# George County's Vision Zero Action Plan



Pathway to Vision Zero

**Prepared By:** George County Action Plan Committee

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#### George County Board of Supervisors LARRY MCDONALD, DISTRICT THREE FRANKIE MASSEY, DISTRICT ONE LARRY HAVARD, DISTRICT FOUR KELLY WRIGHT, DISTRICT TWO HENRY COCHRAN, DISTRICT FIVE 329 Ratliff Street Lucedale, Mississippi 39452 601-947-7506 Sept. 06, 2022 Dear George County Residents and Drivers, There is a tragic statistic about driving in and through George County; per capita our auto fatality rate is higher than the State of Mississippi and the National average. We lost 45 lives on George County roadways between the years of 2016 to 2020. In response, the George County Board of Supervisors is forming the Vision Zero Action Plan with the eventual goal of reducing serious bodily injuries and fatal auto accidents to ZERO. At the core of George County's Vision Zero is a commitment to protect human life while acknowledging transportation-related deaths are preventable. The Vision Zero Action Plan recognizes drivers sometimes make mistakes, so our road system and related policies should be designed to minimize the severity of those inevitable mistakes. Vision Zero acknowledges many factors contribute to safe mobility including roadway layout, vehicle speed, driver's behaviors, technology, and weather. Therefore, design and policy should take these safety factors into real consideration. The plan's initial goal is to drop the County's fatal auto accident rate to below the State's average within the next four (4) years. Next, based on this experience, move towards the ultimate goal of reducing auto crashes with serious injuries and deaths to ZERO. I invite you to read and consider the County's initial plan below or on our website www.georgecountyms.com/newsletter . This Action Plan will be further developed in 2023 and will be a regular item of discussion at the Board of Supervisor's meetings moving forward. Your insight and participation is welcomed on this critical issue. Sincerely, **Frankie Massey**

Frankie Massey / 2022 Board President & Vision Zero Action Committee Member

## **Leadership Commitment and Goal Setting**

A review of auto accidents data (2016-2020) clearly shows George County's fatality rate is higher than the State of Mississippi and the National average, per capita. This research and data reinforces the County's commitment to take proactive steps to eliminate all traffic fatalities and severe injuries, while increasing safe travel for all through the County's <u>VISION ZERO ACTION PLAN</u>.



At the core of George County's Vision Zero is a

commitment to protect human life and an acknowledgement that all transportation-related deaths are preventable and unacceptable. This means road system designers and policymakers are expected to improve the roadway conditions, strategies, and related systems to lessen the severity of crashes for all users.

Vision Zero Action Plan recognizes drivers and motorists will sometimes make mistakes, so the road system and related policies should be designed to ensure those inevitable mistakes do not result in severe injuries or fatalities.

Vision Zero acknowledges that many factors contribute to safe mobility including roadway design, speeds, driver's behaviors, technology, and policies and sets clear goals to achieve the shared goal of zero fatalities and severe injuries.

George County's Action Plans primary goal is to reduce the County's fatal auto accident rate to below the State's average in four (4) years, and further, to the eventual goal to reduce all fatal auto accidents and serious injuries to zero. The George County Board of Supervisors approved a Letter of Committed by the Board President at the September 06, 2022 meeting to achieve these significant declines.

#### **Planning Structure**

The George County Board of Supervisors has been activity and formally involved with strategic road safety planning since 2018. Each Fiscal Year the Board reviews and approves a significant road project to improve driver and traffic safety using a combination of state/federal funds and matching County funds. The following projects were all approved as County road safety projects, by the Board:

- 1) MS Hwy. 198 East- Widening & Turn Lane Expansion Project in 2019
- 2) Venture Road Widening & Drainage Project (Joint County/City Project) in 2020
- 3) Scott Road & Hwy. 26 Intersection Project (Joint County/City project) in 2021
- 4) Evanston Road Widening and Turn Lane Expansion Project in 2022
- 5) Beesley Bridge Replacement Project in 2023
- 6) Merrill Bridge Replacement Project in 2023-2024

With the approval of the 2021 Bipartisan Infrastructure Law, and the vast expansion of federal road safety programs, it became clear George County needed to formalize its internal road safety process to reflect federal roadway system planning.

George County began discussion and developing a formal Action Plan in March 2022. Supervisors, the County Engineer, and the Community Development Office started a list of several key road and bridge improvement project. In May 2022, the Board formally selected two roads projects for research and review for possible BIL funding. In July, the Board formally accepted a ranked critical bridge list from the County Engineer for possible BIL funding.

After weeks of meetings and workshops, an initial Committee was officially formed on August 15, 2022, to oversee the Action Plan development, implementation, and monitoring. The committee currently consists of five members, as follows: Board President Frankie Massey, Sheriff Keith Havard, Community Development Director Ken Flanagan, Civil Engineer Michael Brown and County Engineer Bob Diamond.

The preliminary Action Plan was presented to the George County Board of Supervisors at the Sept. 06, 2022 public meeting. The Committee publicly reviewed vital local road accident and fatal vehicle reports from the previous five years. With the Board's approval, the preliminary Action Plan was posted on County's website (new page) and added to the Board's Bi-Monthly Meeting Agenda for discussion and updates.

## **ACTION 1- Accident Research & Safety Analysis**

The Action Plan Committee is undertaking a detailed, county-wide crash study to provide an understanding of traffic crash causes, contributing factors, locations, and roadway characteristics. This study should identify the "High Injury Network" (HIN) and provide the foundation for future Vision Zero initiatives.

An analysis of traffic accidents will provide a starting point for the County's goals by identifying the number of crashes to reduce to zero as well as the unsafe behaviors to change, vulnerable transportation user types, and outreach needs of different community groups.

The traffic accident research began with the Action Committee combining City, County, and State auto accident reports (2016-2020) together into one document. Several long time serving elected officials believes this may the first time all three data sets have been combined into a single accident report.

An initial review of the local data reveals a concerning statically fact; George County's accident fatality rate is 10 percent higher than the State's average and considerably higher than the National average, per capita. This fatality rate was hidden in plain sight with accident reports divided among three government agency. The Action Committee's efforts have identified vital crash numbers for planning and a starting point.

The accidents reports reveal a complicated set of factors for auto fatalities- speeding, state/federal highway accidents, auto passenger deaths, light truck crashes, and road departures (crossing the line). Further data collection and review by transportation professional is immediately needed. The following tables provide the number of crash fatalities by person in George County, Mississippi.

## <u>Table 1 – Crash Fatalities in George County, MS</u>

(Source: <a href="https://cdan.nhtsa.gov/SASStoredProcess">https://cdan.nhtsa.gov/SASStoredProcess</a>)\*

Fatality Type		Fa	atalitie	s		Fatalities Per 100,000 Population				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Total Fatalities (All Crashes)*	9	12	7	7	7	38.05	50.13	29.12	28.65	28.66
(1) Alcohol-Impaired Driving (BAC=.08+) Fatalities		з	2	1	2	8.46	12.53	8.32	4.09	8.19
(2) Single Vehicle Crash Fatalities	2	5	4	5	6	8.46	20.89	16.64	20.46	24.56
(3) Large Truck Involved Crash Fatalities		З	1	0	0	4.23	12.53	4.16	0.00	0.00
(4) Speeding Involved Crash Fatalities		1	0	3	1	8.46	4.18	0.00	12.28	4.09
(5) Rollover Involved Crash Fatalities	1	2	2	2	1	4.23	8.36	8.32	<mark>8.1</mark> 8	4.09
(6) Roadway Departure Involved Crash Fatalities	3	8	2	5	5	12.68	33.42	8.32	20.46	20.47
(7) Intersection (or Intersection Related) Crash Fatalities	3	1	0	0	0	12.68	4.18	0.00	0.00	0.00
Passenger Car Occupant Fatalities	6	6	4	3	4	25.37	25.07	16.64	12.28	16.38
Light Truck Occupant Fatalities	3	4	1	2	1	12.68	16.71	4.16	<mark>8.1</mark> 8	4.09
Motorcyclist Fatalities	0	1	0	1	0	0.00	4.18	0.00	4.09	0.00
Pedestrian Fatalities	0	0	2	1	2	0.00	0.00	8.32	4.09	<mark>8.19</mark>
Bicyclist (or Other Cyclist) Fatalities	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00

(1) Crash Involved at Least One Driver or Motorcycle Rider With a BAC of .08 or Above

(2) Crash Involved Only One Vehicle In Transport

(3) Crash Involved at Least One Large Truck

(4) Crash Involved at Least One Vehicle Speeding

(5) Crash Involved at Least One Vehicle that Rolled Over

(6) Crash Involved at Least One Vehicle that Departed the Roadway (FHWA Definition)

(7) Crash Occured Within an Intersection or Within the Approach to an Intersection

\*A Fatality Can Be in More Than One Category. Therefore Sum of the Individual Cells Will Not Equal the Total Due to Double Counting

## \*Table 1 does not included 3 fatalities recorded by the George County Sheriff's Department between the years 2016-2020 on three separate rural roads.

## Table 2 – Crash Fatalities by Person Type and Race/HispanicOrigin in George County, MS

Person Type by Rac	2016	2017	2018	2019	
Occupants (All Vehicle Types)	White Non-Hispanic	7	10	5	6
	Black, Non-Hispanic	2	1	0	0
	All Other Non-Hispanic or Race	0	1	0	0
	Total	9	12	5	6
Non-Occupants (Pedestrians, Pedalcyclists and Other/Unknown Non-Occupants)					
	White Non-Hispanic	0	0	2	1
	Black, Non-Hispanic	0	0	0	0
	All Other Non-Hispanic or Race	0	0	0	0
	Total	0	0	2	1
Total					
	White Non-Hispanic	7	10	7	7
	Black, Non-Hispanic	2	1	0	0
	All Other Non-Hispanic or Race	0	1	0	0
	Total	9	12	7	7

(Source: https://cdan.nhtsa.gov/SASStoredProcess)\*

2020 Race/Hispanic Origin Data is Not Yet Complete

\*Table 2 does not included 2 fatalities recorded by the George County Sheriff's Department between the years 2016-2019 on two separate rural roads.

In comparison George County, MS crash fatality rate in 2020 was 28.66 per 100,000 populations; according to the Fatality Analysis Reporting System (FARS). The State of Mississippi's average fatality rate in 2020 was 25.35 per 100,000 population; one of the highest in the nation. The average fatality rate in the United States in 2020 was 11.78 per 100,000 populations. It is apparent using this standard matrix that George County, MS fatality rate is higher than the State of Mississippi and the National average.



## **Figure 1 – Location Map of Fatal Crashes George County, MS**

(Source: <u>https://cdan.nhtsa.gov/SASStoredProcess</u>) & (Source: George County Sheriff's Department Accident Reports)

Figure 1 contains a location map of crash fatalities in George County, MS. The data includes crash fatalities ranging from 2016 to 2020. Fatalities shown by year are as follows: 2016 in ORANGE, 2017 in YELLOW, 2018 in BLUE, 2019 in GREEN, and 2020 in RED. For larger format map, see Page 26.

#### Figure 2 – Location Map of High Injury Network in George Co., MS



Figure 2 contains a location map of the <u>High Injury Network (HIN)</u> in George County. The roadways and intersections highlighted in **RED** depict the High Injury Network areas. These areas consist of multiple crash injuries or fatalities between the years 2016 and 2020 and/or roads containing low sufficient bridges. The HIN was created through data and crash reports from MDOT, the George County Sherriff's Department, and the George County Engineer. This map serves as a guide for safety problems and project prioritization in George County. For larger format map, See Page 25

## **ACTION 2- Improve Roadway Safety Features**

Using the crash analysis as a physical guidance, the Action Committee has created a list of priority safety features for road improvements. Local data reveals Roadway Departures as a significant cause of fatal accidents and crashes with serious injuries.

Many factors contribute to drivers leaving the roadway or straying from their lane. These include driver fatigue and drowsiness; distracted driving; poor traction between vehicles and road surfaces and poor visibility in adverse weather conditions. Driver fatigue can occur when long, monotonous stretches of highway reduce the driver's concentration. These factors are sometimes compounded by driving too fast. Improving road surface visibility is an Action Item the County can address in the short term with long range life saving benefits.

#### <u>Sharp Turn Signage</u>

There are several signing options that road agencies should consider installing at a horizontal curve, especially curves with attributes that data or experience identify as potentially problematic. Agencies should apply signing devices uniformly, based on the sharpness of the curve. This uniformity provides drivers with a consistent message on which to base their expectations. The MUTCD provides specific recommendations and requirements for uniform application of many of these basic devices. The MUTCD requires that the use of warning signs shall be based on an engineering study or engineering judgment (additional info on Page 19-20).

#### **Rumble Strips**

Rumble strips are an effective countermeasure for reducing roadway departure crashes. The noise and vibration produced by rumble strips alert drivers when they leave the traveled way. Rumble stripes is the term used for rumble strips painted with a "retroreflective" coating to increase the visibility of the pavement edge at night and during inclement weather conditions (additional info on Page 21).

#### **Reflectors/Pavement Markings**

Adequately maintained retroreflective pavement markings improve nighttime highway visibility and reduce the risk of crashes by bouncing light from vehicle headlights off of the traffic control device and back toward the vehicle and the driver's eyes. This makes markings appear brighter and easier to see and read at night. Because the retroreflective properties of pavement markings deteriorate relatively quickly, highway agencies need to actively manage their maintenance, remarking as needed in order to ensure that they remain clearly visible at night (additional info on Page 23-24).

#### Speed limits/Signage

Two-thirds (65 percent) of these fatal crashes occur in rural areas according to the Department of Transportation. A data review of George County's fatal crashes shows speeding is a significant factor. The management of speed through appropriate speed limits is an essential element of highway safety. Appropriate speed limits are a prerequisite for effective and sustainable speed management. In terms of traffic law, speed limits should reflect the maximum reasonable and

safe speed for normal conditions. If lower speed limits are desired, then engineering and other measures should be implemented that reduce speeds to a level that would support a lower limit (additional info on Page 22).

## **ACTION 3- Evaluate and Improve Bridges**

A significant amount of George County's roads are within the vast watersheds of the Pascagoula River and the Escatawpa River, and their major tributaries. Although both rivers are valuable natural resources, these watersheds have required George County to build, install, and maintain 89 separate roadway bridges.

This is a relative high number of bridges for a small rural county with a current population of 24,000 residents. This overall bridge count does not include the hundreds of large drainage culverts serving as a paved roadway span over dozens of small tributaries and creeks throughout the watersheds and low lying areas within the Action Plan.

The George County Board of Supervisors has been actively and formally involved in strategic bridge planning since 2018. Each fiscal year the Board reviews and approves a significant bridge project for improved driver and traffic safety utilizing a combination of state/federal funds and matching County funds.

With the approval of the 2021 Bipartisan Infrastructure Law, and the vast expansion of federal bridge safety programs, it became clear George County needed to formalize its internal road safety process to reflect federal roadway system planning.

George County began discussing and developing a formal Action Plan in March 2022. Supervisors, the County Engineer, and the Community Development Office started a list of improvement projects. The County developed a list of priority bridges for modification per the findings of weight evaluation, traffic counts, and crash data review.

Below is a partial list showing the George County bridges with the lowest sufficiency ratings.

Asset Code	NBI 7: Facility Carried by Structure	NBI 6A: Feature Intersected: Narrative	ADT	Substructure Type	Sufficiency Rating	Open/ Posted
SA200000000065	BROOME SCHOOL ROAD	BRIDGE BRANCH	200	TIMBER	31.6	Posted
SA200000000051	BEESLEY ROAD	LYONS BRANCH	50	TIMBER	36.0	Posted
SA200000000083	MIRACLE LANE	PREE CREEK	20	TIMBER	40.1	Posted
SA200000000054	TOM HEMPSTEAD ROAD	LIVE STREAM	50	TIMBER	44.0	Posted
SA200000000021	SALEM SCHOOL ROAD	MCLELLAND LAKE	50	TIMBER	52.4	Posted
SA200000000031	FIG FARM ROAD	TOPPLEY BRANCH	450	TIMBER	56.8	Posted
SA200000000036	RIVER ROAD	REEDY CREEK	780	TIMBER	57.3	Posted
SA200000000011	BEAVER DAM ROAD	BIG CREEK	1000		64.5	
SA200000000047	BARTON AGRICOLA RD	BIG CEDAR CREEK	860		66.1	
SA200000000059	VESTRY ROAD	LIVE STREAM	70	TIMBER	68.9	
SA200000000050	BISMARK RD.	LYONS BRANCH	50	TIMBER	71.3	Posted
SA200000000071	SALLY PARKER ROAD	BRANCH OF WHITES CREEK	310	STEEL	72.7	1
SA200000000060	RED CREEK ROAD	RED CREEK	280		76.5	
SA200000000077	SALEM SCHOOL ROAD	BLACK CREEK	50	TIMBER	76.6	
SA200000000034	RIVER ROAD	BIG CREEK	340		78.6	· · · · · · · · · · · · · · · · · · ·
SA200000000004	BEAVER CREEK ROAD	LIVE STREAM	410	STEEL	79.8	Posted
SA200000000068	VESTRY ROAD	COOPER MILL CREEK	70	TIMBER	80.0	

Many of the roadways throughout the County are incapable of safely carrying the level of service motorist required due to the increases in population. Narrow roadways and bridges with inadequate signage are noticeable safety hazards. Low weight bridges restrict the flow of commerce, emergency vehicle response times, and safety of school busses.

In July-August 2022, the Board formally accepted a ranked critical bridge list from the County Engineer for possible funding and future planning. The following bridge projects were approved in 2022, by the Board:

#### 1) Beesley Bridge Replacement Project- Construction to begin in 2023

2) Merrill Bridge Replacement Project- Construction to begin in 2023/2024

Project timelines are estimated, and dependent upon available funding acquired from general funds, grants, and legislative efforts.

#### **Engagement and Collaboration**

George County Board of Supervisors regularly has citizens appear in board meetings to provide information on areas that they feel roadway infrastructure improvements need to be made. Following meetings efforts are made to remedy the problematic areas or a plan of action is made on how to address these issues. After review of the action plan George County actively seeks funding opportunities to adequately address the infrastructure requirements.

#### **Equity Considerations**

The Action Plan does not and shall not discriminate on the basis of race, color, religion (creed), gender, gender expression, age, national origin (ancestry), disability, marital status, sexual orientation, or military status. Rather the Action Plan aims at improving the safety and quality of life for all motorists and pedestrians with the goal of zero fatalities to all. The Action Plan shall not be directed to serve or promote a single community and strives for equity inclusiveness.

The tables below outline the population data and initial equity assessment for each district in George County, MS. Data obtained from 2020 Census.

GEORGE COUNTY, MS POPULATION	District 1	District 2	District 3	District 4	District 5
Total:	4,694	5,602	5,378	4,682	3,994
Population of one race:	4,539	5,405	5,162	4,495	3,832
White alone	4,324	5,200	4,612	3,853	3,123
Black or African American alone	80	89	463	518	632
American Indian and Alaska Native alone	25	13	24	15	19
Asian alone	17	8	23	10	21
Native Hawaiian and Other Pacific Islander alone	0	0	0	0	1
Some Other Race alone	93	95	40	99	36
Population of two or more races:	155	197	216	187	162

## **Table 3 – Population per District George County, MS**

## **Table 4 – Equity Assessment per District George County, MS**

GEORGE										
COUNTY, MS	Dis	District 1 Di		histrict 2 District 3		District 4		District 5		
POVERTY	DIS		1015		1015	ti iet 5	21501100		District	
LEVEL										
Label	Total	% below poverty level	Total	% below poverty level	Total	% below poverty level	Total	% below poverty level	Total	% below poverty level
Population for										
whom poverty										
status is determined	4,928	12.1%	5,158	23.2%	5,110	7.7%	4,660	19.7%	3,600	28.6%
GENDER										
Male	2,412	13.1%	2,438	17.7%	2,379	8.9%	2,503	19.9%	1,833	31.0%
Female	2,516	11.2%	2,720	28.2%	2,731	6.7%	2,157	19.5%	1,767	26.1%
RACE AND HISPANIC OR LATINO ORIGIN										
White alone	4,820	12.2%	4,901	22.2%	4,161	8.7%	4,378	15.7%	2,947	22.3%
Black or African	10	100.51				0.05	<b>a</b> =a	0.1.0		
American alone	10	100.0%	67	52.2%	642	0.0%	270	84.8%	601	61.9%
American Indian and Alaska Native alone	98	0.0%	0	-	0	-	0	-	0	-
Asian alone	0	-	0	-	175	0.0%	0	-	39	0.0%
Native Hawaiian and Other Pacific Islander alone	0	_	0	_	0	_	0	_	0	_
Some other race	Ŭ		Ū		Ŭ		Ŭ		Ŭ	
alone	0	-	32	100.0%	17	0.0%	10	0.0%	0	_
Two or more races	0	-	158	29.1%	115	28.7%	2	0.0%	13	0.0%
Hispanic or Latino origin (of any race)	196	67.9%	129	52.7%	248	3.2%	91	81.3%	23	0.0%
White alone, not										
Hispanic or Latino	4,624	9.8%	4,865	21.6%	3,994	9.1%	4,297	14.3%	2,924	22.5%
EDUCATIONAL ATTAINMENT										
and over	3,045	7.2%	3,289	22.5%	3,692	9.4%	3,067	17.1%	2,266	26.9%
Less than high school graduate	551	25.2%	608	31.1%	406	28.6%	331	47.4%	439	39.0%
High school graduate (includes equivalency)	1,015	4.6%	1,157	31.2%	1,216	6.1%	1,438	10.8%	737	29.2%
Some college, associate's degree	1,109	2.9%	1,003	10.7%	1,400	3.0%	885	19.1%	855	23.4%
Bachelor's degree or higher	370	0.0%	521	15.7%	670	17.3%	413	10.7%	235	9.8%
EMPLOYMENT STATUS										
Civilian labor force										
16 years and over	2.196	8.0%	2.019	15.2%	2,225	3.5%	1.647	23.7%	1.227	11.0%
Employed	1.947	8.3%	1.632	11.9%	2.068	1.2%	1.444	13.2%	1.048	4.3%
Male	969	2.0%	1.056	8.0%	1.084	1.3%	878	11.2%	611	5.4%
Female	978	14.6%	576	19.1%	984	1.1%	566	16.4%	437	2.7%
Unemployed	249	5.2%	387	28.9%	157	33.8%	203	98.5%	179	50.3%
Male	123	0.0%	145	20.7%	121	43.8%	129	100.0%	54	83.3%
Female	126	10.3%	242	33.9%	36	0.0%	74	95.9%	125	36.0%

### **Policy and Process Changes**

The Action Plan is updated to include policies, plans, guidelines and standards as required. Adoption of new policies, guidelines or standards shall be made when available.

#### **Strategy and Project Selections**

The purpose of the Action Plan is to identify ways to improve roadway infrastructure to reduce vehicular fatalities for all motorists and pedestrians to zero. Many of the roadways throughout the county are incapable of safely carrying the level of service motorist require due to the increases in population. Narrow roadways and bridges with inadequate signage are noticeable safety hazards. Roadways requiring maintenance due to failed drainage crossings and sub-bases are constant obstacles to motorists. Low weight bridges restrict the flow of commerce, emergency vehicle response times, and safety of school busses.

Outlined below are priorities believed to achieve this goal:

#### 1. Salem/Salem School Road Surface Project

Project Details:

- Pave Approximately 3 Miles of Dirt Road
- Install Soil-Cement Base for Roadway
- Install New Cross Drainage Systems
- Install New Striping and Signage

#### Project Goals:

- Zero Fatalities on Roadway
- Improve Roadway Surface to Provide Roadway Stability
- Prevent Erosion and Sediment from Entering Waterway Systems

#### 2. Vestry Road Widening Project

- Project Details:
  - Widen Vestry Road to a 22 Feet Wide Roadway
  - Overlay Approximately 6.5 Miles of Roadway
  - Install New Striping and Signage
  - Repair Failing Cross Drainage Systems

Project Goals:

- Zero Fatalities on Roadway
- Safely transport local commodities through the community.
- Provide a safe roadway for Motorist, Pedestrians, and Emergency Vehicles.

#### 3. Stonecypher - Dean Nursery Road Connector

Project Details:

- Connect Stonecypher Road and Dean Nursery Road to Hwy 613 and Barton Agricola Road
- Improve drainage ditching in low lying areas frequently inundated with water.
- Replace Cross Drainage Systems
- Overlay Approximately 9 Miles of Roadway
- Install New Striping and Signage

Project Goals:

- Zero Fatalities on Roadway
- Connection of Collector Roads to Arterial Roadways
- Relieve Frequent Flooding of Roadways

#### 4. Crossroads/Merrill Road Rehabilitation

Project Details:

- HMA Overlay Approximately 7.3 Miles of DBST Surface
- Improve Roadway Drainage for Areas Demonstrating Frequent Standing Water
- Install New Base Structure in Areas Where Failures Occur
- Install New Striping and Signage

Project Goals:

- Zero Fatalities on Roadway
- Improvement of Roadway Surface to Provide General Roadway Safety
- Alleviate Standing Water in Roadway and Ditches

#### **Progress and Transparency**

Quarterly meetings shall be held to track the progress of the Action Plan. Project statuses and updates should be reported and noted. Information on all efforts and updates will be available to the public at the George County Board of Supervisors Office, 329 Ratliff Street, Lucedale, MS, 39452. An annual public meeting will be held at the office referenced above. Publication of the meeting will be made in the local newspaper and posted on the George County Website in advance of the meeting. The Action plan is available online at www.georgecountyms.com/newsletter.

## **Extra Safety Resource Materials**

More than half (57 percent) of U.S. traffic fatalities occur after a driver crosses the edge or center line of a roadway.

#### Action 2- Sharp Turn Signage (Page 11)

There are several signing options that road agencies should consider installing at a horizontal curve, especially curves with attributes that data or experience identify as potentially problematic. Agencies should apply signing devices uniformly, based on the sharpness of the curve. This uniformity provides drivers with a consistent message on which to base their expectations. The *MUTCD* provides specific recommendations and requirements for uniform application of many of these basic devices. The *MUTCD* requires that the use of warning signs shall be based on an engineering study or engineering judgment. Factors to consider include:

- The difference between the posted speed limit and recommended advisory speed.
- Geometric features of the curve to include its length, radius, shoulders and roadside features.
- Unexpected geometric features within the curve, such as an intersection, change in grade, change in curve radius, or visual cues that contradict the roadway alignment.
- A sudden change in alignment after many miles of consistently straight roadway.
- Traffic volume.
- Crash data.

Many curves need only the basic horizontal alignment warning signs. The decision to add one or more of the other basic or enhanced treatments at a specific curve will be influenced by the factors noted above, but should be prefaced by an assessment at the system and corridor level. The assessment may reveal unnecessary devices that should be removed, improperly placed devices that should be moved, or required or recommended devices that are missing. Providing uniformity may be all that is necessary to address an identified safety concern. If the problem is not resolved by using a uniform application, then additional devices should be considered.

The following discussion provides a summary of basic and enhanced signage, followed by a discussion on maintenance considerations applicable to signs. All example signs are from the *MUTCD*.

#### BASIC SIGNING COUNTERMEASURES

#### **Advance Warning Signs**

Warning signs call attention to unexpected conditions on or adjacent to a roadway. The *MUTCD* prescribes several Horizontal Alignment signs to give drivers advance warning of a horizontal curve, as illustrated in Figure 20.

For a single curve section, use one of these four signs in advance of the curve:

• Turn (W1-1).

- Curve (W1-2).
- Hairpin Curve (W1-11).
- 270-degree Loop (W1-15).

For sections with more than one curve in close proximity, use one of these three warning signs in advance of the first curve:

- Reverse Turn (W1-3).
- Reverse Curve (W1-4).
- Winding Road (W1-5).

#### **Design and Application**

The *MUTCD* requires the use of a warning sign be based on an engineering study or engineering judgment, but the *MUTCD* also has specific requirements for warning signs based on traffic volume and curvature. For freeways, expressways, and roadways with more than 1,000 AADT that are functionally classified as arterials or collectors, refer to Table 2C-5 from the 2009 *MUTCD* (shown in Table 4) to determine those signs that are required or recommended for use based on the difference in posted speed limit and advisory speed. This table provides uniform guidelines for placement of not only advance warning signs but also chevrons, which provide a consistent message to the driver if applied uniformly. The criteria in Table 2C-5 may also be used for local roads and those with less than 1,000 ADT, based on engineering judgment. Warning signs sizes should follow *MUTCD* Tables 2C-2 and 2C-3, and the signs should be located per Table 2C-4 (*MUTCD*, Section 2C). Further information on design and application is discussed under the individual devices.

For horizontal curves where a Horizontal Alignment sign is not required or recommended, engineering judgment should be applied to determine whether a sign is needed. For instance, a roadway with center line and edge line pavement markings, where the alignment change is not unexpected and where there is no crash history, may not need a sign. For those curves that do need advance warning signs, use the Curve sign unless the advisory speed is 30 mph or less, in which case the Turn sign is required. Use the Hairpin Curve sign when the change in horizontal alignment is 135 degrees or more. The Loop sign indicates a change of approximately 270 degrees in direction, such as cloverleaf interchange ramps, and is not addressed in this publication.

#### Action 2- Rumble Strips

Rumble strips are an effective countermeasure for reducing roadway departure crashes. The noise and vibration produced by rumble strips alert drivers when they leave the traveled way. Rumble stripes is the term used for rumble strips painted with a retroreflective coating to increase the visibility of the pavement edge at night and during inclement weather conditions.

#### **Types of Rumble Strips**

- Center line rumble strips are an effective countermeasure to reduce head-on collisions and opposite-direction sideswipes (often referred to as cross-over or cross- center line crashes). Center line rumble strips are primarily used to warn drivers whose vehicles are crossing center lines of two-lane, two-way roads. <u>FHWA Technical Advisory T 5040.40</u>: <u>Center Line Rumble Strips</u> presents guidelines for use and information on the purpose and effectiveness of center line rumble strips. Additionally it provides application considerations, design and installation information, and suggestions for mitigating adverse effects and public outreach.
- Shoulder rumble strips are an effective means of reducing run-off-the-road crashes. They are primarily used to warn drivers when they have drifted from their lane. Edge line rumble strips are a variation on shoulder rumble strips and place the pavement marking within the rumble strip, improving the visibility of the marking. These are more commonly used on roads with narrow shoulders. FHWA Technical Advisory T 5040.39: Shoulder and Edge Line Rumble Strips presents guidelines for use and information on the purpose and effectiveness of shoulder and edge line rumble strips. Additionally it provides application considerations, design and installation information, and suggestions for mitigating adverse effects and public outreach.
- Transverse rumble strips are used to alert drivers of a need to slow down or stop, or to other upcoming changes that may not be anticipated by an inattentive driver. These rumble strips are placed in the travel lane perpendicular to the direction of travel. Typical locations for these rumble strips are on approaches to intersections, toll plazas, horizontal curves, and work zones. Studies that document the safety effectiveness of transverse rumble strips can be found in the <u>CMF Clearinghouse</u>. Further information on transverse rumble strips is not currently covered on this web site since these rumble strips are not typically intended to reduce roadway departures.

#### **Safety Statistics**

Research has shown that installing rumble strips can reduce severe crashes. The following tables illustrate the safety effectiveness of center line and shoulder rumble strips. This information, along with additional statistics, is contained in <u>NCHRP 641: Guidance for the Design and</u> <u>Application of Shoulder and Center Line Rumble Strips. 2009.</u>

Additional information is available via the Crash Modification Factors (CMF) Clearinghouse. The <u>Crash Modification Factors (CMF) Clearinghouse</u> is an online repository of CMFs, along with supporting documentation, to help transportation engineers identify the most appropriate countermeasure for their safety needs.

#### Action 2- Speed limits

The management of speed through appropriate speed limits is an essential element of highway safety. Appropriate speed limits are a prerequisite for effective and sustainable speed management. In terms of traffic law, speed limits should reflect the maximum reasonable and safe speed for normal conditions. That is speed limits should be acceptable as reasonable by most drivers and separate high and low risk speed behavior. If lower speed limits are desired, then engineering and other measures should be implemented that reduce speeds to a level that would support a lower limit.

- Manual on Uniform Traffic Control Devices Guidance
- <u>USLIMITS Expert Speed Zoning Advisor</u>
- Methods and Practices for Setting Speed Limits: An Informational Report
- Speed Concepts: Informational Guide

#### Manual on Uniform Traffic Control Devices

The Manual on Uniform Traffic Control Devices (MUTCD) is the national standard for signing on all highways. <u>Sections 2B.13-16</u> address regulatory speed limits and <u>Section 2C</u> addresses advisory speed signs. School zone speed limit signs are discussed in <u>Section 7B</u> and work zone speed limits in <u>Section 6C</u>.

#### **USLIMITS**

<u>USLIMITS2</u> is a web based tool designed to help practitioners set credible and consistent speed limits for specific segments of roads. It is applicable to all types of roads ranging from rural local roads and residential streets to urban freeways. The original USLIMITS was developed under <u>NCHRP Project 3-67</u> in 2006. FHWA recently adopted the program with enhancements and made it available with user/customer support on the FHWA server at <u>http://safety.fhwa.dot.gov/uslimits/</u>.

User-friendly, logical, and objective, USLIMITS2 is of particular benefit to local communities and agencies without ready access to engineers experienced in conducting speed studies for setting appropriate speed limits. For experienced engineers, USLIMITS2 can provide an objective second opinion and increase confidence in speed limit setting decisions. Users input factors including route type, section length, annual average daily traffic, 50th and 85th percentile speeds, statutory speed limit, and terrain, among others. They receive a recommended speed limit and a list of issues that might be further investigated. Users can save their project file and/or create Word and Excel versions of their reports.

#### Action2- Pavement Markings

#### Overview

Adequately maintained retroreflective pavement markings improve nighttime highway visibility and reduce the risk of crashes by bouncing light from vehicle headlights off of the traffic control device and back toward the vehicle and the driver's eyes. This makes markings appear brighter and easier to see and read at night. Because the retroreflective properties of pavement markings deteriorate relatively quickly, highway agencies need to actively manage their maintenance , remarking as needed in order to ensure that they remain clearly visible at night..

On August 5, 2022, FHWA published a final rule in the federal register adding new provisions to the Manual on Uniform Traffic Control Devices (MUTCD) relating to maintaining minimum levels of pavement marking retroreflectivity. The new provisions in this final rule will be incorporated into Revision 3 of the 2009 edition of the MUTCD.

• <u>Final Rule Federal Register Notice</u> Published on August 5, 2022 and effective September 6, 2022, this final rule provides background information explaining the new provisions in the MUTCD regarding Maintaining Minimum Pavement Marking Retroreflectivity.

Reducing transportation-related fatalities and serious injuries is a primary goal of FHWA.[1] The purpose of including a minimum retroreflectivity standard in the MUTCD [2] is to advance safety and mobility by assisting with the nighttime visibility needs of drivers. This final rule addresses driver visibility needs in terms of pavement markings. The final rule for maintaining minimum levels of retroreflectivity for traffic signs was issued on December 21, 2007, at 72 FR 72574. Both rules are based on older driver needs with an average age of 62 years. While the minimum retroreflectivity levels in the rule are based on driver needs, the improvement in markings that will result from this rule will also improve the infrastructure's ability to work with advanced driver assistance systems (ADAS) and automated driving systems (ADS).

#### Summary of the Major Provisions of the Regulatory Action in Question

This final rule establishes minimum maintained retroreflectivity levels for longitudinal pavement markings on all roads open to public travel with speed limits of 35 mph or greater. The final rule requires applicable agencies or officials to implement a method for maintaining pavement marking retroreflectivity at or above minimum levels, providing a 4-year compliance date for implementing the method. It provides options for agencies on roads where illumination or low volumes make the markings less critical and for certain types of markings. It also acknowledges short-term allowances of subminimum retroreflectivity based on special circumstances. As with the current MUTCD requirements for sign retroreflectivity, this final rule does not include compliance dates for replacement of pavement markings that do not meet minimum retroreflectivity levels. Pavement marking replacement schedules will be based on the methods established by agencies or officials.

#### **Costs and Benefits**

FHWA has estimated the costs and potential benefits of this rulemaking and has determined that this final rule fulfills the requirements under Section 406 of the Department of Transportation and Related Agencies Appropriations Act, 1993 (Pub. L. 102-388; October 6, 1992), while also providing flexibility for agencies. The estimated national costs and benefits are documented in the updated economic analysis report titled Economic Impacts of Minimum Maintained Levels of Pavement Marking Retroreflectivity in the MUTCD, and the flexibility for each agency to choose a method that works best for them to implement the new standard is documented in the new publication titled Methods for Maintaining Pavement Marking Retroreflectivity.

The MUTCD already requires that pavement "markings that must be visible at night shall be retroreflective unless ambient illumination assures that the markings are adequately visible," and that "all markings on interstate highways shall be retroreflective." However, the MUTCD does not currently require that pavement markings meet a minimum level of retroreflectivity. The changes in the MUTCD will provide drivers the benefit of pavement markings that are maintained at or above retroreflectivity levels supported by research on driver needs. In addition, the improved maintenance of pavement markings as a result of this final rule is expected to benefit all road users and ADAS and ADS technology.

The economic analysis provides a national estimate of the costs of implementing this rulemaking and a break-even analysis for maintaining marking retroreflectivity at the established levels. Costs for individual agencies were not computed because they will vary based on factors such as the amount of pavement marking mileage subject to the standards and current pavement marking practices. The analysis estimates one-time national costs in the first year of \$16.17 million for all affected State and local agencies to establish maintenance methods, purchase necessary equipment, and implement their method the first time. In subsequent years, these agencies are expected to incur increased costs nationwide totaling \$29.07 million annually as a result of this rule. These annual costs include \$3.44 million in activities to assess or manage markings as a result of this rulemaking, including replacement of equipment. Although this final rule has no compliance dates for replacing markings, the annual costs also include pavement marking replacement expenditures of approximately \$25.63 million per year beyond current expenditures.

A thorough review of research indicates crashes are typically reduced by the presence of longitudinal pavement markings, and this rulemaking is expected to improve the nighttime presence of these markings, particularly where they are not currently well maintained. Therefore, FHWA believes the improved maintenance of pavement marking retroreflectivity as a result of this rule will provide some reduction in severe crashes. However, since the current levels of pavement marking retroreflectivity are not well known, particularly at the time and location where crashes occur, it is not possible to quantify the benefit specifically attributable to this final rule. As documented in the economic analysis, the most likely effect would be to reduce some of the crashes occurring in dark, unlighted conditions, which result in approximately 10,000 lives lost annually. The break-even analysis indicates that the rule will achieve benefits equal to costs if it saves three lives annually.



![](_page_25_Figure_0.jpeg)