

Oregon Department of Transportation

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Highway Safety Improvement Program  
(HSIP)

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## Annual Report on the Progress of the Highway Safety Improvement and High Risk Rural Roads Programs for SFY 2011



OREGON DEPARTMENT of TRANSPORTATION  
Traffic-Roadway Section  
August 2011

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## LIST OF ACRONYMS

FHWA	Federal Highway Administration
HRRRP	High Risk Rural Roads Program
HSIP	Highway Safety Improvement Program
ODOT	Oregon Department of Transportation
PDO	Property-damage-only crash
SFY	State Fiscal Year
TRS	Traffic-Roadway Section
HSEC	Highway Safety Engineering Committee
TSD	Transportation Safety Division
STIP	Statewide Transportation Improvement Program
HEP	Hazard Elimination Program
SHSP	Strategic Highway Safety Plan
SAFE	Safe, Accountable, Flexible, Efficient

TEA-LU Transportation Equity Act: A Legacy for Users

## INTRODUCTION

This report, required by Sections 152 and 148 of Title 23 of the United States Code, summarizes the progress made in implementing the Highway Safety Improvement Program (HSIP) in Oregon from July 1, 2010 to June 30, 2011, the state fiscal year (SFY 2011). Included are projects under the Highway Safety Improvement Program (HSIP) and the High Risk Rural Roads Program (HRRRP). Attached in Appendix A is the standard reporting form that contains evaluation data for HSIP completed projects and Appendix B provides additional High Risk Rural Roads Program data.

## HIGHWAY SAFETY IMPROVEMENT PROGRAM

The Highway Safety Improvement Program (HSIP) is a federally funded program that mandates each state to conduct and systematically maintain an engineering survey of all public roads. The Traffic-Roadway Section (TRS) uses engineering tools such as the Safety Priority Index System (SPIS) to identify segments of state highways that have a higher crash history and may require safety improvements. SPIS is a method developed by ODOT for identifying potential safety problems on state highways. Citizen complaint submittals and routine inspections by Oregon Department of Transportation (ODOT) District and Region personnel indicate other possible safety concerns.

The purpose of the program is "to achieve a significant reduction in traffic fatalities and serious injuries on public roads". Section 148 of Chapter 23 of the United States Code (USC) outlines how state and local governments will spend federal dollars toward improving safety on public roads or any public transportation facility. Prior to Federal SAFETEA-LU legislation the HSIP program was commonly referred to as the Hazard Elimination Program (HEP), Section 152 of Chapter 23 of the USC. SAFETEA-LU redefined the HSIP and the requirements.

The Traffic-Roadway Section has a HSIP project guideline (ODOT Safety Program Guide) to assist the Region Traffic offices. The program guide has its own criteria and requirements to tailor the Highway Safety program to match Oregon's needs. In general, for a project to meet both the federal and state requirements, it must:

- Be an eligible highway safety project (as defined below);
- Have committed matching funds of 10% of the project cost (for federal funding);
- Be able to meet all applicable guidelines and standards for construction;
- Meet one of the following eligibility criteria:
  1. Positive Benefit/Cost (B/C) Ratio of 1.0 or greater;
  2. Top 10% Safety Priority Index System (SPIS);

3. Justified by Risk Narrative (used on bicycle/pedestrian improvement projects).

TRS also has responsibility for annual reports of the programs progress and ODOT's Project Safety Management System (PSMS). The PSMS includes tools for identification and analysis of the safety problems like our recently completed ODOT Highway Safety Investigation manual which is used to assist our Region Traffic Investigators [http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/highway\\_safety.shtml](http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/highway_safety.shtml).

Other responsibilities of the program include the Transportation Safety Division, responsible for the development of the Oregon's Strategic Highway Safety Plan (SHSP). The Region Traffic Offices have the responsibility of following the guidelines when selecting appropriate safety projects and identifying potential remedies to safety problem areas. ODOT's Highway Finance Office, is responsible for management of HSIP funds along with the Region STIP Coordinators.

The HSIP process begins when a State or local agency identifies a safety problem. Possible safety project locations are identified from a variety of sources including crash records, ODOT's Safety Priority Index System, local citizens, enforcement/emergency response personnel, and road maintenance crews. Next, the agency submits an application to ODOT's Region Traffic who reviews the safety project submittal and determines eligibility based on the "ODOT Highway Safety Program Guide". Before the Regions proposed safety projects can be added to the STIP, they must get approval from the State Traffic Engineers office that the selected safety projects follow ODOT's Highway Safety Program Guidelines. Final project selection and prioritization is at the discretion of the Region.

This section summarizes the number of projects under construction, the type of projects applications reviewed and the effectiveness of projects with sufficient crash data for comparison. For the purposes of this report, HSIP projects are classified into these general categories:

Intersection Improvements—channelization and turning lanes, new or upgraded traffic signals, red light running cameras, and illumination.

Signing and Delineation—traffic signs and pavement marking and/or delineation where these project activities are the predominant safety improvement.

Roadway/Structure Improvements—lane widening, lane additions, rumble strip installation, median strip installation, shoulder widening/improvement, roadway realignment, skid treatment, and safety-related bridge and other structural improvements.

Roadside Improvements—flattening slopes, the elimination of roadside obstacles (e.g. drainage structures), the installation of breakaway signs and utility poles, and the construction, for safety purposes, of sidewalks and bikeways.

Safety Appurtenances—upgrades to bridge approach guardrail and railings, guardrail and median barrier improvements, impact attenuators, and safety fencing.

Traffic Calming Projects—specific traffic calming projects including, but not limited to, curb extensions, lateral/horizontal shifts in the roadway, raised devices (e.g. speed humps), and diverters.

### Safety Projects Obligated in SFY 2011

In SFY 2011, there were fifty-nine (59) safety projects totaling \$39 million which were obligated for construction using HSIP funds. The HSIP fund consists of all safety projects with an ODOT program code of Q280, H280, Q210, H210, L240, S010, TSP0, H050, LS20, L30 or L050. This also includes projects funded by Section 164 penalty money (money transferred from the highway funds to Transportation Safety Division, then redirected for safety projects that comply with HSIP guidelines). The type of projects obligated or under construction are classified in Table 1 by general category of improvement.

**Table 1 HSIP Projects Obligated for Construction in SFY 2011**

<b>Category</b>	<b>Number of Projects</b>	<b>Project Cost Estimates</b>
Intersection Improvements	26	\$26,300,000
Signing and Delineation	5	\$6,000,000
Roadway/Structure Improvements	4	\$700,000
Roadway Improvements	17	\$3,000,000
Safety Appurtenances	5	\$2,000,000
Traffic Calming Projects	2	\$1,000,000
<b>Total Projects</b>	<b>59</b>	<b>\$39,000,000</b>

Note: These figures reflect changes to the existing safety projects in the STIP for SFY 2011

### Applications Received/Reviewed

In SFY 2011 (July 1, 2010 to June 30, 2011) the Region Traffic Offices are required to get final approval from the State Traffic Engineers office that their selected safety projects follow ODOT’s Highway Safety Program Guidelines before they are added to the STIP.

All highway safety projects, regardless of funding (state or federal) will now follow the same guidance for project eligibility as outlined in the ODOT Highway Safety Program Guide [http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/highway\\_safety\\_program.shtml](http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/highway_safety_program.shtml).

The proposed program year of the HSIP safety projects approved varies depending on the STIP cycle. The final selection of projects for construction is the responsibility of the Region Traffic Engineer and the Region Traffic Manager.

## Projects Evaluated

A total of eight (8) HSIP projects were completed between July 1, 2007 to June 30, 2008 and had 3 years of before and after crash data available for evaluation where possible. Details for each project can be found in Appendix A. A similar number of before and after crash months were compared for each project. This simple evaluation only considered total crashes and did not examine target crashes (the crashes the project was designed to mitigate).

The evaluation indicates that there was a 22% increase in injury crashes from the before to the after evaluation period. During the evaluation period, statewide fatal crashes decreased by 20.6% and injury crashes decreased by 3.5%. The evaluation regarding fatal crashes decreased 20% during the time before and after the construction on these 8 projects.

Using the overall reduction in crashes statewide as a surrogate for the variability of crashes, the projects at these locations appear to have had a measurable effect on safety. It should be noted that there was a change in minimum property-damage-only crash (PDO) reporting requirements in 1998 and again in 2003 so that comparison of PDO and total crash reductions is not valid.

It should also be noted that the severity of the injuries were also reduced in four of the eight HSIP projects reviewed.

In Appendix A, an additional ten (10) safety projects were also evaluated which were funded using other safety funds under different criteria. These safety project evaluations are shown for information only to assist in improving ODOT's data driven decision making process when developing future safety projects. In the future, all highway safety projects, regardless of funding (state or federal) will now follow the same guidance for project eligibility as outlined in the ODOT Highway Safety Program Guide.

**Table 2 (Shaded in gray) Summary of 8 HSIP Project Evaluations**

Crash Type	Before	After	Reduction or Increase in Crashes	Percent Change	Percent Change Statewide (06-2009)
Fatal	5	4	-1	-20%	-20.6%
Injury	107	129	+22	+20.6%	-3.5%
PDO	111	86	-25	-22.5%	-11.9%
<b>Total</b>	<b>223</b>	<b>219</b>	<b>-4</b>	<b>-1.8%</b>	<b>-8.3%</b>

**Table 3 Summary of 10 Other Safety Project Evaluations**

<b>Crash Type</b>	<b>Before</b>	<b>After</b>	<b>Reduction or Increase in Crashes</b>	<b>Percent Change</b>	<b>Percent Change Statewide (06-2009)</b>
Fatal	15	10	-5	- 33.3%	-20.6%
Injury	910	1,040	+130	+14.3%	-3.5%
PDO	1,200	1,176	-24	-2.0%	-11.9%
<b>Total</b>	<b>2,125</b>	<b>2,226</b>	<b>+101</b>	<b>+4.8%</b>	<b>-8.3%</b>

**HIGH RISK RURAL ROADS PROGRAM (HRRRP)**

A. Overview

The High Risk Rural Road Program (HRRR) in SAFETEA-LU (called HR3 in Oregon) is a sub-program of the Highway Safety Improvement Program (HSIP), a federally-funded program managed by the Oregon Department of Transportation (ODOT). Approximately one million dollars of federal funding is available each federal fiscal year in Oregon for High Risk Rural Roads.

B. Mission of HR3

The mission of the HR3 is to carry out safety improvement projects on rural roads, with identified safety issues, to achieve a significant reduction in traffic fatalities and serious injuries.

## C. Core Principles

### 1. **The High Risk Rural Roads safety provision is dedicated exclusively to rural roads.**

The HSIP includes a set-aside for construction and operational improvements to address safety problems and opportunities on High Risk Rural Roads. This set-aside of \$90 million (nationally) each fiscal year for high risk rural roads is limited to roadways functionally classified as a rural major or minor collector or as a rural local road.

### 2. **High Risk Rural Roads are identified as follows:**

- a. Roadways functionally classified as a rural major or minor collector or as a rural local road.
- b. Roadways that have a crash rate for fatalities and incapacitating injuries exceeding the statewide average for those functional classes of roadways.
- c. Roadways whereby future traffic volumes are projected to increase causing a projected increase in the crash rate for fatalities and incapacitating injuries exceeding the statewide average.

### 3. **Acceptability of HR3 funding for project development.**

As long as the project will ultimately involve a construction or operational improvement which is identified as part of a State's HSIP process, funds from the set-aside for high risk rural roads for preliminary engineering (including right of way, environmental approvals and final design) would be eligible for federal reimbursement.

## II. OREGON PROCESS TO UTILIZE HR3 FUNDS

### A. General

1. HR3 is a 4 year \$1.1 million annual federally funded program designed to carry out safety improvement projects on rural roads, with identified safety issues, to achieve a significant reduction in traffic fatalities and serious injuries.
2. It is unknown if the HR3 program will continue in future federal authorizations.
3. The goal of ODOT's HR3 program is to fund an average of 1 construction project a year.
4. Projects were selected to obligate 4 years of HR3 funding (\$4.4 million total). ODOT is working with the local agencies to determine how any remaining funds in the program which are not obligated at the end of this cycle will be used.

5. Projects will be developed using the current ODOT/Local Agency federal-aid project delivery process.
6. An HR3 Steering Committee comprised of FHWA, ODOT, AOC and County Road Officials was formed to develop Oregon HR3 program and project selection criteria.
7. HR3 funding is federally funded; therefore projects need to conform to AASHTO standards. The AASHTO Low Volume Road Guide is the AASHTO standard for very low volume rural, e.g. roads with ADTs less than or equal to 400. Exceptions to AASHTO standards will be processed using the current FHWA/ODOT/Local Agency design exception process.

Since HR3 projects are intended to meet a specific safety need the scope of work is limited to features that are directly impacted as a result of addressing this specific need. Each feature constructed in a HR3 project must be built to the applicable standard for new construction. Elements of HR3 projects that are not directly being impacted need not be brought up to current standards. For example, a signing upgrade along a rural corridor will generally not necessitate shoulder widening.

## **B. Eligibility Criteria**

Oregon's eligibility criteria mirrors the federal guidelines as stated in Section I-C-2 above. These criteria are:

1. Roadways functionally classified as a rural major or minor collector or as a rural local road are eligible.
2. The roadway must have a crash rate for fatalities and incapacitating injuries (serious injury A) that exceeds the statewide average for those functional classes of roadways.
3. Roadways are also eligible if future traffic volumes are projected to increase causing a projected increase in the crash rate for fatalities and incapacitating injuries that exceeds the statewide average.

### **ELIGIBILITY NOTES:**

- a. Roadways with similar characteristics **in the vicinity of an area of identified fatal or serious injury crash history** may be included in the project limits. Applicants are encouraged to develop projects that will address similar crash types or characteristics on eligible roadway sections.

- b. The intent of Oregon's implementation is to focus on County Roads, however, qualified State Highways or roads identified as public under 23 CFR 460.2, with a history of fatal or serious injury A crashes may apply for HR3 funding.
- c. Projects in counties subject to loss of revenue due to reduction or elimination of Federal School Safety Net Funds may be given special consideration.
- d. When all projects are submitted the HR3 Steering Committee will assess the possibility of combining projects, of a similar nature, on a Regional or Statewide basis.
- e. Eligible roadways with ADT's less than or equal to 400 will be given special consideration.
- f. Roads with high crash rates, in addition to fatal crashes and serious injury A crashes, and having an assessment by the local engineer that there is potential for serious injury A crashes or fatal crashes to increase will be given special consideration.

### **C. Local Match Requirements**

The Local Match requirement for HR3 projects is 7.78% of the total project cost.

### **D. Project Non- Participating Costs and Overruns**

1. Project Sponsors are responsible for 100 percent of the cost of any item which is not eligible for federal participation.
2. Project overruns, unless authorized by the HR3 Steering Committee, are the responsibility of the Project Sponsor. Project Sponsors may submit a request for consideration of additional authorization for reimbursement of project overruns by submitting a detailed overrun justification to the HR3 Steering Committee. The HR3 Steering Committee will review the submittal and determine if there is sufficient available funding to cover the overrun. If adequate funding is not available, or if the reason and purpose of the overrun does not sufficiently meet HR3 Program goals, the Project Sponsor retains responsibility for the overrun.

Submit overrun requests to Alan Lively at ODOT's Local Government Section by:

- FAX - (503)986-3290
- Mail - Alan Lively, Active Transportation Section, 555 13<sup>th</sup> Street NE, Salem OR 97301
- Email - alan.d.lively@odot.state.or.us

## **E. Intergovernmental Agreement (IGA) and Prospectus**

HR3 projects are federally funded; therefore the current FHWA/ODOT/Local Agency project development and delivery process must be used to expend these funds. Among other requirements, this means that all HR3 projects are required to have an IGA and prospectus executed and federal funds obligated prior to incurring reimbursable expenditures. The regional ODOT Local Agency Liaison in your area is available to assist with this process.

## **F. Statewide Fatal and Serious Injury “A” Crash Rate Information**

In 2004 the total number of fatal and serious injury “A” (F&A) crashes on Oregon’s rural public roads classified major collectors and below was 430. Using an inventory of 47,860 miles for these classifications of roads and an annual estimate 14.2 million vehicle miles per day, the statewide average for these class of roads is 8.3 F&A crashes/HMVM (crashes per hundred million vehicle-miles).

Data for fatal and serious crashes for 2000-2004 can be found by 1) right clicking on: [Crash Data](#) 2) Clicking on Open Hyperlink and 3) Clicking on “No” on the popup box that indicates the document has been modified and asking you if you want to save.

Below are some examples of sections of roadway that meet or exceed the statewide average based on the following formula:

Crash Rate = (# of Crashes \* 100 million)/ (ADT \* Length in Miles \* Number of Years \* 365 days/year)

# F&A Crashes in 3 yrs	Average Daily Traffic (ADT)	Length of Section (miles)	F&A Crash Rate (crash/Hmvm )
3	6600	5	8.3
2	4000	5	9.1
1	2000	5	9.1
1	1500	7	8.7
1	1000	10	9.1
1	500	20	9.1
1	250	40	9.1

Note: As ADT or Length increases Crash Rate decreases.

As ADT or length decreases Crash Rate increases.

Each application must contain information that confirms the project location crash history and rate and should use three or more years of crash data.

Fatalities are used for participants who die as a result of injuries sustained in the crash. Injury "A" (Serious or Incapacitating injury) is used for participants who suffer severe injuries. An incapacitating injury is a non-fatal injury which "prevents the injured person from walking, driving or normally continuing the activities the person was capable of performing before the injury occurred".

### **G. Application and project selection process.**

1. The ODOT Local Government Section sent requests to prospective applicants for HR3 projects to in July 2006. They were required to submit a HR3 Notice of Intent (see Appendix A) to determine if the project met the program eligibility requirements before submitting a full application. Required documentation for the Notice of Intent was:
  - a. A completed Notice of Intent Form
  - b. An attached letter or narrative (1 page max.) explaining the need for the project, type and extent of proposed work, funds requested and matching funds available, and the role of any co-applicants or partners.
  - c. An attached vicinity map and site map or other appropriate graphics (1 or 2 pages).
  
2. ODOT reviewed the Notice of Intent submittals and determined which projects met the program eligibility requirements. ODOT notified all applicants if there project met the eligibility requirements. Full applications (see Appendix B) for projects meeting the program minimum requirements were then requested from the Project Sponsors.  
Required documentation for the included:
  - a. Project justification
  - b. Proposed solution
  - c. Detailed Cost Estimate that includes 15% PE, 15% CE, 40% Contingencies and 20% for Mobilization & Traffic Control. For example, including these items at these percentages for a project with \$100,000 of construction costs will make the final total project cost and funding request \$190,000.
  
3. The HR3 Steering Committee (comprised of ODOT staff and local agency representatives) reviewed the applications, develop a prioritized list, and suggest possible project groupings of eligible projects. The final selected project list was prioritized based on available funding with 5 projects receiving full funding. Four more projects were included in a reserve project list in case more funding becomes available. The selected projects were approved by OTC to be placed

in the STIP at their May 2007 meeting. The projects were amended into the STIP on March 5<sup>th</sup>, 2008 after in depth project scoping was performed.

4. ODOT has completed detailed scoping of the selected and reserve projects. The selected projects are currently in the project development phase with construction planned for summer of 2009.

## **H. Assessment of HR3 Project Effectiveness**

ODOT is responsible to report to FHWA regarding the effectiveness of crash solutions that are implemented using HR3 funding. To prepare this report it is important that HR3 project sponsors provide information as listed in the bullets below to ODOT related to the crash solution(s) implemented and their effectiveness.

- Location/identifier for project—Basic information on the roadway where the project occurred
- Type of improvement(s) implemented
- Cost of improvement
- “Before” and “After” crash results—At least 3 years of “before” and 3 years of “after” data should be used.

Evaluation Results—Show whether the project achieved its purpose using benefit-cost or other approved methodology.



## Appendix A: Standard Reporting Form



THE 2011 ANNUAL REPORT ON HIGHWAY SAFETY IMPROVEMENT PROGRAMS (HSIP)

STANDARD REPORTING FORM OF EVALUATION DATA FOR COMPLETED SAFETY IMPROVEMENTS (July 1, 2007 to June 30, 2008)

ODOT Region	ODOT Key #	Line	Safety Improvement Program [1]	Safety Classification	Cost of Evaluated Improvements \$1,000 [3]	Quantity of Improvements [5]	Units [5]	Number of Crashes														Eval. Status [16]	Volume		Rural or Urban [20]	Number of Lanes [21]	Divided or Undivided [22]
								Before							After								Before [17]	After [18]			
								Mos. [6]	Fat. [7]	Inj. A [8]	Inj. B [9]	Inj. C [10]	*PDO [11]	TOTAL [12]	Mos. [13]	Fat. [14]	Inj. A [15]	Inj. B [16]	Inj. C [17]	*PDO [18]	TOTAL [19]		AADT [17]	AADT [18]			
1	05329	1	ODOT	1A	3882	1.0	X	36	0	0	6	4	2	12	35	0	0	1	1	3	4	F	12,900	12,200	Rural	3	Undivided
1	07146	2	HSIP	1F	720	3.0	X	36	0	0	0	3	3	6	33	0	0	0	0	0	0	F	23,000	49,600	Urban	4	Undivided
1	11931	3	ODOT	1A	3348	1.0	X	36	0	0	2	0	11	13	26	0	0	2	2	4	8	F	9,600	8,500	Rural	2	Undivided
1	11967	4	164	1A	2144	1.0	X	36	0	1	3	2	18	24	33	0	1	4	5	17	27	F	8,500	8,200	Urban	4	Undivided
2	12665	5	HSIP	1A	1800	2.0	X	36	0	2	4	5	8	19	28	0	1	7	18	12	38	F	15,300	13,600	Rural	4	Undivided
1	12854	6	ODOT	3L	6277	6.4	M	36	0	13	60	185	400	658	38	1	12	51	201	373	638	F	116,100	119,200	Urban	4	Divided
1	12872	7	ODOT	3K	6050	4.4	MX	36	1	6	39	72	120	238	38	1	11	23	73	133	241	F	60,700	55,700	Urban	4	Divided
1	12904	8	HSIP	1A	2973	1.0	X	36	1	0	5	1	6	13	36	0	0	0	2	7	9	F	16,900	16,700	Urban	4	Undivided
5	14127	9	ODOT	1A	6817	1.0	B	36	1	1	5	5	47	59	36	0	3	13	12	42	70	F	6,600	9,600	Urban	2	Undivided
4	14189	10	HSIP	1D	5474	70.0	X	36	3	6	21	5	24	59	30	4	5	12	9	24	54	F	12,500	8,300	Rural	2	Undivided
1	14472	11	HSIP	1G	760	1.0	B	36	0	1	8	8	24	41	29	0	1	1	14	14	30	F	---	---	Urban	2	Undivided
2	14534	12	HSIP	1D	235	8.6	X	36	1	2	9	11	26	49	36	0	4	15	10	12	41	F	13,100	12,500	Urban	2	Undivided
4	14552	13	ODOT	1A	3425	1.0	X	36	7	12	78	38	121	256	25	3	10	47	40	123	223	F	3,100	3,100	Rural	2	Undivided
2	14598	14	164	1D	864	18.4	B	36	6	38	123	203	465	835	36	5	20	94	403	476	998	F	28,300	30,100	Rural	2	Undivided
3	14623	15	164	3K	2402	5.4	M	36	0	2	3	7	13	25	35	0	0	6	3	5	14	F	10,900	9,700	Rural	2	Undivided
5	15126	16	HSIP	3E	843	1.0	X	36	0	0	0	1	0	1	35	0	0	2	0	0	2	F	510	630	Rural	2	Undivided
5	15128	17	HSIP	1G	4977	1.0	X	36	0	1	5	9	20	35	35	0	3	11	14	17	45	F	12,200	11,900	Urban	2	Undivided
5	15212	18	164	1A	4020	1.0	X	36	0	1	1	0	3	5	36	0	0	1	1	1	3	F	620	590	Rural	2	Undivided

Note: The 8 projects highlighted in gray shade are HSIP projects

The remaining 10 safety projects evaluated were funded using other safety funds (ex. 164 penalty funds) are shown for information only to assist in improving ODOT's data driven decision making process when developing future safety projects.

\* A change in the minimum reporting value for PDO crashes from \$500 to \$1,000 occurred in 1998 and in 2003, the minimum reporting value for PDO crashes changed again from \$1,000 to \$1,500.

## Appendix B: High Risk Rural Roads Program Data



