

WRONG-WAY CRASH STUDY INTERSTATES AND FREEWAYS CALENDAR YEAR 2013



December 2015

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Wrong-Way Crash Study Calendar Year 2013

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 is 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 on 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 2013 crash data showed that 12 wrong-way crashes occurred on the Interstates and other freeways with full control of access in 2013 (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 2013 wrong-way crashes with 2011 and 2012.

Following the crash analysis, an investigation of the locations where the wrong-way crashes occurred was completed in November 2015.

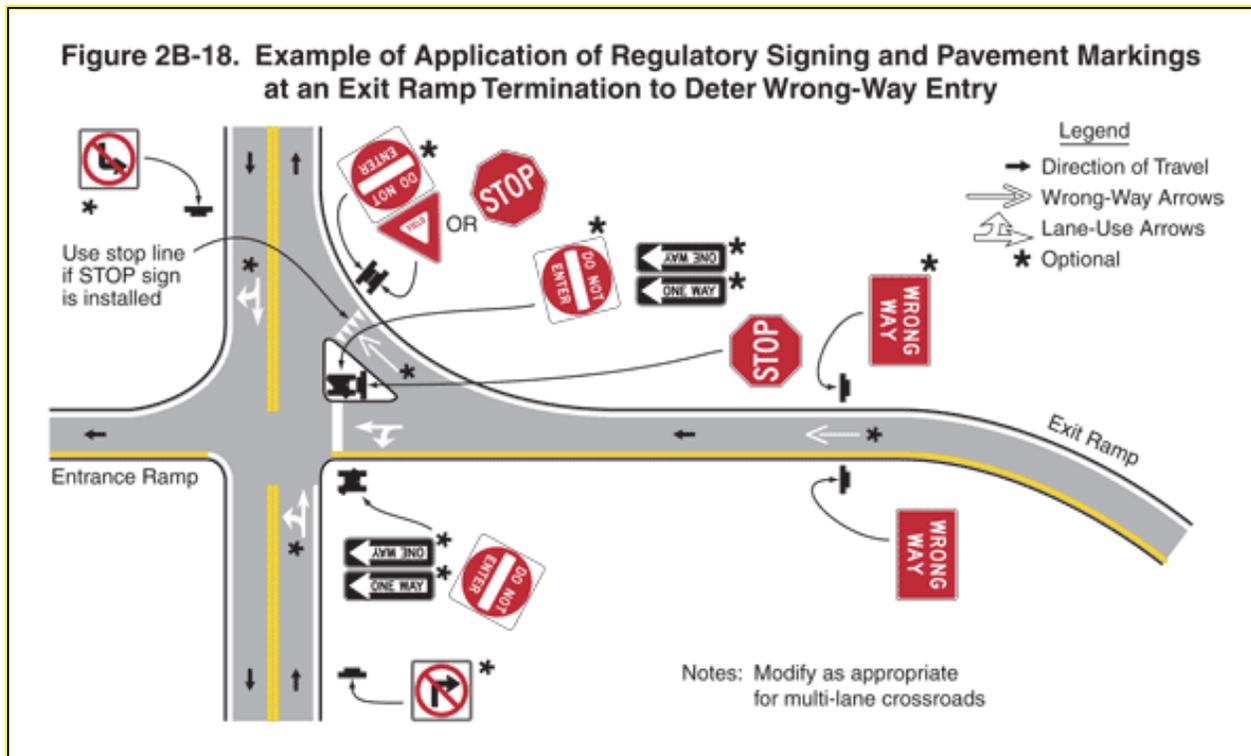


Figure 1. Minimum required signs and markings from the MUTCD (Source: *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD) 2009 Edition)

TABLE 1. Summary of Wrong-Way Crash Analysis in Calendar Year 2013

Crash Severity	2 Fatal Crashes (2 fatalities)				
	4 Nonfatal Injury Crashes that include:		3 Incapacitating Injury Crashes		
			0 Non-Incapacitating Injury Crash		
			1 Possible Injury Crash		
6 Property Damage Only Crashes (PDO)					
Crash Type	Head On	8	Road Surface Condition	Dry	11
	Sideswipe	4		Wet	1
Light Conditions	Dark	8	Contributing Factors	Alcohol	4
	Daylight	3		Drugs	0
	Dark but Lighted	1		*None	3
				**Unknown	2
				Illness or Fatigue	3

* Driver was not impaired

**Not determined if driver was impaired

2013 Wrong Way Crashes

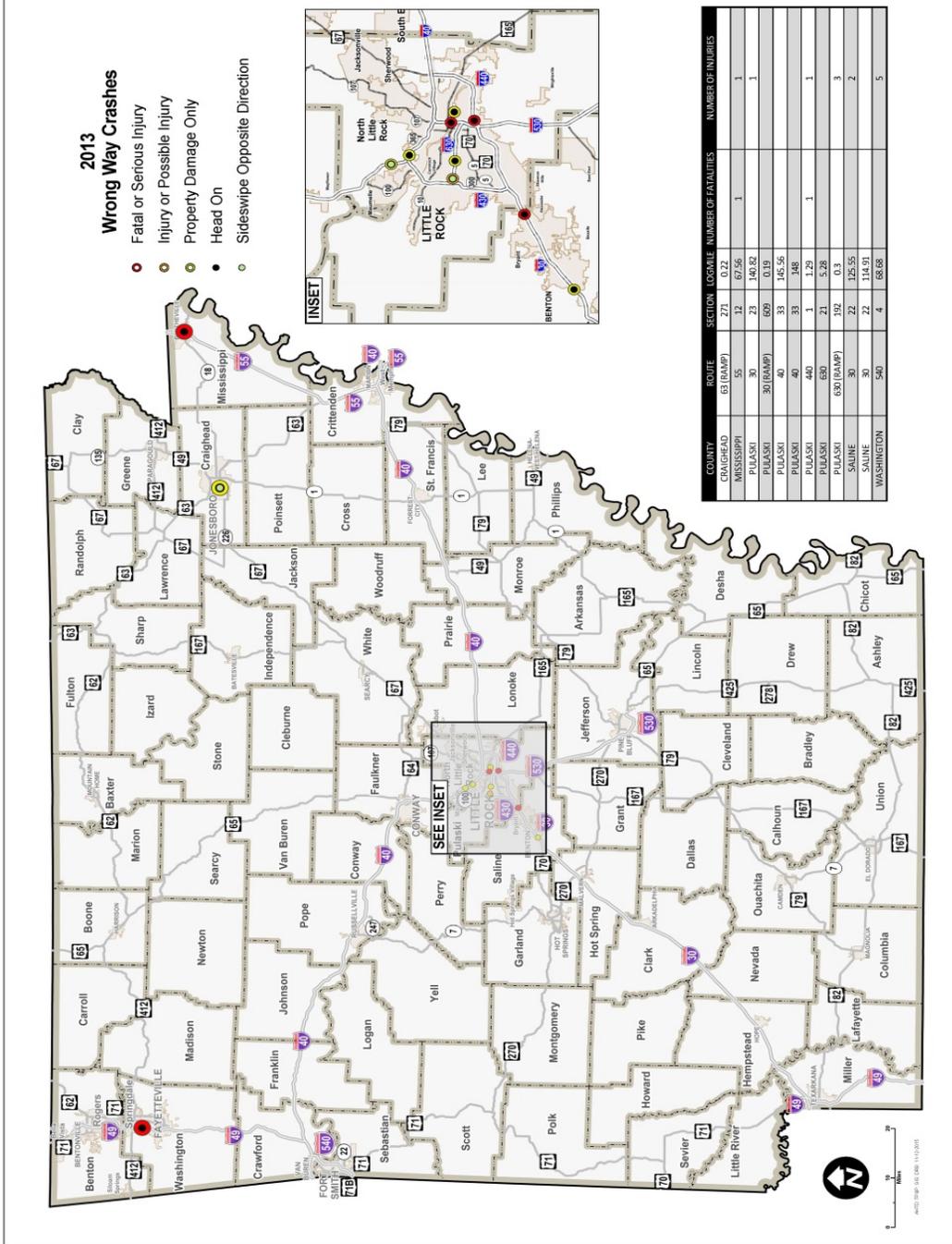


Figure 2. Location of the wrong-way crashes that occurred on Interstates and other freeways with full control access in 2013

TABLE 2: Wrong-Way Crashes 2011-2013

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
2011	16	5	7	4	11	6	4
2012	10	1	2	5	9	8	0
2013	12	2	2	3	8	4	0

Consequently, a total of 17 interchange off-ramps were reviewed that resulted in the following findings:

1. Eight off-ramps were in compliance with the MUTCD minimum requirements as well as AHTD standards. Nine of the ramps (Exits 3, 4, and 5 on I-440; Exits 139A, 140A, 140B, and 141A on I-30; and Exits 1A and 7 on I-630) had the correct signs to be in compliance with the MUTCD, but some of the signs at each location were the incorrect size, and some were missing one or more additional signs needed to be in compliance with current Department signing practices.
2. 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 2013

Crash #	County	Rte	Sec	LM	***Crash Sev.****	# Fat.	# Inj.	Type	Date	Time	Urban/Rural	Light Condition	Surf. Cond.	Impaired	System	Exit Number Reviewed	*MUTCD	**AHTD
201340722	Craighead	00063	271	0.22	5	0	0	Sideswipe Opp. Direction	11-21-2013	4:20 PM	Urban	Daylight	Wet	No	Ramp	45	Y	Y
201360110	Mississippi	55	12	67.56	1	1	1	Head On	01-05-2013	11:14 PM	Urban	Dark	Dry	Illness	Interstate	71	Y	Y
201373249	Pulaski	440	01	1.86	1	1	1	Head On	11-17-2013	10:20 PM	Urban	Dark	Dry	Unknown	Interstate	3,4,5	Y	N
201369004	Pulaski	40	33	148.00	5	0	0	Head On	08-05-2013	1:00 AM	Urban	Dark	Dry	Illness	Interstate	150	Y	Y
201369323	Pulaski	00030	609	0.19	5	0	0	Head On	08-17-2013	5:59 AM	Urban	Dark	Dry	Fatigued	Ramp	141A	Y	N
201362066	Pulaski	40	33	145.56	5	0	0	Sideswipe Opp. Direction	02-18-2013	1:10 AM	Urban	Dark	Dry	Alcohol	Interstate	142	Y	Y
201375094	Pulaski	30	23	140.82	2	0	1	Head On	12-17-2013	1:14 AM	Urban	Dark/But Lighted	Dry	Alcohol	Interstate	139A,141A, 140A,140B, and 1A on I630	Y	N
201370897	Pulaski	630	21	5.28	5	0	0	Head On	09-13-2013	11:00 AM	Urban	Daylight	Dry	No	Interstate	6A	Y	Y
201373701	Pulaski	00630	192	0.30	4	0	3	Sideswipe Opp. Direction	11-28-2013	2:25 PM	Urban	Daylight	Dry	No	Ramp	7	Y	N
201369119	Saline	30	22	125.55	2	0	2	Head On	08-13-2013	12:11 AM	Urban	Dark	Dry	Alcohol	Interstate	126	Y	Y
201372407	Saline	30	22	114.91	5	0	0	Sideswipe Opp. Direction	10-28-2013	10:15 PM	Urban	Dark	Dry	Alcohol	Interstate	116	Y	Y
201365881	Washington	540	04	68.68	2	0	5	Head On	05-18-2013	2:10 AM	Urban	Dark	Dry	Unknown	Interstate	69	Y	Y

*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

8 **For An Act To Be Entitled**

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

17 **Subtitle**

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

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

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

APPENDIX C

Crash Location Maps,
Photos of Interchanges, and Crash Reports

Highway 63, Exit 45 in Craighead County Crash Number 201340722



Maintenance Review

The driver accessed the southbound Exit 45 ramp the wrong way from U.S. 63 at the intersection with U.S. 49 and traveled north on the southbound ramp. The driver was involved in a property damage only sideswipe crash on the ramp at log mile 0.22.

Maintenance Review Results

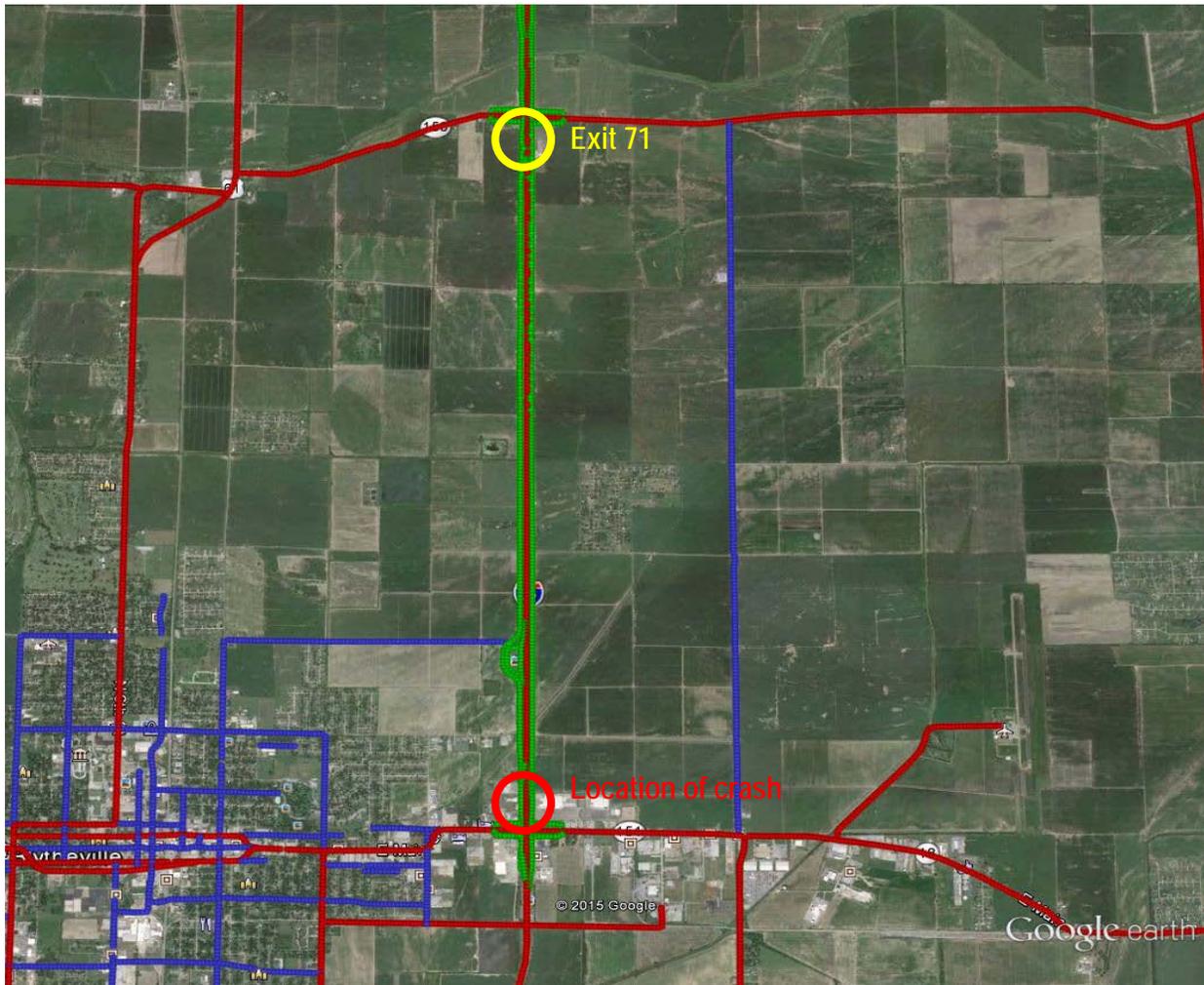
The southbound interchange at Exit 45 was reviewed. The pavement markings and signs were in place and in compliance with MUTCD as well as AHTD standards. No modifications are needed at this time.







Interstate 55, Exit 71 in Mississippi County Crash Number 201360110



Maintenance Review

The driver likely accessed the I-55 northbound lanes at Exit 71. The driver proceeded southbound in the northbound lanes and was involved in a fatal head on crash with a northbound vehicle at the 67.56 mile marker.

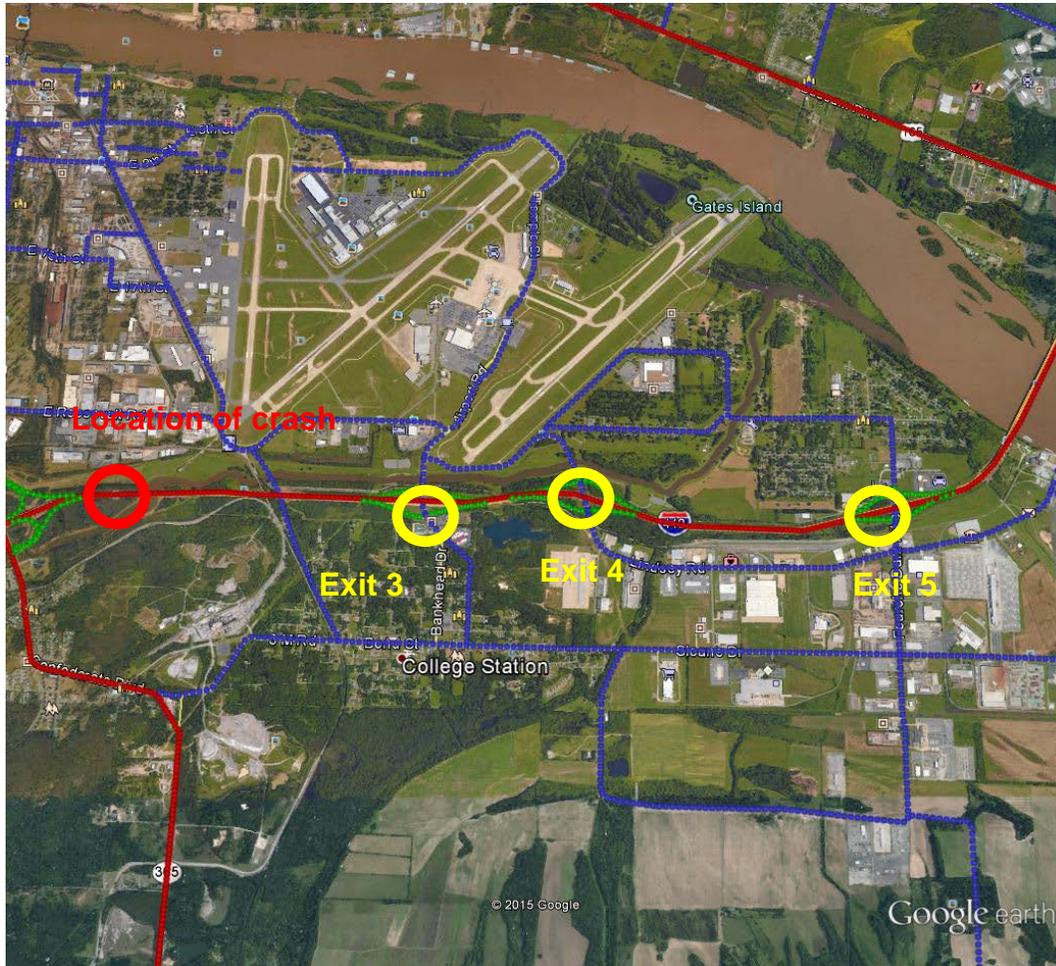
Maintenance Review Results

The northbound interchange at Exit 71 was reviewed. The pavement markings and signs were in place and in compliance with MUTCD as well as AHTD standards. No modifications are needed at this time. As this is currently an active work zone, the photos may not accurately represent conditions at the time of the crash.





Interstate 440, Exits 3, 4, and 5 in Pulaski County Crash Number 201373249



Maintenance Review

The driver accessed I-440 possibly at Exit 3, Exit 4, or Exit 5 and traveled west in the eastbound lanes of traffic. The driver was involved in a fatal head on crash in Pulaski County at Log Mile 1.86.

Maintenance Review Results

The interchanges at exits 3, 4, and 5 were reviewed. All interchanges were in compliance with MUTCD standards. At Exit 3 the Stop signs, Yield signs as well as the Do Not Enter signs will be replaced with larger signs to conform with AHTD standards. At Exit 4 the Do Not Enter sign will be replaced with a larger sign to be in compliance with AHTD standards. At Exit 5 the Do Not Enter sign was missing. All above modifications will be completed by statewide forces as soon as possible.





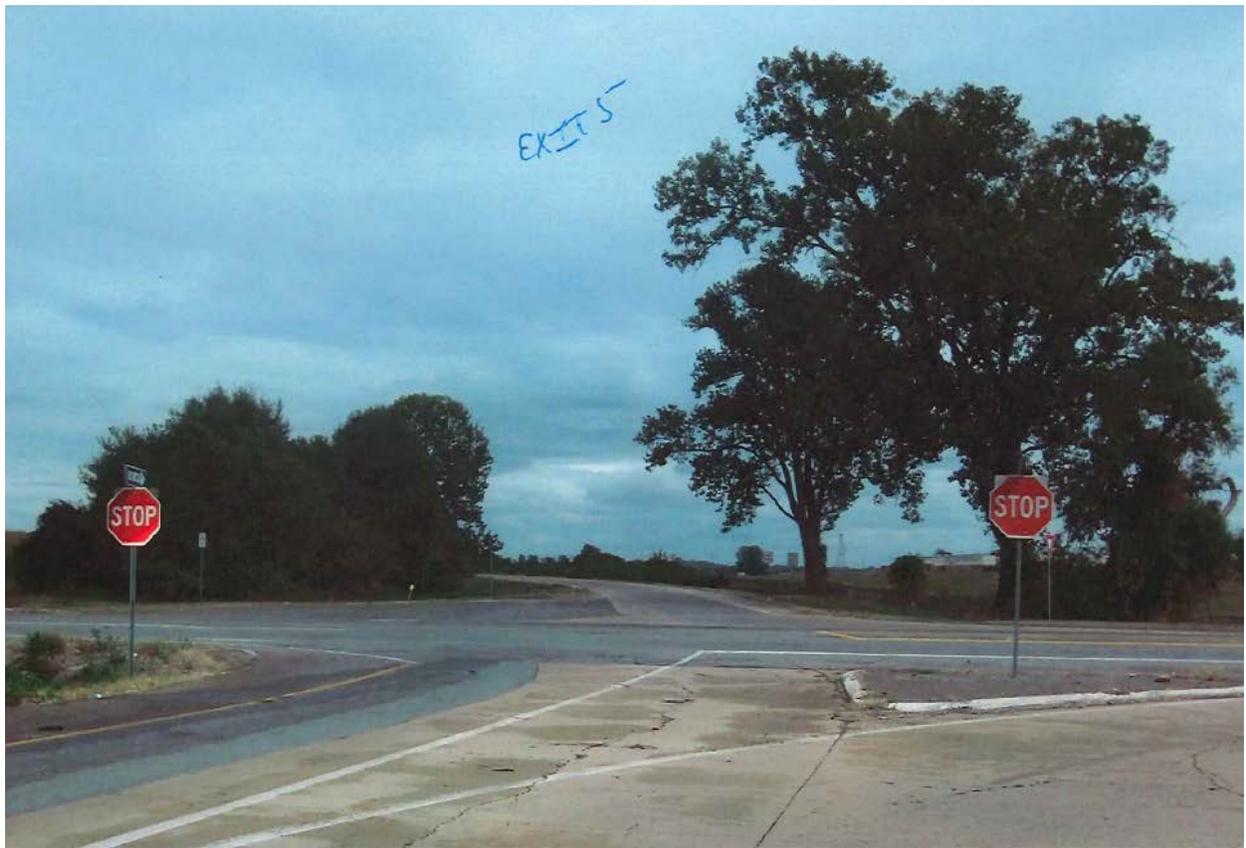






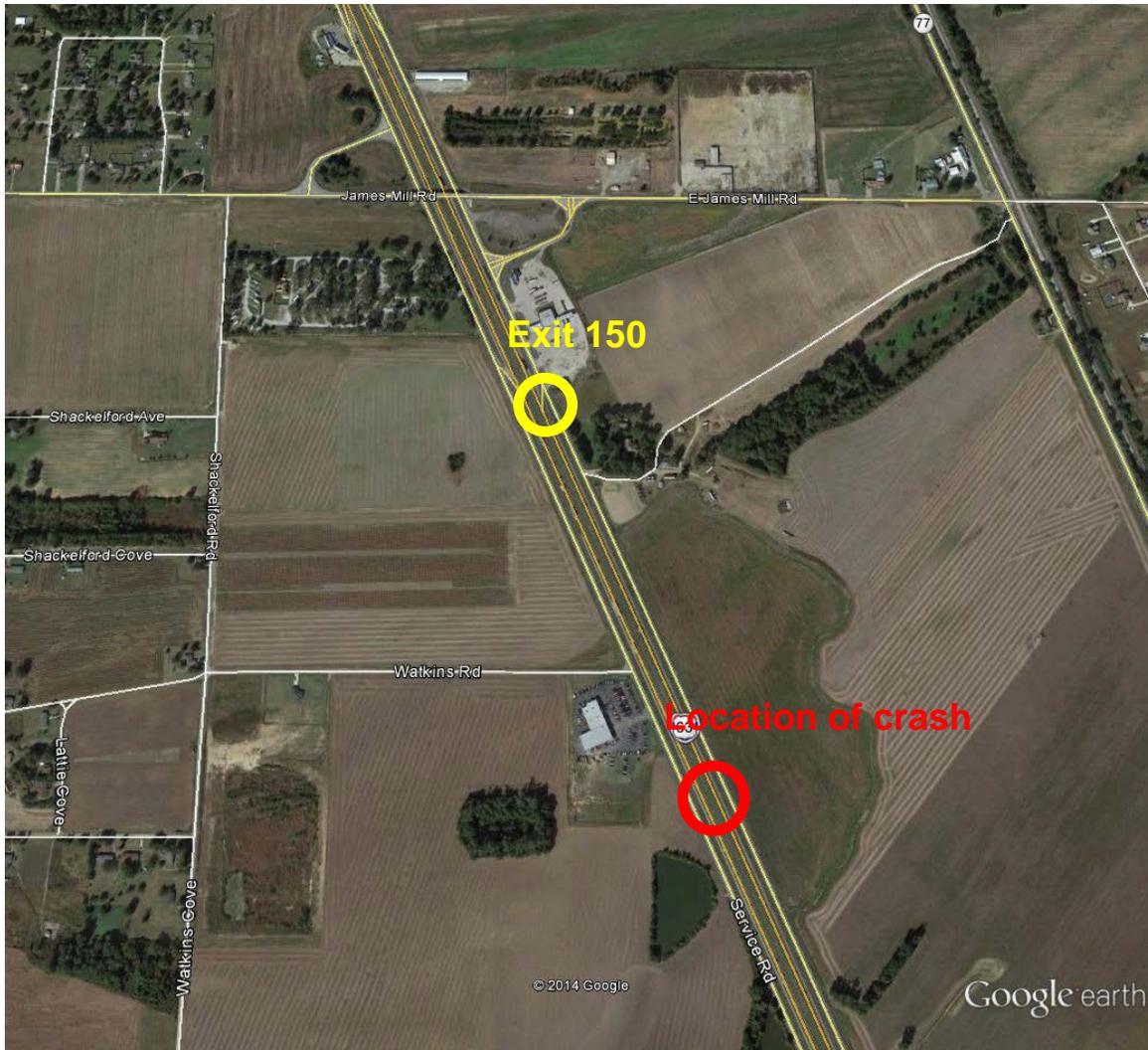








Interstate 40, Exit 150 in Pulaski County Crash Number 201369004



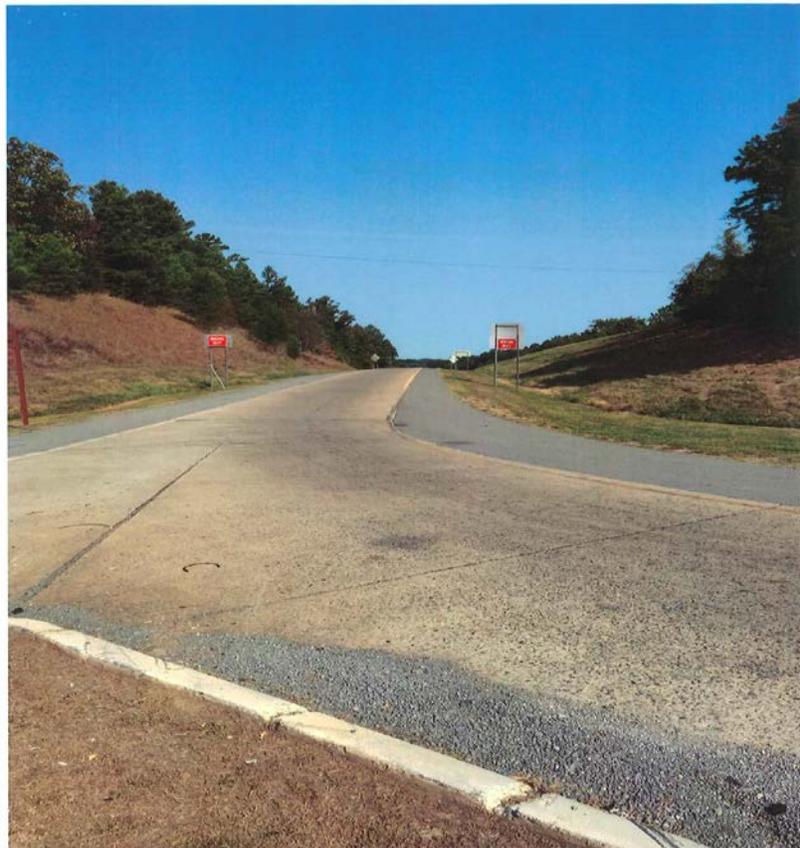
Maintenance Review

The driver accessed I-40 eastbound at Exit 150 and traveled west in the eastbound lanes. The driver struck an 18 wheeler, at log mile 148, in the right front side that was attempting to avoid the impact. No one was injured in the collision.

Maintenance Review Results

The interchange at Exit 150 was reviewed. All pavement markings and signs were in place and in conformance with MUTCD and AHTD standards. However, all signs will be replaced due to their age and condition by statewide forces as soon as their schedule permits.





Interstate 30, Exit 141A in Pulaski County Crash Number 201369323



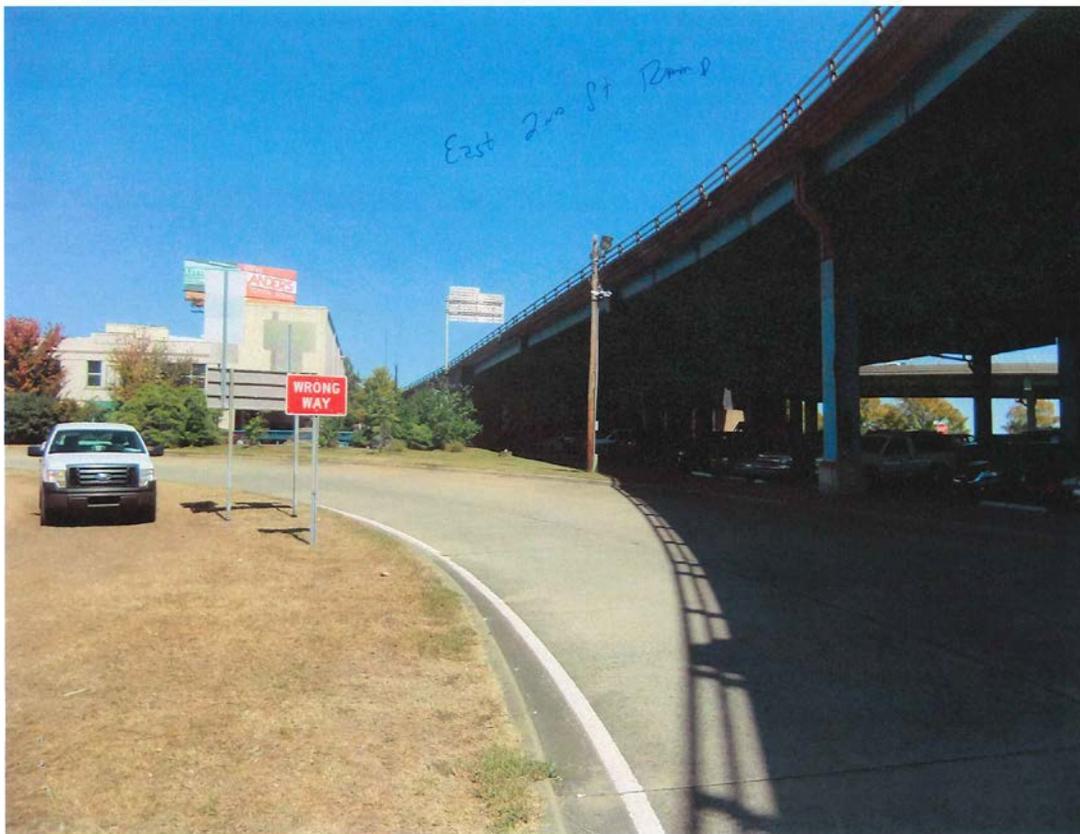
Maintenance Review

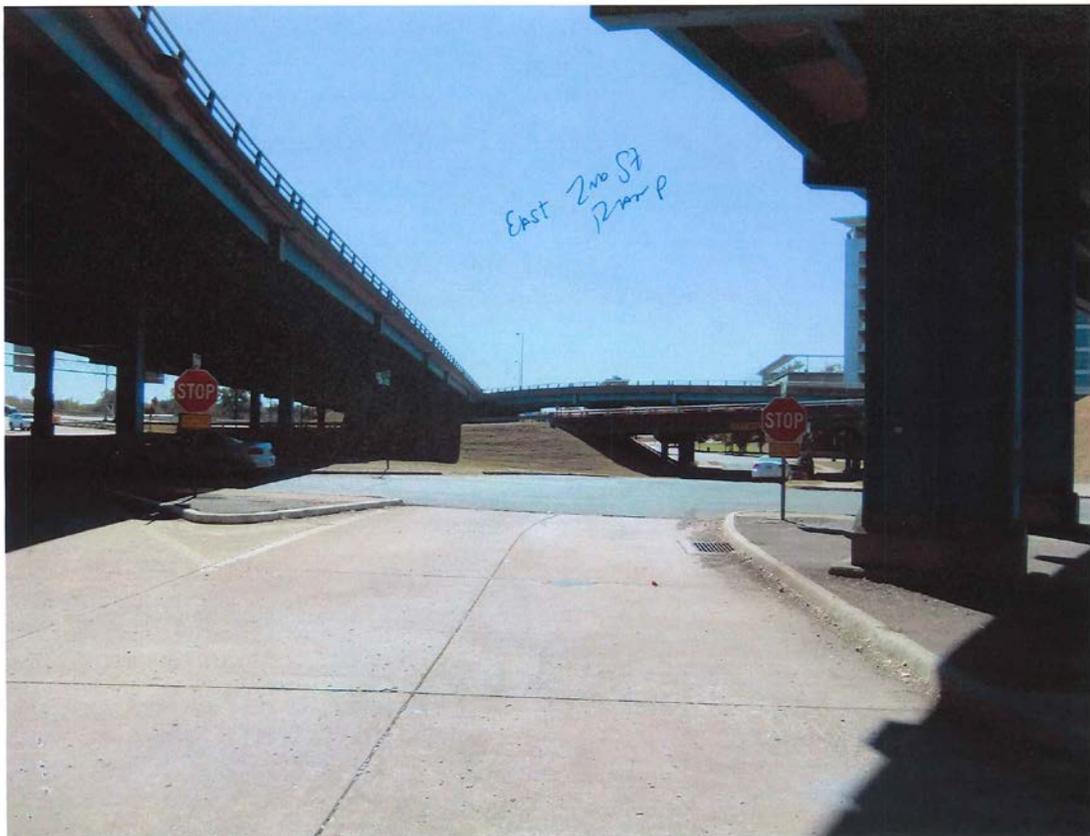
The driver accessed the exit ramp from I-30 at East 2nd Street and traveled east in the westbound lanes of the exit ramp. The driver was involved in a head on collision on the ramp at log mile 0.19. No injuries were reported as a result of this crash.

Maintenance Review Results

The interchange at Exit 141A was reviewed and pavement markings and signs were in conformance with MUTCD standards. However, the 36"x36" Yield Signs at the interchange will be replaced, 30"x30" Do Not Enter Signs will be installed on the back of the Yield Signs. One way signs will also be added to the tops of these sign assemblies.

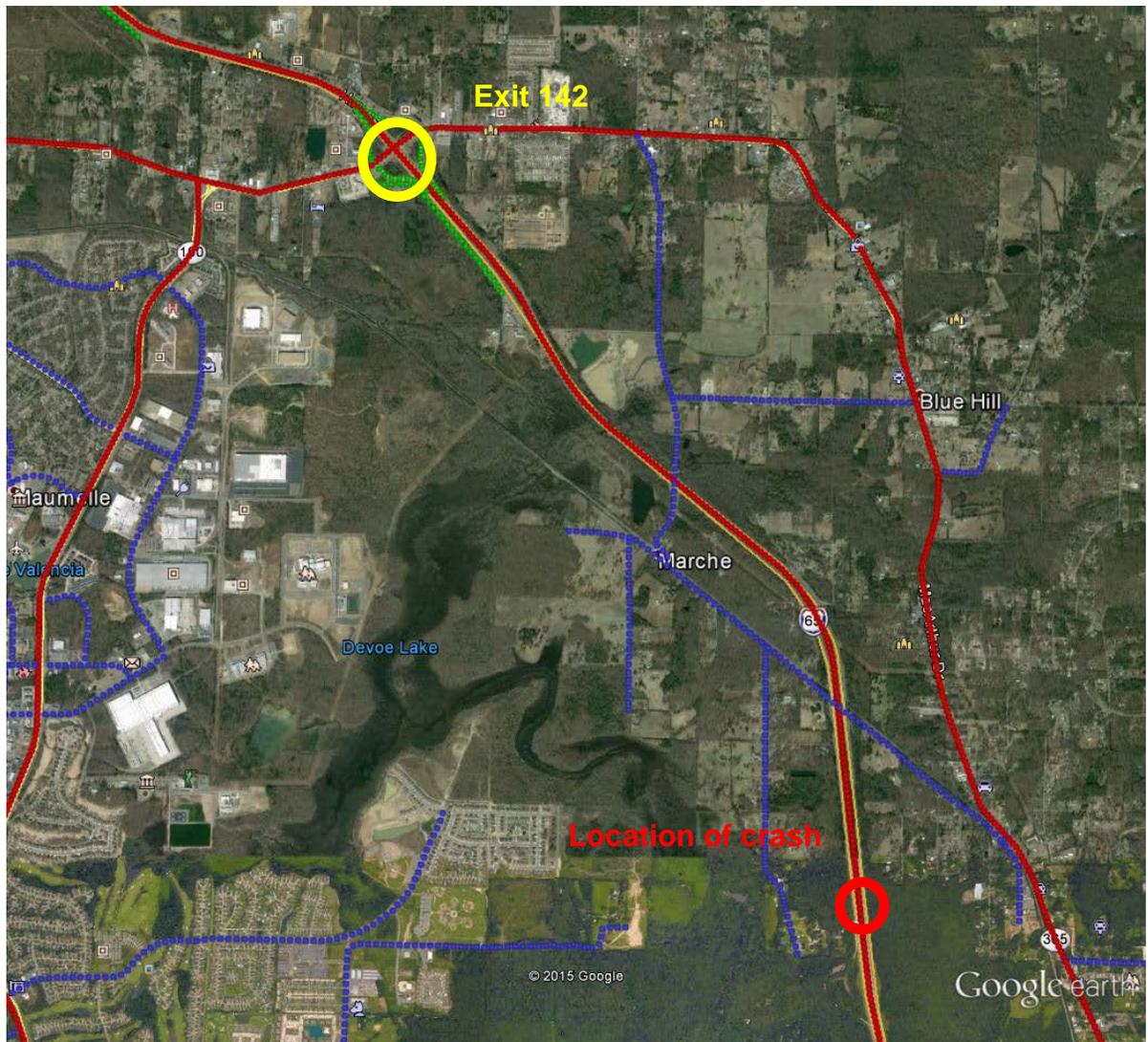
The Wrong Way Signs will be replaced with 42"X30" signs. These modifications will bring the interchange into compliance with AHTD standards.







Interstate 40, Exit 142 in Pulaski County Crash Number 201362066



Maintenance Review

The driver accessed I-40 possibly at Exit 142 and travelled eastbound in the westbound lanes. The driver sideswiped the trailer of a westbound tractor trailer at log mile 145.56. There were no injuries in this crash.

Maintenance Review Results

The interchange at Exit 142 was reviewed and all pavement markings and signs were in compliance with AHTD and MUTCD standards. However, all signs will be replaced due to their age.





Interstate 30, Exits 139A, 141A, 140A, 140B, and 1A on Interstate 630 in Pulaski County Crash Number 201375094



Maintenance Review

The driver accessed I-30 westbound in the eastbound lanes at Exit 139A, 141A, 140A, 140B on I-30, or Exit 1A on I-630. The driver struck a west bound 18 wheeler head on which resulted in a serious injury at log mile 140.82.

Maintenance Review Results

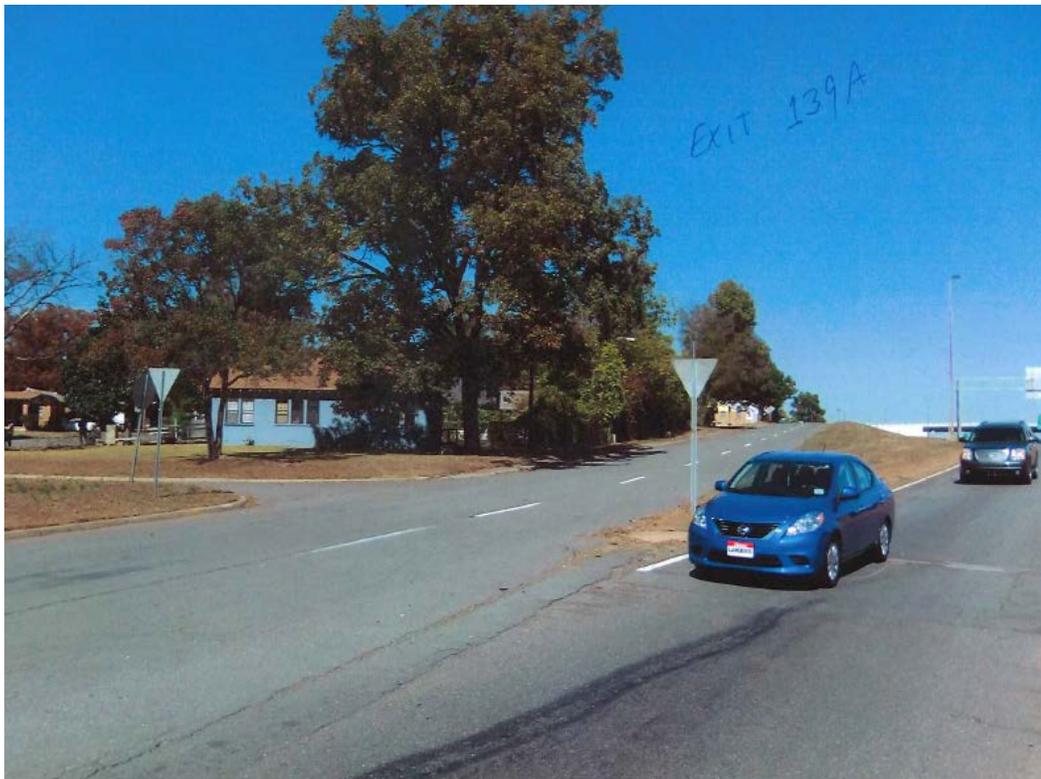
The interchange at Exit 139A was reviewed and in compliance with MUTCD standards. However, some of the signs will be replaced with larger signs to be in compliance with AHTD standards.

The Exit 141A interchange was reviewed and was in compliance with MUTCD standards. However, an additional Wrong Way sign needs to be installed on the ramp and the Keep Right symbol sign needs to be replaced with the Keep Right with arrow sign. The One Way signs also need to be replaced with larger signs. The above changes will bring this interchange into compliance with AHTD standards.

Exit 140A was reviewed and was in compliance with MUTCD standards. However, the Wrong Way sign and the Do Not Enter sign need to be replaced with larger signs to be in compliance with AHTD standards.

The interchange at Exit 140B was reviewed and was in compliance with MUTCD standards. Wrong Way signs and Do Not Enter signs need to be installed on the back of the Stop Signs and Yield Signs at the ramp. Larger Wrong Way signs also need to be installed at the intersection to bring this interchange into compliance with AHTD standards.

Exit 1A on I-630 was also reviewed. This Interchange was in compliance with MUTCD and AHTD standards. However, some signs need to be replaced because of damage to the signs. All of the above improvements will be made by statewide forces as soon as possible.



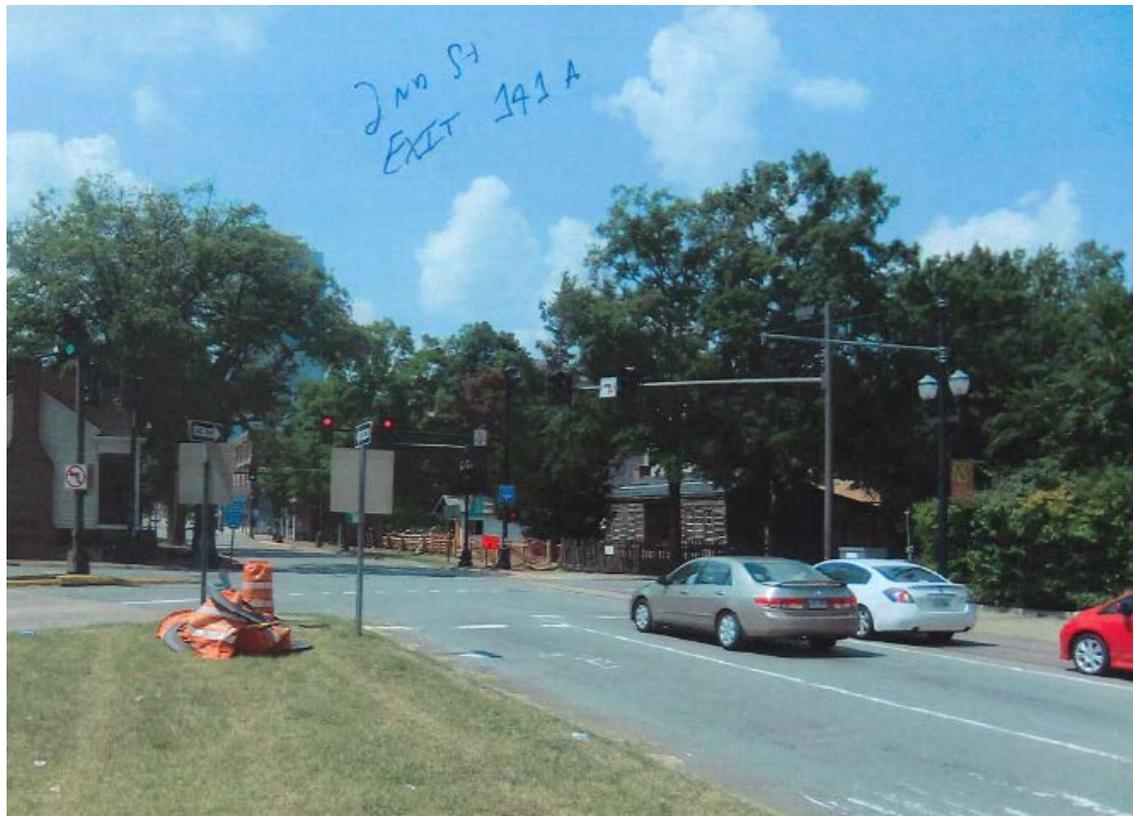
















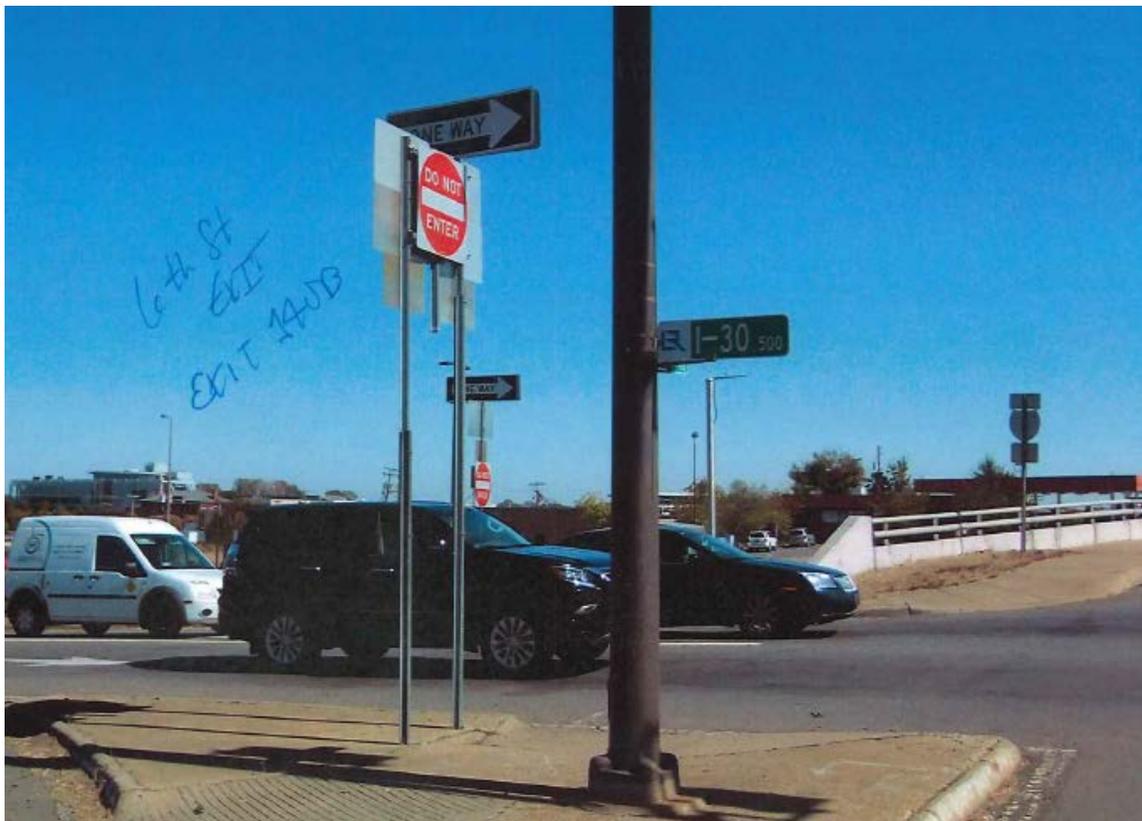


















Interstate 630, Exit 6A in Pulaski County Crash Number 201370897



Maintenance Review

The driver accessed I-630 at Exit 6A and traveled eastbound in the westbound lanes. The driver was involved in a non-injury head on crash at log mile 5.28.

Maintenance Review Results

The interchange at Exit 6A was reviewed. All signs and pavement markings are in place and in compliance with MUTCD and AHTD standards. Some signs will be replaced due to age or condition as soon as statewide forces can get this scheduled.





Interstate 630, Exit 7 in Pulaski County Crash Number 201373701



Maintenance Review

The driver accessed the westbound off ramp traveling east on the westbound ramp. The driver was involved in a possible injury sideswipe opposite direction crash at the 0.30 log mile.

Maintenance Review Results

The interchange at Exit 7 was reviewed. Pavement markings and signs were in compliance with MUTCD standards. However, two 42"x30" Wrong Way signs will be installed 200' from the Baptist Health Drive. The Wrong Way sign on the ramp will be replaced with a larger Wrong Way sign. These modifications will bring this interchange

into compliance with AHTD standards and will be implemented by statewide forces as soon as possible.









Interstate 30, Exit 126 in Saline County Crash Number 201369119



Maintenance Review

The driver accessed I-30 at Exit 126 and traveled westbound in the eastbound lanes. The driver was involved in a serious injury head on crash at log mile 125.55.

Maintenance Review Results

The eastbound off ramp at Exit 126 was reviewed along with the one-way frontage road to the Alexander Road overpass. Pavement markings and signs were in place and in

compliance with MUTCD and AHTD standards. However, additional Wrong Way and Do Not Enter signs will be installed for added safety as soon as possible.





Interstate 30, Exit 116 in Saline County Crash Number 201372407



Maintenance Review

The driver accessed I-30 at Exit 116 and traveled westbound in the eastbound lanes. The driver was involved in a head on crash at log mile 114.91. There were no injuries in this crash.

Maintenance Review Results

The eastbound off ramp at Exit 116 was reviewed which consists of a slip ramp from a two way frontage road. All pavement markings and signs were in place and in compliance with MUTCD and AHTD standards. However, the Wrong Way sign will be

replaced with a larger sign and additional Do Not Enter and Wrong Way signs will be installed to increase safety. These modifications will be done by statewide forces as soon as possible.



Interstate 540 (49), Exit 69 in Washington County Crash Number 201365881



Maintenance Review

The driver accessed I-540 (49) at Exit 69 and traveled southbound in the northbound lanes. The driver was involved in a serious injury head on crash at log mile 68.68.

Maintenance Review Results

The interchange at Exit 69 was reviewed. All pavement markings and signs were in compliance with MUTCD and AHTD standards. No modifications are recommended at this time.



