

**Joint Legislative Committee on Performance
Evaluation and Expenditure Review (PEER)**

Report to
the Mississippi Legislature



**Effects of Deficient Bridges on Selected
Mississippi Public School Districts' Bus
Routes**

PEER: The Mississippi Legislature's Oversight Agency

The Mississippi Legislature created the Joint Legislative Committee on Performance Evaluation and Expenditure Review (PEER Committee) by statute in 1973. A joint committee, the PEER Committee is composed of seven members of the House of Representatives appointed by the Speaker and seven members of the Senate appointed by the Lieutenant Governor. Appointments are made for four-year terms, with one Senator and one Representative appointed from each of the U. S. Congressional Districts and three at-large members appointed from each house. Committee officers are elected by the membership, with officers alternating annually between the two houses. All Committee actions by statute require a majority vote of four Representatives and four Senators voting in the affirmative.

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The Committee assigns top priority to written requests from individual legislators and legislative committees. The Committee also considers PEER staff proposals and written requests from state officials and others.

PEER Committee
Post Office Box 1204
Jackson, MS 39215-1204

(Tel.) 601-359-1226
(Fax) 601-359-1420
(Website) <http://www.peer.state.ms.us>

The Mississippi Legislature

Joint Committee on Performance Evaluation and Expenditure Review

PEER Committee

SENATORS
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RAY ROGERS
PERCY W. WATSON

TELEPHONE:
(601) 359-1226

FAX:
(601) 359-1420

Post Office Box 1204
Jackson, Mississippi 39215-1204

James A. Barber
Executive Director

www.peer.state.ms.us

OFFICES:
Woolfolk Building, Suite 301-A
501 North West Street
Jackson, Mississippi 39201

November 17, 2015

Honorable Phil Bryant, Governor
Honorable Tate Reeves, Lieutenant Governor
Honorable Philip Gunn, Speaker of the House
Members of the Mississippi State Legislature

On November 17, 2015, the PEER Committee authorized release of the report entitled **Effects of Deficient Bridges on Selected Mississippi Public School Districts' Bus Routes.**

A handwritten signature in cursive script that reads "Becky Currie".

Representative Becky Currie, Chair

This report does not recommend increased funding or additional staff.

Table of Contents

Letter of Transmittal	i
Executive Summary	vii
Introduction	1
Authority	1
Problem Statement.....	1
Scope and Purpose.....	2
Scope Limitations	2
Method	4
Background	6
What is the role of school districts in providing transportation to students?.....	6
What is a bridge?.....	7
What is a deficient bridge?.....	7
Who owns, inspects, and repairs bridges in Mississippi?.....	10
Financial Effects of Deficient Bridges on School Districts’ Transportation Expenditures.....	12
What school districts did PEER select for financial analysis?.....	12
How did deficient bridges affect bus routes in the school districts selected for financial analysis?.....	13
How did PEER estimate the cost to detour around deficient bridges in the selected school districts?.....	15
What are the financial effects of school bus detours around deficient bridges in the selected districts?.....	16
How do the detour costs incurred by school districts compare to the repair or replacement costs of the deficient bridges causing detours?.....	19
Potential Safety Issues Regarding Deficient Bridges and School Districts’ Bus Routes	21
Why are school districts using bus routes that cross posted bridges?	21
Do school buses meet state weight guidelines?	28
Conclusion and Recommendations	30
Conclusion	30
Recommendations	31

Table of Contents (continued)

Appendix A: Information Request Sent to Selected School Districts.....33

Appendix B: Maps of Mississippi's Public School Districts.....35

Appendix C: Additional Information on Methodology59

Appendix D: Changes in Mississippi School Districts Since the
2010 Census Due to Consolidation.....65

Appendix E: School Bus Definitions and Weights66

List of Exhibits

1. Examples of Posted Weight Limit Signs in Mississippi.....9

2. Rear Axle and Gross Vehicle Weight Ratings for Type C
and Type D Buses, by Manufacturer 10

3. Overview of the Estimated Cost Per Mile to Operate a School Bus in Mississippi 16

4. Estimated Detour Costs for Districts with Detours Caused by
Deficient Bridges, School Year 2014-15 18

5. Estimated Costs to Repair or Replace Deficient Bridges Causing Detours..... 20

6. School Bus Definition by Type According to the MDE Mississippi
Minimum Standards for School Buses 67

7. Capacity and Gross Vehicle Weight Ranges by Bus Type 68

8. Examples of Weight Ratings for Bus Types as Reported by the Manufacturers..... 68

Effects of Deficient Bridges on Selected Mississippi Public School Districts' Bus Routes

Executive Summary

Introduction

The PEER Committee received a legislative request to determine how much school districts spend to operate bus routes that have to detour around deficient bridges on local and state roads. The primary concern of the requesting legislator was to learn approximately how much school districts spend on school bus route detours that could be potentially redirected for classroom instruction.

PEER also addressed potential safety concerns regarding the deficient bridges and how all school districts could obtain the information needed to plan school bus routes that are safer for the passengers of these buses and result in less damage to bridge infrastructure.

Background

State law requires that school districts provide transportation to students of legal school age who live a distance of one mile or more from the school to which they are assigned. In planning these routes, school district transportation staffs are required to plan routes in an economical manner.

Federal law, through the National Bridge Inspection Standards, defines a bridge as a structure along the center of the roadway of more than twenty feet that is erected over a depression or an obstruction (e. g., creek, highway, or railway). For the purposes of this review, PEER defined a *deficient* bridge as:

- a bridge that is closed to all vehicle traffic; or,
- a bridge that is posted for gross vehicle weight limits of up to 33,000 pounds; or,
- a bridge that is posted for single axle weight limits of up to 20,000 pounds.

PEER collected route information from the eleven Mississippi public school districts that have more than ten deficient bridges within their district boundaries to determine to what extent these bridges affect each district's respective transportation system (e. g., additional time and/or mileage

added to school bus routes for detours around the bridges). (See page 4 of the report to learn how PEER selected the school districts for review.)

Financial Effects of Deficient Bridges on School Districts' Transportation Expenditures

Four of the eleven school districts PEER selected for review reported that they are currently rerouting school buses as a direct result of deficient bridges. PEER's estimates of current detour costs accounted for two percent or less of these respective school districts' total transportation expenditures for School Year 2013-2014. While current detour costs might not be material in comparison to the cost to repair or replace the deficient bridges, there is potential for additional detour costs from rerouting school buses in the future, since PEER determined that all eleven of the selected school districts have routes with buses crossing posted bridges, even though the districts were unaware that these bridges were deficient.

What school districts did PEER select for financial analysis?

PEER utilized a geographic information system (GIS) as the primary tool to identify and select school districts for this review. PEER reviewed the following data and incorporated it into the GIS analysis to identify deficient bridges within school districts:

- the geographic boundaries of public school districts from 2010, provided by United States Census Bureau;
- the location and condition of bridges as of April 1, 2015, provided by data from the National Bridge Index; and,
- the weight limits for posted bridges as of April 1, 2015, provided by Mississippi Department of Transportation (MDOT) and Office of State Aid Road Construction.

PEER used this data to generate a count of the number of closed and posted bridges (i. e., posted for a gross vehicle weight of 33,000 pounds or posted for a single axle weight of 20,000 pounds) that could affect bus routes for school districts. PEER then reviewed the number of deficient bridges in each district to select those districts with the highest count of deficient bridges for review.

PEER selected the following eleven public school districts that were noted as having the highest numbers of deficient bridges (determined by PEER to be any district having more than ten deficient bridges) that could affect bus routes: Amite County, Carroll County, Hinds County, Hollandale, Itawamba County, Jones County, Leland, North Panola, Quitman County, Western Line, and Yazoo County.

Appendix B, page 35 of this report, shows the locations of deficient bridges identified by PEER that could potentially affect school bus routes in the selected school districts. Locations of deficient bridges in all Mississippi school districts

are available on the PEER website (www.peer.state.ms.us; see Report #599, “Entire Appendix B”).

How did deficient bridges affect bus routes in the school districts selected for financial analysis?

Four of the eleven districts reported that they are detouring buses due to closed bridges. While one school district, Jones County, tries to identify and detour around bridges posted for weight limits that could apply to school buses, PEER determined that all of the selected districts currently operate routes where buses travel across posted bridges.

How did PEER estimate the cost to detour around deficient bridges in selected school districts?

PEER estimated that it costs approximately \$1.70 per mile to operate a school bus in Mississippi based on maintenance costs, fuel costs, and depreciation expenses. PEER also obtained information on compensation of bus drivers from the selected school districts to calculate estimated personnel costs as a result of extended bus route travel time. PEER then applied these two pieces of information to the additional mileage and additional time reported for school bus detour routes as a result of deficient bridges.

What are the financial effects of school bus detours around deficient bridges in the selected districts?

The estimated total cost of detours caused by deficient bridges ranges from \$4,284 to \$25,704 for the four selected school districts that reported detours for the current school year. While these are additional costs that the district must incur, these costs represent only about two percent or less of the respective districts’ School Year 2013-2014 transportation expenditures. (See Exhibit A, page x.)

How do the detour costs incurred by school districts compare to repair or replacement costs of the deficient bridges causing detours?

The estimated detour costs as a result of deficient bridges are not material in comparison to the estimated costs of repairing or replacing bridges. In making the decision to repair or replace bridges, bridge owners must consider several factors in determining the priority and schedule for bridge repair or replacement, with school bus routes being one possible factor to consider. (See Exhibit B, page xi.)

Exhibit A: Estimated Detour Costs* for Districts with Detours Caused by Deficient Bridges, School Year 2014-15

School District	Total Estimated Operational Detour Costs (School Year 2014-2015)	Total Estimated Personnel Detour Costs (School Year 2014-2015)**	Total Estimated Detour Costs (School Year 2014-2015)	Detour Costs as a Percentage of Total District Transportation Expenditures (School Year 2013-2014)
Carroll County	\$9,792	\$2,250	\$12,042	2.0%
Hollandale	4,284		4,284	1.4%
Jones County	25,704		25,704	0.7%
North Panola	4,896		4,896	0.5%

*Changes in total transportation spending were not adjusted for inflation.

**Carroll County was the only district that reported an hourly wage for its bus drivers. Because the other school districts compensated bus drivers by salary, no additional personnel costs would be estimated for additional time generated by a detour route.

SOURCE: PEER analysis.

Potential Safety Issues Regarding Deficient Bridges and School Districts' Bus Routes

During the course of this review, PEER identified instances in which some school bus routes in the districts selected for review utilized bridges that were posted with weight limits for single axle vehicles of up to 20,000 pounds or posted with weight limits for gross vehicle weights of up to 33,000 pounds. Based on the typical weight ratings for larger buses (Type C and D buses), the potential for buses traveling across these posted bridges creates safety concerns for the passengers and increases wear and tear on deficient bridges.

Further, the process for notifying school districts of deficient bridges and the training of school district transportation personnel related to deficient bridges need improvement.

Why are school districts using bus routes that cross posted bridges?

No consistent or routine process is in place for notifying school districts of posted bridges that could affect bus routes. Most of the selected districts' transportation staffs stated that they were notified of closed bridges, but that they were not always made aware of posted bridges.

Exhibit B: Estimated Costs* to Repair or Replace Deficient Bridges Causing Detours

School District	Number of Deficient Bridges Included in Cost Estimate	2015 National Bridge Index Estimated Cost to Repair or Replace Deficient Bridges Causing Detours	Estimated Detour Cost for School Year 2014-2015	Years Until Detour Costs Equals the Cost to Repair or Replace Deficient Bridges
Carroll County	2	\$ 588,000	\$12,042	49
Hollandale	1	374,000	4,284	87
Jones County	¹ 14	5,255,000	25,704	204
North Panola	² 1	39,700	4,896	8

Notes to exhibit:

* Estimates were not adjusted for inflation and assume that the detour route will continue and cost the same until the bridge is repaired or replaced.

¹Although Jones County School District reported detours around twenty bridges, PEER only included those bridges that were defined as deficient based on PEER methodology (fourteen bridges). When PEER further examined the status of those bridges reported by Jones County School District, PEER excluded two bridges that are less than twenty feet (and therefore are not defined as a bridge within the NBI database). PEER also excluded four bridges because they were noted in the NBI as not being in need of structural improvements.

²The bridge reported by North Panola causing a detour route is less than twenty feet, which is not defined as a bridge within the NBI database. Therefore, PEER contacted the Panola County Engineer to obtain a cost estimate to repair or replace this bridge. According to the county engineer, the contract price to repair this bridge on Spring Hill Road is \$39,700.

SOURCE: PEER analysis.

Other reasons that could contribute to buses crossing posted bridges that could potentially be unsafe were:

- no uniform safety training of school district personnel specific to identifying which bridges school buses should not cross;
- no formal incorporation of posted bridges as potential safety hazards in the state school bus safety policies;
- no formal oversight and a lack of enforcement of posted weight violations; and,
- bridges that are not visibly posted for school buses, but might still be unsafe for them to cross.

Do school buses meet state weight guidelines?

Most school buses do meet state weight guidelines. However, school districts could potentially purchase buses that might exceed the single axle weight limits mandated by MISS. CODE ANN. § 63-5-27 (2) (1972) because such buses are included on the Mississippi Department of Education's bus prices and companies list.

Recommendations

1. School districts should review their transportation routes annually to ensure that school buses are not crossing closed bridges or bridges posted with weight limits that could apply to school buses. School districts could review their routes in the following manner:
 - consult the map and deficient bridge information available on the PEER website (www.peer.state.ms.us; see Report #599, “Entire Appendix B”) to determine whether the district’s routes cross any of the deficient bridges identified by PEER as bridges that could affect school district transportation;
 - review the “cab cards” of school buses owned by the district to determine the gross vehicle weight rating of each bus because the gross vehicle weight rating could be used to identify which posted weight limits apply to individual school buses;
 - visually inspect the bridges on district routes to identify bridges that are currently closed or posted with weight limits that would apply to school buses;
 - confer with the county engineer to determine which bridges are currently closed or posted, or open to traffic but should be posted, because posted weight limits might not be visible; and,
 - confer with and develop relationships with appropriate county staff to determine day-to-day changes in bridge conditions.
2. In order to ensure that school districts are notified about deficient bridges, the Legislature should amend the following sections of the MISSISSIPPI CODE to require the following:
 - amend MISS. CODE ANN. § 65-17-203 (1972) to require that county engineers provide school districts with a list of all local bridges (county or municipal) that could affect school district transportation routes one month before the start of the school year;
 - amend MISS. CODE ANN. § 65-1-10 (1972) to require that MDOT provide school districts with a list of all state bridges that could affect school district transportation routes one month before the start of the school year;
 - amend MISS. CODE ANN. §65-17-1 (1972) to require county road managers in counties with a countywide system of road administration to notify school districts of any changes to bridge conditions that could affect school district transportation routes, such as when a bridge is closed, a bridge is repaired, or a weight

- restriction is removed or posted that could apply to school buses;
- amend MISS. CODE ANN. §65-19-67 (1972) to require supervisors in counties with separate road districts to notify school districts of any changes to bridge conditions that could affect school district transportation routes, such as when a bridge is closed, a bridge is repaired, or a weight restriction is removed or posted that could apply to school buses; and,
 - amend MISS. CODE ANN. §21-37-4 (1972) to require the governing authorities of municipalities to notify school districts of any changes to bridge conditions that could affect school district transportation routes, such as when a bridge is closed, a bridge is repaired, or a weight restriction is removed or posted that could apply to school buses.
3. The Mississippi Department of Education, with assistance from the Mississippi Department of Transportation's Office of Weight Enforcement, should provide periodic training to school districts' transportation directors and bus drivers on the following: (a) what is a deficient bridge and a posted bridge; (b) how to determine a school bus's weight; (c) what posted weight limits on bridges could apply to school buses; (d) how transportation directors can find out about posted or deficient bridges in their school districts; and (e) what are the protocols for school bus drivers for how to reroute around deficient bridges and how to report deficient bridges to the transportation director.
 4. The Mississippi Department of Education, Mississippi Department of Transportation, the Office of State Aid Road Construction, and other interested state entities that receive complaints of school buses crossing deficient bridges should meet and discuss the feasibility of creating a centralized system to track such complaints and their resolution over time. If such a system is feasible, the state entities should create the system and monitor school districts' performance in this area.
 5. The Mississippi Department of Education should amend the *Mississippi Minimum Standards for School Buses* purchasing and operation guidelines to reflect that school buses should not have more than twenty thousand pounds gross weight imposed on the highway on any one single axle.

For More Information or Clarification, Contact:

PEER Committee
P.O. Box 1204
Jackson, MS 39215-1204
(601) 359-1226
<http://www.peer.state.ms.us>

Representative Becky Currie, Chair
Brookhaven, MS

Senator Thomas Gollott, Vice Chair
Biloxi, MS

Senator Sampson Jackson, Secretary
DeKalb, MS

Effects of Deficient Bridges on Selected Mississippi Public School Districts' Bus Routes

Introduction

Authority

The PEER Committee conducted this review pursuant to the authority granted by MISS. CODE ANN. Section 5-3-51 et seq. (1972).

Problem Statement

The PEER Committee received a legislative request to determine how much school districts spend to operate bus routes that have to detour around deficient¹ bridges on local and state roads. The primary concern of the requesting legislator was to learn approximately how much school districts spend on school bus route detours that could be potentially redirected for classroom instruction.

In addition to estimating the transportation costs associated with detour routes, PEER learned during the course of this review that each of the school districts selected for the review reported that school buses were actually crossing deficient bridges (see discussion on pages 21 through 27.) In most of the selected districts, school district staff noted that they were unaware that some of these bridges were potentially unsafe for school buses and several districts even began modifying existing routes as soon as they were notified of the deficient bridges within their respective districts based on PEER's correspondence.

Therefore, PEER also sought to identify reasons why a school district could be operating school bus routes that travel across these deficient bridges. PEER also addressed potential safety concerns regarding these deficient bridges and how all school districts could obtain the information needed to plan school bus routes that are safer for the passengers of these buses and result in less damage to bridge infrastructure.

¹For the purposes of this review, PEER has defined a *deficient bridge* as a bridge that is posted for gross vehicle weight limits of up to 33,000 pounds or posted for single axle weight limits of up to 20,000 pounds. Bridges that are closed to all vehicle traffic are also considered deficient bridges.

Scope and Purpose

PEER sought to address the following objectives:

- collect route information from school districts with more than ten deficient bridges to determine to what extent these bridges affect each district's respective transportation system (e. g., additional time and/or mileage added to school bus routes for detours around the bridges);
- determine whether any school buses within the selected school districts are currently operating on deficient bridges and evaluate how school districts are notified about bridge deficiencies;
- conduct a financial analysis of the selected school districts comparing the estimated costs to repair deficient bridges to the estimated costs associated with rerouting school district transportation routes because of deficient bridges;
- generate maps illustrating the number of deficient bridges in all Mississippi public school districts; and,
- identify potential safety issues that could be addressed to allow school districts to plan school bus routes that are safer for the passengers of these buses.

Scope Limitations

PEER obtained the information on bridges identified in this report from the April 2015 National Bridge Index (NBI), compiled by the Federal Highway Administration. Based on the NBI definition of a bridge, bridges less than twenty feet in length are considered culverts and are not included in the NBI data. Therefore, these culverts are not included in PEER's analysis. Also, the deficient bridges that were selected by PEER were those posted for gross vehicle weight² and single axle weight³ limits, but do not include bridges that are posted for tandem axle weight⁴ limits because school buses are single axle vehicles.

PEER notes that current bridge conditions could vary from what was reported in the 2015 NBI data due to the inspection cycle of these bridges. While bridge inspections are the source

²*Gross vehicle weight* is a posted weight limit that refers to the total weight of a vehicle.

³*Single axle weight* is a posted weight limit that refers to the total amount of weight allowed on a single axle.

⁴*Tandem axle weight* is a posted weight limit that refers to the total amount of weight allowed on a vehicle that has two closely spaced rear axles.

of the data used to compile the NBI, the frequency of these inspections varies by bridge condition. Typically, bridges are inspected on a twenty-four-month cycle, but inspections could occur more or less frequently as recommended by the bridge inspector based on the condition of the bridge.

PEER provided an information request list (see Appendix A on page 33) and a district map to the selected school districts regarding their bus routes, detours, and other transportation operations. PEER did not attempt to verify the accuracy of the districts' responses regarding bus routes, bridges crossed by buses, or the additional time and mileage added to bus routes for those districts that reported detours.

Regarding the financial estimates calculated in this review, PEER did not consider potential intangible cost effects of detours (e. g., children being on the bus for longer periods of time). PEER notes that the estimated cost to repair or replace deficient bridges was also obtained from the April 2015 NBI data, but this cost must only be estimated once every eight years by the engineer and therefore may not reflect current material costs. Also, while only four of the selected school districts reported detouring around closed or posted bridges, all of the districts did have more than ten bridges within their district posted for a weight that could apply to a school bus. Therefore, some districts could have modified or rerouted buses to compensate for these bridges but might not have reported changes to those routes as detours. Furthermore, since PEER identified instances in which all of the selected districts had routes operating with buses crossing posted bridges, there is a possibility that a district could incur higher detour costs in the future by being made aware of the most current bridge conditions.

PEER did not examine route information reported by the districts with the purpose of determining route economy. Furthermore, PEER did not identify changes a district might need to make regarding existing routes and made no recommendations on how to change routes. Because of the safety concern of buses crossing posted bridges with weight limits that could be unsafe for a school bus, PEER compiled a list of deficient bridges in each school district to enable districts to verify the locations of these bridges and make their own determinations regarding safety in planning bus routes. This information is available in Appendix B on page 35 of this report for the eleven selected school districts (listed on page 13) and on the PEER website for all Mississippi school districts (www.peer.state.ms.us; see Report #599, "Entire Appendix B").

PEER excluded specialized districts (e. g., Mississippi School for the Arts) from this analysis because their respective transportation needs are not the same as those of a regular school district.

Method

PEER interviewed staff of the Mississippi Department of Transportation Bridge Division and the Office of State Aid Road Construction to discuss deficient bridges that could potentially affect district transportation routes. Engineering staff in each of these offices suggested that PEER focus on the operational status of bridges (e. g., open to all traffic, closed to traffic, or posted with weight limits).

PEER used the following sources to obtain information on the operational status of bridges:

- the National Bridge Index database as of April 2015, provided by Mississippi Department of Transportation;
- posted weight limits for state bridges as of April 2015, provided by the Mississippi Department of Transportation; and,
- posted weight limits for local bridges as of April 2015, provided by the Office of State Aid Road Construction.

PEER used the heaviest gross vehicle weight rating for larger capacity school buses (i. e., 33,000 pounds) in identifying bridges that could affect school bus routes. For single axle weight ratings, PEER used the maximum load limit of 20,000 pounds established by state law.

PEER utilized a geographic information system (GIS) to overlay school district boundaries in Mississippi with the bridge locations provided by the April 2015 National Bridge Index. Once the bridge locations were established within each school district, the gross vehicle and single axle weight limits were applied as a filter to identify school districts that contained more than ten deficient bridges based on these criteria. This yielded the list of eleven school districts that are the focus of this study (see page 13).

PEER developed its estimate for maintenance costs using the criteria outlined within the *Bus Lifecycle Cost Model* published by the United States Department of Transportation in 2011. Diesel fuel cost was obtained from the United States' Energy Information Administration (EIA).⁵ PEER also depreciated the cost of equipment to quantify additional wear and tear to district vehicles.

PEER estimated the cost to repair or replace the identified deficient bridges causing detours using NBI data on the total project cost (all costs associated with bridge improvement project).

⁵The Energy Conservation and Production Act of 1976 established the Energy Information Administration (EIA) to collect, analyze, and disseminate independent and impartial energy information to the public. EIA publishes data on the price of diesel fuel by regions of the United States. Mississippi is part of the Gulf Coast Region, which also includes New Mexico, Texas, Arkansas, Louisiana, and Alabama.

PEER also performed the following:

- reviewed applicable federal law and regulations governing bridges;
- reviewed the Mississippi Department of Education's policy and procedures concerning school buses, including the *School Bus Minimum Standards and the Transportation Handbook*, Department of Education *Instructor's Guide for Training School Bus Drivers*, *Mississippi Driver's Manual*, and *Mississippi Professional Driver's Manual* for Class A, B, and C Commercial Driver's License;
- requested information on school district bus routes from eleven selected school districts (see page 13 for a list of the school districts selected for review; districts either provided a depiction of their routes or indicated which bridges their routes crossed on maps provided by PEER);
- interviewed county engineers of the selected school districts; and,
- interviewed transportation directors in the selected school districts regarding training and safety concerns.

See Appendix C, page 59, for additional information on PEER's methodology.

Background

This chapter addresses the following questions:

- What is the role of school districts in providing transportation to students?
- What is a bridge?
- What is a deficient bridge?
- Who owns, inspects, and repairs bridges in Mississippi?

What is the role of school districts in providing transportation to students?

State law requires that school districts provide transportation to students of legal school age who live a distance of one mile or more from the school to which they are assigned. In planning these routes, school district transportation staffs are required to plan routes in an economical manner.

Under MISS. CODE ANN. § 37-41-3 (1972), school districts are required to provide transportation to students of legal school age who live a distance of one mile or more from the school to which they are assigned.

In the development of route plans, state law requires school districts to use economy as a prime consideration. Also, state law requires that there be no duplication of routes except in circumstances in which it is totally unavoidable.

MISS. CODE ANN. § 37-41-13 (1972) states that no child entitled to transportation must be required to walk more than one mile to reach the school bus in the morning or his/her home in the afternoon.

Further, MISS. CODE ANN. § 37-15-29 (1972) states that no child should be required to be transported more than thirty miles to or from school via school bus, if there is another school in an adjacent school district located on a shorter school bus transportation route by the nearest traveled road. In such a case, the child, at the guardian's discretion, may enroll in the nearer school.

The Mississippi Department of Education's Office of Safe and Orderly Schools produces the *Mississippi Pupil Transportation Handbook* for school districts. This handbook provides guidelines to school district personnel regarding transportation operations, including school bus safety. For example, this handbook states that dangerous road conditions (e. g., blind curves, blind highway intersections, blind railroad intersections, narrow curves) should be reported to proper authorities. However, as noted in the discussion on page 25, the handbook does not provide guidelines or safety protocols related to unsafe bridge conditions.

What is a bridge?

Federal law, through the National Bridge Inspection Standards, defines a bridge as a structure along the center of the roadway of more than twenty feet that is erected over a depression or an obstruction (e. g., creek, highway, or railway).

The National Bridge Inspection Standards, codified as 23 CFR § 650.305, define a bridge as a structure along the center of the roadway of more than twenty feet which is erected over a depression or an obstruction (e. g., creek, highway, or railway) that has a track or passageway for carrying traffic.

As noted previously, this report does not cover culverts, which are defined as a similar structure that is shorter than twenty feet. However, PEER notes that culverts may also require rerouting of school buses. For example, North Panola School District reported rerouting two school buses while a culvert is being repaired.

What is a deficient bridge?

For the purposes of this review, PEER defined a *deficient* bridge as:

- a bridge that is closed to all vehicle traffic; or,
- a bridge that is posted for gross vehicle weight limits of up to 33,000 pounds; or,
- a bridge that is posted for single axle weight limits of up to 20,000 pounds.

Although engineers have several classifications for bridges based on those bridges' structural ability to handle vehicle traffic or based on the physical features of the bridge (e. g., classifications such as "structurally deficient" or "functionally obsolete"), PEER set its own definition of *deficient* for purposes of this review.

For purposes of this review, PEER has defined a *deficient* bridge as:

- a bridge that is closed to all vehicle traffic; or,
- a bridge that is posted for gross vehicle weight limits of up to 33,000 pounds; or,
- a bridge that is posted for single axle weight limits of up to 20,000 pounds.

When are bridges posted with weight limits?

Bridges that cannot support state legal loads because of their design or condition are posted with weight limits to ensure public safety and to prevent structural damage.

Bridges classified by engineers as structurally deficient or functionally obsolete are not necessarily unsafe, but may require the posting of a vehicle weight or height limit in order

to prevent structural damage and protect the safety of the public.

MISS. CODE ANN. Section 63-5-1 (1972) et seq. establishes state legal load limits and describes the vehicle weights that can safely use the roads and bridges within Mississippi. Generally, Mississippi weight limits are a gross vehicle weight of 80,000 pounds or less, a tandem axle weight of 40,000 pounds, and a single axle weight of 20,000 pounds. Vehicle length should not exceed forty feet and width should not exceed eight and one half feet.

Posted weight limits communicate to the public whether a vehicle can safely travel a road or cross a bridge. A bridge that has a posted weight limit means that it is unsafe for a vehicle to cross if the vehicle exceeds the specified weight restriction amount, even if the road that the bridge is located on is safe for all vehicles. Exhibit 1 on page 9 provides examples of posting sign types and weight limits for bridges. If a weight limit is not posted on a bridge, then any vehicle that complies with Mississippi's state legal load limits should be able to cross that bridge safely.

What posted weight limits apply to school buses?

PEER believes that school buses with a gross vehicle weight of 33,000 pounds or more or with a single axle weight of 20,000 pounds or more should not cross deficient bridges.

To establish an upper weight limit threshold for gross vehicle weight rating, PEER decided to use the maximum possible weight for the largest school buses commonly purchased by Mississippi's public school districts (i. e., Type C buses). PEER obtained weight information from two bus manufacturers (i. e., Thomas and Blue Bird) whose products are sold on MDE's School Bus Prices and Approved Companies list. Exhibit 2, page 10, shows both the rear axle weight (single axle) and gross vehicle weight ratings for these buses.

Although the rear axle weight for the bus types noted in Exhibit 2, ranged from 18,437 pounds to 23,000 pounds, because the state legal load limit for a single axle is 20,000 pounds (discussed on page 4), PEER selected the upper posting threshold for a bridge to be 20,000 pounds for a single axle.

To establish an upper weight limit threshold for gross vehicle weight rating, PEER selected the maximum possible weight for the largest noted bus, the Type D eighty-four-passenger bus, which was 33,000 pounds. PEER's assumption was that regardless of bus type, school districts purchase new buses with the purpose of having increased capacity for students and their equipment and supplies.

See Appendix E on page 66 for additional weight information regarding applicable weight ratings for buses by type, capacity, and manufacturer.

Exhibit 1: Examples of Posted Weight Limit Signs in Mississippi

When the maximum legal load under state law exceeds the safe load capacity of a bridge, a sign displaying the weight limits shall be required. The following are some examples of posted weight limit signs a driver may see in Mississippi.

Signs Posted to Limit Vehicles Based on Gross Weight:

A bridge sign that reflects a single weight limit with no reference to an axle is posted for gross vehicle weight.



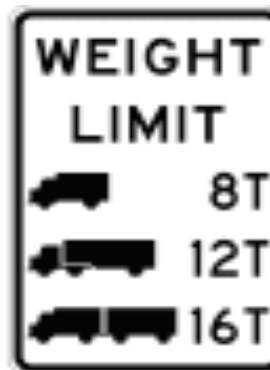
Signs Posted to Limit Vehicles Based on Axle Weight:

A bridge sign that reflects a weight limit specific to an axle weight and/or type (e. g., tandem axle vehicles, single axle vehicles, or for all axle weights).



Signs Posted to Limit Weights for Multiple Vehicle Types:

A bridge sign that reflects various weight limits by vehicle type. In some cases this sign may also include a posted gross vehicle weight if needed for enforcement purposes.



SOURCES: Manual on Uniform Traffic Devices. Section 2B.49 Weight Limit Signs (R12-1 through R12-5). U.S. Department of Transportation. Federal Highway Administration. <http://mutcd.fhwa.dot.gov/HTM/2003r1/part2/part2b4.htm#section2B49>

Office of State Aid Road Construction. Mississippi Department of Transportation. Bridge Posting Signs. June 10, 2013. SA-BP-13

Exhibit 2: Rear Axle and Gross Vehicle Weight Ratings for Type C and Type D Buses, by Manufacturer

Manufacturer	Type	Capacity	Rear Axle Weight Rating (in Pounds)	Gross Vehicle Weight Rating (in Pounds)
Blue Bird	C	71	20,083	27,943
Blue Bird	D	84	18,437	30,281
Thomas	C	71	21,000	31,000
Thomas	C	71	21,000	29,800
Thomas	D	84	23,000	33,000

SOURCE: School bus weight information obtained from manufacturers on MDE's School Bus Prices and Approved Companies list as of September 17, 2015.

Who owns, inspects, and repairs bridges in Mississippi?

The primary owners of bridges that could affect school district transportation routes are counties and municipalities. Other bridge owners include the Mississippi Department of Transportation, federal agencies, or private entities. While the Federal Highway Administration sets the standards for bridge inspections, the bridge owners are ultimately responsible for closing, posting, maintaining, repairing, and replacing the bridges under their authority.

The primary owners of bridges that could affect school district transportation routes are generally at the local level, with the bridge belonging to either a county or a municipality. Each county receives funding from the State Aid program for bridges, with each county having a specified number of miles for designated state aid routes. Although the Office of State Aid Road Construction does not own any bridges, that office oversees the distribution of bridge funds to counties and the inspection process for the local system. The local system includes public roads, highways, and routes not identified in the State Designated Highway System or the federal Highway Bridge Replacement and Rehabilitation Program (HBRRP).

The Federal Highway Administration sets the standards for bridge inspection through the National Bridge Inspection Standards (NBIS). The National Bridge Inspection Standards set forth how, with what frequency, and by whom bridge inspection is to be completed. The NBIS also sets forth the standards for the qualification and training of bridge inspection personnel.

County engineers oversee the bridge inspection process for bridges on the local system. Each county board of supervisors, as the governing agency of the county, is required by statute to appoint a county engineer who is a registered professional engineer to act for and on behalf of the board and to

administer the engineering functions at the county level, subject to the rules and regulations promulgated by the State Aid Engineer. County engineers, in following the National Bridge Inspection Standards and state law, then must report their findings to the Office of State Aid Road Construction and maintain updated bridge files, including posting information, for each bridge within their jurisdiction. The Office of State Aid Road Construction requires county engineers to document, by photo, posting signs when a bridge is inspected.

In Mississippi, MDOT oversees the inspection process for state-owned bridges under the State Designated Highway System. MDOT receives bridge funding through MAP-21 (Moving Ahead for Progress in the 21st Century), which provides funding for bridge replacement, inspection, and repair through the National Highway Prioritization Program.

Financial Effects of Deficient Bridges on School Districts' Transportation Expenditures

Four of the eleven school districts PEER selected for review reported that they are currently rerouting school buses as a direct result of deficient bridges. PEER's estimates of current detour costs accounted for two percent or less of these respective school districts' total transportation expenditures for School Year 2013-2014. While current detour costs might not be material in comparison to the cost to repair or replace the deficient bridges, there is potential for additional detour costs from rerouting school buses in the future, since PEER determined that all eleven of the selected school districts have routes with buses crossing posted bridges, even though the districts were unaware that these bridges were deficient.

This chapter addresses the following questions:

- What school districts did PEER select for financial analysis?
- How did deficient bridges affect bus routes in the school districts selected for financial analysis?
- How did PEER estimate the cost to detour around deficient bridges in the selected school districts?
- What are the financial effects of school bus detours around deficient bridges in the selected districts?
- How do the detour costs incurred by school districts compare to the repair or replacement costs of the deficient bridges causing detours?

What school districts did PEER select for financial analysis?

PEER analyzed the effects of deficient bridges on transportation expenditures of these eleven school districts: Amite County, Carroll County, Hinds County, Hollandale, Itawamba County, Jones County, Leland, North Panola, Quitman County, Western Line, and Yazoo County.

PEER utilized a geographic information system (GIS) as the primary tool to identify and select school districts for this review. PEER reviewed the following data and incorporated it into the GIS analysis to identify deficient bridges within school districts:

- the geographic boundaries of public school districts from 2010, provided by United States Census Bureau;
- the location and condition of bridges as of April 1, 2015, provided by data from the National Bridge Index; and,
- the weight limits for posted bridges as of April 1, 2015, provided by Mississippi Department of Transportation and Office of State Aid Road Construction.

PEER used this data to generate a count of the number of closed and posted bridges (i. e., posted for a gross vehicle weight of 33,000 pounds or posted for a single axle weight of 20,000 pounds) that could affect school bus routes for school districts. PEER then reviewed the number of deficient bridges in each district to select those districts with the highest count of deficient bridges for review.

PEER selected the following eleven public school districts that were noted as having the highest numbers of deficient bridges (determined by PEER to be any district having more than ten deficient bridges) that could affect bus routes:

- Amite County;
- Carroll County;
- Hinds County;
- Hollandale;
- Itawamba County;
- Jones County;
- Leland;
- North Panola;
- Quitman County;
- Western Line; and,
- Yazoo County.

Appendix B, page 35, shows the locations of deficient bridges identified by PEER that could potentially affect school bus routes in the selected school districts. Locations of deficient bridges in all Mississippi school districts are available on the PEER website (www.peer.state.ms.us; see Report #599, “Entire Appendix B”).

How did deficient bridges affect bus routes in the school districts selected for financial analysis?

Four of the eleven districts reported that they are detouring buses due to closed bridges. While one school district, Jones County, tries to identify and detour around bridges posted for weight limits that could apply to school buses, PEER determined that all of the selected districts currently operate routes where buses travel across posted bridges.

Generally, transportation staffs of the selected school districts noted that they only establish detour routes when a bridge is closed for repairs. Carroll County, Hollandale, and North Panola each reported detour routes for bridges that were closed for repairs.

Jones County reported that it has detour routes in place as a result of twenty bridges in the district. That district’s staff

stated that they do try to identify and detour around both closed bridges and bridges posted for weight limits that could apply to buses. Jones County staff noted that these detours around the twenty bridges were for the following two reasons:

- bridges posted with weight limits (three bridges posted for tandem axles and five bridges posted for either a gross vehicle weight or single axle weight that would apply to school buses); and,
- bridges identified as potentially unsafe for school buses as reported to them by the county board of supervisors (twelve bridges).

While the district correctly identified and detoured around several bridges posted with weights that coincided with those established in the PEER methodology, the district also reported detours regarding additional bridges that did not appear in PEER's list. Two of these bridges were less than twenty feet long and therefore excluded from the PEER list of deficient bridges. The remaining detours were prompted by bridges determined by the Jones County Board of Supervisors as being possibly unsafe if crossed by school buses.

PEER also contacted the Office of State Aid Road Construction to obtain more information regarding these bridges identified by the county board of supervisors as being potentially unsafe for school buses. Based on the information provided by State Aid staff, all twelve of these bridges were noted in their records as having a status of "open with no weight restrictions." State Aid staff did report that one of these bridges does have a temporary structure installed to support the bridge until it is replaced. Therefore, PEER cautions that despite the status of "open with no weight restrictions," the school district should always check with the county engineer if there are questions regarding the safety of crossing a potentially deficient bridge. The county engineer is most likely to have the most up-to-date bridge status information.

Also, PEER identified instances in which buses travel across posted bridges in each of the selected districts, including Jones County School District, but districts were unaware that these bridges might be unsafe for school buses. For example, even though Jones County School District did identify multiple posted bridges for detours, there were still some deficient bridges identified by PEER that the district's staff was unaware of because their posted bridge information might not have been updated. Several districts began modifying existing routes when they were notified of the deficient bridges within their respective districts based on PEER's correspondence. (See pages 21 through 27 for more information on some of the reasons why a school district could be operating school bus routes that travel across deficient bridges.)

How did PEER estimate the cost to detour around deficient bridges in the selected school districts?

PEER estimated that it costs approximately \$1.70 per mile to operate a school bus in Mississippi based on maintenance costs, fuel costs, and depreciation expenses. PEER also obtained information on compensation of bus drivers from the selected school districts to calculate estimated personnel costs as a result of extended bus route travel time. PEER then applied these two pieces of information to the additional mileage and additional time reported for school bus detour routes as a result of deficient bridges.

PEER estimated that it costs approximately \$1.70 per mile to operate a school bus in Mississippi. PEER established this estimate based on both direct operating costs (maintenance and fuel costs) and depreciation costs of the equipment. (See information on method, Appendix C, page 59.) Exhibit 3, page 16, provides a breakdown of PEER's cost estimate.

The \$1.70 cost estimate does not include expenditures on bus drivers' compensation. PEER calculated this amount separately because the method of compensating bus drivers varies by school district (e. g., hourly wages versus salary). PEER obtained compensation information from each of the four selected school districts that reported detours to estimate additional personnel costs.

Three of these four districts compensate their bus drivers by salary, not hourly wages: Hollandale, Jones County, and North Panola. Thus, PEER did not estimate additional personnel costs for these three districts as a result of detour routes because additional route time would not change the amounts paid to these drivers.

Carroll County School District does compensate its bus drivers hourly. PEER obtained information on the hourly wage for the bus drivers operating the detour routes within this district and multiplied this hourly wage by the daily time added to the bus routes as reported by the school district based on a 180-day school year. Using this method, the additional personnel cost estimate for Carroll County School District is approximately \$2,250 for the current school year.

In order to estimate the total detour costs as a result of deficient bridges, PEER multiplied the total cost per mile estimate to the additional reported mileage and then added any personnel cost estimates as applicable. The following section shows the estimated total costs for each of the selected districts that reported detours.

Exhibit 3: Overview of the Estimated Cost Per Mile to Operate a School Bus in Mississippi

Category	Method Used to Develop Estimate	Cost Estimate
Maintenance Cost	Cost estimate as provided by the U.S. Department of Transportation's <i>Bus Lifecycle Cost Model</i> (2011)	\$1.00 maintenance cost per mile
Fuel Cost*	\$2.76/gallon diesel ÷ 7 miles per gallon = \$0.39/mile Data provided by The <i>Bus Lifecycle Cost Model</i>	\$0.39 diesel fuel cost per mile
Depreciation Expense**	\$110,000 ÷ 350,000 miles = \$0.31 per mile Data provided by The <i>Bus Lifecycle Cost Model</i>	\$0.31 depreciation per mile
Total Operating Costs per Mile		\$1.70 per mile

*United States' Energy Information Administration data showing the average price of diesel fuel in the Gulf Coast Region for January to July 2015. The Gulf Coast Region includes New Mexico, Texas, Arkansas, Louisiana, Alabama, and Mississippi.

**Depreciation expense, although not a budgetary expense of the school district during the year, is used to cost out the wear and tear on the school bus.

SOURCE: U. S. Department of Transportation's *Bus Lifecycle Cost Model* (2011) and PEER analysis.

What are the financial effects of school bus detours around deficient bridges in the selected districts?

The estimated total cost of detours caused by deficient bridges ranges from \$4,284 to \$25,704 for the four selected school districts that reported detours for the current school year. While these are additional costs that the district must incur, these costs represent only about two percent or less of the respective districts' School Year 2013-2014 transportation expenditures.

As noted previously, four of the selected school districts reported detour routes: Carroll County, Hollandale, Jones County, and North Panola.

In order to estimate total detour costs as a result of deficient bridges, PEER obtained information on the additional mileage, time, and compensation costs from each of the four districts.

PEER used the following formula to calculate estimated operational detour costs:

[(Total operating cost per mile)
x
(District-reported daily detour mileage)]
x
(180 days per school year)
=
Total Estimated Operational Detour Cost

If the district reported bus driver compensation in the form of an hourly wage, PEER used the following formula to calculate estimated personnel detour costs:

[(District-reported hourly bus driver wages)
x
(District-reported additional hours per day)]
x
(180 days per school year)
=
Total Estimated Personnel Detour Cost

PEER then used the following formula to estimate the total estimated detour costs:

Total Estimated Operational Detour Cost
+
Total Estimated Personnel Detour Cost <i>(if applicable)</i>
=
Total Estimated Detour Cost

Based on this information, PEER estimated that the four districts spend between \$4,284 and \$25,704 per school year to detour around deficient bridges.

PEER also determined the percentage of total transportation expenditures that was represented by these detour costs for each of the four districts based on each district's total transportation spending for the previous school year (2013-2014). Exhibit 4, page 18, shows this information. (PEER notes that changes in total transportation spending were not adjusted for inflation for the purposes of this calculation.)

Exhibit 4: Estimated Detour Costs* for Districts with Detours Caused by Deficient Bridges, School Year 2014-15

School District	Total Estimated Operational Detour Costs (School Year 2014-2015)	Total Estimated Personnel Detour Costs (School Year 2014-2015)**	Total Estimated Detour Costs (School Year 2014-2015)	Detour Costs as a Percentage of Total District Transportation Expenditures (School Year 2013-2014)
Carroll County	\$9,792	\$2,250	\$12,042	2.0%
Hollandale	4,284		4,284	1.4%
Jones County	25,704		25,704	0.7%
North Panola	4,896		4,896	0.5%

*Changes in total transportation spending were not adjusted for inflation.

**Carroll County was the only district that reported an hourly wage for its bus drivers. Because the other school districts compensated bus drivers by salary, no additional personnel costs would be estimated for additional time generated by a detour route.

SOURCE: PEER analysis.

Although these detour costs are not material in comparison to the selected districts’ total transportation expenditures, since PEER identified instances in all of the selected districts of routes with buses crossing posted bridges, there is a possibility that a district could incur higher detour costs in the future by being made aware of the most current bridge conditions.

Also, while only four of the selected school districts reported detouring around bridges, all eleven districts selected for review were selected because they had more than ten posted bridges that could affect a school bus route. Therefore, some districts might have drawn bus routes to compensate for these bridges, but might not have reported changes to those routes as “detours.”

How do the detour costs incurred by school districts compare to the repair or replacement costs of the deficient bridges causing detours?

The estimated detour costs as a result of deficient bridges are not material in comparison to the estimated costs of repairing or replacing bridges. In making the decision to repair or replace bridges, bridge owners must consider several factors in determining the priority and schedule for bridge repair or replacement, with school bus routes being one possible factor to consider.

By posting a bridge to restrict access, bridge owners extend the life of a bridge, but in doing so, they also restrict access. In making the decision to repair or replace a bridge, bridge

owners (e. g., MDOT, counties) must consider several factors in determining priority for bridge repair and replacement. Bridge owners must ensure that emergency personnel can quickly provide fire and public safety protection. They also must consider the needs of local industry and commerce to move freight. Also, bridge owners should typically consider traffic volume, access, and impact when considering a schedule and priority for bridge repair or replacement.

PEER estimated the cost to repair or replace deficient bridges causing detours using NBI data on the total project cost (i. e., all costs associated with the bridge improvement project), which is calculated by bridge inspectors every eight years.

NBI data was not available on all of the bridges that caused detours in the selected districts. One bridge located in the North Panola School District and two bridges located in Jones County School District did not meet the NBI definition of a bridge. The Panola County engineer provided a replacement estimate for the bridge in the North Panola School District, but costs estimates for the bridges in Jones County were not readily available as of October 6, 2015.

The estimated cost to detour around deficient bridges is not material in comparison to the cost to repair or replace the deficient bridges causing detours. Exhibit 5, page 20, shows the estimated cost to repair or replace the deficient bridges causing detours in the selected school districts. PEER also estimated the number of years it would take before a school district's detour costs would equal the cost to repair or replace the deficient bridge. PEER notes that these estimates were not adjusted for inflation and assumes that the detour route will continue and cost the same until the bridge is repaired or replaced.

Exhibit 5: Estimated Costs* to Repair or Replace Deficient Bridges Causing Detours

School District	Number of Deficient Bridges Included in Cost Estimate	2015 National Bridge Index Estimated Cost to Repair or Replace Deficient Bridges Causing Detours	Estimated Detour Cost for School Year 2014-2015	Years Until Detour Costs Equals the Cost to Repair or Replace Deficient Bridges
Carroll County	2	\$ 588,000	\$12,042	49
Hollandale	1	374,000	4,284	87
Jones County	¹ 14	5,255,000	25,704	204
North Panola	² 1	39,700	4,896	8

Notes to exhibit:

* Estimates were not adjusted for inflation and assume that the detour route will continue and cost the same until the bridge is repaired or replaced.

¹Although Jones County School District reported detours around twenty bridges, PEER only included those bridges that were defined as deficient based on PEER methodology (fourteen bridges). When PEER further examined the status of those bridges reported by Jones County School District, PEER excluded two bridges that are less than twenty feet (and therefore are not defined as a bridge within the NBI database). PEER also excluded four bridges because they were noted in the NBI as not being in need of structural improvements.

²The bridge reported by North Panola causing a detour route is less than twenty feet, which is not defined as a bridge within the NBI database. Therefore, PEER contacted the Panola County Engineer to obtain a cost estimate to repair or replace this bridge. According to the county engineer, the contract price to repair this bridge on Spring Hill Road is \$39,700.

SOURCE: PEER analysis.

Potential Safety Issues Regarding Deficient Bridges and School Districts' Bus Routes

During the course of this review, PEER identified instances in which some school bus routes in the districts selected for review utilized bridges that were posted with weight limits for single axle vehicles of up to 20,000 pounds or posted with weight limits for gross vehicle weights of up to 33,000 pounds. Based on the typical weight ratings for larger buses (Type C and D buses), the potential for buses traveling across these posted bridges creates safety concerns for the passengers and increases wear and tear on deficient bridges.

Further, the process for notifying school districts of deficient bridges and the training of school district transportation personnel related to deficient bridges need improvement.

This chapter addresses the following questions:

- Why are school districts using bus routes that cross posted bridges?
- Do school buses meet state weight guidelines?

Why are school districts using bus routes that cross posted bridges?

No consistent or routine process is in place for notifying school districts of posted bridges that could affect bus routes. Most of the selected districts' transportation staffs stated that they were notified of closed bridges, but that they were not always made aware of posted bridges. Other reasons that could contribute to buses crossing posted bridges that could potentially be unsafe were:

- *no uniform safety training of school district personnel specific to identifying which bridges school buses should not cross;*
- *no formal incorporation of posted bridges as potential safety hazards in the state school bus safety policies;*
- *no formal oversight and a lack of enforcement of posted weight violations; and,*
- *bridges that are not visibly posted for school buses, but might still be unsafe for them to cross.*

PEER identified instances in all eleven of the selected school districts in which school bus routes were utilizing bridges posted for single axle vehicles of 20,000 pounds or posted for vehicles with a gross vehicle weight of 33,000 pounds. Therefore, PEER sought to determine why school districts have bus routes that cross these deficient bridges and to identify ways that school districts could plan safer school bus routes that also would result in less damage to the bridges' structures.

When PEER contacted school districts' staffs for more information regarding current bus routes and deficient bridge locations, most of the selected districts' staffs noted that they

were unaware that some of these bridges were potentially unsafe for school buses. Several of these districts verified the deficient bridge locations based on the list compiled by PEER and began immediately modifying existing bus routes if bridges within their district's boundaries were posted with a weight limit that could apply to a school bus.

Based on information obtained from the selected school districts, PEER identified reasons that could contribute to buses crossing posted bridges that could potentially be unsafe:

- no uniform safety training of school district personnel specific to identifying which bridges school buses should not cross;
- no formal incorporation of posted bridges as potential safety hazards in the state school bus safety policies;
- no formal oversight and a lack of enforcement of posted weight violations; and,
- buses crossing deficient bridges that are not visibly posted for school buses, but might still be unsafe for them to cross.

The following sections discuss in more detail each of the above-listed reasons.

School Districts Do Not Always Receive Posted Bridge Data

While each of the eleven selected school districts noted they were informed of bridge closings, only Jones County School District reported receiving information from the board of supervisors about posted bridges. However, when PEER compared this district's posted bridge information to the list of deficient bridges identified by PEER, there were some additional posted bridges that the district was not aware of that could also affect bus routes. School districts do not currently have a formal process in place whereby each school district can contact a central source to determine the deficient bridges that could affect their district's transportation routes.

Each of the eleven selected school districts surveyed by PEER reported receiving information about closed bridges and bridges under repair from their respective county boards of supervisors or county road departments. However, only one school district, Jones County School District, reported being informed by the county board of supervisors about bridges with posted weight limits that could apply to school buses.

As noted previously, PEER followed up with staff at the Jones County School District to identify the status of the reported posted bridges and to compare the district's information with the list of and locations of deficient bridges identified by PEER. Some of these bridges were not included within the PEER list because they had been posted for weight limits applicable to tandem axle vehicles (PEER only located posted bridges for gross vehicle weight and single axle weight limits) and the Jones County Board of Supervisors had determined that these bridges could also possibly be dangerous if crossed by school

buses. Some of the posted bridge information provided to the district coincided with the PEER list and the district's staff had correctly identified and reported currently detouring around these bridges. However, there were also some posted bridges within the PEER list of deficient bridge locations that the district was unaware of as potentially being unsafe for school bus traffic.

Therefore, the Jones County School District's transportation staff verified these posted bridges and in some cases noted that they were going to begin modifying existing routes immediately based on this information. While Jones County School District was planning detour routes around multiple posted bridges, the fact that they were still planning some routes that utilized posted bridges shows the need for all districts to obtain the most up-to-date information possible regarding posted bridges and their respective weight limits that could apply to school buses. In this example, the Jones County School District (as with most of the surveyed school districts) relies on its respective county staff (e. g., county board of supervisors, county engineers, road managers) to keep the school district's staff informed on the status of bridges and applicable weight limit postings.

Although there are several potential sources of deficient bridge information including posted bridges and road closures due to outage, repair, or renovation, PEER found there is no formal process in place for notifying school districts of deficient bridges that could affect school district transportation routes.

For example, the Mississippi Department of Transportation maintains a current list on its website of posted bridges located along state-owned roads. However, there is no formal process for notifying school districts or other users. Instead, each school district must take the initiative to check the MDOT website for changes concerning bridges in their respective districts.

The Office of State Aid Road Construction's website shows a list of posted and closed bridges that receive funding through the Office of State Aid Road Construction. These most commonly apply to bridges owned by counties and municipalities. However, in reference to these county and local bridge maps, the website states:

. . .you are strongly cautioned not to make decisions involving safe transit of bridges without consulting the State Aid County Engineer of the applicable county.

This reinforces the need for school districts to work with their respective county engineers to obtain the most current information possible regarding posted bridges. As noted above in the example in which the Jones County Board of Supervisors notifies the Jones County School District regarding posted bridges, if this information is not updated and communicated

on a routine basis, some school buses could still potentially travel across posted bridges.

Training of School District Transportation Personnel Varies Concerning Posted Bridges

Safety training of school district personnel (e. g., transportation directors and school bus drivers) varies by each district. Several of the selected districts reported that their safety training typically does not address what posted bridge weight limits could apply to school buses.

The extent of training in relation to posted bridges varies by school district. While all school districts are required to have their bus drivers certified by the Mississippi Department of Education every two years, only four of the selected districts reported that this certification process included a training component regarding bridge weight limits and school bus weights. Also, one district reported that while its policy is not to cross posted bridges, it does not provide training to the transportation director or school bus driver on posted bridges.

Several districts reported no specific training of bus drivers related to bridges, but stated that if the bus driver does not feel safe crossing any particular bridge for any reason, he or she is advised not to cross it. If this situation occurs, the bus driver is to report the bridge location to the transportation director. While one district relies on its county road department to identify closed, posted, or otherwise unsafe bridges in developing bus routes, the district only trains drivers to follow detour signs if bridges are closed by the county (not when posted for weight). Two districts reported that bus drivers are expected to report any hazards that they encounter along their route, including bridge safety.

Several school districts reported that training of the transportation director does not include a component addressing how bridge weight limits affect school bus traffic. At least one district's staff said that its transportation director gathers posted bridge information in its review of bus routes, but did not apply it to the routing of buses.

Current State School Bus Safety Policies Overlook Posted Bridges

While the Mississippi Department of Education provides policies for the safe travel of students on school buses, current policies do not provide guidance to school districts regarding posted bridges in managing school bus routes.

The Mississippi Department of Education's Office of Safe and Orderly Schools, Division of Pupil Transportation, provides links on its website to training for transportation directors and school bus drivers on a range of school bus safety issues ranging from safe stops to proper procedures for unloading and discharging students. The Office of Safe and Orderly Schools also provides a manual that includes school bus safety, the *Mississippi Pupil Transportation Handbook*. This handbook

states that dangerous road conditions (e. g., blind curves, blind highway intersections, blind railroad intersections, narrow curves) should be reported to proper authorities. However, this handbook does not provide guidelines or safety protocols related to unsafe bridge conditions. Furthermore, there is a section in this handbook regarding regulatory road signs, but it does not include a discussion of posted bridge signs and how they could apply to school bus routes or posted bridge weight limits.

MDOT's Office of Enforcement stated that the office offers assistance to any school district to weigh and measure buses and to explain the meaning of the posted limit signs. In 2009, MDOT enforcement personnel contacted the public and private school districts in the state and offered to weigh their buses and to advise them directly of the importance of staying in touch with city, county, or state transportation officials for a current list of posted bridges. Sixty-two public and private school systems participated.

When PEER questioned MDOT's Office of Enforcement staff regarding coordination with MDE about posted bridges and bus safety, MDOT staff stated that they notify MDE each year, either in writing or orally, of the potential need to reroute buses around posted bridges due to potential safety concerns and posted weight limits. However, the Department of Education has not implemented improved training and notification methods regarding the need to avoid posted bridges based on these notifications.

No Formal Oversight and a Lack of Enforcement of Posted Weight Violations

Although several state entities noted receiving intermittent reports of school buses crossing posted bridges, there is no central point of contact for reporting such information. MDOT's Office of Enforcement reported that it and most other law enforcement agencies typically would not enforce posted weight limits for school buses that cross deficient bridges.

In interviews with PEER, the Mississippi Association of Supervisors, the Mississippi Department of Education, the Office of State Aid Road Construction, and MDOT's Office of Enforcement staff all noted receiving occasional complaints of school buses crossing posted bridges. However, none of these entities reported maintaining records regarding these complaints. Furthermore, there is no central point of contact for reporting such incidences to provide for follow-up training and review.

Posted bridge signs are typically enforced by law enforcement officers (e. g., MDOT Office of Enforcement, local sheriff's departments). However, MDOT Office of Enforcement reported that it and most other law enforcement agencies typically would not track complaints and enforce posted weight limits for school buses that cross deficient bridges. While freight trucks suspected of heavy loads can be weighed on site, if

portable scales are available, or directed to the nearest weighing station to be weighed if suspected of exceeding weight limits, the stopping or redirecting of school buses during a school bus route to get weighed is not likely. MDOT Office of Enforcement stated it reports potential violations to the school district, but does not ticket school districts or maintain a record of violations.

While not likely, school districts and/or bus drivers could be ticketed for failure to obey a traffic control device, including a posted bridge sign, ranging from \$100 for the first offense to \$500 for the third offense within a one-year period. Also, school districts and/or bus drivers could also be fined for crossing a posted bridge if a school bus's gross weight or single axle weight exceeds the posted weight limit for that bridge. This fine could range from five dollars to eleven cents per pound of the excess weight amount.

Bridges Not Visibly Posted in a Manner Applicable to School Buses

PEER identified the potential for school buses to cross deficient bridges that are not visibly posted for school buses, but might still be unsafe for them to cross.

PEER identified two scenarios in which there could be the potential for a school district to operate bus routes using deficient bridges because these notifications are not visibly posted in a manner that would apply to a school bus, but the bridge could still be potentially unsafe. These scenarios include:

- Bridges that are rated as “should be posted” by bridge inspectors, but are not visibly posted with a sign by bridge owners.
- Bridges that are posted solely with a tandem axle (applicable to a vehicle that has two closely spaced rear axles) weight limit, even though this weight limit rating could still be potentially unsafe for a single axle vehicle (e.g., a school bus).

According to data from the National Bridge Index, as of April 2015, a total of 272 bridges in Mississippi are not posted but legally should be posted with a sign showing a specified weight limit rating. Because there is no visible weight limit posting, any vehicle might cross the bridge and not be aware of any potential safety hazards. As noted on page 18, it is the responsibility of the bridge owner to post a sign showing any applicable weight limits based on the result of the bridge inspection by the engineer. The Office of State Aid Road Construction and county engineers also reported incidences in which a bridge posting sign could have been posted by the bridge owner, but that it might not be visible because of the sign being damaged (e. g., knocked down by accident) or stolen.

The Office of State Aid Road Construction's data set of bridge weight limits shows a total of 1,031 bridges in Mississippi that

are currently posted with a weight limit solely for a tandem axle, but may need to be posted with a single axle weight limit that could apply to school buses, based on the weight rating limits identified by PEER.

For example, in reviewing school district route maps, Jones County School District reported detouring around several bridges that were not included within PEER's list of deficient bridges (i. e., bridges posted for gross vehicle weight limits of up to 33,000 pounds and single axle weight limits of up to 20,000 pounds). Through further analysis of these bridges identified by the school district as causing bus route detours, PEER determined that these bridges were posted solely with a weight limit for a tandem axle vehicle, but not posted for single axle.

PEER contacted staff of the MDOT Bridge Division, MDOT Office of Enforcement, and the Office of State Aid Road Construction to obtain additional information regarding bridges posted with tandem axle weight limits and to determine whether any of these could potentially apply to a school bus. According to staff of the Office of State Aid Road Construction, some bridges posted solely with tandem axle weight limits may also be unsafe for a single axle vehicle (e. g., a school bus). While these bridges may need to also be posted with a single axle weight limit, it is ultimately the responsibility of the bridge owner. Based on the information provided to PEER, approximately ninety percent of the weight limit amount for a tandem axle vehicle could apply to a single axle vehicle. For example, a tandem axle bridge posting with a weight limit of 22,000 pounds could also apply to a single axle vehicle load of 19,800 pounds or more. However, bridge owners may also post more restrictive weight limits than are legally required in order to minimize deterioration of bridge elements. The ninety percent rule would not apply to these bridges.

Therefore, while a school bus could legally cross a bridge posted only for a tandem axle vehicle, school district transportation personnel should review the bridge posting weight limit and consult with their local county engineer or the MDOT Bridge Division to see whether this weight limit could also apply to their school buses. For reference, PEER has compiled the number of tandem axle bridges that could potentially apply to school buses, as well as the number of bridges with a status of "open, but should be posted" for each school district as of April 2015. These are included in Appendix B, page 35, for the eleven selected districts and on the PEER website (www.peer.state.ms.us; see Report #599, "Entire Appendix B") for all Mississippi school districts. The bridge information is on the back of each school district's map.

Do school buses meet state weight guidelines?

Most school buses do meet state weight guidelines. However, school districts could potentially purchase buses that might exceed the single axle weight limits mandated by MISS. CODE ANN. § 63-5-27 (2) (1972) because such buses are included on the Mississippi Department of Education's School Bus Prices and Approved Companies list.

In collecting data to determine the weights of typical buses available for purchase by schools, PEER found that some of the larger capacity buses sold by manufacturers on MDE's bus prices and companies list have the potential to exceed single axle weight limits if they are either loaded with passengers based on specifications up to their gross rear axle weight⁶ or loaded with cargo and/or passengers up to their total gross allowable rear axle weight.⁷ MISS. CODE ANN. § 63-5-27 (2) (1972) restricts the gross weight imposed on the highway by the wheels of any one single axle of a vehicle to twenty thousand pounds or less.

The Mississippi Department of Education's Office of Safe and Orderly Schools provided PEER with the School Bus Prices and Approved Companies list for October 1, 2014, through September 30, 2015. According to the Director of the Mississippi Department of Education's Office of Pupil Transportation, school districts must purchase new buses from this list. However, if a school district opts to purchase a used bus, the Director of the Office of Pupil Transportation stated that the school district might opt to competitively purchase any bus meeting the *Mississippi Minimum Standards for School Buses*.

In data provided to PEER by approved vendors (see Appendix E on page 66), some Thomas and Blue Bird Type C school buses have rear gross axle weights that exceed the 20,000 pound single axle weight limit established by state law. For example, the Blue Bird 77 passenger capacity bus could have an average rear axle gross vehicle weight of 21,415 pounds, more than 1,400 pounds above the legal limit. The Thomas 71 passenger capacity bus has a total rear axle weight of 19,335 pounds (i. e., based on an estimated weight of 71 passengers and the weight of the vehicle), but a gross allowable rear axle rating of 21,000 pounds (i. e., maximum allowed by the manufacturer), which would be above the legal limit, if fully loaded with gear or other items.

⁶*Gross vehicle weight* is the sum of the weight of the vehicle plus passengers on the front axle plus the weight of the vehicle plus passengers on the rear axle. Gross rear axle weight is the weight of the vehicle plus passengers on the rear axle only.

⁷*Gross allowable vehicle weight* is the sum of the maximum allowable weight recommended by the manufacturer on the front axle plus the maximum allowable weight recommended by the manufacturer on the rear axle. Gross allowable rear axle weight is the maximum allowable weight recommended by the manufacturer on the rear axle only.

Although the Department of Education's *Mississippi Minimum Standards for School Buses* defines buses by type (A, B, C, D), including maximum or minimum gross vehicle weight rating (e.g., Type C buses must have a Gross Vehicle Weight Rating greater than 21,500 lbs.), neither the Mississippi Department of Education's *Mississippi Minimum Standards for School Buses* nor its purchasing guidelines for school buses take into consideration front and rear axle weights imposed on roads by school buses, including the 20,000 pound single axle restrictions established under MISS. CODE ANN. § 63-5-27 (2) (1972).

Conclusion and Recommendations

Conclusion

Deficient bridges do not have a significant financial effect on school district spending in comparison to overall school district transportation expenditures. PEER found that detour costs represented 2% or less of the school districts' total transportation expenditures for School Year 2013-2014 in the school districts reviewed for this report. Although detour costs currently are not material, the safety recommendations in this report could require school districts to plan new detour routes in order to avoid crossing deficient bridges. These additional detour routes could increase the financial impact of deficient bridges on school districts' spending.

Mississippi has a large number of deficient bridges that will require significant funding and time to replace. Because the issue will not be quickly resolved, school districts will need to continue to be vigilant in identifying and planning detour routes for deficient bridges. As noted on pages 21 through 27, PEER determined that in each of the school districts selected for review, buses were crossing bridges that were posted and potentially unsafe and the school districts were unaware of such.

PEER did not examine any of the route information reported by the districts with the purpose of determining route economy. Furthermore, PEER did not make any recommendations on what routes should be changed or how to change current routes within the selected districts.

School districts should work with appropriate sources (e. g., county supervisors, county road departments, county engineers, city public works departments) to obtain and maintain up-to-date information on transportation routes and posted weight limits that could apply to school buses. Appendix B, page 35, provides maps of the eleven selected school districts showing the locations of deficient bridges that may serve as a starting point for identifying whether these bridges affect current bus routes. Locations of deficient bridges in all Mississippi school districts are available on the PEER website (www.peer.state.ms.us; see Report #599, "Entire Appendix B").

Because of the safety issues PEER identified during the course of field work for this review, safety training of school district transportation personnel should also be reviewed to ensure that all such personnel are knowledgeable of deficient bridges and identify posted bridges that could affect school bus routes. MDE should also review its policies to ensure effective oversight and compliance with state law regarding school buses and state legal limits.

Recommendations

1. School districts should review their transportation routes annually to ensure that school buses are not crossing closed bridges or bridges posted with weight limits that could apply to school buses. School districts could review their routes in the following manner:
 - consult the map and deficient bridge information available on the PEER website (www.peer.state.ms.us; see Report #599, “Entire Appendix B”) to determine whether the district’s routes cross any of the deficient bridges identified by PEER as bridges that could affect school district transportation;
 - review the “cab cards” of school buses owned by the district to determine the gross vehicle weight rating of each bus (the gross vehicle weight rating could be used to identify which posted weight limits apply to individual school buses);
 - visually inspect the bridges on district routes to identify bridges that are currently closed or posted with weight limits that would apply to school buses;
 - confer with the county engineer to determine which bridges are currently closed or posted, or open to traffic but should be posted, because posted weight limits might not be visible; and,
 - confer with and develop relationships with appropriate county staff to determine day-to-day changes in bridge conditions.
2. In order to ensure that school districts are notified about deficient bridges, the Legislature should amend the following sections of the MISSISSIPPI CODE to require the following:
 - amend MISS. CODE ANN. § 65-17-203 (1972) to require that county engineers provide school districts with a list of all local bridges (county or municipal) that could affect school district transportation routes one month before the start of the school year;
 - amend MISS. CODE ANN. § 65-1-10 (1972) to require that MDOT provide school districts with a list of all state bridges that could affect school district transportation routes one month before the start of the school year;
 - amend MISS. CODE ANN. §65-17-1 (1972) to require county road managers in counties with a countywide system of road administration to notify school districts of any changes to bridge conditions that could affect school district transportation routes, such as when a

bridge is closed, a bridge is repaired, or a weight restriction is removed or posted that could apply to school buses;

- amend MISS. CODE ANN. §65-19-67 (1972) to require supervisors in counties with separate road districts to notify school districts of any changes to bridge conditions that could affect school district transportation routes, such as when a bridge is closed, a bridge is repaired, or a weight restriction is removed or posted that could apply to school buses; and,
 - amend MISS. CODE ANN. §21-37-4 (1972) to require the governing authorities of municipalities to notify school districts of any changes to bridge conditions that could affect school district transportation routes, such as when a bridge is closed, a bridge is repaired, or a weight restriction is removed or posted that could apply to school buses.
3. The Mississippi Department of Education, with assistance from the Mississippi Department of Transportation's Office of Enforcement, should provide periodic training to school districts' transportation directors and bus drivers on the following: (a) what bridges are not safe for a bus to cross; (b) how to determine a school bus's weight; (c) what posted weight limits on bridges could apply to school buses; (d) how transportation directors can find out about posted or deficient bridges in their school districts; and (e) what are the protocols for school bus drivers for how to reroute around deficient bridges and how to report deficient bridges to the transportation director.
 4. The Mississippi Department of Education, Mississippi Department of Transportation, the Office of State Aid Road Construction, and other interested state entities that receive complaints of school buses crossing deficient bridges should meet and discuss the feasibility of creating a centralized system to track such complaints and their resolution over time. If such a system is feasible, the state entities should create the system and monitor school districts' performance in this area.
 5. The Mississippi Department of Education should amend the *Mississippi Minimum Standards for School Buses* purchasing and operation guidelines to reflect that school buses should not have more than twenty thousand pounds gross weight imposed on the highway on any one single axle.

Appendix A: Information Request Sent to Selected School Districts

PEER distributed the following survey questions (along with school district boundary maps noting the locations of all bridges, deficient or otherwise) as identified in the NBI to the eleven selected school districts.

.....

According to preliminary 2015 National Bridge Inventory data, your school district may have bridges within its boundaries that are closed or posted (i. e., restricting vehicle travel for vehicles above the posted weight) to school bus traffic.

1. How does the district learn of or determine which bridges are closed or posted when planning daily school bus routes? What activities do the bus route coordinator or other school district personnel conduct to review the safety of established bus routes, in particular bridge safety?
2. Provide the district's definition for a "bus route" (e. g., what period of time and stops does it cover)?
3. Does the district have criteria for identifying bridges within its boundaries that might be considered unsafe even though they have not been closed or posted for daily school bus traffic? (If so, please provide a list of such criteria.) If the district does identify such bridges, what state or local entity does the district contact regarding the condition of the bridges?
4. Does the district have written policies concerning school bus safety (e. g., avoiding posted bridges) and ridership (e. g., recommended limits on the length of time students may spend on the bus each day)? How does the district ensure that daily bus drivers adhere to these policies?
5. PEER has included in this information request a map of your school district, indicating the locations of all bridges within the boundaries of your district. Please highlight on the map all of your district's daily bus routes for the 2015-2016 school year.
 - a. NOTE: If you have a software program that can produce maps of your district's daily bus routes for the 2015-2016 school year, you may submit those in lieu of our provided map.
 - b. Also, if a route is run more than twice a day, note on the map the number of times a day that a bus runs that route.
 - c. Mark any bridges that the district considers unsafe to cross due to their being closed, posted, or deficient based on the district's own criteria for unsafe bridges.
6. In designing daily bus routes for the 2015-2016 school year, did the district have to design "detour routes" to avoid bridges that were closed, posted, or considered

deficient based on the district's own criteria? If so, please provide the following information for each of these "detour routes:"

- a. mileage added to each bus route; and,
- b. time added to each bus route.

Other than additional fuel, maintenance (e.g. \$/mile), and salary costs, did changes to daily bus routes result in any additional costs? If so, what were these costs and how did you determine them?

7. Does your district compensate daily bus drivers with an hourly rate or a daily rate? What is the average hourly/daily rate for your district's bus drivers?
8. Does the training of the district's transportation director include a component addressing how bridge weight limits affect school bus traffic? Does the training of the district's transportation director also include a component addressing how to incorporate information on closed, posted, and deficient (as determined by the district's own criteria) bridges in the design of daily bus routes? If so, please provide a copy of such training material.
9. What type of training does the district provide to daily bus drivers regarding bridge safety? (Please provide a copy of such training material.) Does the training of the district's daily bus drivers include a component addressing what drivers should do if they encounter an unexpected bridge hazard (e. g., a bridge that is posted after the route was initially designed)? If so, please provide a copy of such training material.
10. Regarding school bus activity trips (e. g., sports or band contests), how does the district inform the bus driver regarding closed, posted, or deficient bridges on potential routes to the activity site?

SOURCE: PEER.

Appendix B: Maps of Mississippi’s Public School Districts

This appendix includes maps of each of the eleven Mississippi public school districts PEER selected for review showing posted bridges that could potentially impact school bus routes, noted by circles. These include any bridges posted for single axle weight limits of up to 20,000 pounds and bridges posted for gross vehicle weight limits of up to 33,000 pounds.

Maps for the other Mississippi school districts are available on the PEER website (www.peer.state.ms.us; see Report #599, “Entire Appendix B”).

Included with each map is the following information for each school district:⁸

- the total number of bridges in the district;
- the number of posted bridges potentially impacting school districts, including the number of single axle postings, number of gross weight postings, and number of tandem axle bridges;
- the number of open bridges that should be posted according to bridge inspection criteria but that have not been posted by the bridge owners; and,
- the number of closed bridges.

PEER is also providing NBI/State Aid Road Construction bridge data for each bridge posted for single axle weight limits of up to 20,000 pounds and gross vehicle weight limits of up to 33,000 pounds.

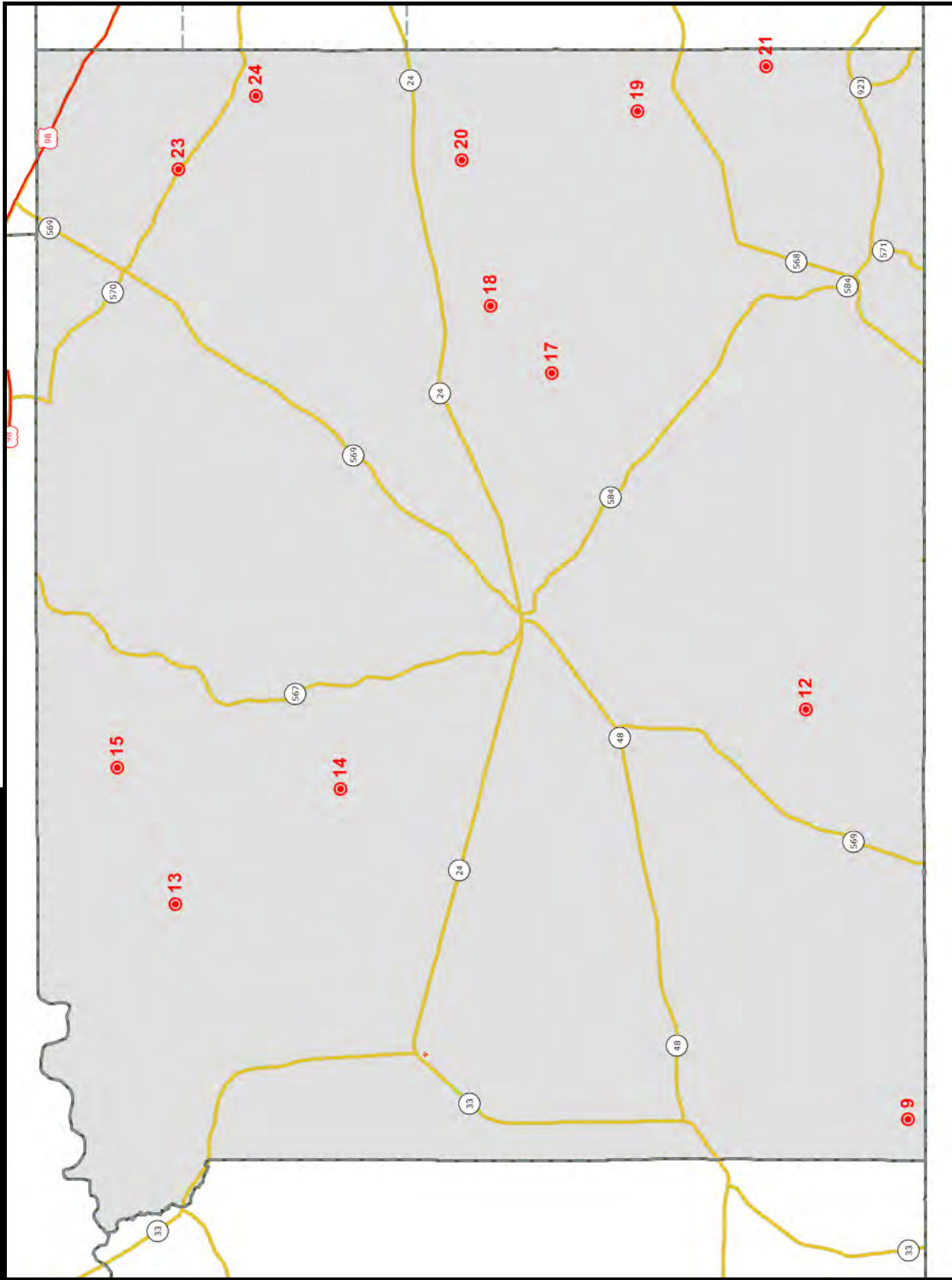
Since the 2010 census, twelve Mississippi public school districts have been consolidated with another district or districts. PEER included the maps for the original school districts in the compilation of Mississippi school districts’ maps and bridge information provided on the PEER website and indicated with an asterisk (*) on each map that the district has since been consolidated with another district.

SOURCE: PEER analysis of school district boundaries from the U. S. Census Bureau Data (2010); bridge locations and statuses from the National Bridge Index Database (April 2015); and, bridge weight limit

⁸PEER excluded specialized districts (e. g., Mississippi School for the Arts, agricultural high schools) from this analysis. Also, as of July 1, 2015, the following school districts had been consolidated with another district or districts: Benoit, Clay County, Drew, Indianola, Mound Bayou, North Bolivar, Oktibbeha County, Shaw, Starkville, Sunflower County, West Bolivar, and West Point. PEER included the maps for the original school districts, but indicated by an asterisk (*) on each of these maps that the district has been or is in process of being consolidated with another district.

ratings from the MDOT Office of State Aid Road Construction and MDOT Bridge and Structure Division.

Amite County School District



Deficient Bridges: See Reverse for Additional Information

DEFICIENT BRIDGE IDENTIFICATION AND LOCATION INFORMATION: Amite County School District

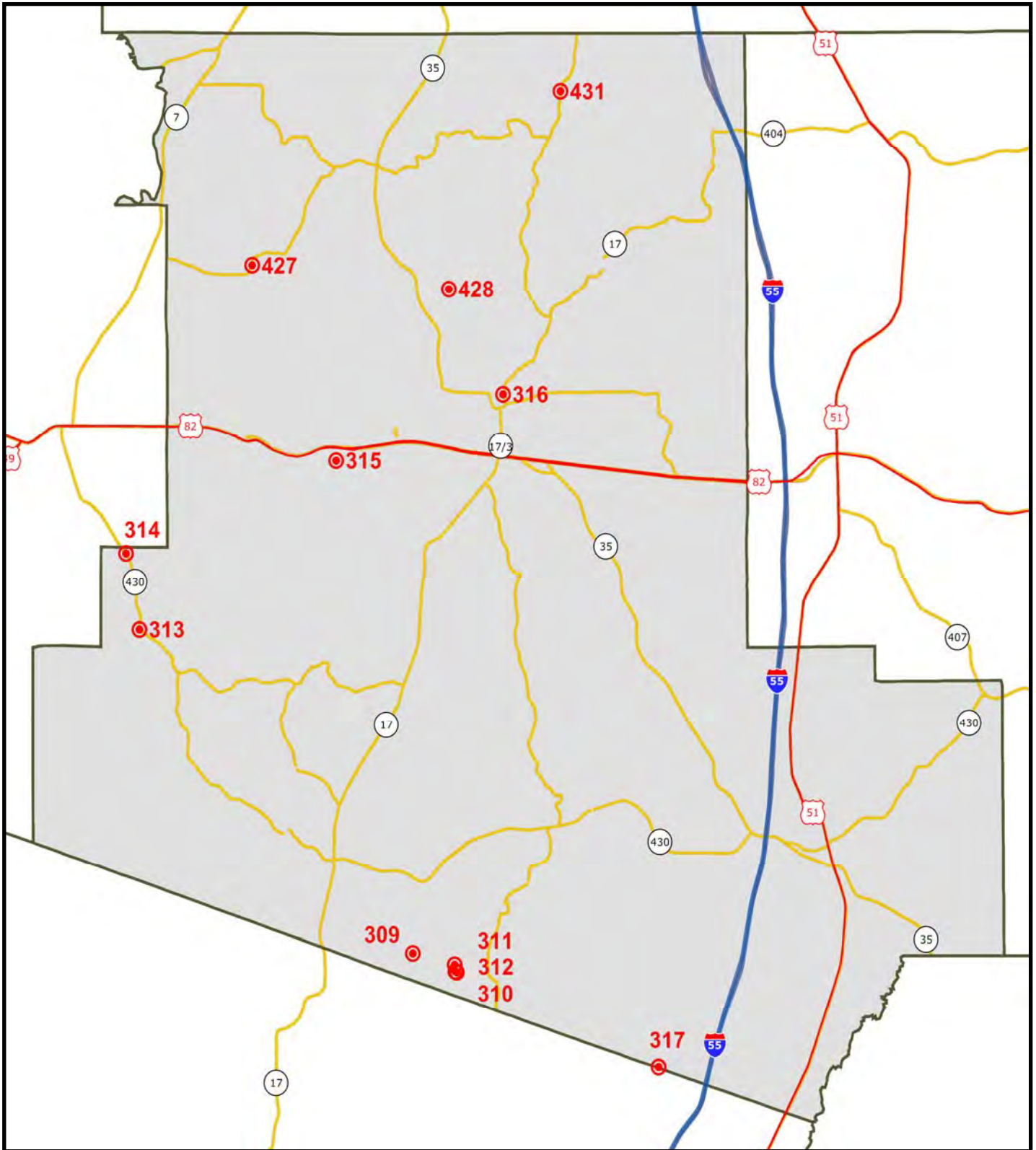
PEER ID	NBI STRUCTURE ID	FEATURES INTERSECTED	FACILITY CARRIED BY STRUCTURE	PLS LOCATION
9	SA03000000000008	LARGE DRAIN	COPELL ROAD	SEC 37 T 1 N R 2E
12	SA03000000000028	WEST FORK AMITE RIVER	LOWER CENTREVILLE	SEC 18 T 1 N R 4E
13	SA03000000000151	BRANCH	FOX ROAD	SEC_20_T4N_R3E
14	SA03000000000101	SMALL DRAIN	GRAVES CHAPEL ROAD	SEC 15 T 3 N R 3E
15	SA03000000000149	CASTON CREEK	HANCOCK ROAD	SEC 14 T 4 N R 3E
17	SA03000000000075	EAST FORK AMITE RIVER	SWAMP ROAD	SEC 10 T 2 N R 5E
18	SA03000000000070	LARGE DRAIN	TURNER ROAD	SEC 1 T 2 N R 5E
19	SA03000000000088	TICKFAW CREEK	MIXON ROAD	SEC 26 T 2 N R 6E
20	SA03000000000132	LARGE CREEK	MIDDLE GLADING RD.	SEC 34 T 3 N R 6E
21	SA03000000000204	CREEK	BRASHAM ROAD	SEC_12_T1N_R6E
23	SA03000000000203	GORDON CREEK	WOMACK ROAD	SEC_21_T4N_R6E
24	SA03000000000193	SMALL CREEK	TANGIPAHOA ROAD	SEC 35 T 4 N R 6E

TOTAL DEFICIENT BRIDGES	OWNER			COST TO REPLACE OR REPAIR						
	COUNTY	CITY	STATE PARK	RAILROAD	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	TOTAL
Amite County School District	12	0	0	0	\$2,612,000	\$0	\$0	\$0	\$0	\$2,612,000

DISTRICT PROFILE

SCHOOL DISTRICT	TOTAL BRIDGES	SINGLE AXLE	GROSS WEIGHT	TANDEM	OPEN, SHOULD BE POSTED BUT IS NOT	CLOSED BRIDGES	NO DATA
Amite County School District	233		9	47	11	3	

Carroll County School District



 Deficient Bridges: See Reverse for Additional Information

DEFICIENT BRIDGE IDENTIFICATION AND LOCATION INFORMATION: Carroll County School District

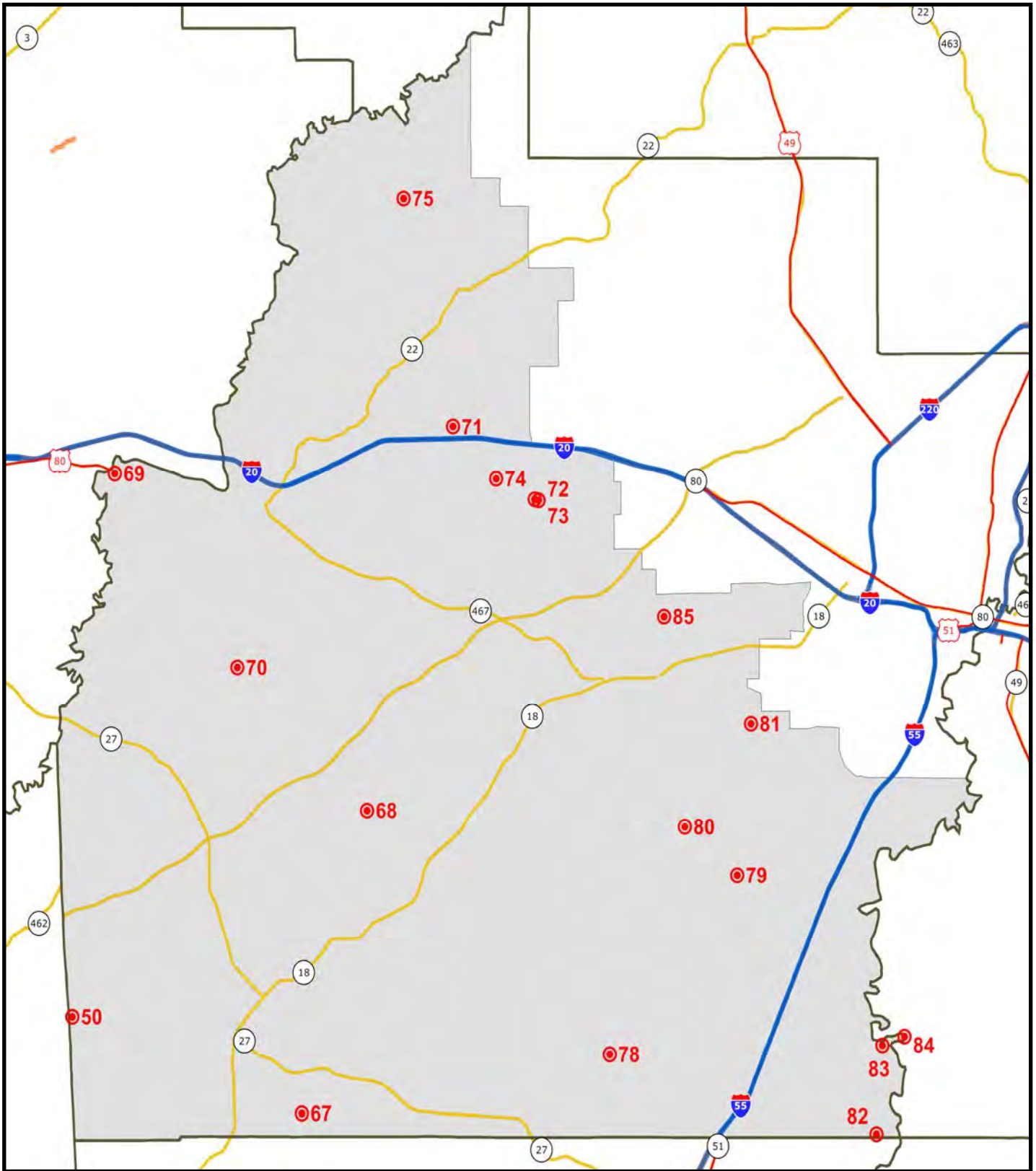
PEER ID	NBI STRUCTURE ID	FEATURES INTERSECTED	FACILITY CARRIED BY STRUCTURE	PLS LOCATION
309	SA0800000000190	CREEK	CR 166	SEC 34 T16N R 3E
310	SA0800000000001	RELIEF FOR FANNEGUSHA CK	CO RD 43	SEC 1 T16N R 3E
311	SA0800000000176	BRANCH OF FANNEGUSHA	CO RD 43	SEC 2 T16N R 3E
312	SA0800000000002	FANNEGUSHA CK	CO RD 43	SEC 1 T16N R 3E
313	SA0800000000071	BCH OF ABOTCAPUTA CK	OLD HWY 430	SEC 17 T18N R 2E
314	SA0800000000070	DITCH	HWY 430	SEC 6 T18N R 2E
315	SA0800000000188	BRANCH	CO RD 369	SEC 20 T19N R 3E
316	SA0800000000189	CREEK	CR 297	SEC 7 T19N R 4E
317	SA0800000000009	BCH OF BIG BLACK RIVER	CO RD 36	SEC 19 T16N R 5E
427	SA0800000000186	CREEK	CAMBELL RD	SEC 23 T20N R 2E
428	SA0800000000142	LITTLE TEOC CREEK	CO RD 215	SEC 26 T20N R 3E
431	SA0800000000164	POTACOCOWA CREEK	CO RD 100	SEC 28 T21N R 4E

TOTAL DEFICIENT BRIDGES	OWNER			COST TO REPLACE OR REPAIR							
	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	TOTAL
Carroll County School District	12	0	0	0	0	\$3,044,000	\$0	\$0	\$0	\$0	\$3,044,000

DISTRICT PROFILE

SCHOOL DISTRICT	TOTAL BRIDGES	SINGLE AXLE	GROSS WEIGHT	TANDEM	OPEN, SHOULD BE POSTED BUT IS NOT	CLOSED BRIDGES	NO DATA
Carroll County School District	240		8	68	14	4	

Hinds County School District



 Deficient Bridges: See Reverse for Additional Information

DEFICIENT BRIDGE IDENTIFICATION AND LOCATION INFORMATION: Hinds County School District

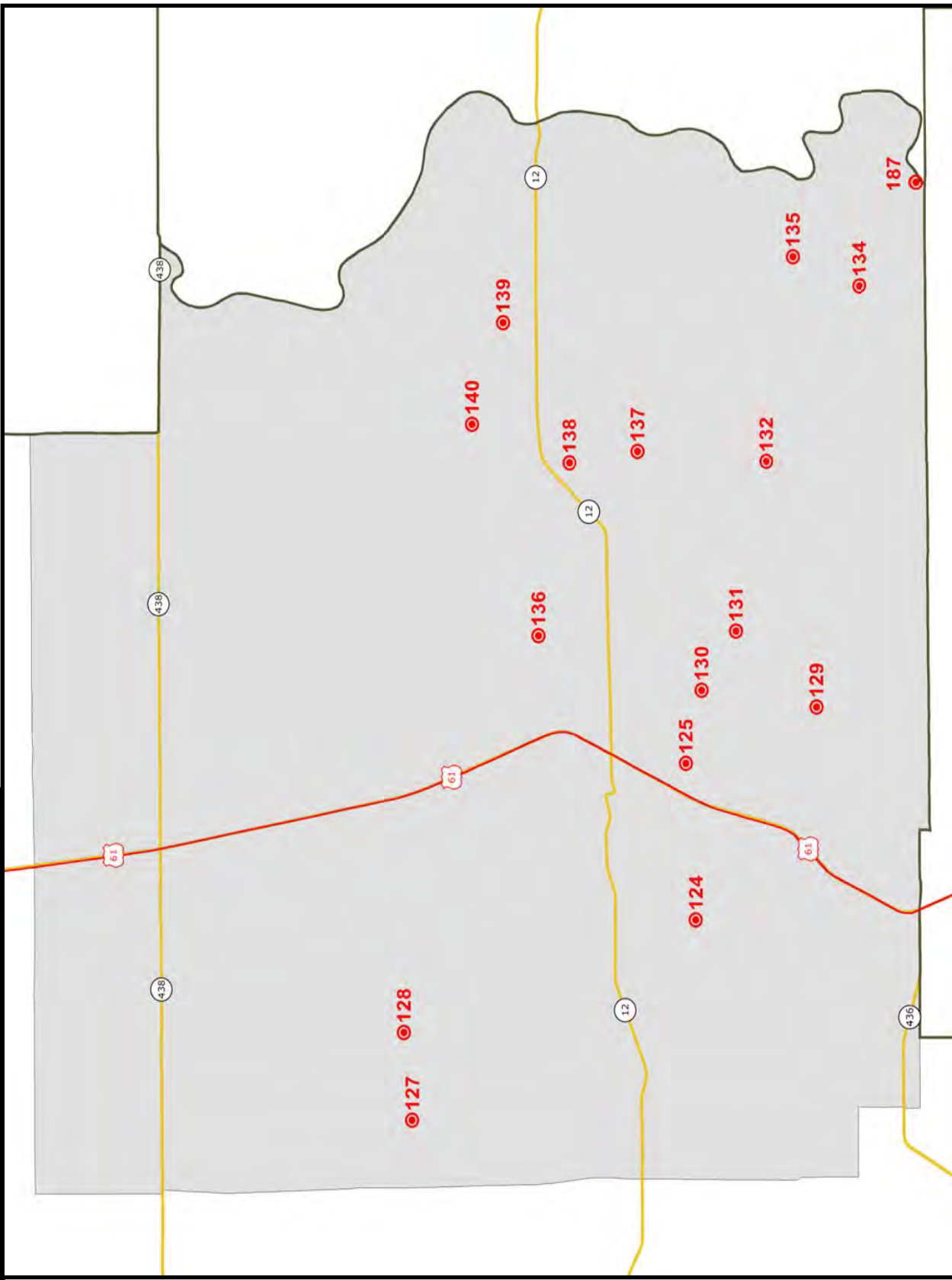
PEER ID	NBI STRUCTURE ID	FEATURES INTERSECTED	FACILITY CARRIED BY STRUCTURE	PLS LOCATION
50	SA2500000000369	BIG SAND CREEK	HUNT RD	SEC 16 T13N R 5E
67	SA2500000000041	WHITE OAK CREEK	LOWWATER BR RD	SEC 35 T 3N R 4W
68	SA2500000000084	BITTER CREEK	LEARNED RD	SEC 18 T 4N R 3W
69	SA2500000000391	RELIEF FOR BIG BLACK R	OLD HWY 80	SEC 22 T16N R 5E
70	SA2500000000185	BCH OF 14 MILE CREEK	MIDDLE ROAD	SEC 21 T 5N R 4W
71	SA2500000000301	BCH OF BAKERS CREEK	CAROL JOHNS RD	SEC 15 T 6N R 3W
72	SA2500000000292	RELIEF FOR BAKERS CREEK	ST. THOMAS ROAD	SEC 30 T 6N R 2W
73	SA2500000000293	RELIEF FOR BAKERS CREEK	ST THOMAS ROAD	SEC 30 T 6N R 2W
74	SA2500000000304	RELIEF BAKERS CR	CHAMPION HILL RD	SEC 23 T 6N R 3W
75	SA2500000000353	COX CREEK	FARR RD	SEC 8 T 7N R 3W
78	SA2500000000018	WHITE OAK CREEK LITTLE	TANK RD	SEC 21 T 3N R 2W
79	SA2500000000060	LITTLE CREEK	KIMBALL ROAD	SEC 29 T 4N R 1W
80	SA2500000000073	RHODES CREEK	OWENS RD	SEC 13 T 4N R 2W
81	SA2500000000159	BCH OF BIG CREEK	GORE RD	SEC 32 T 5N R 1W
82	SA2500000000013	RELIEF FOR PEARL RIVER	MONCURE RD	SEC 31 T 3N R 1E
83	SA2500000000008	VAUGHN CR	ROSEMARY RD	SEC 19 T 3N R 1E
84	SA2500000000007	PEARL RIVER	ROSEMARY RD	SEC 18 T 3N R 1E
85	SA2500000000170	BCH OF BAKERS CREEK	N MIDWAY ROAD	SEC 14 T 5N R 2W

TOTAL DEFICIENT BRIDGES	OWNER			COST TO REPLACE OR REPAIR				TOTAL			
	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	COUNTY	CITY		STATE PARK	PRIVATE	RAILROAD
Hinds County School District	18	0	0	0	0	\$6,108,000	\$0	\$0	\$0	\$0	\$6,108,000

DISTRICT PROFILE

SCHOOL DISTRICT	TOTAL BRIDGES	SINGLE AXLE	GROSS WEIGHT	TANDEM	OPEN, SHOULD BE POSTED BUT IS NOT	CLOSED BRIDGES	NO DATA
Hinds County School District	274		13	21	5	4	

Hollandale School District



Deficient Bridges: See Reverse for Additional Information

DEFICIENT BRIDGE IDENTIFICATION AND LOCATION INFORMATION: Hollandale School District

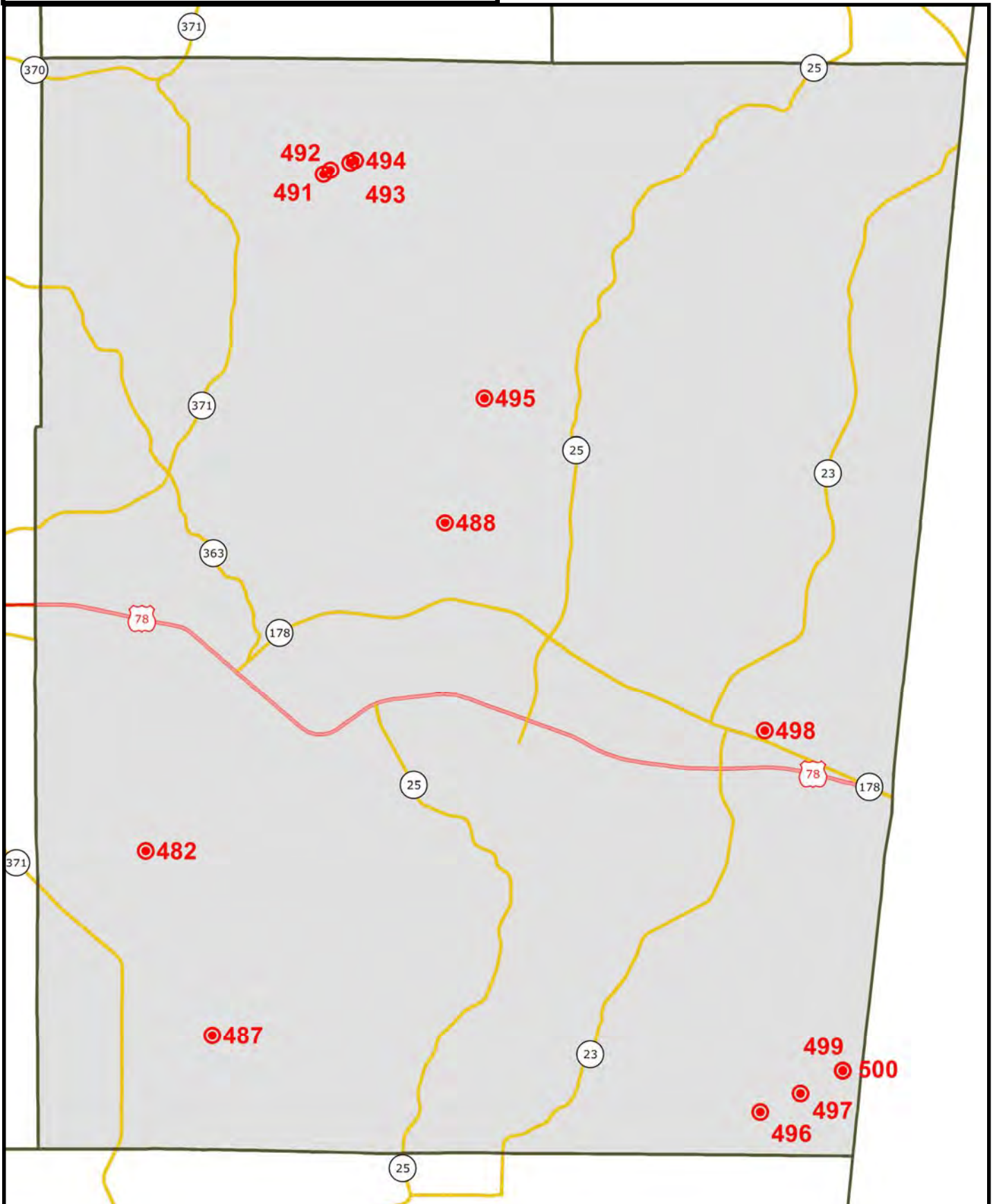
PEER ID	NBI STRUCTURE ID	FEATURES INTERSECTED	FACILITY CARRIED BY STRUCTURE	PLS LOCATION
124	SA7600000000067	DITCH-1006	OILWELL ROAD	SEC 14 T15N R 7W
125	SA7600000000052	DEER CREEK	FAS 1505 MURPHY	SEC 17 T15N R 6W
127	SA7600000000133	CANAL	FAS 624AVONDARLOVE	SEC 21 T16N R 7W
128	SA7600000000136	CANAL	FAS624 AVONDARLOVE	SEC 28 T16N R 7W
129	SA7600000000059	CANAL	TREADWAY ROAD	SEC 29 T15N R 6W
130	SA7600000000051	CANAL	FAS 1505 MURPHY	SEC 16 T15N R 6W
131	SA7600000000050	CANAL	FAS 1505 MURPHY	SEC 15 T15N R 6W
132	SA7600000000056	CANAL - 1024	WATSON RD	SEC 24 T15N R 6W
134	SA7600000000033	DITCH NO 11	FONTENOT ROAD	SEC 29 T15N R 5W
135	SA76000000000332	BAYOU-1765	LESLIE ROAD	SEC 21 T15N R05W
136	SA7600000000123	CANAL	AIRPORT ROAD	SEC 34 T16N R 6W
137	SA7600000000046	FOUR MILE LAKE	DYSON ROAD	SEC 12 T15N R 6W
138	SA7600000000040	CANAL - 1024	WATSON RD	SEC 1 T15N R 6W
139	SA7600000000102	DITCH NO 5	MCCULLUM ROAD	SEC 32 T16N R 5W
140	SA7600000000116	FOUR MILE BAYOU	BOGUE ROAD	SEC 25 T16N R 6W
187	SA7600000000039	BAYOU	FAS 1505 MURPHY	SEC 34 T15N R 5W

TOTAL DEFICIENT BRIDGES	OWNER			COST TO REPLACE OR REPAIR				TOTAL			
	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	COUNTY	CITY		STATE PARK	PRIVATE	RAILROAD
Hollandale School District	16	0	0	0	0	\$4,531,000	\$0	\$0	\$0	\$0	\$4,531,000

DISTRICT PROFILE

SCHOOL DISTRICT	TOTAL BRIDGES	SINGLE AXLE	GROSS WEIGHT	TANDEM	OPEN, SHOULD BE POSTED BUT IS NOT	CLOSED BRIDGES	NO DATA
Hollandale School District	104		13	10	2	3	

Itawamba County School District



 Deficient Bridges: See Reverse for Additional Information

DEFICIENT BRIDGE IDENTIFICATION AND LOCATION INFORMATION: Itawamba County School District

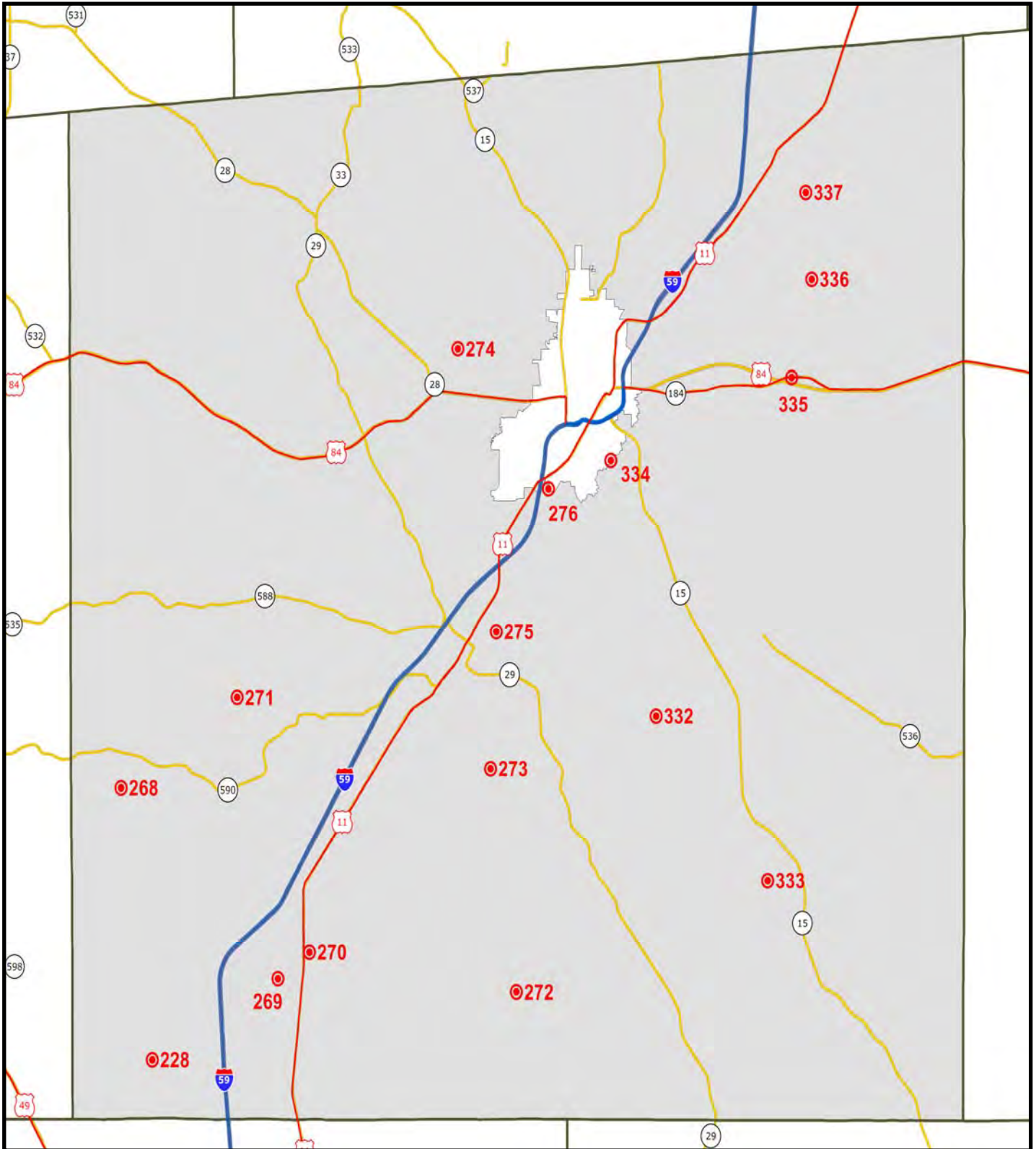
PEER ID	NBI STRUCTURE ID	FEATURES INTERSECTED	FACILITY CARRIED BY STRUCTURE	PLS LOCATION
482	SA2900000000097	GREENWOOD CREEK	MATTOX SPRINGS RD.	SEC 19 T10S R 8E
487	SA2900000000122	BRANCH OF BOGUEFALA CRK	WYGUL ROAD	SEC 16 T11S R 8E
488	SA2900000000060	UNNAMED CREEK	ROUTE 0140	SEC 17 T 9S R 9E
491	SA2900000000006	DONIVAN CREEK BRANCH	BOAT RAMP ROAD	SEC 35 T 7S R 8E
492	SA2900000000008	OLD TOMBIGBEE RIVER	BOAT RAMP ROAD	SEC 35 T 7S R 8E
493	SA2900000000009	UNNAMED CREEK	BOAT RAMP ROAD	SEC 36 T 7S R 8E
494	SA2900000000010	UNNAMED CREEK	BOAT RAMP ROAD	SEC 36 T 7S R 8E
495	SA2900000000024	CUMMINGS CREEK	SCOTT SENTER RD	SEC 33 T 8S R 9E
496	SA2900000000137	SPLUNGE CREEK	CAGLE/LINDSEY ROAD	SEC 27 T11S R10E
497	SA2900000000135	SPLUNGE CREEK	WRIGHT ROAD SE	SEC 23 T11S R10E
498	SA2900000000110	JOHNS CREEK	BANKHEAD ROAD S.E.	SEC 10 T10S R10E
499	SA2900000000131	SPLUNGE CREEK	WILSON ROAD SE	SEC_14_T11S_R10E
500	SA2900000000140	UNNAMED CREEK	GREENWOOD-HOPEWELL	SEC 18 T10S R 8E

TOTAL DEFICIENT BRIDGES	OWNER			COST TO REPLACE OR REPAIR						
	COUNTY	CITY	STATE PARK	RAILROAD	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	TOTAL
Itawamba County School District	13	0	0	0	\$3,249,000	\$0	\$0	\$0	\$0	\$3,249,000

DISTRICT PROFILE

SCHOOL DISTRICT	TOTAL BRIDGES	SINGLE AXLE	GROSS WEIGHT	TANDEM	OPEN, SHOULD BE POSTED BUT IS NOT	CLOSED BRIDGES	NO DATA
Itawamba County School District	242		11	17	11	2	

Jones County School District



Deficient Bridges: See Reverse for Additional Information

DEFICIENT BRIDGE IDENTIFICATION AND LOCATION INFORMATION: Jones County School District

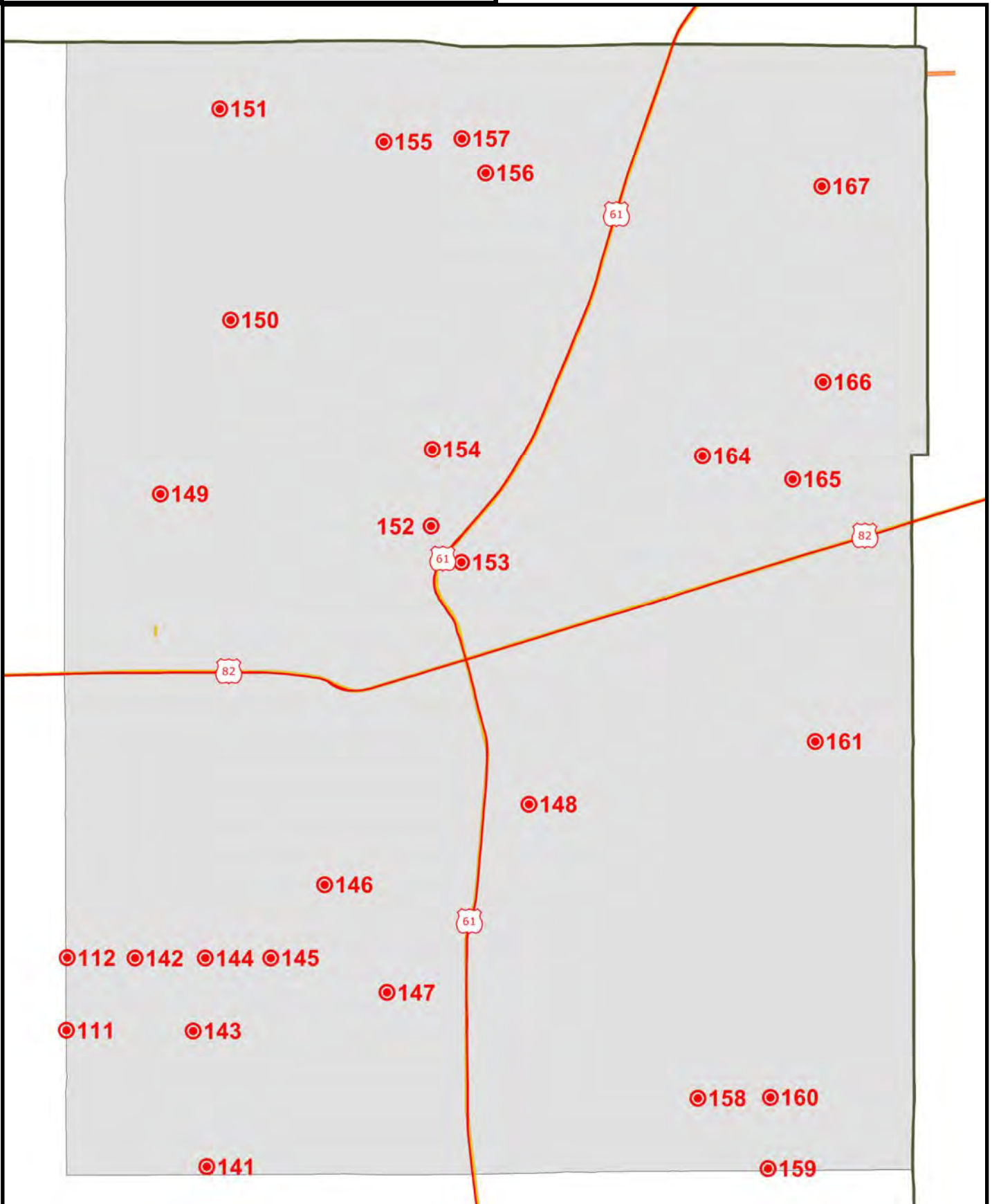
PEER ID	NBI STRUCTURE ID	FEATURES INTERSECTED	FACILITY CARRIED BY STRUCTURE	PLS LOCATION
228	SA3400000000054	PROVIDENCE CREEK	NEW ZION RD	SEC 25 T 6N R14W
268	SA3400000000096	SNOWS CREEK	LOTT LANE	SEC 23 T 7N R14W
269	SA3400000000041	THOMAS CREEK	OLD HWY 11	SEC 15 T 6N R13W
270	SA3400000000039	THOMAS CREEK	SELLERS RD	SEC 11 T 6N R13W
271	SA3400000000079	HOSKINS CREEK	HOSKINS CREEK RD	SEC 9 T 7N R13W
272	SA3400000000024	TALLAHALA CREEK	OVERTT-MOSELLE RD	SEC 14 T 6N R12W
273	SA3400000000077	TALLAHALA CREEK	THREE MILE STRETCH	SEC 22 T 7N R12W
274	SA3400000000192	HORSE CREEK	HINES RD	SEC 33 T 9N R12W
275	SA3400000000139	TALLAHOMA CREEK	EVILLE-TKRS CR RD	SEC 35 T 8N R12W
276	SA3400000000132	SANDY CREEK	DONCURT DRIVE	SEC 13 T 8N R12W
332	SA3400000000062	GATOR BRANCH	SPURLINE RD	SEC 9 T 7N R11W
333	SA3400000000003	WILDCAT CREEK	WILL YOUNG RD	SEC 6 T 6N R10W
334	SA3400000000115	TALLAHALA CREEK	TOM WINDHAM RD	SEC 8 T 8N R11W
335	SA3400000000227	TRIB TO BOGUEHOMA CREEK	OLD HIGHWAY 84	SEC_31_T9N_R10W
336	SA3400000000165	BOGUE HOMA CREEK	RED HILL GROSS RD	SEC 20 T 9N R10W
337	SA3400000000158	BOGUE HOMA CREEK	P'GROVE-SVILLE RD	SEC 8 T 9N R10W

TOTAL DEFICIENT BRIDGES	OWNER			COST TO REPLACE OR REPAIR			TOTAL			
	COUNTY	CITY	STATE PARK	RAILROAD	COUNTY	CITY		STATE PARK	PRIVATE	RAILROAD
Jones County School District	15	1	0	0	\$6,305,000	\$127,000	\$0	\$0	\$0	\$6,432,000

DISTRICT PROFILE

SCHOOL DISTRICT	TOTAL BRIDGES	SINGLE AXLE	GROSS WEIGHT	TANDEM	OPEN, SHOULD BE POSTED BUT IS NOT	CLOSED BRIDGES	NO DATA
Jones County School District	319		16	19	5		

Leland School District



 Deficient Bridges: See Reverse for Additional Information

DEFICIENT BRIDGE IDENTIFICATION AND LOCATION INFORMATION: Leland School District

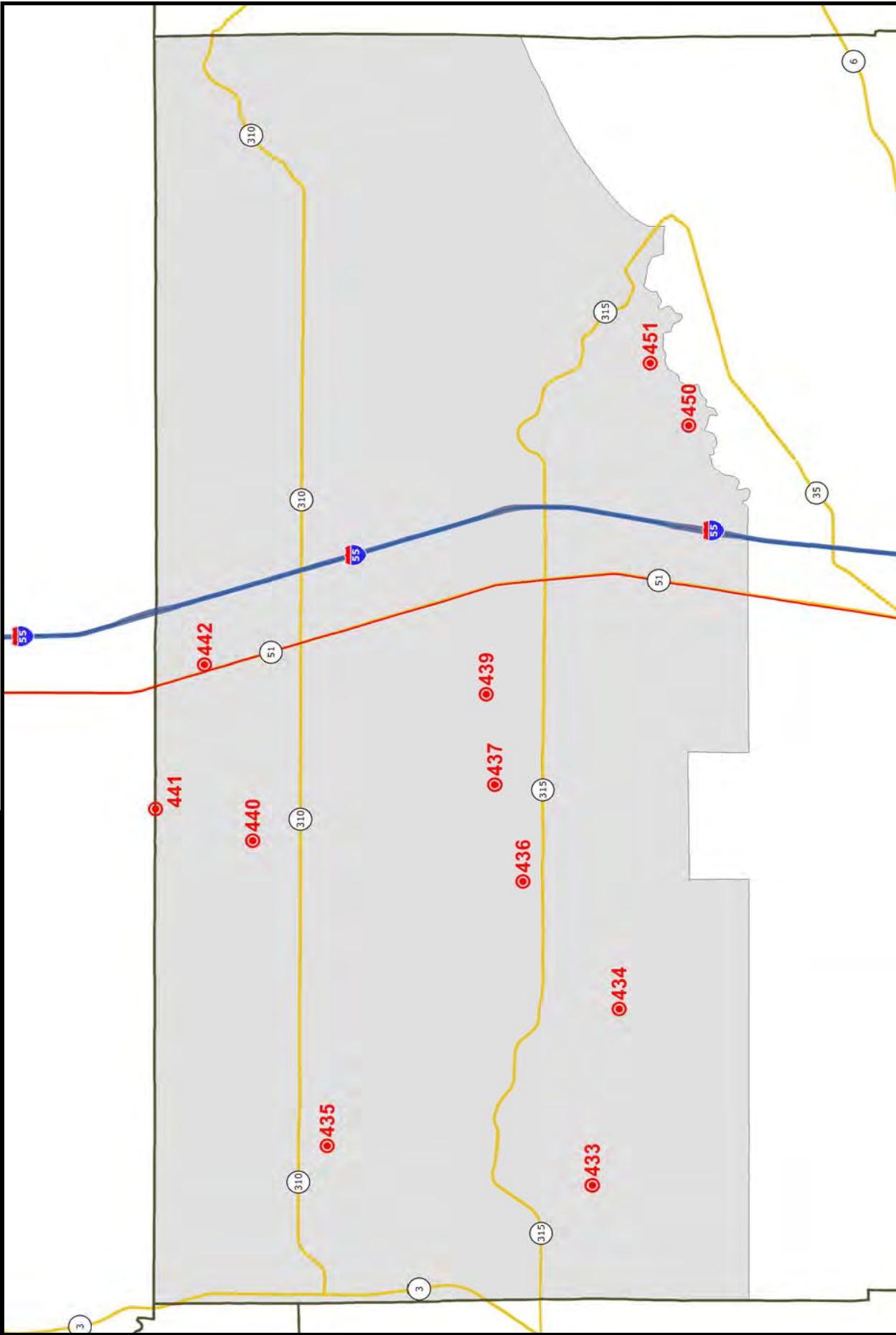
DISTRICT PROFILE

SCHOOL DISTRICT	TOTAL BRIDGES	SINGLE AXLE	GROSS WEIGHT	TANDEM	OPEN, SHOULD BE POSTED BUT IS NOT	CLOSED BRIDGES	NO DATA
Leland School District	106		21	8	2	5	

PEER ID	NBI STRUCTURE ID	FEATURES INTERSECTED	FACILITY CARRIED BY STRUCTURE	PLS LOCATION
111	SA7600000000169	DITCH NO 1	WILCOX ROAD	SEC 7 T1 7N R 7W
112	SA7600000000193	DITCH NO 7-1092	ARCHER RANGE ROAD	SEC 17 T1 7N R 8W
141	SA7600000000180	WIDOW BAYOU	FIRE TOWER ROAD	SEC 20 T1 7N R 7W
142	SA7600000000167	DITCH NO 1	BURDETT ROAD	SEC 5 T1 7N R 7W
143	SA7600000000171	BLACK BAYOU	WILCOX ROAD	SEC 8 T1 7N R 7W
144	SA7600000000168	DITCH NO 2	BURDETTE ROAD	SEC 5 T1 7N R 7W
145	SA7600000000166	DITCH NO 3	BURDETT ROAD	SEC 4 T1 7N R 7W
146	SA7600000000243	BAYOU - 0921	COOPER ROAD	SEC 34 T1 8N R 7W
147	SA7600000000173	DEER CREEK	FAS 1600 KENNEDY	SEC 11 T1 7N R 7W
148	SA7600000000223	CANAL	FRAZIER ROAD	SEC 30 T1 8N R 6W
149	SA7600000000224	CANAL 0867	POTTER ROAD	SEC 5 T1 8N R 7W
150	SA7600000000288	CANAL	FAS618FEATHERFARM	SEC 21 T1 9N R 7W
151	SA7600000000280	CREEK	WINTERVILLE-PRISC	SEC 9 T1 9N R 7W
152	SA7600000000228	CREEK	NEPANEER ROAD	SEC 12 T1 8N R 7W
153	SA7600000000229	CANAL	GRIFFIN ROAD	SEC 12 T1 8N R 7W
154	SA7600000000295	BEAR LAKE	NEPANEER ROAD	SEC 36 T1 9N R 7W
155	SA7600000000282	CANAL	FAS 616 WINTERVILL	SEC 11 T1 9N R 7W
156	SA7600000000284	COLD WATER CREEK	NEPANEER ROAD	SEC 12 T1 9N R 7W
157	SA7600000000283	OLD BOGUEPHALIA	FAS 616 NEPANEER	SEC 12 T1 9N R 7W
158	SA7600000000159	DRAINAGE DITCH NO 31	BAKER ROAD	SEC 15 T1 7N R 6W
159	SA7600000000164	CANAL	FAS 619 TRIBBETT	SEC 27 T1 7N R 6W
160	SA7600000000162	CANAL	FAS 619 TRIBBETT	SEC 22 T1 7N R 6W
161	SA7600000000220	JOHNSON SLOUGH	GENELLE ROAD	SEC 26 T1 8N R 6W
164	SA7600000000277	DITCH NO 16	COLLIER ROAD	SEC 33 T1 9N R 6W
165	SA7600000000210	SIX MILE BAYOU	BAMBOO ROAD	SEC 2 T1 8N R 6W
166	SA7600000000273	DITCH NO 14	RUSSELL ROAD	SEC 26 T1 9N R 6W
167	SA7600000000269	CANAL	HELM ROAD 0804	SEC 14 T1 9N R 6W

TOTAL DEFICIENT BRIDGES	OWNER				COST TO REPLACE OR REPAIR						
	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	TOTAL
Leland School District	27	0	0	0	0	\$6,363,000	\$0	\$0	\$0	\$0	\$6,363,000

North Panola School District



Deficient Bridges: See Reverse for Additional Information

DEFICIENT BRIDGE IDENTIFICATION AND LOCATION INFORMATION: North Panola School District

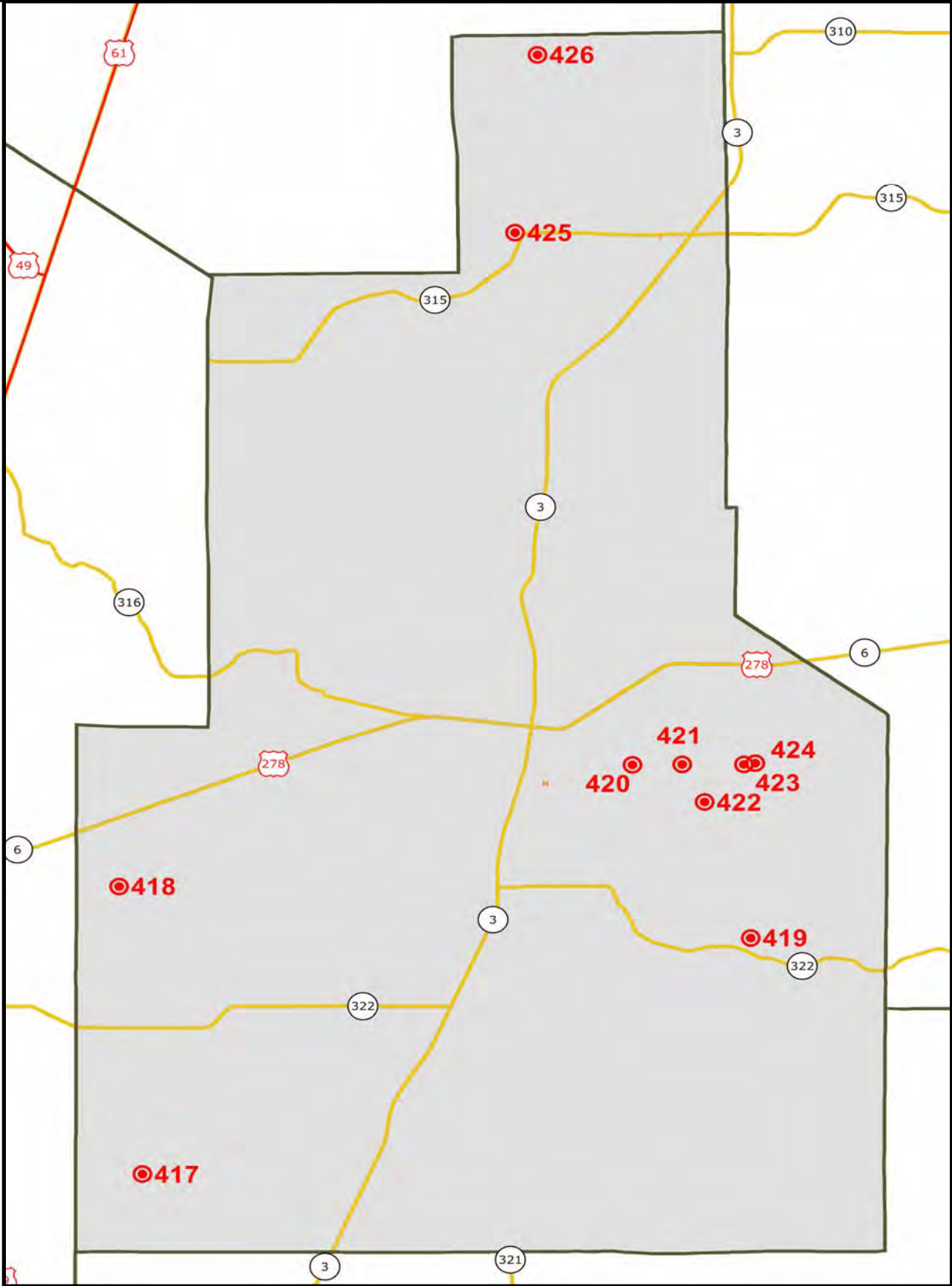
PEER ID	NBI STRUCTURE ID	FEATURES INTERSECTED	FACILITY CARRIED BY STRUCTURE	PLS LOCATION
433	SA5400000000090	DRAINAGE CANAL	SILO ROAD	SEC_4_T8S_R9W
434	SA5400000000079	DAVIS CREEK	WARD ROAD	SEC_6_T8S_R8W
435	SA5400000000052	CREEK	FARMER ROAD	SEC_3_T7S_R9W
436	SA5400000000050	FLOYD CREEK	MELROSE ROAD	SEC_28_T7S_R8W
437	SA5400000000048	CROOKED CREEK	BURDETT ROAD	SEC_25_T7S_R8W
439	SA5400000000042	MCIVOR CREEK	OLD PANOLA ROAD	SEC_19_T7S_R7W
440	SA5400000000020	ARKABUTLA CREEK	LUCIUS TAYLOR RD.	SEC_34_T6S_R8W
441	SA5400000000015	ARKABUTLA CREEK	TATE-PANOLA CO LIN	SEC 23 T 6S R 8W
442	SA5400000000011	CREEK	ABE CHAPEL ROAD	SEC_29_T6S_R7W
450	SA5400000000060	CREEK	RIVER ROAD	SEC_7_T8S_R6W
451	SA5400000000062	CREEK	RIVER ROAD	SEC_9_T8S_R6W


TOTAL DEFICIENT BRIDGES	OWNER				COST TO REPLACE OR REPAIR						
	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	TOTAL
North Panola School District	11	0	0	0	0	\$313,4000	\$0	\$0	\$0	\$0	\$313,4000

DISTRICT PROFILE

SCHOOL DISTRICT	TOTAL BRIDGES	SINGLE AXLE	GROSS WEIGHT	TANDEM	OPEN, SHOULD BE POSTED BUT IS NOT	CLOSED BRIDGES	NO DATA
North Panola School District	96		8	4	2	3	

Quitman County School District



 Deficient Bridges: See Reverse for Additional Information

DEFICIENT BRIDGE IDENTIFICATION AND LOCATION INFORMATION: Quitman County School District

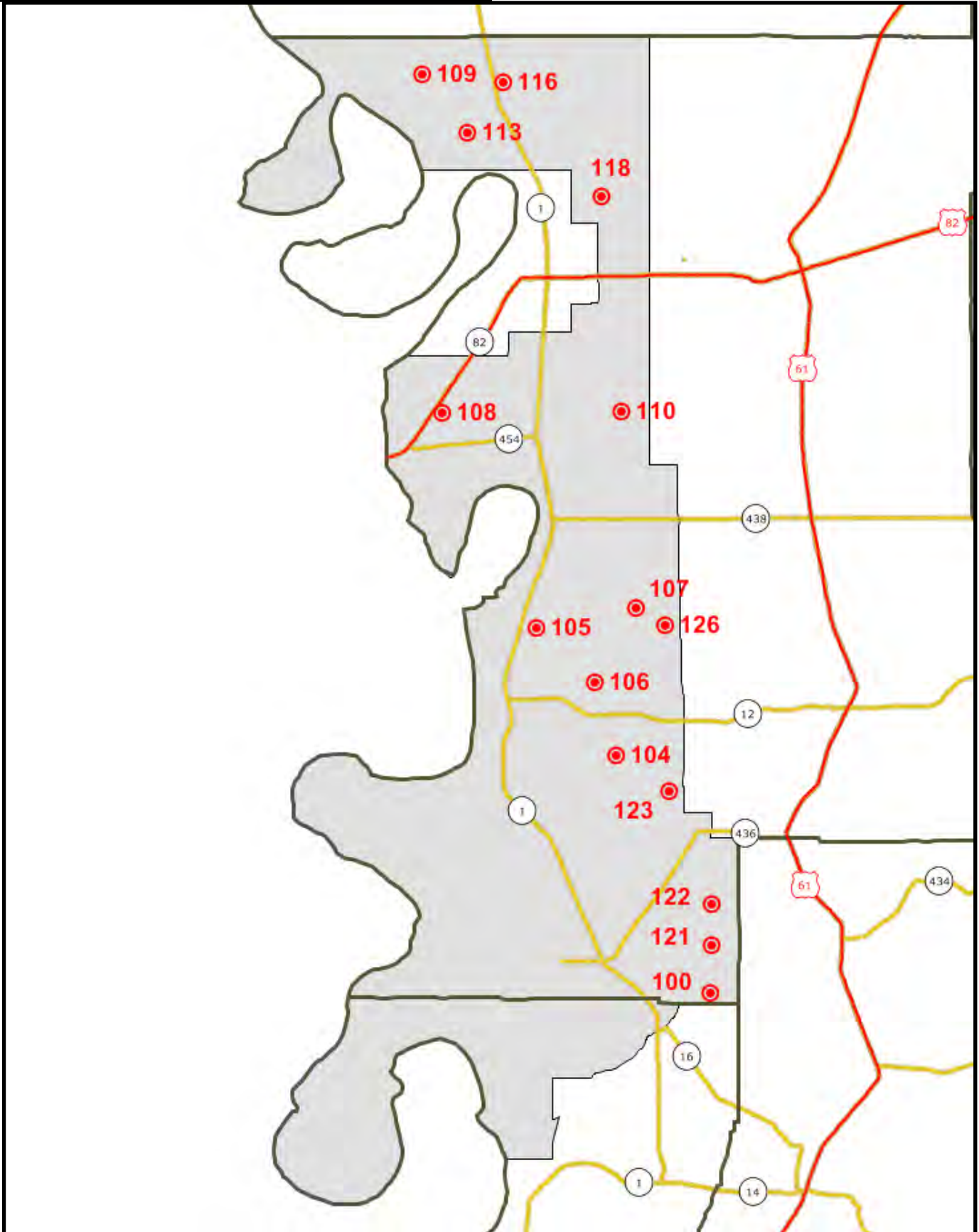
PEER ID	NBI STRUCTURE ID	FEATURES INTERSECTED	FACILITY CARRIED BY STRUCTURE	PLS LOCATION
417	SA60000000000049	BAYOU	ROOSEVELT ROAD	SEC 29 T26N R 2W
418	SA60000000000079	DRAINAGE DITCH	SHADY GROVE	SEC 19 T27N R 2W
419	SA60000000000071	OLD LITTLE TALLAHATCHIE	SUTTON ROAD	SEC 27 T27N R 1E
420	SA60000000000063	MARKS CUTOFF	HOOD ROAD	SEC 6 T27N R 1E
421	SA60000000000061	QUITMAN-PANOLA DITCH	HOOD ROAD	SEC 5 T27N R 1E
422	SA60000000000059	DRAINAGE DITCH	COOK ROAD	SEC 4 T27N R 1E
423	SA60000000000058	BOBO BAYOU	HOOD ROAD	SEC 4 T27N R 1E
424	SA60000000000055	BEECH BAYOU	HOOD ROAD	SEC 3 T27N R 1E
425	SA60000000000014	OLD COLDWATER RIVER	FLBA HARBOR ROAD	SEC 32 T 7S R10W
426	SA60000000000004	OLD COLDWATER RIVER	T&P 29	SEC 5 T 7S R10W

TOTAL DEFICIENT BRIDGES	OWNER			COST TO REPLACE OR REPAIR							
	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	TOTAL
Quitman County School District	10	0	0	0	0	\$2,047,000	\$0	\$0	\$0	\$0	\$2,047,000

DISTRICT PROFILE

SCHOOL DISTRICT	TOTAL BRIDGES	SINGLE AXLE	GROSS WEIGHT	TANDEM	OPEN, SHOULD BE POSTED BUT IS NOT	CLOSED BRIDGES	NO DATA
Quitman County School District	118		6	7	1	4	

Western Line School District



 Deficient Bridges: See Reverse for Additional Information

DEFICIENT BRIDGE IDENTIFICATION AND LOCATION INFORMATION: Western Line School District

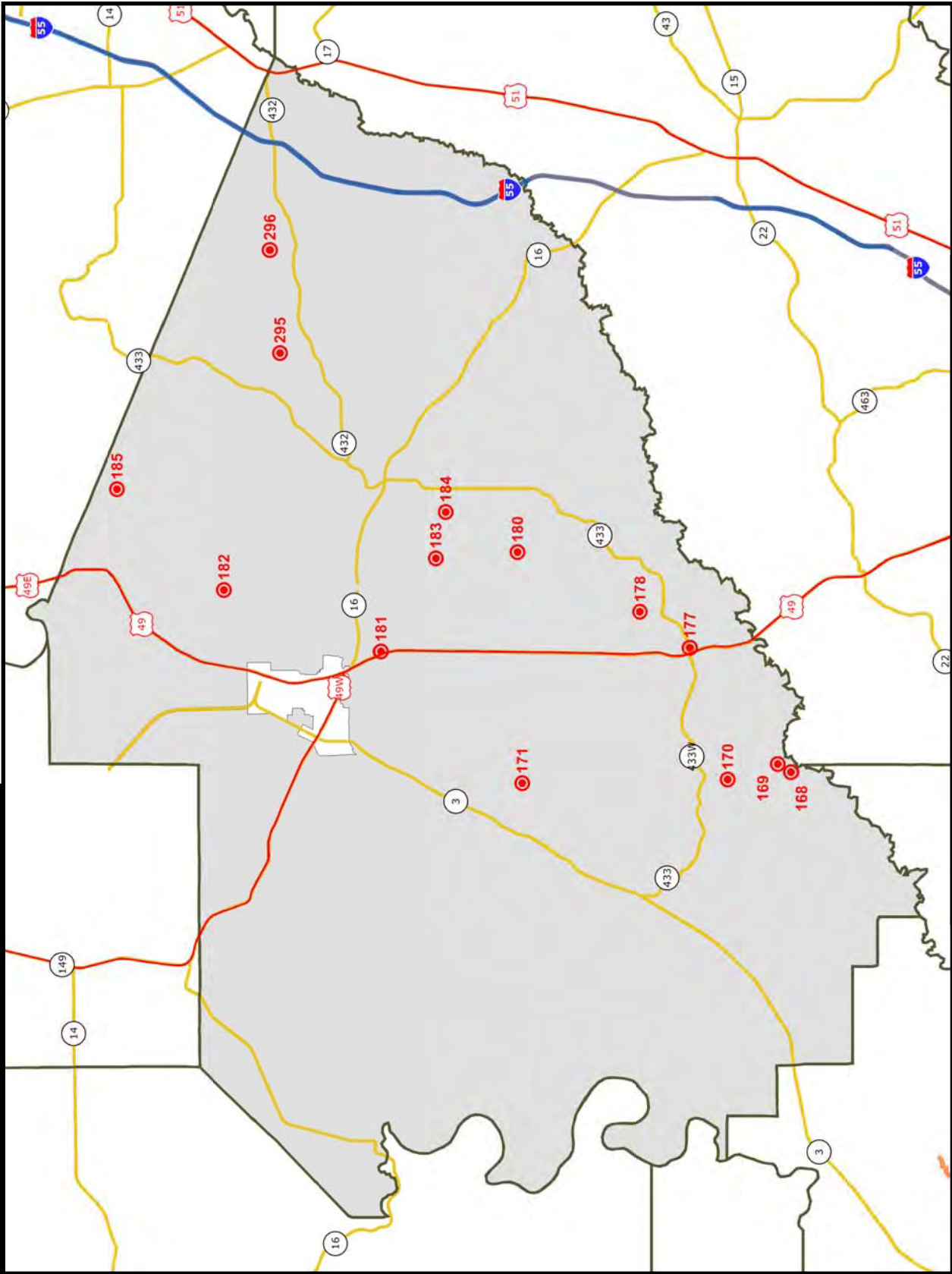
PEER ID	NBI STRUCTURE ID	FEATURES INTERSECTED	FACILITY CARRIED BY STRUCTURE	PLS LOCATION
100	SA76000000000008	CANAL	SAGO ROAD	SEC 33 T14N R 7W
104	SA76000000000082	CANAL	SURVEILLANCE STA	SEC 14 T15N R 8W
105	SA76000000000146	CANAL	POSSUM RIDGE ROAD	SEC 26 T16N R 8W
106	SA76000000000078	GRANICUS BAYOU	FAS 626 RIVERSIDE	SEC 3 T15N R 8W
107	SA76000000000143	CANAL	FAS624 AVONDARLOVE	SEC 20 T16N R 8W
108	SA76000000000208	CANAL	WILCOX ROAD	SEC 18 T17N R 9W
109	SA76000000000322	CANAL	HUNTINGTON POINT	SEC 24 T19N R 9W
110	SA76000000000192	DITCH NO 6	WILCOX ROAD	SEC 17 T17N R 8W
113	SA76000000000319	CANAL	DITCH BANK ROAD	SEC 17 T19N R 9W
116	SA76000000000303	CANAL	D P & L ROAD	SEC 7 T19N R 8W
118	SA76000000000245	HORSESHOE BAYOU	ABIDE ROAD	SEC 8 T18N R 8W
121	SA76000000000005	CANAL	PETE WOOD ROAD	SEC 21 T14N R 7W
122	SA76000000000003	CANAL	EIFLING ROAD	SEC 17 T14N R 7W
123	SA76000000000073	BLACK BAYOU	WOODSAWMILL ROAD	SEC 30 T15N R 7W
126	SA76000000000132	CANAL	FAS624 AVONDARLOVE	SEC 19 T16N R 7W

TOTAL DEFICIENT BRIDGES	OWNER			COST TO REPLACE OR REPAIR							
	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	TOTAL
Western Line School District	15	0	0	0	0	\$3,606,000	\$0	\$0	\$0	\$0	\$3,606,000

DISTRICT PROFILE

SCHOOL DISTRICT	TOTAL BRIDGES	SINGLE AXLE	GROSS WEIGHT	TANDEM	OPEN, SHOULD BE POSTED BUT IS NOT	CLOSED BRIDGES	NO DATA
Western Line School District	125		12	8	1	3	

Yazoo County School District



Deficient Bridges: See Reverse for Additional Information



DEFICIENT BRIDGE IDENTIFICATION AND LOCATION INFORMATION: Yazoo County School District

PEER ID	NBI STRUCTURE ID	FEATURES INTERSECTED	FACILITY CARRIED BY STRUCTURE	PLS LOCATION
168	SA8200000000017	BRANCH CREEK	LINK ROAD	SEC 36 T 9N R 3W
169	SA8200000000013	WALKER BRANCH	LINK ROAD	SEC 31 T 9N R 2W
170	SA8200000000015	TURKEYFOOT BRANCH	LEEABRE LANE	SEC 24 T 9N R 3W
171	SA8200000000056	THOMPSON CREEK	TINSLEY ROAD	SEC 1 T10N R 3W
177	SA8200000000005	MOUND CREEK	OLD HIGHWAY 49S	SEC 11 T 9N R 2W
178	SA8200000000043	BLUFF CREEK	ROSEHILL ROAD	SEC 31 T10N R 1W
180	SA8200000000026	WALSHESBA CREEK	GREEN ROAD	SEC_4_T10N_R1W
181	SA8200000000099	SHORT CREEK	WITHERSPOON ROAD	SEC 11 T11N R 2W
182	SA8200000000135	PINEY CREEK	GRABALL FREERUN RD	SEC 8 T12N R 1W
183	SA8200000000078	WALSHESBA CREEK	COX ROAD	SEC 21 T11N R 1W
184	SA8200000000A080	WALSHESBA CREEK	COX ROAD	SEC_23_T11N_R1W
185	SA8200000000188	CREEK	PINEY SPRINGS ROAD	SEC_13_T13N_R1W
295	SA8200000000147	PINEY CREEK	HARRIS SWAYZE ROAD	SEC 23 T12N R 1E
296	SA8200000000156	DRY CREEK	MOLESTAGE SLACK RD	SEC 16 T12N R 2E

TOTAL DEFICIENT BRIDGES	OWNER			COST TO REPLACE OR REPAIR			TOTAL
	COUNTY	CITY	STATE PARK	PRIVATE	RAILROAD	STATE PARK	
Yazoo County School District	14	0	0	0	0	\$3,251,000	\$3,251,000

DISTRICT PROFILE

SCHOOL DISTRICT	TOTAL BRIDGES	SINGLE AXLE	GROSS WEIGHT	TANDEM	OPEN, SHOULD BE POSTED BUT IS NOT	CLOSED BRIDGES	NO DATA
Yazoo County School District	272	3	11	43	4		

Appendix C: Additional Information on PEER's Methodology

PEER's methodology focused on the following primary areas: identifying bridges; determining posted weight limits for bridges; determining school bus weights; locating deficient bridges in the state; estimating the financial effects of deficient bridges on bus routes; and, identifying potential safety concerns regarding buses that cross deficient bridges.

Identifying Bridges

PEER conducted interviews with the staffs of the MDOT Bridge Division and the Office of State Aid Road Construction to discuss deficient bridges that could affect school district transportation routes. According to staff at these agencies, bridges that are structurally deficient or functionally obsolete could need repair or replacement but would not necessarily affect school district transportation. Engineering staff at each of these organizations suggested that PEER focus on the operational status of bridges (e. g., open to all traffic, closed to traffic, or posted with weight limits).

PEER utilized the following sources to obtain information regarding the operational status of bridges:

- the National Bridge Index database, as of April 2015, produced by the Federal Highway Administration and provided by the Mississippi Department of Transportation;
- posted weight limits for state system bridges, as of April 2015, provided by the Mississippi Department of Transportation; and,
- posted weight limits for local system bridges, as of April 2015, provided by the Office of State Aid Road Construction.

The bridges identified in these datasets are limited to bridges that are greater than twenty feet in length. Bridges less than twenty feet in length are not included in the NBI and were not evaluated by PEER.

Determining Posted Weight Limits for Bridges

To determine what posted weight limits should be applied to the NBI dataset of bridges to identify those that could apply to school buses, PEER took the following steps:

- determined gross vehicle weight rating of school buses;

- reviewed *Code of Federal Regulations* governing when a bridge should be posted with a weight limit;
- reviewed the American Association of State Highway and Transportation Officials *Bridge Inspection Manual* (2008); and,
- interviewed staff at MDOT and Office of State Aid Road Construction regarding bridge posting requirements.

Based on the information provided by the bus manufacturers, PEER used the heaviest gross vehicle weight rating for single axle Type D buses (33,000 pounds) to establish the upper weight restriction limit.

PEER did not use the heaviest axle weight ratings provided by the school bus manufacturers to identify weight limits for single axle vehicles because some of the rear axle weight ratings of some buses on the bus prices and companies list exceed the state legal load that prohibits vehicles from operating in Mississippi with more than 20,000 pounds of weight on a single axle. Thus, bridges only have weight limits if they cannot support 20,000 pounds on a single axle.

Therefore, the weight limits to identify deficient bridges that could impact school district transportation in Mississippi include those bridges that are closed to all vehicle traffic, posted for gross vehicle weight limits of up to 33,000 pounds, or posted for single axle weight limits of up to 20,000 pounds.

Determining School Bus Weights

PEER then sought to identify which posted weight limits could affect school district transportation based on the average weights of school buses in Mississippi.

To determine how much school buses weigh, PEER took the following steps:

- interviewed the Director of Pupil Transportation in the MDE Office of Safe and Orderly Schools;
- reviewed MDE policy and procedures concerning school buses, including the School Bus Minimum Standards and the Transportation Handbook;
- conducted a literature review to determine bus weight averages in other states; and,
- interviewed manufacturers of school buses in Mississippi based on the authorized list of vendors specified within MDE's School Bus Prices and Approved Companies list (for October 1, 2014, to September 30, 2015).

Based on the information provided by MDE and the manufacturers of school buses, PEER focused on the larger bus types to determine the highest possible weight that would apply to buses potentially crossing posted bridges.

Locating Deficient Bridges

PEER utilized a geographic information system to overlay school district boundaries in Mississippi (based on data from the U. S. Census Bureau) with the bridge locations from the April 2015 National Bridge Index. Once the bridge locations were established within each school district, the gross vehicle weight and single axle weight limits were applied as filters to identify the locations of deficient bridges within school districts.

This data was used to generate a count of the number of closed and posted bridges that could affect school bus routes for each school district in Mississippi. The geographic locations of all bridges identified by PEER that could affect school bus routes are located on maps on pages 37 through 58 of this report and on the PEER website (www.peer.state.ms.us; see Report #599, "Entire Appendix B").⁹

After identifying the school district boundaries and the number of deficient bridges located on potential bus routes, PEER selected the following eleven districts that had more than ten bridges that could affect bus routes to analyze the financial impact of these bridges on school districts' budgets:

- Amite County;
- Carroll County;
- Hinds County;
- Hollandale;
- Itawamba County;
- Jones County;
- Leland;
- North Panola;
- Quitman County.
- Western Line; and,
- Yazoo County.

⁹As of July 1, 2015, the following school districts had been consolidated with another district or districts: Benoit, Clay County, Drew, Indianola, Mound Bayou, North Bolivar, Oktibbeha County, Shaw, Starkville, Sunflower County, West Bolivar, and West Point. PEER included the maps for the original school districts, but indicated by an asterisk (*) on each of these maps that the district has been consolidated with another district. See Appendix D, page 65, for more information on recent school district consolidations.

Estimating the Financial Effects of Deficient Bridges on Bus Routes

PEER distributed survey questions and school district boundary maps noting the locations of all bridges (deficient or otherwise) as identified in the NBI to the eleven selected school districts. For a complete list of the questions posed to these districts by PEER, see Appendix A on page 33.

Based on this information request, PEER asked each of the eleven selected districts to provide copies of their respective routes or indicate on the maps which of the bridges currently were being crossed by school buses in their routes. PEER also requested each of the districts to estimate any additional mileage and additional time that might be caused specifically because of a detour around a deficient bridge.

PEER estimated that it costs approximately \$1.70 per mile to operate a school bus in Mississippi. PEER established this estimate based on both direct operating costs (maintenance and fuel costs) and depreciation costs of the equipment. The estimate for maintenance costs was established using the criteria outlined within the *Bus Lifecycle Cost Model* published by the United States Department of Transportation in 2011. Diesel fuel cost was obtained from the United States' Energy Information Administration (EIA). PEER also depreciated the cost of equipment to quantify additional wear and tear to district vehicles.

PEER then applied this cost per mile estimate to the reported additional daily detour mileage reported by the four selected districts reporting detours: Carroll County, Hollandale, Jones County, and North Panola. PEER multiplied the daily detour mileage by cost per mile estimate and the number of days in a school year (180 days) to determine annual detour mileage costs.

PEER also requested from each of the four districts that reported detours information regarding any additional route times and bus driver compensation.

In order to estimate the total detour costs as a result of deficient bridges, PEER multiplied the total cost per mile estimate by the additional reported mileage and added personnel cost estimates as applicable. (See the discussion on pages 16 through 18 for the estimated total costs for each of the selected districts that reported detours.)

PEER then compared the estimated detour costs to total district transportation expenditures from School Year 2013-2014.

PEER also compared the estimated total detour costs for the selected districts to the estimated cost to repair or replace the identified deficient bridges. In order to obtain cost estimates to repair or replace deficient bridges, PEER took the following steps:

- interviewed MDOT staff, State Aid staff, and county engineers to determine the best source for estimating the cost to repair or replace a bridge;
- obtained cost estimates for local system roads from NBI data as of April 2015 provided by MDOT on total program costs (costs normally included in bridge improvement projects include roadway improvement costs and items such as demolition, right of way, and detours). This estimate is provided by county engineers and must be reevaluated every eight years. According to county engineers, no uniform method is used to estimate bridge repair and replacement costs;
- obtained cost estimates for posted bridges on state highways as of April 2015 provided by MDOT. MDOT reports NBI estimates based on the average unit cost for bridge construction in Mississippi. This is not always an accurate representation of costs for a particular project, so MDOT asked PEER to use its program cost estimates; and,
- both Jones County School District and North Panola School District reported detours around bridges that are not included in the NBI database. PEER interviewed county engineers to obtain bridge improvement estimates where applicable. PEER was not able to obtain this information from the Jones County engineer, but did obtain this information from the Panola County engineer.

Identifying Potential Safety Concerns Regarding Buses that Cross Deficient Bridges

PEER identified instances in all of the selected school districts in which buses crossed deficient bridges. Therefore, PEER also sought to identify potential safety concerns for these occurrences and to identify areas for improvement that could apply to all school districts.

In order to identify some of these potential safety concerns, PEER took the following steps:

- interviewed staff of Mississippi Association of Supervisors, Mississippi Association of School Superintendents, Mississippi School Boards Association, county engineers, MDOT Weight Enforcement, Office of State Aid Road Construction, MDE Office of Accreditation, and MDE Office of Pupil Transportation;
- requested school district routes. Districts either provided their routes or indicated which bridges their routes crossed on maps provided by PEER;
- compared the information provided by the districts to the locations of deficient bridges, as identified by PEER, that could affect school district transportation to determine whether school buses crossed deficient bridges;

- interviewed transportation directors in each of the selected school districts regarding safety concerns;
- reviewed MDE policy and procedures concerning school buses, including the *School Bus Minimum Standards and the Transportation Handbook*, State Department of Education *Instructor's Guide for Training School Bus Drivers*, *Mississippi Driver's Manual*, *Mississippi Professional Driver's Manual for Class A, B, and C Commercial Driver's Licenses*; and,
- conducted a literature review to identify best practices concerning bus safety, as well as reviewing policy and procedures from other states concerning bus safety.

SOURCE: PEER.

Appendix D: Changes in Mississippi School Districts Since the 2010 Census Due to Consolidation

School district consolidation can occur through voluntary action between two or more school districts, administrative consolidation by the Department of Education, or statutory consolidation by the Legislature. Since 2010, the following school districts have consolidated:

- under MISS. CODE ANN. § 37-7-104.1 (1972), North Bolivar and Mound Bayou school districts were merged into the North Bolivar Consolidated School District;
- under MISS. CODE ANN. § 37-7-104.1 (1972), West Bolivar, Shaw, and Benoit school districts were merged into the West Bolivar Consolidated School District;
- under MISS. CODE ANN. § 37-7-104.2 (1972), Clay County and West Point school districts were merged into the West Point Consolidated School District;
- under MISS. CODE ANN. § 37-7-104.3 (1972), Oktibbeha County and Starkville school districts were merged into the Starkville-Oktibbeha Consolidated School District; and,
- under MISS. CODE ANN. § 37-7-104 (1972), Drew, Indianola, and Sunflower County school districts were merged by administrative consolidation by MDE into the Sunflower County Consolidated School District.

Since the 2010 census, twelve Mississippi public school districts have been consolidated with another district or districts. For purposes of this report, PEER did not combine the number of closed and posted bridges that could affect school bus routes in the districts that were or are in the process of being consolidated.

SOURCE: PEER analysis of MISSISSIPPI CODE ANNOTATED and information provided by the Mississippi Department of Education.

Appendix E: School Bus Definitions and Weights

The Mississippi Minimum Standards for School Buses are established by the Mississippi Department of Education and apply to all school buses manufactured on or after November 1, 2006. One component of these minimum standards includes the definitions of school buses in Mississippi based on bus type, gross vehicle weight, and capacity. Exhibit 6, page 67, lists these definitions for school bus types and provides example pictures. Exhibit 7, page 68, provides a list of the various capacities and gross vehicle weight ranges by each type of school bus.

MDE did not have weight information pertaining to school bus front and rear axle weights or maximum gross vehicle weight rating for Type C and D buses.

Each school bus manufacturer is required by law to specify the maximum allowable total weight of the school bus, the maximum weight on the front axle, and the maximum weight on the rear axle. School districts can use the gross vehicle weight ratings in determining the weight of their buses and use it as a guide for which bridges require rerouting.

PEER requested gross vehicle weight (loaded) and gross axle weights (front and rear axles) from approved vendors on the Mississippi Department of Education, Office of Safe and Orderly Schools' *School Bus Prices and Approved Companies* list, October 1, 2014, to September 30, 2015. Although public school districts may purchase used buses outside this list, it provided PEER with estimated maximum weight examples of buses available for school districts to purchase. Exhibit 8, page 68, shows some of the weight ratings reported by the bus manufacturers regarding bus type, front and rear axle weights, and gross vehicle weights.

As shown in Exhibit 8, Type C seventy-one-passenger school buses available for purchase can have a gross vehicle weight rating ranging from approximately 28,000 pounds to 31,000 pounds and be rated for up to approximately 21,000 pounds on a single axle. Type D eighty-four-passenger buses available for purchase can have a gross vehicle weight rating ranging from approximately 30,000 pounds to 33,000 pounds and have up to 23,000 pounds on a single axle.

SOURCE: Mississippi Department of Education's *Mississippi Minimum Standards for School Buses*; school bus weight information obtained from vendors on MDE's *School Bus Prices and Approved Companies* list for October 1, 2014, to September 30, 2015.

Exhibit 6: School Bus Definition by Type According to the MDE Mississippi Minimum Standards for School Buses

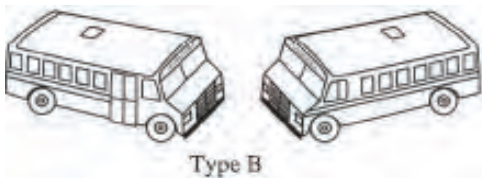
TYPE A:

A Type A school bus is a conversion bus constructed utilizing a cutaway front section vehicle with a left side driver's door. This definition includes two classifications: Type A-1, with a Gross Vehicle Weight Rating (GVWR) of 14,500 pounds or less; and Type A-2, with a GVWR greater than 14,500 pounds and less than or equal to 21,500 pounds.



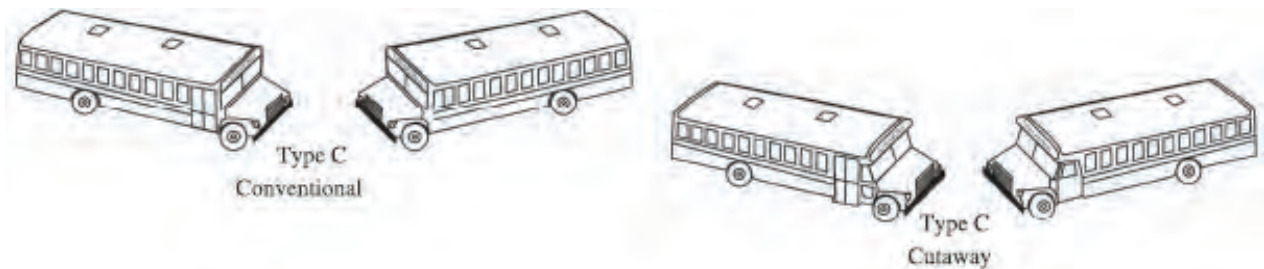
TYPE B:

A Type B school bus is constructed utilizing a stripped chassis. The entrance door is behind the front wheels. This definition includes two classifications: Type B-1, with a GVWR of 10,000 pounds or less, and Type B-2, with a GVWR greater than 10,000 pounds.



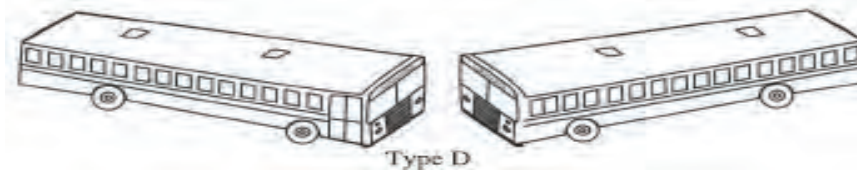
TYPE C:

A Type C school bus is constructed utilizing a chassis with a hood and front fender assembly. The entrance door is behind the front wheels-also known as a conventional style school bus. This type also includes the cutaway truck chassis or truck chassis with cab with or without a left side door and with a GVWR greater than 21,500 pounds.



TYPE D:

A Type D school bus is constructed utilizing a stripped chassis. The entrance door is ahead of the front wheels-also known as a rear engine or front engine transit style school bus.



SOURCE: Mississippi Department of Education's *Mississippi Minimum Standards for School Buses*. (Uploaded by MDE on November 22, 2011, and retrieved by PEER on October 8, 2015.)

Exhibit 7: Capacity and Gross Vehicle Weight Ranges by Bus Type

Type	Capacity (Number of Passengers)	Gross Vehicle Weight (in Pounds)
A-1	16 to 20	≥ 14,500
A-2	16 to 30	> 14,500 but ≤ 21,500
B-1	25 to 75	≤ 10,000
B-2	25 to 75	> 10,000
C	29 to 77	> 21,500
D	41 to 89	No weight was specified for this bus type

SOURCE: Mississippi Department of Education's *Mississippi Minimum Standards for School Buses*. (Uploaded by MDE November 22, 2011, and retrieved by PEER on October 8, 2015.)

Exhibit 8: Examples of Weight Ratings for Bus Types as Reported by the Manufacturers

Manufacturer	Type	Capacity	Front Axle Weight Rating (pounds)	Rear Axle Weight Rating (pounds)	Gross Vehicle Weight Rating (pounds)
Blue Bird	C	71	7,860	20,083	27,943
Blue Bird	C	72	7,927	20,647	27,943
Blue Bird	C	77	8,020	21,415	29,436
Blue Bird	D	84	11,844	18,437	30,281
Integrated CE S Bus (PB 105)	C	71 (120 per passenger)	10,000	19,800	29,800
Thomas	C	71	10,000	21,000	31,000
Thomas	C	71	10,000	21,000	29,800
Thomas	C	77	10,000	21,000	29,800
Thomas	D	84	13,200	23,000	33,000

SOURCE: School bus weight information obtained from vendors on MDE's School Bus Prices and Approved Companies list for October 1, 2014 to September 30, 2015.

PEER Committee Staff

James A. Barber, Executive Director

Legal and Reapportionment

Ted Booth, General Counsel
Ben Collins
Barton Norfleet

Administration

Barbara Hamilton
Larry Landrum
Rosana Slawson
Gale Taylor

Quality Assurance and Reporting

Ava Welborn, Director
Tracy Bobo

Performance Evaluation

Lonnie Edgar, Team Coordinator
David Pray, Team Coordinator
Jennifer Sebren, Team Coordinator
Kim Cummins
Matthew Dry
Matthew Holmes
Michael Surratt
Jenell Ward
Jade Watters
Sarah Williamson
Julie Winkeljohn
Ray Wright

Performance Accountability

Linda Triplett, Director
Kirby Arinder
Alicia Davis
Anna Johnson
Jessica Kelly
MeriClare Steelman