shoulder Widening	\$ 1,731,545.00	\$ 1,558,390.50	Lane Departure	Run off road
HSIPX-061-8(135)--3L-31	Dubuque	US 61	Jackson Co Line to US 151	Pavement and Shoulder Widening	\$ 1,768,998.00	\$ 1,592,098.20	Lane Departure	Run off road
HSIPX-061-6(71)--3L-23	Jackson	US 61	Welton to Maquoketa	Pavement and Shoulder Widening	\$ 2,007,153.00	\$ 1,806,437.70	Lane Departure	Run off road
HSIPX-071-7(53)--3L-11	Buena Vista, Clay	US 71	Sioux Rapids to Spencer	Pavement and Shoulder Widening	\$ 3,005,919.00	\$ 2,705,327.10	Lane Departure	Run off road
HSIPX-018-1(79)--3L-84	Sioux	US 18	US 75 to Sheldon	Pavement and Shoulder Widening	\$ 3,230,840.00	\$ 2,907,756.00	Lane Departure	Run off road
HSIPX-044-5(25)--3L-25	Dallas	Ia 44	Dallas Center to Grimes	Pavement and Shoulder Widening	\$ 1,530,680.00	\$ 700,000.20	Lane Departure	Run off road
HSIPX-415-1(50)--3L-77	Polk	Ia 415	Ia 141 to S of Polk City	Pavement and Shoulder Widening	\$ 1,577,668.00	\$ 1,409,269.50	Lane Departure	Run off road
HSIPX-010-1(77)--3L-84	Sioux	Ia 10	State Line to Hawarden	Pavement and Shoulder Widening	\$ 803,755.00	\$ 518,000.00	Lane Departure	Run off road
HRRR-C010(81)—5R-10	Buchanan		County project to place rumble strips	Installation of Rumble Strips	\$ 29,651.00	\$ 26,685.56	Lane Departure	Run off road
HSIPX-065-3(61)--3L-91	Warren	US 65	Scotch Ridge Road, 2.5 miles south of Ia 5	Pavement and Shoulder Widening	\$ 252,084.00	\$ 226,875.60	Intersection	
IHSIPX-035-4(192)97--08-77	Polk	I-35	Rest Areas	Installation of Guardrail	\$ 666,919.00	\$ 600,227.10	Lane Departure	Cross Median
<b>Totals</b>					<b>\$ 35,200,960.00</b>	<b>\$ 29,378,993.35</b>		

## C. Program Effectiveness

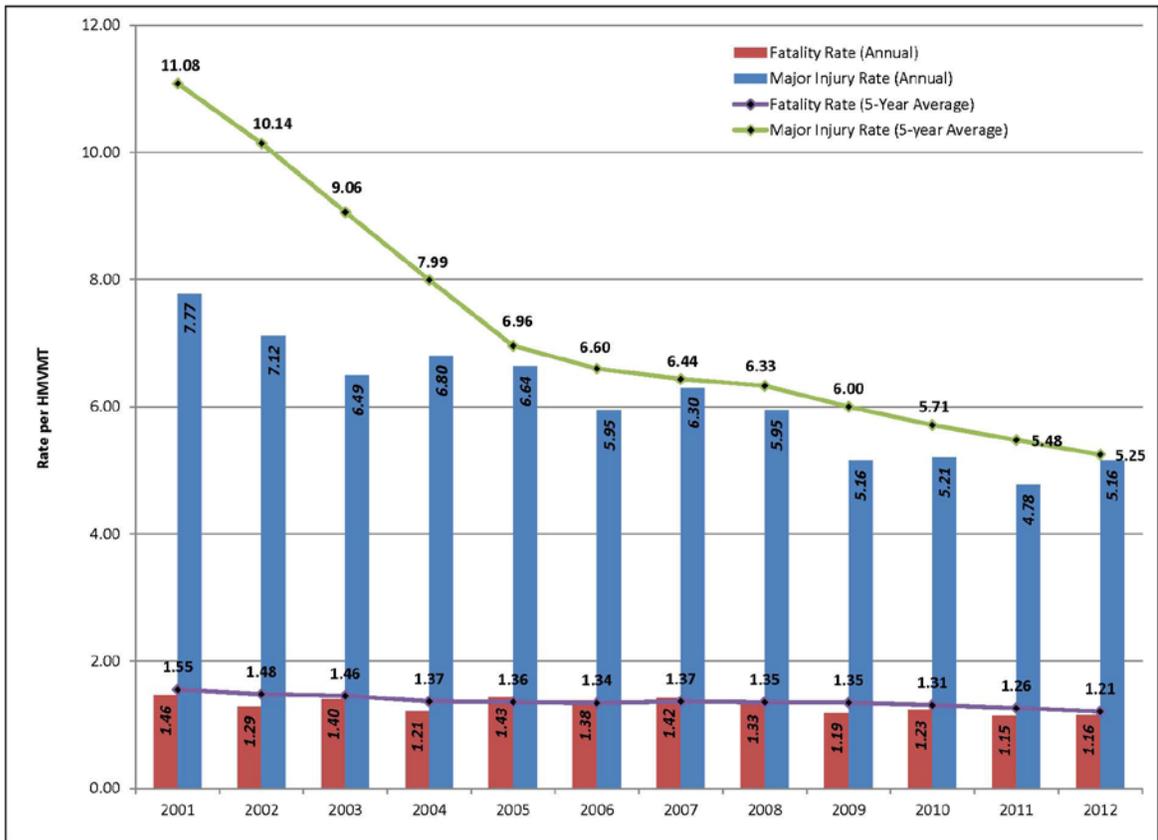
### i. General Highway Safety Trends

The following charts show the recent fatality and major injury trends in Iowa.



The charts show year by year fluctuation in fatalities and major injuries, but the general trend has been downward.

Another indicator is rate. This is figured as the number of occurrences per hundred million vehicle miles traveled (HMVMT).



In Iowa, we have slow steady decline in the fatality rate over a long period of time. We are also seeing a more significant decline in the major injury rate.

ii. Overall HSIP Effectiveness

At the onset of the HSIP program in Iowa, funding was generally targeted towards urban intersections. Over the years, HSIP funding expenditures has been focused on the emphasis areas defined in the SHSP, in particular lane departure.

As the HSIP program began to focus on lane departure projects, a parallel initiative to change design policies was initiated. This policy change was to address lane departure crashes, and the following table provides a brief summary of the changes.

## **Paved Shoulder Policy**

Originally issued in January 2004, and revised in June 2008. The policy was created to address run off the road crashes.

### Original policy highlights

All interstates are to get full width paved shoulders.

All NHS routes and non-NHS routes with 3000 or more ADT are to get four foot paved shoulders. The remaining shoulder width is granular.

Non-NHS routes with less than 3000 ADT can have four foot paved shoulders if conditional warrants are met.

### Policy revision

Added six foot paved shoulder conditions and additional conditions that merit a full width paved shoulder.

## **Milled Rumble Policy**

Originally issued in January 2004 as a compliment to the Paved Shoulder Policy, and revised in June 2010. The policy was created to address run off the road crashes.

### Original policy highlights

Milled rumble strips become the standard with asphalt shoulders. Concrete pavement and shoulders still rely on stamped rumbles.

### Policy revision

Added centerline rumbles to the policy. Centerline rumbles are now standard on undivided, rural highways. Shoulder rumbles are standard for asphalt and concrete. Shoulder rumbles are expected on all paved shoulders with exceptions for residential and urban areas.

## **Safety Edge Policy**

Issued in April 2010 and is supplemental to the Paved Shoulder Policy. This policy address run off the road crashes.

### Original policy highlights

Safety edge becomes the standard pavement edge treatment when paved shoulders are not included or less than 4 feet wide. This policy completes a series of treatments to address run off the road crashes.

The effect of these policies is far reaching, and difficult to measure. These policies imbed safety features within projects outside the HSIP, and broaden the reach of HSIP safety initiatives. They represent a systemic implementation of safety features, albeit a slow delivery process. Now, even regular capacity and infrastructure projects are incorporating safety features that help reduce crashes.

Included in Appendix A is a simple before/after evaluation of previously completed HSIP projects. For projects old enough, either a 3,4, or 5 year before/after is provided.

## **D. High Risk Rural Roads Program**

The High Risk Rural Roads Program (HRRRP) has been discontinued in MAP-21. The following pages detail the final year of the HRRRP.

While MAP-21 ended HRRRP, it also added performance measures for roads previously eligible for HRRRP funding. If fatal and major injury crashes on high risk rural roads increase for two consecutive years, then the state is required to invest a portion of HSIP funds (two times the 2009 HRRRP level) on those roads.

In the 2013 Iowa Strategic Highway Safety Plan (SHSP), high risk rural roads are defined as the paved rural major and minor collectors, and the paved local roads.

The Iowa DOT is committed to improving safety on all public roads. To do so, the Iowa DOT is taking advantage of its set-aside option and is allocating \$2 million of its HSIP funds to provide a systemic safety program for the county road system under a new program: HSIP-Secondary Roads.

Because it focuses on low-cost safety improvements, the HSIP-Secondary Roads program will fund more projects than the former HRRRP did. It will emphasize reducing crashes related to rural road lane departures, through projects in the \$10,000 per mile cost range. (The discontinued HRRRP program focused on \$500,000 maximum, spot improvement grants.)

In addition, HSIP-Secondary Roads promotes systemic implementation of safety countermeasures. The systemic approach installs appropriate low cost countermeasures along an entire corridor, instead of treating only a single problem location.

## FFY 2013 High Risk Rural Roads Annual Report

**Protection of Data from Discovery & Admission into Evidence**

Section 148(g)(4) of 23 USC stipulates that data compiled or collected for the preparation of the HSIP Report "...shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in an action for damages arising from any occurrence at a location identified or addressed in such reports..." This information is also protected by 23 USC 409 (discovery and admission as evidence of certain reports and surveys).

**A. Methodology Used to Identify HRRR Projects**

The Iowa DOT has traffic data and crash data on all state and local routes. Paved routes classified as rural major collectors, rural minor collectors, and rural local routes with crash rates above the statewide average for fatal and major injury accidents define the eligible routes. Counties are provided maps showing all the eligible high risk rural roads in their respective counties. We utilize both a crash rate per 100M VMT and crashes per mile (crash density) to locate road segments that are in the top 15% of each category. Maps are also provided to counties showing them their top 15% locations. We use this information, along with a Benefit/Cost Ratio to rate county applications for HRRR funding. The Iowa DOT also provides detailed crash information free to counties to assist them in analyzing their crash histories.

**B. Program Effectiveness**

It is too early in the program to analyze "after" accident data to measure program effectiveness. A 5-year accident history prior to the improvements will be compared to a 5-year accident history following the improvements.

**C. Project Evaluation**

The evaluation of individual projects will be accomplished when the 5-year accident history following the improvements is available.

**General Listing of Obligated Projects In FFY 2013**

Project	Improvement Category	Output	Cost	Relationship to SHSP	
				Emphasis Area	Strategy
HRRR-CO91(88)--5R-91	2	2.83 miles	\$293,384.60	Roadway Departure	Paved Shoulders
HRRR-CO10(81)--5R-10	2	6.71 miles	\$2,230,018.08	Roadway Departure	Paved Shoulders
HRRR-C006(76)--5R-06	1	Intersection	\$410,412.00	Intersection crash severity	vertical realignment to alleviate sight distance issues
HRRR-CO77(165)--5R-77	1	Intersection	\$25,375.00	Intersection crash severity	oversize stop signs with flashing beacon

<b>HRRRP Project Funding</b>		
<b>Reporting Period: 10/01/2012 to 09/30/2013</b>		
<b>Funding Category</b>	<b>Programmed</b>	<b>Obligated</b>
HRRRP	\$1,510,865.00	\$1,136,829.00
Other Federal-Aid Funds	\$2,023,000.00	\$1,050,723.00
State and Local Funds	\$1,412,000.00	\$771,637.00
<b>Total</b>	<b>\$4,945,865.00</b>	<b>\$2,959,189.00</b>

Below is a listing of projects obligated each of the previous Federal Fiscal Years:

#### **General Listing of Obligated Projects In FFY 2012**

<b>Project</b>	<b>Improvement Category</b>	<b>Output</b>	<b>Cost</b>	<b>Relationship to SHSP</b>	
				<b>Emphasis Area</b>	<b>Strategy</b>
HRRR-C010(69)--5R-10	1	Intersection	\$631,470.00	Intersection crash severity	Roundabout
HRRR-C091(83)--5R-91	2	5.91 miles	\$591,682.00	Roadway Departure	Paved Shoulders
HRRR-C022(67)--5R-22	17	0.65 miles	\$150,127.00	Roadway Departure	Guardrail in Curves

#### **General Listing of Obligated Projects In FFY 2011**

<b>Project</b>	<b>Improvement Category</b>	<b>Output</b>	<b>Cost</b>	<b>Relationship to SHSP</b>	
				<b>Emphasis Area</b>	<b>Strategy</b>
HRRR-C077(159)--7W-77	1	Intersection	\$777,042.00	Roadway Departure	Grade improvements, new bridge
HRRR-C050(90)--5R-50	2	0.2 miles	\$385,999.00	Roadway Departure	Paved Shldrs, curves

**General Listing of Obligated Projects In FFY 2010**

Project	Improvement Category	Output	Cost	Relationship to SHSP	
				Emphasis Area	Strategy
HRRR-C063(88)--5R-63	2	1.65 miles	\$2,191,000.00	Roadway Departure	Widen Shoulders & Realign Curves
HRRR-C010(61)--5R-10	2	7 miles	\$1,086,000.00	Roadway Departure	Paved Shoulders
HRRR-C010(69)--5R-10	1	intersection	\$91,764.00	Crash Severity	Construct Roundabout

**General Listing of Obligated Projects In FFY 2009**

Project	Improvement Category	Output	Cost	Relationship to SHSP	
				Emphasis Area	Strategy
HRRR-C091(77)--5R-91	2	3.8 Miles	\$268,217.69	Roadway Departure	Paved Shoulders
HRRR-C057(87)--5R-57	1	0.5 Miles	\$298,213.34	Intersections	Improve sight distance
HRRR-C025(73)--5R-25	2	3 Miles	\$293,508.91	Roadway Departure	Widen Shoulders and Flatten Foreslopes

**APPENDIX A – Before and After Crash Analysis for Past Projects**

**Appendix A  
Highway Safety Improvement Program Effectiveness Assessment**

		Appendix A												Evaluation Results (Benefit/Cost Ratio)											
		3-5 Years Before Injury & Crash Data						3-5 Years After Injury & Crash Data																	
		Federal Injury & Crash Values						Federal Injury & Crash Values																	
		\$3,341,000	\$231,000	\$46,000	\$24,000	\$2,500	\$3,341,000	\$231,000	\$46,000	\$24,000	\$2,500														
Location	Functional Class	Improvement type	Cost	Injuries			Crashes			Injuries			Crashes			Total Before Injury/Crash Valuation	Total After Injury/Crash Valuation								
				Fatalities	Serious Injuries	Minor Injuries	Total Injuries	Property Damage Only (PDO)	Total Crashes	Fatalities	Serious Injury	Minor Injury	Possible Injury	Total Injuries	Property Damage Only (PDO)				Total Crashes						
FY 2000*	No projects let																								
FY 2001	HES-69-5(77)--2H-85	Story	US 69	US 69/Duff Ave & South 16th St (Ames)	Relocate existing NB to WB left-turn lane, add	2	1a,1b,1h	\$164,156.95	0	11	31	48	90	57	104	0	7	20	25	52	72	105	\$5,261,500	\$3,317,000	11.85
FY 2001*	HES-20-3(96)--2H-94	Webster	US 20	5th Ave. S & S 21st St (Ft. Dodge)	Add 150-foot left turn lanes and upgrade sign	2	1a,1b	\$511,130.63	0	4	18	63	85	116	173	0	0	3	24	27	49	70	\$3,554,000	\$836,500	5.32
FY 2001*	HES-000S(88)--2H-00	Study		Four-Lane to Three-Lane Guidelines																					
FY 2001*	HES-000S(90)--2H-00	Study		Effectiveness of Roadway Safety Improvements																					
FY 2002	HES-169-6(58)--2H-94	Webster	US 169	from IA 926/Kenyon Rd/Old US 20/Co Rd D20 to 0.15 miles north of G Ave (Fort Dodge)	Construct turn lanes, bays, access	2	1b,2h	\$909,000.00	1	8	17	26	52	43	73	3	1	3	22	29	31	49	\$6,702,500	\$10,997,500	(4.72)
FY 2002*	HES-6-4(129)--2H-77	Polk	US 6	Beaver Ave & Douglas Ave (Des Moines)	Alignment and turn bays	2	1b,2g	\$1,700,000.00	0	7	39	83	129	106	189	0	0	8	19	27	59	88	\$5,668,000	\$971,500	2.76
FY 2002*	HES-6-9(58)--2H-82	Scott	US 6	US 6 (Kimberly Rd) & Eastern Ave. (Davenport)	Lengthen turn bays, widen bridge	0	1b	\$936,100.00	0	4	53	167	224	139	270	0	2	12	59	73	103	154	\$7,717,500	\$2,887,500	5.37
FY 2003	HES-U-1945(659)--8X-77	Polk		SW 9th St & Porter Ave (Des Moines)	Add left turn lanes	3	1a,1b	\$1,964,500.00	0	8	28	58	94	33	88	0	3	3	6	12	19	28	\$4,610,500	\$1,022,500	1.83
FY 2004	Various numbers	Various		Interstate Shoulder Rumble Strips, IA 3, IA 12, US 18, US 34, IA 48, IA 59, US 75, IA 92, IA 141, US 218	Paved Shoulders/Rumble Strips		2a,2b	\$1,216,037.95																	
FY 2005	HES-006-7(67)--2H-52	Johnson	US 6	On US 6 at Oasis Road (1.5 miles west of Muscatine Co. Line)	Curves	2	2a	\$102,994.20	0	1	4	2	7	5	12	0	0	0	7	7	2	6	\$475,500	\$173,000	2.94
	HES-18-8(37)--2H-33	Fayette	US 18	U.S. 18, 2.2 miles S. of U.S. 52		2	2a,2b,2m	\$121,783.50	0	0	1	0	1	3	4	1	0	3	1	5	0	4	\$53,500	\$3,503,000	(28.32)
	HES-18-9(84)--2H-03	Allamakee	US 18	US 18 MP 279.3 to US 18 MP 279.8		2	2a,2m	\$78,302.70	0	0	1	1	2	1	3	0	0	0	0	0	0	0	\$72,500	\$0	0.93
	HES-9-8(32)--2H-96	Winneshiek	IA 9	curve from MP 260.8 to MP 261.3 (SE Decorah)		2	2a	\$70,427.00	0	0	2	2	4	11	15	1	0	0	6	7	17	24	\$167,500	\$3,527,500	(47.71)
	HES-76-2(26)--2H-03	Allamakee	IA 76	On IA 76 from MP 25.5 to MP 26.1		2	2a,2m	\$77,986.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	0.00
	HES-20-1(107)--2H-97	Woodbury	US 20	S Curve on US 20 1.5 miles W. of Merville		2	2a	\$618,618.65	1	0	3	4	8	7	14	0	0	1	3	4	5	9	\$3,592,500	\$130,500	5.60
	HES-71-6(41)--2H-81	Sac	US 71	On US 71 from MP 128.48 to MP 129.04		2	2a	\$276,416.10	1	1	7	6	16	2	12	0	0	1	2	3	4	3	\$4,043,000	\$51,000	14.44
	HES-65-3(43)--2H-91	Warren	US 65	from Indianola (E Hillcrest Ave) to the IA 5 interchange ramps		2	2a,2f,3b	\$1,360,784.70	3	10	31	33	91	175	238	0	6	16	38	132	138	225	\$14,988,500	\$3,379,000	8.53
FY 2006	HES-069-5(84)--2H-85	Story	US 69	Riverside Rd. and 190th St. Intersections with US 69 north of Ames	Curve	2	1b,2a	\$142,095.60	0	2	13	18	37	52	77	1	0	1	3	5	37	42	\$1,622,000	\$3,551,500	(13.58)
	HES-30-4(72)--2H-08	Boone/Story	US 30	On US 30 from two miles east of IA 17 east to I-35 Interchange	Expressway Paved Shoulder	2	2a,3b	\$1,736,103.60	6	22	54	86	173	258	379	4	19	28	79	132	289	387	\$30,321,000	\$21,659,500	4.99
	HES-218-3(71)--2H-92	Johnson	US 218	from IA 22 to I-80 (Riverside to Coralville)	Expressway Paved Shoulder	2	2a,3b	\$4,041,374.40	4	23	84	124	240	405	561	2	11	67	84	167	322	444	\$26,529,500	\$15,126,000	2.82
	NHSX-018-9(83)--3H-22	Clayton	US 18	from Postville (MP 281.73) to MP 300.75 (west of Marquette)	Two Lane Paved Shoulders	2	2a,3b	\$750,000.00	4	8	34	26	72	90	134	0	6	26	28	61	80	114	\$17,625,000	\$3,454,000	18.89
	HES-034-4(41)--2H-88	Union	US 34	On US 34 from Cedar St. In Creston east to Thayer	Two Lane Paved Shoulders	2	1b,2a,2b,2f,3b	\$2,255,000.00	4	7	10	19	41	52	79	4	5	6	20	35	33	56	\$16,027,000	\$15,357,500	0.30
	HES-141-7(35)--2H-77	Polk	IA 141	Intersection with NW 121st Street/Co Rd F4R (NW of Johnston)	Expressway Intersection Enhancements	2	1b	\$185,643.90	0	0	8	9	17	14	25	0	0	8	1	9	21	30	\$619,000	\$444,500	0.94
	HES-218-7(186)--2H-07	Black Hawk	US 218	Intersection of US 218/IA 27 with Co Rd C57/Cedar-Wapsi Rd (south of Janesville)	Expressway Intersection Enhancements	2	1b	\$280,855.80	1	6	10	15	32	26	41	1	2	12	23	40	27	57	\$5,612,000	\$4,374,500	2.27
	HES-218-2(76)--2H-47	Bremer	US 218	Intersection of US 218/IA 27 with Co Rd C50/Barrick Rd (Janesville)	Expressway Intersection Enhancements	2	1b	\$290,855.80	2	0	4	11	19	7	15	0	3	9	11	23	19	30	\$7,147,500	\$1,418,500	20.40
	HES-218-9(124)--2H-34	Floyd	US 218	Intersection of US 218 and US 18/IA 27	Expressway Intersection Enhancements	2	1b	\$73,188.90	0	4	5	5	14	7	17	0	1	8	8	17	9	17	\$1,291,500	\$813,500	6.53
	HES-020-8(42)--2H-28	Dubuque	US 20	On US 20 1.0 mile west of IA 136 at 7th St SW in Dyersville	Expressway Intersection Enhancements	2	1b	\$135,405.00	2	0	2	5	6	3	0	0	4	7	14	6	14	6	\$6,694,500	\$10,390,000	(27.29)
	HES-020-9(177)--2H-31	Dubuque	US 20	On US 20 2.0 miles east of IA 136 at Wuchter Rd	Expressway Intersection Enhancements	2	1b,1f	\$234,183.60	0	0	9	2	11	7	12	0	0	2	6	8	7	13	\$479,500	\$253,500	0.97
	HES-58-1(81)--2H-07	Black Hawk	IA 58	From the US 20 interchange north to the University Ave interchange	Expressway Intersection Enhancements	2	1b,2a,2f,3b	\$1,668,542.20	7	9	31	56	112	168	242	2	8	34	86	141	195	285	\$28,656,000	\$12,645,500	9.60
FY 2007	HSP-065-8(53)--2H-17	Cerro Gordo	US 65	from NCL Mason City to IA 9 (Manly)	Two Lane Paved Shoulders	3	2a,2b	\$609,140.07	0	4	14	12	31	31	50	1	1	1	10	13	35	44	\$1,933,500	\$3,945,500	(3.30)
	HES-030-1(125)--2H-43	Harrison	US 30	On US 30 from Missouri Valley to Logan	Two Lane Paved Shoulders	2	2a,2b,3b	\$787,569.05	1	2	16	28	52	151	188	3	3	15	37	63	164	207	\$5,588,500	\$12,704,000	(9.03)
	STP-005-2(35)--2C-68	Marion	IA 5	From N Lovilia city limits north to IA 5/IA 92 Interchange	Two Lane Paved Shoulders	2	1b,2a,2b	\$301,402.39	4	6	15	16	51	83	121	0	10	12	28	65	61	104	\$16,031,500	\$3,686,500	40.96
	HES-034-4(43)--2H-88	Union	US 34	From the Intersection of US 34 and IA 25 Adams/Union County Line to Creston	Two Lane Paved Shoulders	2	2a,2b	\$608,916.22	5	10	8	17	40	20	44	0	5	8	9	22	7	18	\$19,841,000	\$1,756,500	29.70
	HES-218-8(115)--2H-09	Bremer	US 218	From 1 mile south of Co Rd C50 to end of Waverly By-Pass	Expressway Paved Shoulder	2	2a,2b	\$969,163.98	3	2	27	32	64	96	133	0	7	15	34	58	99	137	\$12,735,000	\$3,370,500	9.66
	HES-415-1(41)--2H-77	Polk	IA 415	from I-35/80 to IA 160	Expressway Paved Shoulder	1	1b,2a,2b	\$756,106.33	0	11	36	53	103	154	219	3	5	33	73	116	194	272	\$5,854,000	\$14,933,000	(12.01)
	HES-030-4(77)--2H-08	Story	US 30	From two miles east of IA 17 Interchange east to the 19th St Interchange in Nevada)	Expressway Paved Shoulder	2	2a,2b,3b	\$1,654,359.14	5	23	80	149	265	446	632	5	30	63	111	212	471	628	\$30,388,000	\$30,374,500	0.01
	HES-218-3(74)--2H-92	Washington	US 218	From just north of Jct with IA 92 to the English River Bridge	Expressway Paved Shoulder	0	2a,2b,3b	\$2,439,735.79	0	13	30	31	75	108	156	0	8	13	12	34	60	84	\$5,397,000	\$2,884,000	1.03
	HES-006-3(66)--2H-25	Dallas	US 6	Intersection of US 6 and Co. Rd. R-16 NE of Adel	Expressway Intersection Enhancements	3	1b	\$101,567.88	0	1	0	2	3	1	4	0	1	0	1	1	2	4	\$281,500	\$235,500	0.47
	HES-218-2(131)--2H-44	Henry	US 218	Intersection with IA 78	Expressway Intersection Enhancements	2	1b,1f	\$112,974.97	0	3	1	1	5	3	5	0	5	5	4	14	3	8	\$770,500	\$1,488,500	(6.36)
	HES-020-2(76)--2H-47	Ida	US 20	W Jct of US 20 and US 59 near Holstein	Expressway Intersection Enhancements	2	1b	\$140,082.57	1	0	0	1	2	1	3	0	0	1	1	2	3	5	\$3,367,500	\$77,500	23.49
	HES-020-2(77)--2H-47	Ida	US 20	E Jct of US 20 and US 59 near Holstein	Expressway Intersection Enhancements	2	1b	\$80,982.93	0	0	0	1	0	1	2	3	0	1	1	3	3	5	\$51,000	\$3,418,500	(41.58)
	HES-034-1(78)--2H-65	Mills	US 34	US 34 at Ingrum Ave (Old IA 949) E. of Glenwood	Expressway Intersection Enhancements	2	1b	\$128,741.65	0	0	0	0	0	0	0	0	0	0	0	0	4	4	\$0	\$10,000	(0.08)
	HES-092-1(58)--2H-78	Pottawattamie	IA 92	On IA 92, at Harry Langdon Blvd and Valley View Dr Intersections	Expressway Intersection Enhancements	2	1b	\$140,236.61	1	1	7	12	22	27	40	0	0	10	13	31	40	\$4,249,500	\$317,500	28.04	
	HES-020-1(108)--2H-97	Woodbury	US 20	Intersection of US 20 and Co Rd K42 W of Lawton	Expressway Intersection Enhancements	2	1b	\$103,692.90	0	0	0	2	2	3	4	0	1	1	3	5	3	7	\$55,500	\$356,500	(2.90)
	HES-061-1(152)--2H-56	Lee	US 61	Intersection with Ortho Rd (Fort Madison)	Intersection Improvements																				

**Appendix A**  
**Highway Safety Improvement Program Effectiveness Assessment**

				Appendix A																
				3-5 Years Before Injury & Crash Data							3-5 Years After Injury & Crash Data									
				Federal Injury & Crash Values							Federal Injury & Crash Values									
				\$3,341,000	\$231,000	\$46,000	\$24,000	\$2,500	\$3,341,000	\$231,000	\$46,000	\$24,000	\$2,500							
				Injuries			Crashes				Injuries			Crashes						
				Fatalities	Serious Injuries	Minor Injuries	Possible/Unknown Injuries	Total Injuries	Property Damage Only (PDO)	Total Crashes	Fatalities	Serious Injury	Minor Injury	Possible Injury	Total Injuries	Property Damage Only (PDO)	Total Crashes	Total Before Injury/Crash Valuation	Total After Injury/Crash Valuation	Evaluation Results (Benefit/Cost Ratio)
Location				Functional Class	Improvement type	Cost														
FY 2010	HISIPX-5-3(136)--3L-63	Marion	IA 5	From Missouri state line to 1 mile north of Centerville	2	2d,3b	\$850,000.00													
	HISIPX-057-1(22)--3L-12	Butler	IA 57	From E. Jct IA 14 to Grundy County Line	2	2b	\$50,000.00													
	HISIPX-006-7(80)--3L-52	Johnson/Muscatine	US 6	US 6 from ECL of Iowa City southeasterly to WCL of West Liberty	2	2a,2b	\$2,900,000.00													
	HISIPX-28-2(39)--3L-77	Polk	IA 28	Merle Hay Road widening at Urbandale Ave	2	2a	\$750,000.00													
	IHSIPX-80-6(304)207--08-48	Iowa	I-80	2 Miles E. Of Poweshiek Co. Line E. to US 151	3	3b	\$650,000.00													
	IHSIPX-80-6(305)205--08-48	Iowa/Johnson	I-80	1 Mile E. Of US 151 E. To US 218	3	3b	\$910,000.00													
	IHSIPX-80-7(99)259--08-16	Cedar	I-80	On I-80 from MP 258 east to MP 272	3	3b	\$780,000.00													
	IHSIPX-380-6(266)13--08-57	Linn	I-380	Co. Rd. E-70/Wright Bros. Blvd. N. To Boyson Rd.	3	3b	\$1,285,000.00													
	HISIPX-163-1(82)--3L-77	Polk	IA 163	IA 163 & SE Polk Driveways	2	1b,2a,2b	\$150,000.00													
	HISIPX-151-3(136)--3L-57	Marion	US 151	From IA 13 to N Springville city limits	2	1b,2a,2b	\$1,243,034.10													
	HISIPX-61-4(107)--3L-70	Muscatine	US 61	IA 38 to Scott Co Line	2	2a,2b,3b	\$1,874,952.00													
	IHSIPX-80-5(284)143--08-77**	Polk	I-80	Interchange Cross Road Signing	2	3c	\$185,000.00													
FY 2011	STPN-150-3(66)--2J-10	Buchanan	IA 150	170th St. 4.5 mi. N of Independence	2	2g	\$523,000.00													
	HISIPX-20-9(192)--3L-31	Dubuque	US 20	On US 20 from MP 298.90 to MP 304.26	2	2a,2b	\$1,400,000.00													
	HISIPX-139-0(14)--3L-96	Winneshiek	IA 139	From IA 9 to Minnesota State Line	2	2a,2b,2l	\$1,078,433.10													
	HISIPX-52-2(99)--3L-31	Dubuque	US 52	From North John Deere Road in Dubuque northwesterly to ECL Rickardsville	2	2a,2b,2m	\$1,000,000.00													
	HISIPX-6-6(44)--3L-48	Iowa/Johnson	US 6	On US 6 from E. Jct. of US 6 and US 151 to Tiffin	2	2a,2b,2l,3b	\$2,000,000.00													
	IHSIPX-380-6(278)20--08-57	Linn	I-380	In Cedar Rapids at the South Approach to the Cedar River	2	2c	\$250,000.00													
	HISIPX-218-7(202)--3L-07	Black Hawk	US 218	Intersection US 218 & Co. Rd. C-57	1	1b	\$750,000.00													
	IHSIPX-080-3(170)110--08-25**	Dallas	I-80	US 169 (De Soto) E. to I-35	3	3b	\$845,000.00													
	IHSIPX-80-7(98)248--08-52	Johnson/Cedar	I-80	6 Miles W of Cedar Co. Line E. To Co. Rd. X-40	3	3b	\$584,918.10													
	IHSIPX-80-8(272)271--08-16	Cedar/Scott	I-80	IA 38 E. to Co. Rd. Y-30	3	3b	\$585,000.00													
	IHSIPX-80-8(266)279--08-82	Scott	I-80	Co. Rd. Y-30 E. to Mississippi River	3	3b	\$1,517,857.20													
	IHSIPX-380-6(276)0--08-52	Linn	I-380	From I-80 north to 1.2 miles north of Linn County Line	3	3b	\$845,000.00													
	IHSIPX-80-5(289)187--08-79	Poweshiek/Iowa	I-80	4 Miles E. of IA 146 E. to 2 Miles E. of Iowa Co. Line	3	2a,3b	\$1,430,000.00													
	IHSIPX-80-5(288)164--08-50	Jasper/Poweshiek	I-80	IA 14 E. to 4 Miles E. of IA 146	3	2b,3b	\$1,430,000.00													
	IHSIPX-80-5(287)142--08-77	Polk/Jasper	I-80	From just west of Grant St/1st Ave N to just west of IA 14	3	2a,3b	\$1,430,000.00													
FY2012	IHSIPX-35-2(409)42--08-91	Warren	I-35	From Clarke Co. Line N. to Co. Rd. G-50		3b	\$955,402.20													
	HISIPX-151-3(148)--3L-57	Linn	US 151	On US 151 at County Road X20 in Springville		1b	\$170,172.00													
	HISIPX-030-9(161)--3L-23	Clinton	US 30	From 1 mile west of US 61 easterly to near the west junction with US 67		2a,2b	\$2,784,845.70													
	HISIPX-061-6(70)--3L-23	Clinton	US 61	From the south junction with US 30 northerly to 0.5 mile south of Co Rd Y68		2a,2b	\$540,368.10													
	HISIPX-218-2(140)--3L-44	Henry	US 218	From just north of the US 34 Mt. Pleasant Bypass north to IA 75		2a,2b	\$2,387,455.20													
	NHSX-065-4(121)--3L-77	Polk/Jasper	US 65	From 0.5 miles north of Jct. I-80 north to Jct. IA 330/IA 117 in Jasper Co.		2a,2b	\$1,537,300.80													
	HISIPX-061-4(109)--3L-70	Muscatine	US 61	From just north of IA 38 in Muscatine east to Scott Co. Line near Blue Grass (SBL)		2a, 2b	\$1,847,587.50													
	HISIPX-014-3(146)--3L-63	Marion, Jasper	IA 14	From NCL of Knoxville north to just south of I-80 in Newton		2l	\$287,800.20													
	HISIPX-030-6(199)--3L-86	Tama, Benton	US 30	From Tama Bypass east to just west of US 218		2l	\$40,615.20													
	HISIPX-169-6(85)--3L-94	Webster, Humboldt	US 169	From north of IA 7 near Fort Dodge north to South Corp Line of Humboldt		2l	\$41,633.10													
	HISIPX-009-8(39)--3L-96	Winneshiek, Allamakee	IA 9	From the east limits of Ridgeway to the Intersection of IA 9 and IA 76 south of Waukon		2l	\$51,613.20													
	HISIPX-018-9(101)--3L-22	Clayton	US 18	From the east limits of Postville to near Marquette		2l	\$42,477.30													
	HISIPX-006-1(123)--3L-78	Pottawattamie	US 6	From just east of I-80 to US 59		2b, 2l	\$2,757,176.10													
	HISIPX-005-3(64)--3L-63	Marion	IA 5	From NCL of Lovilia north to IA 92 near Knoxville		2l	\$24,646.50													
	HISIPX-063-1(73)--3L-26	Davis	US 63	From 0.25 miles north of NCL of Bloomfield north to 0.25 miles south of SCL of Ottumwa		2l	\$100,533.60													
	HISIPX-092-9(142)--3L-58	Louisa	IA 92	From approx. 0.5 mile E. of US 218 to near WCL of Columbus Jct. and from ECL of Columbus Jct. to US 61		2l	\$31,335.30													
HRRR	HRRR-C025(73)--5R-25	Dallas		345TH STREET TO CITY OF REDFIELD	2	2a	\$264,158.02													
	HRRR-C050(81)--5R-50	Jasper		INTERSECTION OF IA 14 AND COUNTY ROAD F36	2	2a	\$500,000.00													
	HRRR-C057(87)--5R-57	Linn		INTERSECTION OF SPRINGVILLE RD (X-20) & MARTELLE RD (E-45)	1	1b,2a	\$268,392.00													
	HRRR-C091(68)--5R-91	Warren		FROM G24 NORTH TO BLUE STREET	2	2a	\$288,000.00													
	HRRR-C091(77)--5R-91	Warren		FROM US 65/69 EAST AND NORTH TO CARLISLE CITY LIMITS	2	2a	\$240,000.00													

\* Selected sites  
 \*\* 10 year crash data used to select sites

## Appendix B –Older Driver & Pedestrian Special Rule Calculation

**Appendix B  
Older Driver and Pedestrian Special Rule Calculation**

**2001 - 2013 Older Drivers and Pedestrians\*  
Injury Status  
Statewide, Iowa**

Injury Status	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013**
Fatal	57	61	63	57	68	82	61	61	54	58	72	54	38
Incapacitating	193	197	196	176	148	164	152	137	109	153	121	131	115
Non-incapacitating	659	570	522	555	504	506	506	480	444	460	407	457	318
Possible	952	874	932	923	885	898	830	839	832	831	798	856	601
Unknown	92	122	326	266	1310	1597	513	65	52	89	61	49	26
F + SI	250	258	259	233	216	246	213	198	163	211	193	185	153

65+ Persons (per 1,000 population)	140	146	147	148	148	148	150
Annual rate	0.18	0.20	0.18	0.18	0.16	0.20	0.20

	2001-2005	2002-2006	2003-2007	2004-2008	2005-2009	2006-2010	2007-2011	2008-2012
5-year average rate	1216	1212	1167	1106	1036	1031	978	950
					0.18	vs.	<b>0.18</b>	

\* Older Drivers and Pedestrians include persons 65 or older who were identified as having been in the driver seating position or identified specifically as a pedestrian.

\*\* 2003 data is preliminary, downloaded 10/15/2013