

WRONG-WAY CRASH STUDY INTERSTATES AND FREEWAYS CALENDAR YEAR 2012



October 2014

Table of Contents

Page

Wrong-Way Crash Study, Calendar Year 20121

List of Figures

Figure 1. Minimum required signs and markings from the MUTCD2
Figure 2. Map of Wrong-Way Crash Locations in Calendar Year 20123

List of Tables

Table 1. Summary of Wrong-Way Crash Analysis in Calendar Year 20122
Table 2. Wrong-Way Crashes 2010-20124
Table 3. List of Wrong-Way Crashes on Interstates and Other Freeways in Calendar Year 20125

List of Appendices

Appendix A Act 641

Appendix B Minute Order 2009-035

Appendix C Crash Location Maps, Photos of Interchanges and Crash Reports

Wrong-Way Crash Study Calendar Year 2012

Act 641 of the 87th Arkansas General Assembly requires the Arkansas State Highway and Transportation Department (AHTD) to analyze all wrong-way crashes on the Interstates and other freeways with full control of access and to prepare an annual report. Furthermore, the Act requires that based on the findings in the report, the AHTD to implement appropriate countermeasures when warranted to reduce the possibility of wrong-way crashes. Accordingly, Minute Order 2009-035 was adopted by the Arkansas State Highway Commission on February 25, 2009. This Minute Order authorized an annual analysis of wrong-way crashes on these routes to determine if additional traffic control devices are warranted. Copies of Act 641 and Minute Order 2009-035 are shown in Appendices A and B respectively.

An annual analysis of wrong-way crashes identifies the locations to be investigated. The investigation consists of reviewing the signing and striping for compliance with the minimum requirements of the Manual of Uniform Traffic Control Devices (MUTCD) as well as compliance with current AHTD signing practices. The minimum requirements as specified in Section 2B.41 of the MUTCD 2009 Edition include the following:

1. At least one “ONE WAY” sign for each direction of travel on the crossroad shall be placed where the exit ramp intersects the crossroad.
2. At least one “DO NOT ENTER” sign shall be conspicuously placed near the downstream end of the exit ramp in positions appropriate for full view of a road user starting to enter wrongly from the crossroad.
3. At least one “WRONG WAY” sign shall be placed on the exit ramp facing a road user traveling in the wrong direction.

Current AHTD practice is to install the minimum required signs and markings from the MUTCD plus additional optional signs and markings (see Figure 1). Current AHTD practice also includes the installation of oversized signs as shown in Table 2B-1 in the MUTCD. This practice enhances the conspicuity of the signage and provides added protection to ensure that the minimum required signage is in place should one of the sign assemblies be damaged or destroyed.

The crash analysis of 2012 crash data showed that ten wrong-way crashes occurred on the Interstates and other freeways with full control of access in 2012 (see Figure 2). The crash analysis was conducted on only those crashes that involved a vehicle entering or traveling in the wrong direction on the controlled access facility. Crossover crashes were not included. These crashes are summarized in Table 1 whereas Table 2 shows a comparison of the 2012 wrong-way crashes with 2010 and 2011.

Following the crash analysis, an investigation of the locations where the wrong-way crashes occurred was completed in June 2014.

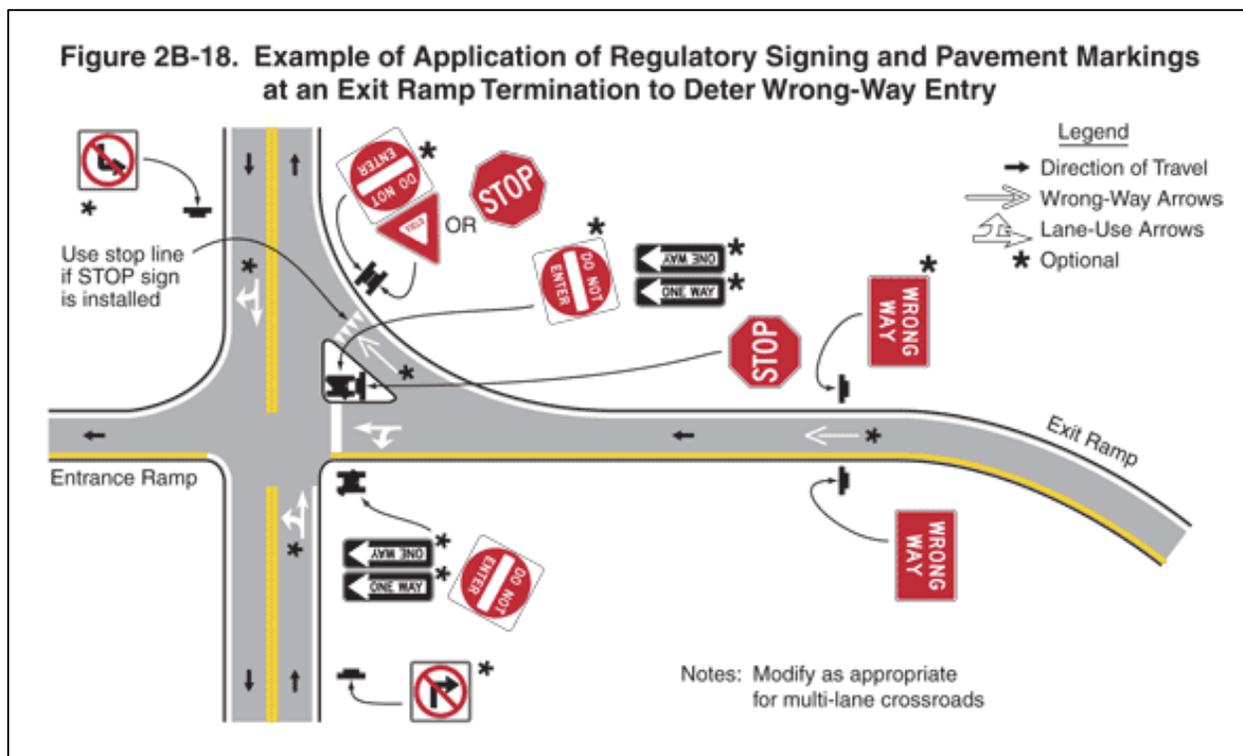


Figure 1. Minimum required signs and markings from the MUTCD (Source: *Manual on Uniform traffic Control Devices for Streets and Highways* (MUTCD) 2009 Edition)

TABLE 1. Summary of Wrong-Way Crash Analysis in Calendar Year 2012

Crash Severity	1 Fatal Crashes (2 fatalities)				
	7 Nonfatal Injury Crashes that include:		5 Incapacitating Injury Crashes		
			1 Non-Incapacitating Injury Crash		
			1 Possible Injury Crash		
2 Property Damage Only Crashes (PDO)					
Crash Type	Head On	8	Road Surface Condition	Dry	8
	Sideswipe	2		Wet	2
Light Conditions	Dark	6	Contributing Factors	Alcohol	8
	Daylight	1		Drugs	0
	Dark but Lighted	3		*None	2
				**Unknown	0
				Illness	0

* Driver was not impaired

**Not determined if driver was impaired

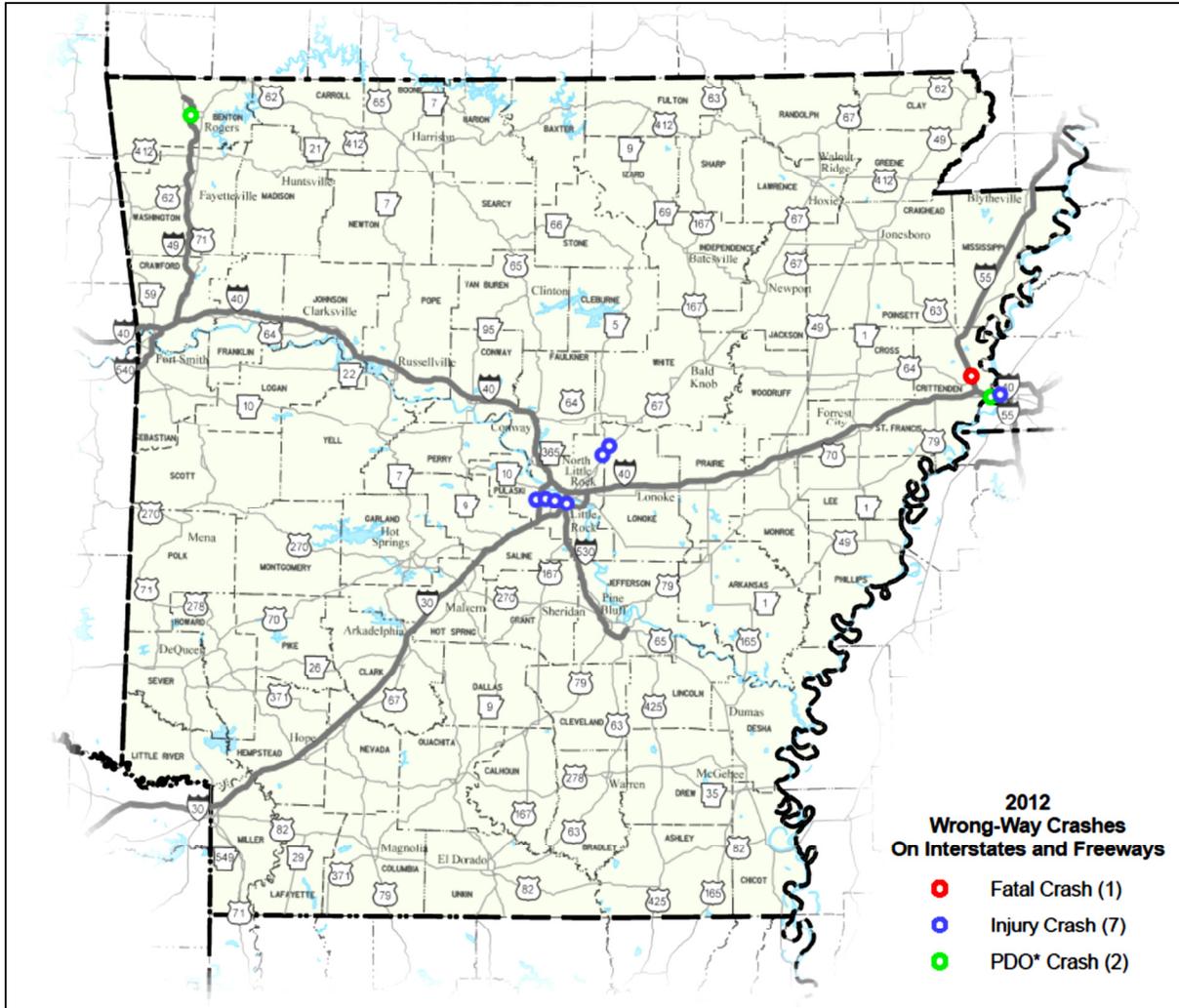


Figure 2. Location of the wrong-way crashes occurred on Interstate and other freeways with full control access in 2012

TABLE 2: Wrong-Way Crashes 2010-2012

Year	Total Wrong Way Crashes	Fatal Crashes	Fatalities	Serious Injury Crashes	Number of Dark Crashes	Driver Impaired Drugs or Alcohol	Fatal Crashes Driver Impaired on Drugs or Alcohol
2010	14	2	2	7	8	9	2
2011	16	5	7	4	11	6	4
2012	10	1	2	5	9	8	0

Consequently, a total of nine interchange off-ramps were reviewed that resulted in the following findings:

1. Eight off-ramps were in compliance with the MUTCD minimum requirements. The MUTCD compliance of the signage at the I-630 intersection with Shackelford Road at the time of the crashes is unknown because crashes happened at this location during construction. This area is encompassed by an active construction zone where the traffic patterns and corresponding signage have been revised numerous times since the occurrence of the crashes. The signage at this location at the time of investigation did not meet the minimum requirements of MUTCD but immediate installation of “ONE WAY” and “WRONG WAY” signs brought it into compliance with the MUTCD.
2. Four of the ramps were in compliance with the MUTCD minimum requirements, but were not in compliance with the current AHTD signing practices. All of the sign corrections are scheduled to be implemented by statewide signing crews as soon as possible.

Findings of this investigation are also summarized in Table 3. Crash location maps, along with diagrams of the interchanges, investigation reports and crash reports are included in Appendix C.

TABLE 3. List of Wrong-Way Crashes on Interstates and Other Freeways in Calendar Year 2012

Crash #	County	Rte	Sec	LM	Sev.****	# Fat.	# Inj.	Type	Date	Time	Urban/Rural	Light Condition	Surf. Cond.	Impaired	System	Exit Number	** MUTCD	***AHTD
201268805	Pulaski	630	21	6.80	2	0	2	Head On	8/5/2012	1:02 AM	Urban	Dark	Dry	Alcohol	Interstate	Shackleford Rd. Intersection	U	N
201264812	Pulaski	630	21	7.33	2	0	3	Head on	5/7/2012	9:15 PM	Urban	Dark	Dry	Alcohol	Interstate	140	Y	N
201274539	Pulaski	30	23	139.4	2	0	4	Head on	12/21/2012	12:01 AM	Urban	Dark but Lighted	Dry	Alcohol	Interstate	14	Y	Y
201261544	Crittenden	55	11	11.60	1	2	2	Head On	2/15/2012	9:33 PM	Urban	Dark	Wet	None	Interstate	3B	Y	Y
201260516	Crittenden	55	11	3.0	5	0	0	Head On	1/19/2012	6:15 PM	Urban	Dark but Lighted	Dry	Alcohol	Interstate	4	Y	Y
201268475	Crittenden	40	52	284.40	2	0	3	Head On	8/12/2012	5:05 AM	Urban	Dark	Dry	Alcohol	Interstate	1	Y	NA*
201267694	Benton	540 (49)	5 (29)	84.79	5	0	0	Sideswipe Opp. Direction	7/19/2012	8:10 AM	Urban	Daylight	Dry	None	Interstate	85	Y	N
201269131	Pulaski	630	21	4.25	2	0	2	Head On	8/25/2012	9:24 PM	Urban	Dark but lighted	Dry	Alcohol	Interstate	4	Y	N
201261621+	Lonoke	67	11	1.59	3	0	2	Sideswipe Opp. Direction	2/16/2012	11:47 PM	Urban	Dark	Wet	Alcohol	U.S. Highway	11	Y	N
201261677+	Lonoke	67	11	0.04	4	0	2	Head On	2/19/2012	11:48 PM	Urban	Dark	Dry	Alcohol	U.S. Highway	11	Y	N

+Same driver involved in both of these crashes at the same exit on different days

* Ramp is in Memphis TN

**Meets MUTCD Standard, Y=Yes or N=No or U=Unknown

***Meets AHTD Standard, Y=Yes or N=No

****Crash Severity = 1-fatal crash; 2-incapacitating injury crash; 3-non-incapacitating injury crash; 4-possible injury crash; and 5-property damage only.

APPENDIX A

Act 641

Stricken language would be deleted from and underlined language would be added to the law as it existed prior to this session of the General Assembly.

Act 641 of the Regular Session

1 State of Arkansas
2 87th General Assembly
3 Regular Session, 2009

A Bill

HOUSE BILL 1961

4
5 By: Representative Pyle
6
7

For An Act To Be Entitled

8
9 AN ACT TO REQUIRE THE ARKANSAS STATE HIGHWAY AND
10 TRANSPORTATION DEPARTMENT TO ANALYZE WRONG-WAY
11 CRASHES ON INTERSTATES AND OTHER FREEWAYS THAT
12 ARE A PART OF THE STATE HIGHWAY SYSTEM; TO
13 IMPLEMENT WARRANTED AND FEASIBLE COUNTERMEASURES
14 THAT MAY REDUCE THE POSSIBILITY OF WRONG-WAY
15 CRASHES; AND FOR OTHER PURPOSES.
16

Subtitle

17
18 TO REQUIRE THE ARKANSAS STATE HIGHWAY
19 AND TRANSPORTATION DEPARTMENT TO ANALYZE
20 WRONG-WAY CRASHES ON INTERSTATES AND
21 OTHER FREEWAYS THAT ARE A PART OF THE
22 STATE HIGHWAY SYSTEM.
23
24

25 BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF ARKANSAS:
26

27 SECTION 1. Arkansas Code Title 27, Chapter 65, Subchapter 1 is amended
28 to add an additional section to read as follows:

29 27-65-144. Additional annual reporting.

30 (a) The Arkansas State Highway and Transportation Department shall
31 analyze all reported wrong-way crashes on interstate highways and other
32 freeways that are a part of the state highway system to determine whether the
33 installation of additional traffic control devices is warranted and feasible
34 in order to reduce the possibility of future wrong-way crashes.

35 (b) Any additional traffic control devices installed under subsection



03-05-2009 11:39 JSE199

1 (a) of this section shall conform to the Manual on Uniform Traffic Control
2 Devices for Streets and Highways, approved by the Federal Highway
3 Administration as the national standard in accordance with 23 U.S.C. 109(d),
4 23 U.S.C. 114(a), 23 U.S.C. 217, 23 U.S.C. 315, and 23 U.S.C. 402(a), 23
5 C.F.R. 655, and 49 C.F.R. 1.48(b)(8), 1.48(b)(33) and 1.48(c)(2), and is the
6 manual adopted by the State Highway Commission under § 27-52-104.

7 (c) A person may not file a legal action as a result of the
8 implementation of any recommendations made from studies conducted under this
9 section.

10
11 SECTION 2. DO NOT CODIFY. This act shall begin with a reporting
12 period in 2009 and annually thereafter.

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14 **APPROVED: 3/27/2009**
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APPENDIX B

Minute Order 2009-035

MINUTE ORDER

District: Statewide
County: Statewide
Category: Commission Policy

WHEREAS, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users of 2005 (SAFETEA-LU) requires each state to develop and implement a Strategic Highway Safety Plan (SHSP) that involves a comprehensive and collaborative approach to highway safety; and

WHEREAS, Minute Order 2007-091 adopted Arkansas' SHSP as a planning guide for improving highway safety in the State; and

WHEREAS, one emphasis area identified in Arkansas' SHSP is to reduce the number of head-on crashes; and

WHEREAS, head-on crashes occur from time to time on Interstates and other freeways as a result of wrong-way travel on these fully access controlled routes.

NOW THEREFORE, the Director is authorized to conduct an annual analysis, beginning with the 2009 reporting period, of all reported wrong-way crashes on Interstate highways and other freeways that are a part of the state highway system to determine whether the installation of additional traffic control devices is warranted and feasible to reduce the possibility of future wrong-way crashes.

FURTHERMORE, any additional traffic control devices installed as a result of the annual analysis will conform to the Manual on Uniform Traffic Control Devices for Street and Highways, which is approved by the Federal Highway Administrator as the National Standard in accordance with Title 23 U.S. Code, Sections 109(d), 114(a), 217, 315, and 402(s), 23 CFR 655, and 49 CFR 1.48(b)(8), 1.48(b)(33), and 1.48(c)(2), and is the manual adopted by the Arkansas Highway Commission pursuant to Arkansas Code Annotated Section 27-52-104.

Approved: [Signatures] Chairman, Vice-Chairman, Member, Member, Member

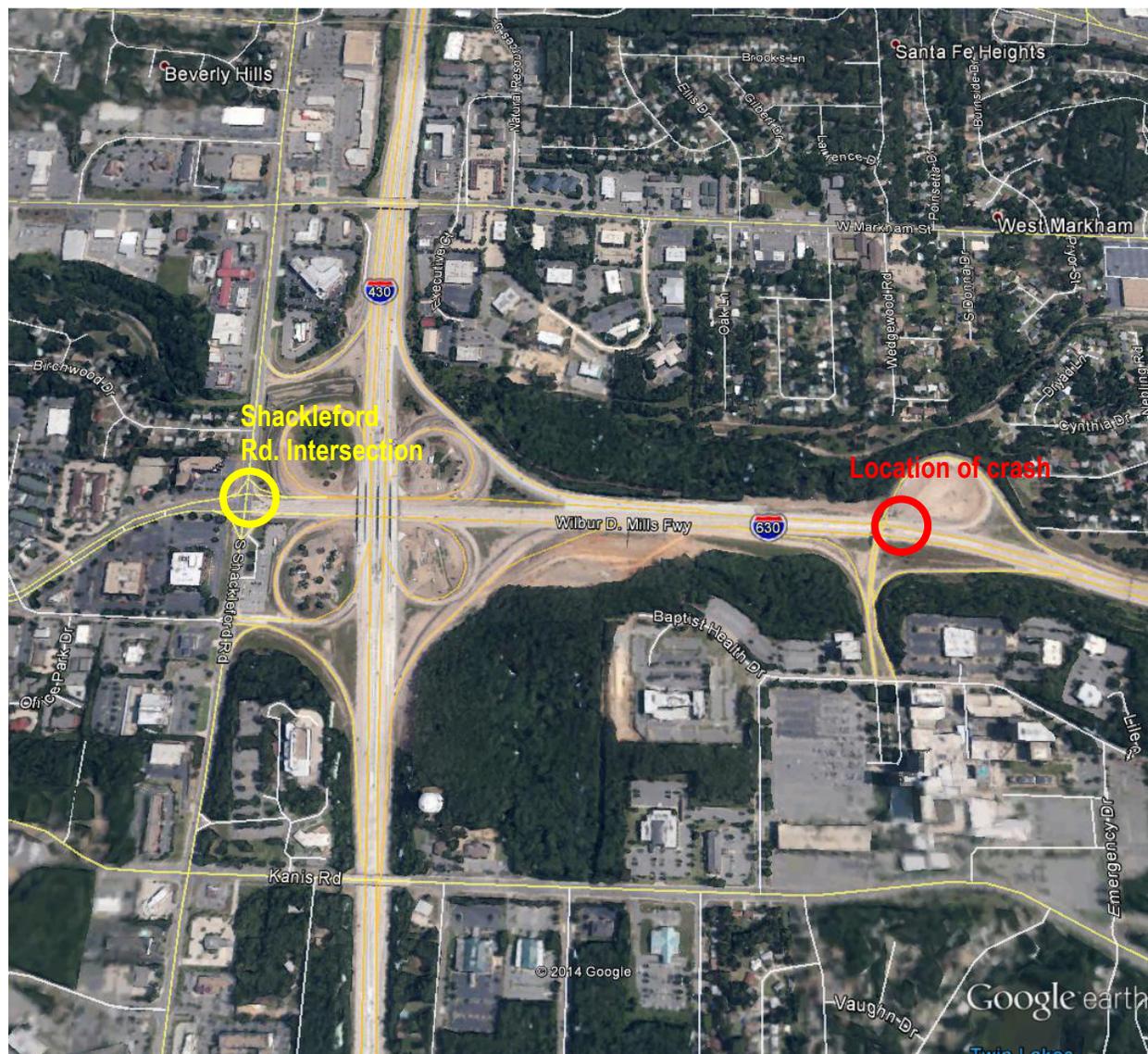
Submitted By: [Signature] Assistant Chief Engineer - Planning
Approved: [Signature] Director
Minute Order No. 2009 035 R
Date Passed FEB 25 2009

ACE-P
Form 19-456
Rev. 08/01/2007

APPENDIX C

Crash Location Maps,
Photos of Interchanges, and Crash Reports

Interstate 630, Shackelford Rd. Intersection in Pulaski County



Maintenance Review

The driver accessed I-630 at the Shackelford Rd. intersection and traveled east in the westbound lanes of traffic. The driver was involved in a head on serious injury crash in Pulaski County at Log Mile 6.80.

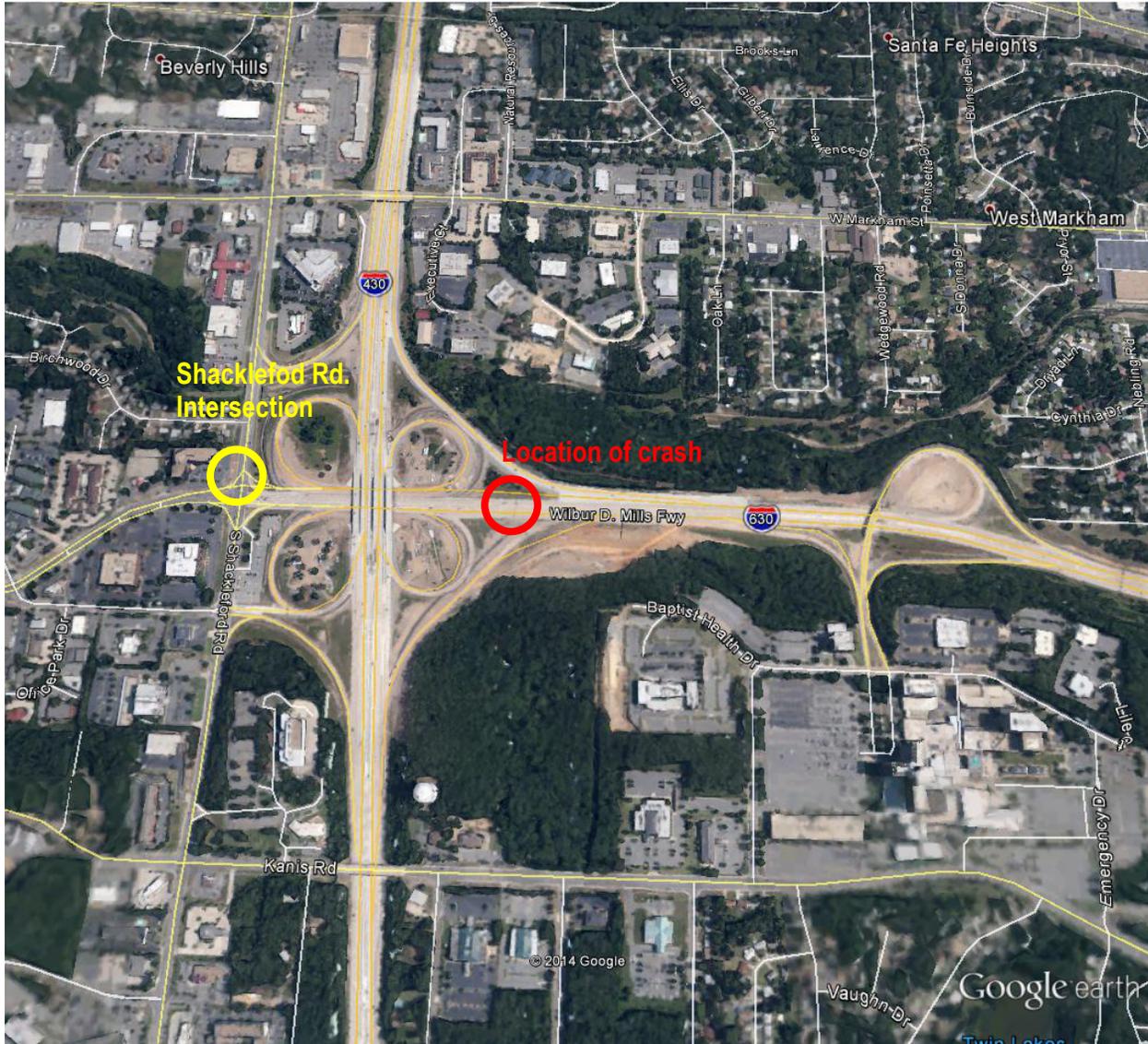
Maintenance Review Results

This intersection is a major work zone where traffic patterns have changed numerous times since this crash. The signs at this intersection currently do not comply with MUTCD or AHTD standards due to the construction and some of the warning signs are not in place. These will be installed as soon as possible by the statewide forces as the construction schedule permits.





Interstate 630, Shackelford Rd. Intersection in Pulaski County



Maintenance Review

The driver accessed I-630 at the Shackelford Rd. intersection and traveled east in the westbound lanes of traffic. The driver was involved in a head on serious injury crash in Pulaski County at Log Mile 7.33.

Maintenance Review Results

This intersection is a major work zone where traffic patterns have changed numerous times since this crash. The signs at this intersection currently do not comply with MUTCD or AHTD standards due to the construction and some of the warning signs are not in place. These will be installed as soon as possible by statewide forces as the construction schedule permits.





Interstate 30, Exit 140 in Pulaski County

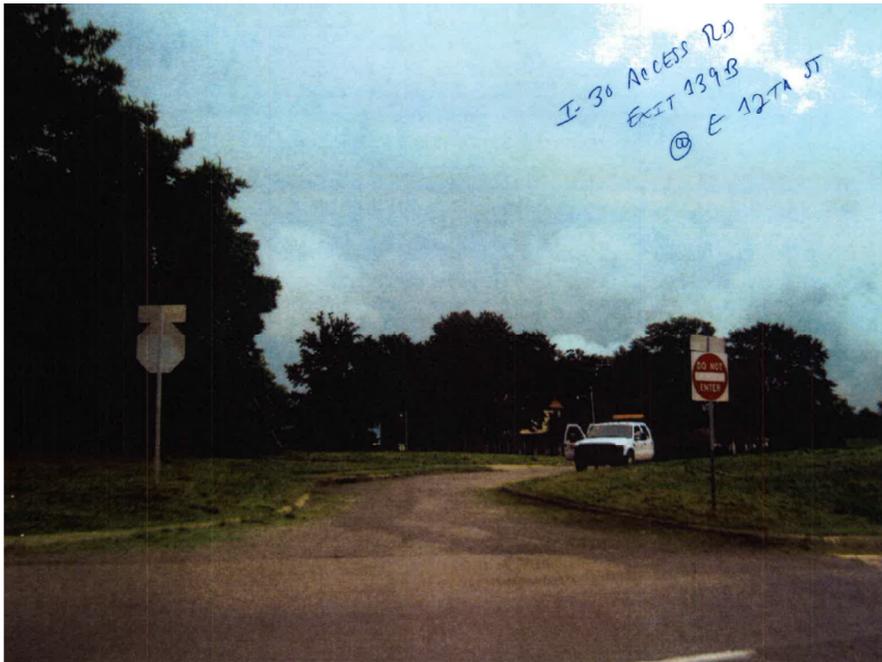


Maintenance Review

The driver accessed I-30 at the 6th/9th Street exit and traveled west in the eastbound lanes of traffic. The driver was involved in a sideswipe serious injury crash in Pulaski County at Log Mile 139.4.

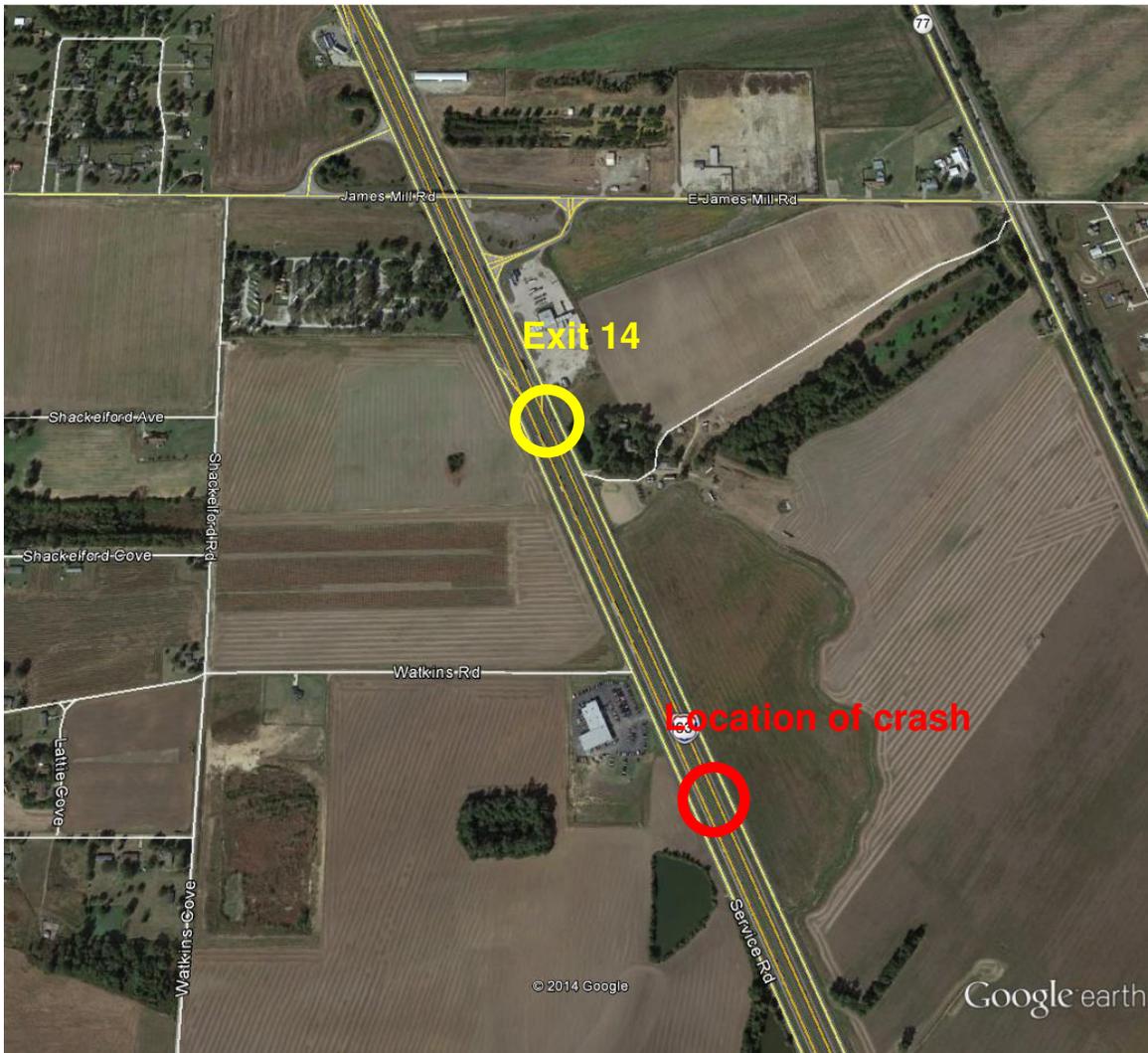
Maintenance Review Results

The interchange at exit 140 was reviewed. Pavement markings and signs were in place and in conformance with MUTCD standards. However, the 36"x36" Do Not Enter signs at 9th Street will be replaced with 48"x48". The 54"x18" One Way signs are missing on the east side of the road and will be installed. Also, on the access road, the Wrong Way signs prior to 9th street and 12th street will be replaced to be consistent with current AHTD standards on sizes and the Wrong Way signs prior to 10th street are missing and will be installed. These modifications will be implemented by statewide forces as soon as possible.





Interstate 55, Exit 14 in Crittenden County



Maintenance Review

The driver accessed I-55 at exit 14 (Jericho) and traveled south in the northbound lanes of traffic. The driver was involved in a head on fatal crash in Crittenden County at Log Mile 11.60.

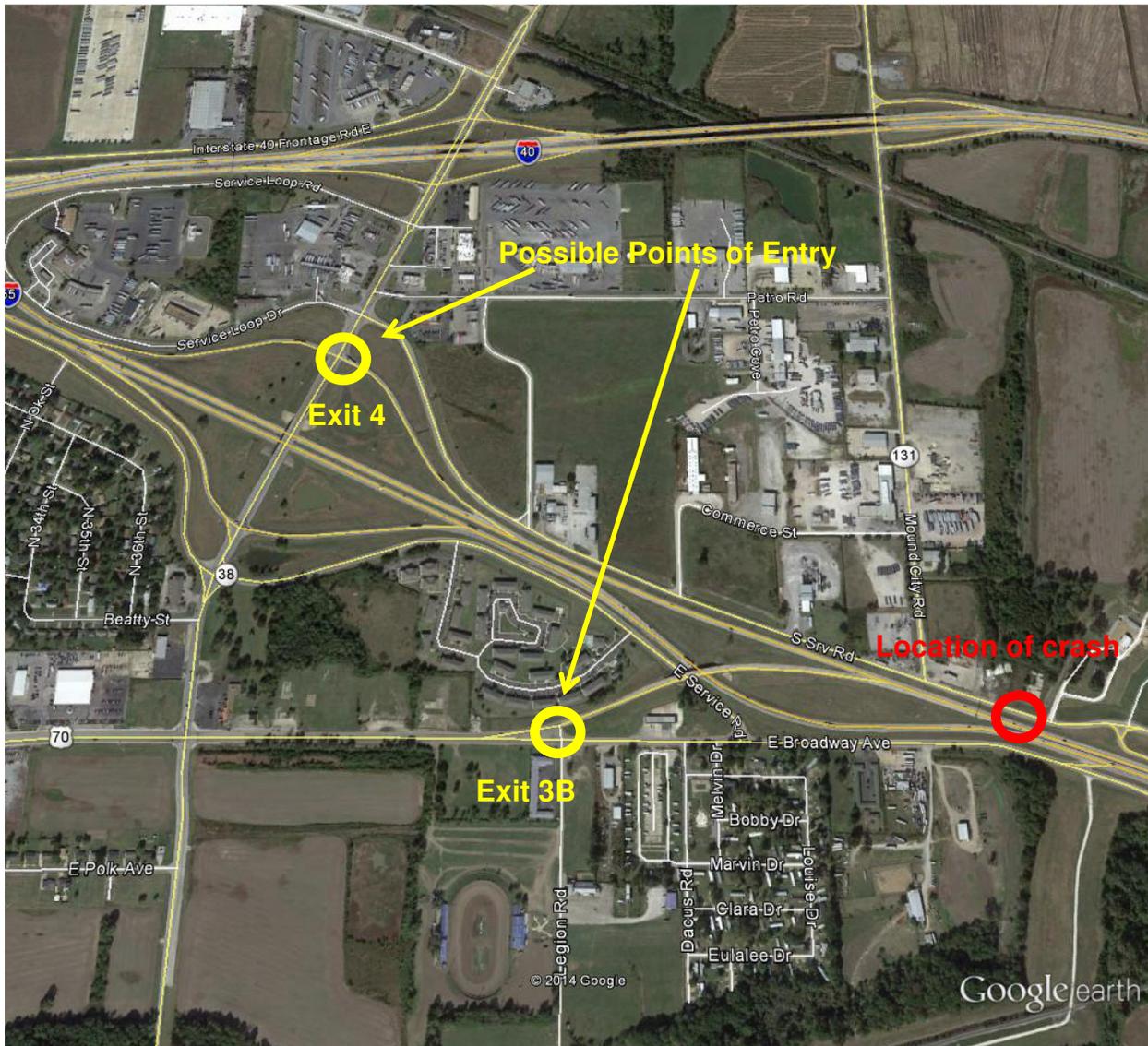
Maintenance Review Results

The interchange at exit 14 was reviewed. All pavement markings and signs were in place and in conformance with MUTCD and AHTD standards. However, some additional signs will be added to the median to be consistent with the southbound off ramp section of this interchange. These modifications will be implemented by statewide forces as soon as possible.





Interstate 55, Exit 4 and Exit 3B in Crittenden County



Maintenance Review

The driver possibly accessed I-55 at exit 4 (MLK Dr.) or exit 3B (Hwy. 70-Broadway) and traveled south in the northbound lanes of traffic. The driver was involved in a head on crash in Crittenden County at Log Mile 3.0.

Maintenance Review Results

The interchanges at exit 4 and 3B were reviewed. All pavement markings and signs were in place and in conformance with MUTCD and AHTD standards. However, some of the signs needed to be straightened or replaced. These modifications will be implemented by statewide forces as soon as possible.





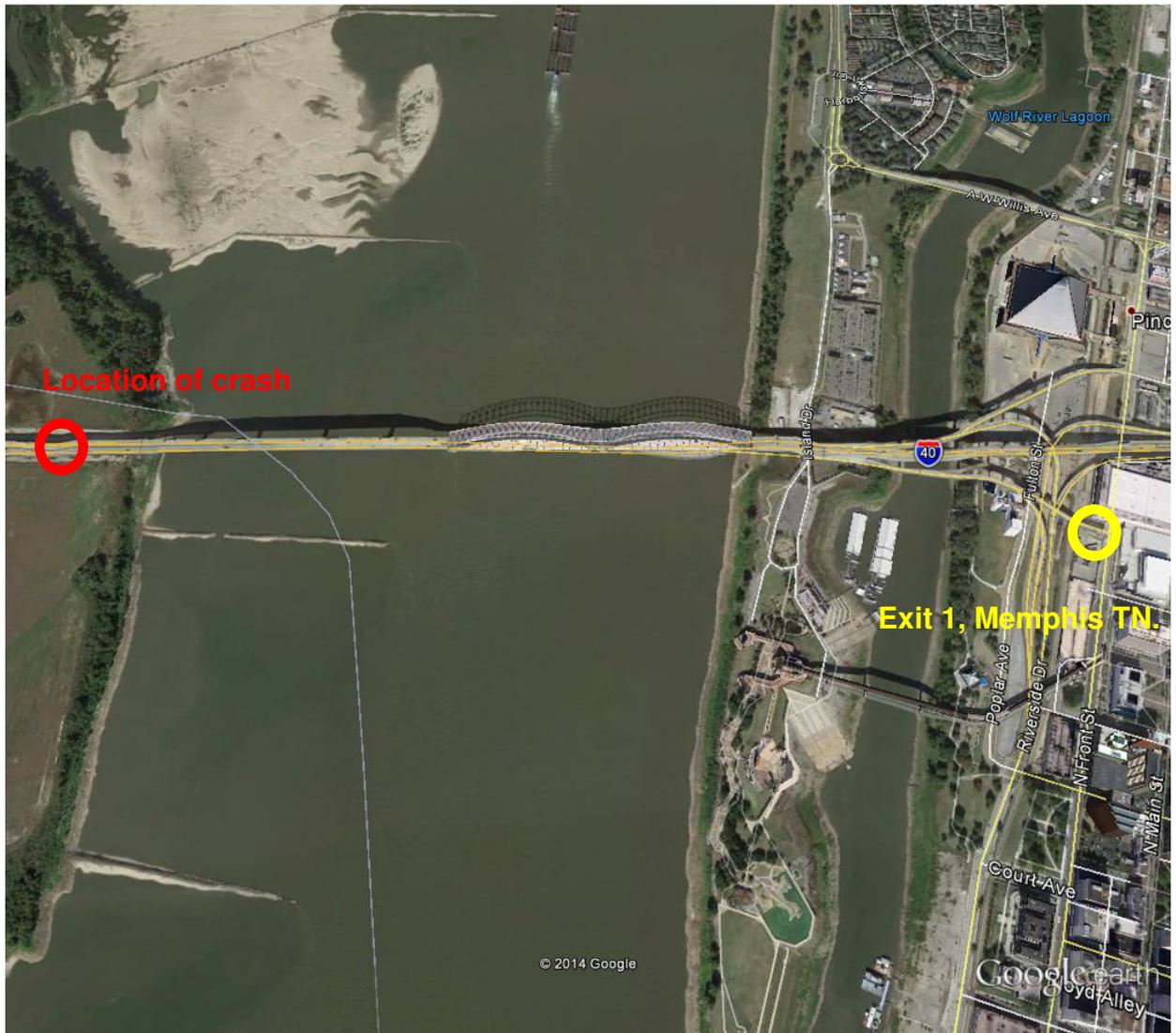








Interstate 40, Exit 40 in Crittenden County



Maintenance Review

The driver accessed I-40 possibly at exit 1 in Memphis, Tennessee and traveled west in the east lanes of traffic. The driver was involved in a head on serious injury crash in Crittenden County at Log Mile 284.4.

Maintenance Review Results

The interchange at exit 1 in Memphis, TN was reviewed. All pavement markings and signs were in place and in conformance with MUTCD and AHTD standards. No recommendations were made for modifications.





Interstate 540 (49), Exit 85 in Benton County



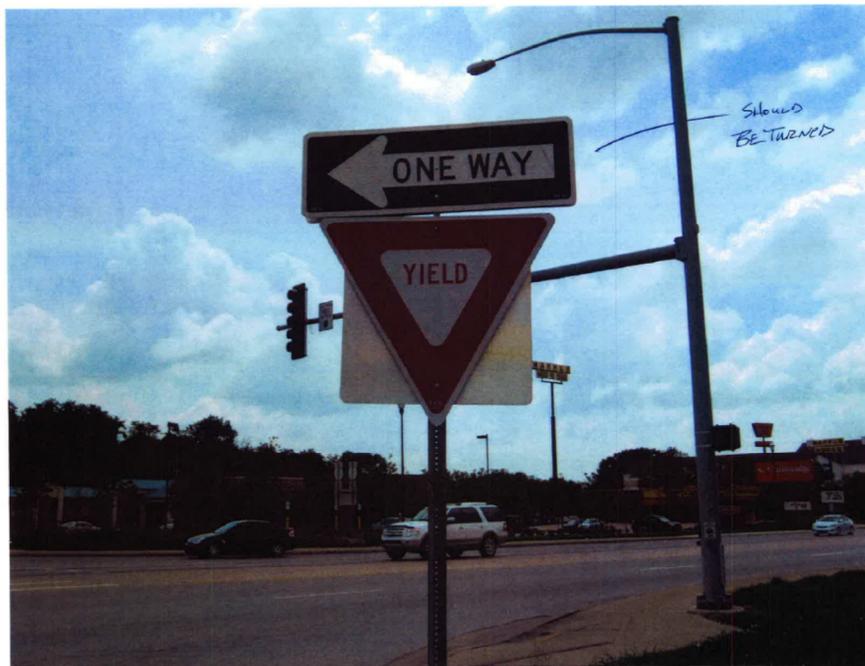
Maintenance Review

The driver accessed I-540 (49) at exit 85 and traveled north in the southbound lanes of traffic. The driver was involved in a sideswipe crash in Benton County at Log Mile 84.79.

Maintenance Review Results

The interchange at exit 85 was reviewed. Pavement markings along with Yield, Do Not Enter and Wrong Way signs were in place and in conformance with MUTCD as well as AHTD standards. However, the 15x84 One-Way signs were missing on the east approach while the One-Way signs on the west side of the off-ramp need to be repositioned. These modifications will be made by statewide forces as soon as possible.







Interstate 630, Exit 4 in Pulaski County



Maintenance Review

The driver accessed I-630 at Exit 4 eastbound off ramp and traveled west in the eastbound lanes of traffic. The driver was involved in a head on serious injury crash in Pulaski County at Log Mile 4.25.

Maintenance Review Results

The interchange at Exit 4 was reviewed. All pavement markings and signs were in place and in conformance with MUTCD standards. However, the Wrong Way signs and the Yield signs will be replaced with larger signs to be consistent with AHTD standards. These modifications will be made by statewide forces as soon as possible.





U.S. Highway 67, Exit 11 in Pulaski County



Maintenance Review

The driver accessed U.S. 67 at Exit 11 in Pulaski County and traveled north in the southbound lanes of traffic. The driver was involved in a non-incapacitating injury sideswipe opposite direction crash in Lonoke County at Log Mile 1.59. Three days later this same driver did the exact same thing again and was involved in a possible injury head on crash at log mile 0.04 in Lonoke County.

Maintenance Review Results

The interchange at Exit 11 was reviewed. Pavement markings along with One Way and Do Not Enter signs were in place and in conformance with MUTCD and AHTD standards. However, the 30"x30" Do Not Enter sign and the 48" Yield sign were missing on the east approach of the channelized intersection. Also, on the off ramp, the Wrong Way sign on the west side of the ramp will be replaced to be consistent with current AHTD standards on size. The Wrong Way sign on the east side of the ramp is missing. These modifications will be implemented by statewide forces as soon as possible.



