2012 MISSISSIPPI
Infrastructure Report Card

An independent review of the current state of infrastructure needs, capacity and funding in the State of Mississippi by the Mississippi Section of the American Society of Civil Engineers.

ASCE AMERICAN SOCIETY® OF CIVIL ENGINEERS

GRADING SUMMARY

TOPIC	ASCE-MS GRADE	NATIONAL AVG

Dams D D

Mississippi does not have a substantial number of High Hazard dams due to low population densities in much of the state. There is however a concern that dams and levees in the state are not being sufficiently monitored. Mississippi ranks as one of the lowest states in funding and staffing per dam. Due to the few available staff at state agencies and low funding for maintenance and repair, much of the responsibility is placed on the landowner and or municipality for the structure. This low level of oversight by state and federal agencies should be increased to assure the surrounding landowners as well as the facilities themselves are protected.

Drinking Water C- D-

Mississippi enjoys plentiful natural drinking water resources from underground aquifers. These aquifers are relatively safe from surface water pollution. However, drinking water treatment systems are severely under-funded by public means, with less than 50% funding available from public sources. A rural, small-population state cannot keep up the pace of deterioration of water tanks, pipes, and treatment facilities. The health of the people of Mississippi is directly affected when drinking water infrastructure is allowed to be compromised due to the lack of funds to meet current environmental standards.

Roads and Bridges C C to D-

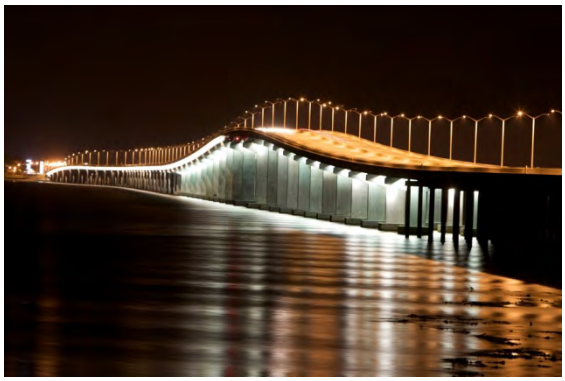
25 % of MS roads are considered in poor condition and 50% of MS bridges are deficient. Recent MDOT studies show only 51% of the necessary revenue is available to maintain Mississippi's road and bridge system. Our road network, in Mississippi, is greatly impacted by subsurface swelling clay that daily attacks roadway infrastructure and greatly reduces the expected life cycle of these facilities. Paired with exponential growth in commercial traffic in recent years and chronic levels of underfunding by federal and state agencies, there is a serious threat to the State's economy and the residents' livelihood. Several key interstate routes pass through Mississippi, which feed population centers and outlying suburban growth areas. If funding levels are not addressed in the very near future, roads and bridges as well as jobs and population centers will see a decline.

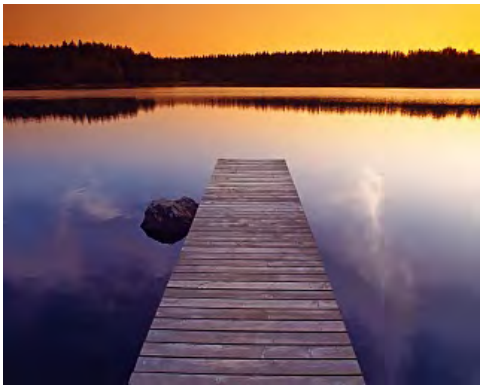
Wastewater C D-

Based on recent agency reports, only 70% of Mississippi's wastewater facility needs are being met. Due to public funding shortfall, rural use of on-site sewer treatment plants, low tax base, and slow economic growth; there is a very real potential for wastewater pollution in our wonderful natural streams and rivers. While the smaller communities are not experiencing unsustainable growth, they cannot afford to pay for system failures or regulatory-required improvements in a timely manner. In many cases, timely response and payment of fines is next to impossible. The larger population centers are facing a veritable funding cliff that will force unprecedented tax increases to make up for the lack of Federal and State funding. The implications of continued low levels of funding may further hinder Mississippi in its economic growth and standard of living.

ASCE
MISSISSIPPI SECTION

TABLE OF CONTENTS



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EXECUTIVE SUMMARY

"Make no little plans, they have no magic to stir men's blood."

Daniel Burnham, as quoted in an NPR editorial commentary from July 3, 2009, titled *America's crumbling infrastructure requires a bold look ahead.* The closing sentence of the article states,

"It's time to think big again."

Background

Proper maintenance and operation of infrastructure is vital to the health, safety, and economic progress of the State of Mississippi. The Mississippi Section of the American Society of Civil Engineers (ASCE-MS) at the recommendation of the National body of ASCE is pleased to prepare this independent review of the current state of Mississippi's Dams, Drinking Water, Roads and Bridges, and Wastewater.

ASCE-MS, as a state chapter of ASCE, partnered with member engineers and other professionals with expertise in these different areas to provide information and feedback for the report. This report provides a detailed summary of the current state of infrastructure in the State of Mississippi by the leading civil engineering organization.

Founded in 1852, the American Society of Civil Engineers (ASCE) represents more than 140,000 members of the civil engineering profession worldwide and is America's oldest national engineering society.

The Mississippi section of ASCE was founded in 1969 and currently has almost 1,000 active members from all disciplines and sectors of civil engineering.

Goals

Our goals in this study are to provide an unbiased assessment of the four infrastructure topics, report the findings to the public and elected officials, facilitate dialogue, and foster solutions for the citizens of Mississippi. ASCE's first canon of ethics is to hold paramount the safety, health and welfare of the public.

Many issues have combined to put additional pressure on the State's infrastructure systems. Municipal systems have been struggling for years with aging facilities and the lack of adequate funding to maintain the existing system and keep up with new growth. Economic conditions have led to less and less tax revenue to make up the difference between federal assistance and minimum funds necessary to serve the population in a manner that promotes adequate health and safety.

As time progresses, this funding gap between the minimum required budget and the actual revenue source becomes wider and wider. As maintenance is delayed, the life cycle of the facility is shortened, and operation costs increase; thereby, leading to an increase in fund requests. This sets up a potentially physically harmful downward spiral for our residents and visitors. The current issues must be addressed and the current path reversed.

In order to foster solutions for Mississippi, ASCE-MS plans to assist all entities involved in funding, designing, maintaining, and operating infrastructure in this state to understand the issues and find real solutions to bridge the funding gap and to promote a high level of health and standard of living for Mississippi, now and in the future.

Grading

The grading process is modeled after the ASCE National's Report Card for America's Infrastructure. Utilizing the available industry specific reports from the Environmental Protection Agency (EPA), United States Department of Transportation (USDOT), American Association of State Highway Transportation Officials (AASHTO), Mississippi Department of Transportation (MDOT), Mississippi Department of Environmental Quality (MDEQ), Mississippi State Department of Health (MSDH), and others; qualitative measures were established to make comparisons with other states across the Nation to effectively grade Mississippi's infrastructure.

Specific comparisons between states used for this report were the EPA needs assessment lists ranking states based on funding gaps that gave the report a statistical baseline. Where not available, such as funding and needs assessments for municipal roads or private sewer collection would be more of a subjective ranking based on the collective opinions of engineers working in that field. Then a collective average of all subsets would give us an overall grade.

Example: **Mississippi Roadway Infrastructure**

Federal Roads	A
State Roads	B
County Roads	C
Municipal Roads	D
Average	**C+**

The above method was utilized for all infrastructure topics and the following schedule was used to set a letter grade based on percentile placement among other states.

TABLE 1: Grading Schedule

A	100%-90%	Exceptional
B	89% - 80%	Good
C	79% - 70%	Mediocre
D	69% - 60%	Poor
F	59% or lower	Failing

DAMS

"The best way to describe the damage is incredible."

On March 12, 2004, the Big Bay Lake dam failed in Lamar County, MS, releasing 3.5 billion gallons of water. A total of 104 homes and businesses were damaged by the flood waters. Of the 104 damaged structures, 48 were completely destroyed, 37 sustained major damage, and 19 sustained minor damage. In addition, 30 roads were damaged or closed during the event. The affected areas stretched approximately 17 miles west of the dam.

Report on Facilities

Dams provide a life-sustaining resource to the residents of Mississippi. Dams have several functions including recreation, flood control, water supply, agriculture, and hydroelectric power. Unlike most infrastructure facilities, the majority of dams are privately owned and operated. Due to the risk of dam failure and the critical importance of dams, MDEQ, through the Division of Dam Safety, regulates dam construction, operation and maintenance.

How Are We Doing?

A look at national comparisons (ASDSO 2009)

46th in Expenditures per Dam

42nd in Full Time Staff per Dam

9th in Remediation Needs (All Dams)

18th in Remediation Needs (High Hazard)

There are more than 3,500 dams in Mississippi; a great majority of these are Low Hazard dams. About 256 dams across the state are classified as High Hazard dams whose failure could result in the loss of human life; 83 are classified as Significant Hazard dams whose failure could result in damages to high value property and major roads. Dam safety programs are a critical element to responsible stewardship of dams. Dam safety involves government regulation to ensure that periodic maintenance, inspection, emergency action planning, and other key practices are adhered to by dam owners and operators.

Due to re-evaluation by DEQ, the number of High Hazard dams in Mississippi has decreased from 285 in 2005 to 256 in 2010, a decrease of 10.5 percent. As of 2008, the number of full time equivalent (FTE) staff for the dam safety program was 4 compared to 2 employees in 2005. The funding available for the Dam Safety Program has increased from $290,000 (2009 fiscal year) to approximately $450,000 (2011 fiscal year), an increase of 35 percent.

Ross Barnett Reservoir – Outfall Structure – Hinds/Rankin County, MS

Conditions

The Dam safety program in Mississippi began in 1978 by State Law. The program was tasked with identifying High Hazard dams and providing that list to the U.S. Army Corp of Engineers for the National Dam Inspection Program. Dam safety regulations were adopted by the State in 1984. The State Dam Safety Program inspected all High Hazard and Significant Hazard dams until 2004 when the regulations were changed to require the dam owner to hire a consultant to perform inspections using State inspection forms. These forms must be submitted to the State for review and approval. State personnel also visually inspect dams on an emergency basis to determine if the dam was incorrectly classified for hazard classification. The amendment of the regulations in 2004 also required an Emergency Action Plan (EAP) to be submitted for approval to the state dam safety program for all High Hazard Dams.

The owner or operator of a Significant Hazard dam may be directed to develop an EAP. An EAP is a formal document that identifies potential emergency conditions at a dam, and outlines the procedures to follow to minimize loss of life and property damage. A well-prepared and maintained EAP can greatly reduce the potential risk of loss of life in the event of a dam breach. In 2006, MDEQ had 44 EAPs on file for High Hazard Dams compared to 141 EAPs on file in 2010. MDEQ had 3 EAPs on file for Significant Hazard Dams, in 2006 compared to 8 EAPs on file in 2010, even though Significant Hazard dams are not required to provide an EAP.

Funding and Future Need

Based on 2007 data from the association of State Dam Safety Officials, the total number of State Regulated High Hazard dams nationwide increased from 9,525 in 2005 to 9,850 in 2007, an increase of 3.4 percent, while the number of State-Regulated High Hazard dams in Mississippi has decreased.

In the 2007 State Dam Safety Program Performance Information Summary; the number of dams requiring remediation, were identified. In 2007, Mississippi had 28 High Hazard dams with some type of remediation needed. By the completion of the 2007 report there were 2 High Hazard dams already remediated. In 2009, there were 8 High Hazard dams remediated, and in 2010, there were 10 High Hazard dams and 1 Significant Hazard dam remediated.

The majority of dams in Mississippi are located on private property. Therefore, the land owner is responsible for meeting MDEQ prescribed regulations and completing inspection forms. The owner or operator is required to perform, at their expense, any necessary work to correct deficiencies in maintenance and operation or complete necessary repairs identified by inspections.

Grade

Mississippi has a low percentage of dams requiring remediation work based on inspection reports. Due to the State's low population densities, there are very few High Hazard dams. There is however a concern that dams and levees in the state are not being sufficiently monitored. The DEQ Dam Safety group has seen increases in staff and budgets which has allowed them to rapidly bring the state up to National Averages. Based on the relatively few available regulatory staff and low funding for maintenance and repair, much of the responsibility is placed on the landowner and or municipality for the structure. This low level of oversight by state and federal agencies should be increased to assure the surrounding landowners as well as the facilities themselves are protected.

The ASCE-MS report card committee assigns DAMS a grade of "D."

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State and Federal Oversight of Dam Safety Must be Improved, Association of State Dam Safety Officials, December 2010.

Interview with the Dam Safety Director, Mississippi Department of Environmental Quality, 2011

State Dam Safety Program Performance Information Report, 2007, National Dam Safety Program

Dam Safety in Mississippi, Association of State Dam Safety Officials, 2005

National Inventory of Dams, United States Corp of Engineers, 2010

Annual Report 2009-2010, Association of Dam Safety Officials

DRINKING WATER

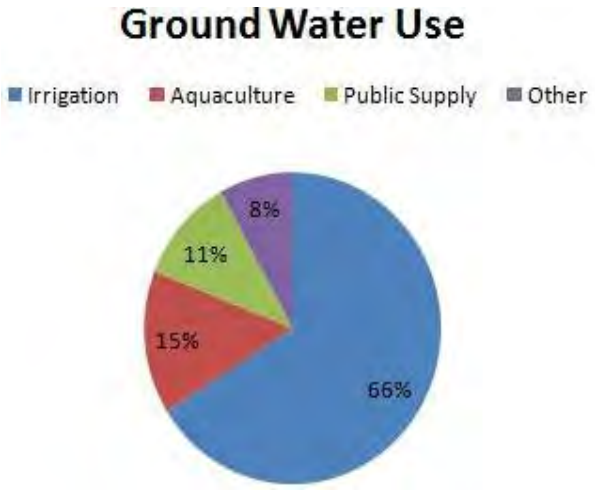
"The seeds that were sown then, are being reaped now."

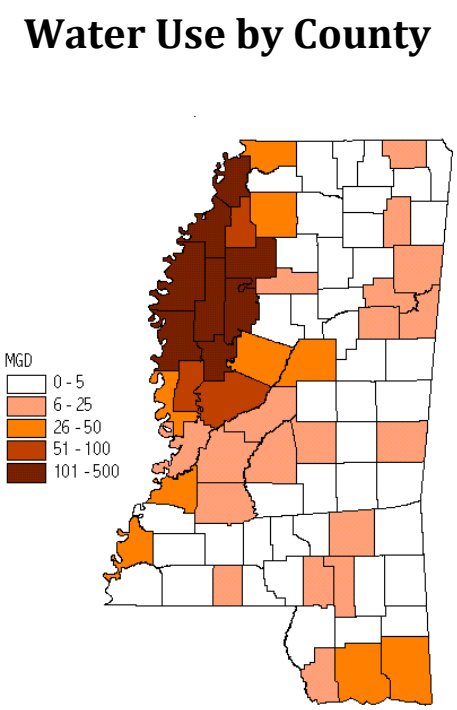
In a January 17, 2010 article from "The Clarion-Ledger," (Jackson, MS,) quoting Wheeler Dunn, a contractor during the 1950s and 60s, commenting on the now subpar construction techniques employed at the time and the increasing age of the water system. More than 150 water-main breaks occurred in the City of Jackson during a prolonged hard freeze that month, putting the fragility of water infrastructure on display. The City Engineer, David Willis, released figures stating 574,780 feet of water pipe needs replacing, based on an assessment of the system in 1997. It is likely that amount has increased.

Report on Facilities

85% of Mississippi's 1,600 public water systems are considered community water systems. Many of these systems were developed in the 1960's to provide safe drinking water to rural areas through the Farmers Home Administration. 50 years later, in 2012, these systems are faced with many challenges including aging infrastructure, legal mandates for improvement, ever increasing regulations, and poor management practices. Many improvements however, have been made over the past 15-20 years to improve the regulation of drinking water.

Mississippi is more dependent on its ground water resources than any other state. There are approximately 3,400 water wells used in the state. More than 80% of Mississippi's total water supply is obtained from its ground water resources and more than 93% of the potable water supply is extracted from available aquifers. Mississippi only has 3 public water systems that utilize surface water sources. Every day, an estimated 2.6 billion gallons of ground water are pumped from the aquifers of Mississippi. While the irrigation of crops and aquaculture accounts for the largest use of ground water, public water supply would be severely impaired by groundwater pollution or a reduced groundwater supply by overuse or other impacts.





How Are We Doing?

A look at national comparisons (EPA 2009)

21st in Per Capita Funding Needs

Conditions

The Federal Safe Drinking Water Act Amendment of 1996 (SDWA) requires states to implement a Capacity Development Program to develop a Capacity Assessment Rating for water systems. This rating covers the current technical, managerial, and financial capacity of individual water systems. The MSDH is required to ensure each proposed project and current system complies with the current and future provisions of the SDWA. The State of Mississippi has approximately 1,500 public water systems that are subject to the SDWA requirements. Mississippi is a rural state with limited financial resources; thereby, making it nearly impossible to immediately force water systems to make the necessary capital improvements for failing systems to comply with the SDWA. Improvements in the SDWA do however incrementally force small systems to make necessary improvements over time or consolidate their system with a surrounding better performing system.

The Capacity Development Program does identify public water systems that are at risk of becoming unable to provide safe, adequate drinking water to their customers. If a system falls below acceptable levels on any one or multiple report factors, efforts are made to provide technical assistance to improve the processes and procedures of the system. Assistance from the MSDH includes additional funding support, comprehensive and intermediate technical assistance, a PEER review program, and hands-on operator training.

While the Capacity Development Program has produced results in improving water system ratings overall, it is a voluntary program and there are no specific penalties for a water system that refuses assistance or fails to improve and/or maintain their Capacity Assessment Rating. As additional regulations increase, water systems in Mississippi will have increased difficulty with compliance.

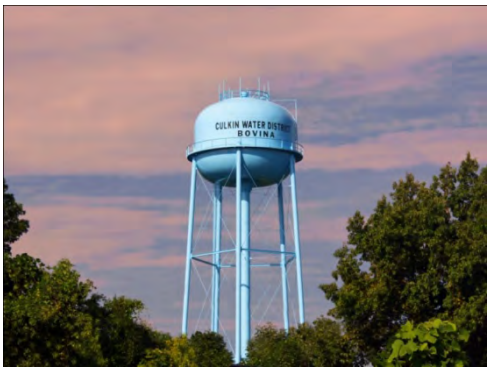
The failure of water systems to properly evaluate facilities and to property establish budgets that are adequate to address long term needs will continue to be a problem under the present regulatory structure. Most water systems usage rates do not provide sufficient revenue to provide maintenance and long-term replacement costs.

During the research for this report it was noted there was a substantial lack of records for violations and water system failures. A database of this information compiled of this information by the MSDH would provide the State agencies and funding organizations a better understanding of system trends and aid in tracking funding effectiveness. It is understood; however, that water systems are aging faster than they can be repaired. The average water usage in American homes continues to increase over time and environmental regulations continue to increase. According to the Mississippi Survey of Drinking Water System Characteristics and Rate Structure report, the average charge for 10,000 gallons of drinking water for public water systems is $30.18, or 0.30 cents per gallon. The average household uses around 350 gallons per day. This leads to a very real crisis in water quality and quantity that will have to be addressed with more efficient water treatment methods and increased funding.

Funding

According to the latest EPA Drinking Water Needs Assessment, Mississippi requires an estimated $3.25 billion in total funding over the next 20 years to continue to provide safe drinking water to the public. Modestly adjusting for 2% inflation, this amounts to $4.8 billion. Currently, only 50% of this base level funding is available. According to the latest EPA Drinking Water Needs Assessment, at the end of the 20 year study period there will be over $2 billion shortfall in drinking water funding. This funding total combines federal estimates of need based on the latest Drinking Water Infrastructure Needs Survey and Assessment from the EPA as well as estimates of funds required by State sources, municipalities and rate payers. Per year, this need equates to $225 million with only approximately $100 million available in consistent public funding. The total need used in our estimates include replacement costs, repairs, expansions, and facility upgrades to meet current federal and state enforced regulations. Without this base level of funding, most systems are focusing on repairs and maintenance only and are not able to provide replacement of the system facilities over time.

A shortfall in funding of this magnitude will force water system agencies to provide a lower level of service than is needed to meet current regulations, this will most certainly become a public health threat.



Grade

Mississippi enjoys plentiful natural drinking water resources from underground aquifers. These aquifers are relatively safe from surface water pollution. However, above-ground drinking water systems are severely under-funded by public means, with less than 50% funding available from public sources in regard to need. A rural, small-population state cannot keep up the pace of deterioration of water tanks, pipes, and treatment facilities.

The health of the people of Mississippi is directly affected when drinking water infrastructure is allowed to be compromised due to the lack of funds to meet current environmental standards. While the majority of the State of Mississippi has access to adequate quality drinking water, many of the larger Cities face dire circumstances if infrastructure funding levels are not increased.

The ASCE-MS report card committee has assigned Drinking Water a grade of "C-."

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Drinking Water Infrastructure Needs Survey Fact Sheet, 2009, Environmental Protection Agency

Drinking Water Funding Matrix, Mississippi State Department of Health
Public Water Systems Capacity Development Program, September 2010, Mississippi State

Department of Health - Mississippi Fact Sheet – Groundwater Protection Council
(http://www.gwpc.org/e-library/documents/state_fact_sheets/mississippi.pdf)

Mississippi Source Water Assessment Program – Mississippi Department of Environmental Quality
(http://www.deq.state.ms.us/MDEQ.nsf/b935b4eeecddbe9186256c47006be614/b484659ef6535fbe86256cda00561fb3/$FILE/msswapp.pdf)

Mississippi Survey of Drinking Water System Characteristics and Rate Structure Report, Mississippi State University

Time to move ahead on local-option sales tax for city, Jackson Free Press, June 17, 2011

ROADS AND BRIDGES

"We have an $8 Billion backlog in infrastructure needs."

Quote from former MDOT executive director, Butch Brown, in a September 15, 2009 "Jackson Free Press" article, highlighting that the yearly funding shortfall is beyond a critical point. The 2010 Future Mobility in Mississippi report by The Road Information Program (TRIP), states an additional $6 billion shortfall will occur from the period 2010-2019 resulting from a chronic shortfall in funding of approximately 50% of the real needs.

Report on Facilities

Currently, nearly 1 in every 4 highway mile is considered to be in poor condition. MDOT operates and maintains 10,958 centerline miles of highways. 82% of these roadways are classified as rural arterials and collectors. MDOT also maintains 4,227 highway bridges of which 10.3% have a sufficiency rating of 50% or less. The department has made positive strides and improved its ranking among other states to stand at 16th in the latest *Report on the Performance of State Highway Systems* published by the Reason Foundation (September 2010).

Total vehicles miles traveled have increased from approximately 37 billion to 43.4 billion, or 18%, from 2004 to 2008, despite volatility of fuel costs during that time. There is no expectation that traffic growth will slow in the near future, although fuel revenues are expected to decline with the emergence of hybrids and automobiles designed for higher fuel economy. Mississippi is geographically located between large population centers and provides key links between gulf coast ports and large distribution centers. The State's economic lifeblood is based on the ability to efficiently and safely move goods across the State, as well as support the larger population centers in the state which are located along Interstate and highway routes.

Safety is important to all residents and travelers in Mississippi. Currently, Mississippi's fatality rates are 50% higher than the national average, the 6th highest fatality rating in the nation. The statistics are improving as the fatality rates are trending lower year to year, but more focus should be placed on finding solutions to make Mississippi's roads safer.

Conditions

A key issue in road and bridge infrastructure is the degradation of local county and small community roads. In many communities there are insufficient taxes available to handle all the infrastructure needs, and roads and bridges are routinely placed at the bottom of the list of most pressing issues. Every year, as construction costs increase, funding levels are reduced or at best stagnated. Bridges in small towns, while having a low traffic volume, are expected to perform for decades beyond their design life. These bridges usually only receive funding when facing an imminent closure or posing a direct danger to the traveling public. Without adequate maintenance of roadways, the substructure will degrade faster. As the surface pavement cracks, moisture interacts with the subgrade material which results in the only option of repair being a total replacement of the roadway.

Intelligent Transportation Systems have been implemented in the state to better manage traffic in a real time manner. These systems include fiber optic networks, traffic management cameras, and digital message boards which are operated from the state-wide traffic center in Jackson, MS. During Hurricane Gustav in 2008, these systems were in-place and directed evacuation traffic through Jackson from Louisiana and the Gulf Coast Region of Mississippi. These systems have been proven to improve traffic safety, and congestion; during normal commuting times, and emergency situations. These technologies should be expanded into other large population centers such as Tupelo, Vicksburg, and the Gulf Coast region. Evacuation routes in rural areas of I-55 and I-59 are also underserved with these technologies.

MDOT has put considerable effort into preserving existing roadways with overlays, but due to funding shortfalls, there remains a growing backlog of roadway and bridge repair projects. Costs to bring the state's roadways and bridges up to minimum conditions are show in Tables 1 and 2 taken from MDOT's recently completed MULTIPLAN report. Mississippi's backlog of state-maintained highway and pavement needs are estimated at $5.5 billion in roads and $1.73 billion in bridges, with a current yearly operating budget of $837 million.

Table 1: Backlog Needs for Roads in Millions of Dollars

Type of Need	Rural	Urban	Total	Percent
Preservation	$1,692	$232	$1,924	35%
Modernization	$1,836	$1,168	$3,004	55%
Expansion	$202	$365	$567	10%
Total	$3,730	$1,765	$5,495	100%
Percent	68%	32%	100%	

Table 2: Backlog Needs for Bridges in Millions of Dollars

Type of Need	Rural	Urban	Total	Percent
Rehabilitation	$8	$3	$11	10%
Improvements	$242	$126	$368	21%
Replacement	$995	$357	$1,352	78%
Total	$1,245	$486	$1,731	100%
Percent	72%	28%	100%	

Mississippi's future transportation needs extend far beyond the project backlog on roads and bridges. MDOT is also responsible for freight and passenger rail, ports and waterways, aviation, public transportation, and bicycle and pedestrian facilities, each of which have their own specific needs of maintenance, preservation and expansion.

US 82 Mississippi River Bridge – Greenville, MS

Funding and Future Needs

The MDOT receives funding through multiple avenues. One is an annual federal allotment to the state of approximately $450 million. The second large revenue stream is from state gas taxes. The Mississippi legislature last increased the gas tax in 1987 for the purpose of funding the 1987 Four Lane Highway Program. Today, the revenue from the gas tax and other sources results in approximately $415 million per year for the State agency. Casino taxes and other revenue add to the over $1 billion per year MDOT budget. After paying debt service and administrative costs, approximately $450 million remains in actual construction funds available per year to continue to build out and maintain the State's road network.

There are three types of improvements needed in the road network, preservation, modernization, and expansion. Preservation is the prevention of the deterioration of current roads. Modernization is the improvement of existing road systems, and expansion is adding roads or adding lanes to existing roads. Projecting revenues through 2035, Mississippi can barely maintain the existing highway system, and more revenue sources will have to be identified in order to meet the capacity needs due to the increased traffic loads in future years.

Typical Rural Highway

The future of Federal transportation funding is more uncertain now than ever, making it very difficult to project future revenues. For this document, optimistic revenue projections were used. Assuming a best case scenario, over the next 25 years only 51% of the budget needs for roads will be met. Under this funding plan, 45% of roads will be categorized as poor or worse condition by 2035. As of 2008, 23% of the roads are in poor or worse condition.

As a result of the recent national emphasis on bridge safety, MDOT has elected to use more of its flexible funding on bridge repair and replacement. Assuming a best case funding scenario at these higher funding levels, 80% of the full bridge needs will be met.

Total needs for MDOT highways and bridges amount to $29.8 billion from 2008 to 2035 in 2008 Dollars, averaging $1.1 Billion per year. Assuming a best case funding scenario, MDOT will have approximately 51% of the revenues needs to maintain the transportation system at an acceptable level.

Table 3: Total Highway and Bridge Needs with Funding Projections

Construction Program Component	Full Needs	Funding Projection
Highways	$25,185	$11,627
Bridges	$4,612	$3,684
Total	$29,797	$15,311
Total per year	$1,245	$486

Values are in Millions – 2008 Dollars (not adjusted for inflation)

Grade

Mississippi's road and bridge system is greatly impacted by subsurface swelling clay that daily attacks roadway infrastructure and greatly reduces the expected life cycle of these facilities. Paired with exponential growth in commercial traffic in recent years and chronic levels of underfunding by federal and state agencies, there is a serious threat to the State's economy and the resident's livelihood. Several key interstate routes pass through Mississippi, which feed population centers and outlying suburban growth areas. If funding levels are not addressed in the very near future, roads and bridges as well as jobs and population centers will see a decline.

The ASCE-MS report card committee assigns Roads and Bridges a grade of "C."

Digital Message Board – Jackson, MS

US 90 Bridge – Biloxi, MS

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Mississippi's Unified Long-Range Transportation Infrastructure Plan, Mississippi

Department of Transportation Deficient Bridge Report, Federal Highway Administration, 2008

Mississippi Future Mobilty Report, TRIP 2010

WASTEWATER

"Mississippi Department of Environmental Quality closes second section of beach in Long Beach, MS due to raw sewage leak."

Article dated June 1, 2011 from the "Sun Herald" newspaper reporting on a failed sewer pump station that allowed raw sewage to drain directly onto the public access beach. This was the second time that week a public beach had been closed due to raw sewage leaks. The other incident occurred in Gulfport, MS.

Report on Facilities

How Are We Doing?

A look at national comparisons (EPA 2008)

14th in Per Capita Funding Needs

There are over 660 permitted municipal wastewater treatment facilities in Mississippi that handle nearly 58% of wastewater effluent for the State's residents (The additional 42% is handled by some form of private on-site treatment.) National averages for citizens on central collection systems are 74%. The State agency responsible for pollution control, the MDEQ, inspects wastewater systems, enforces current environmental standards, and provides guidance on treatment processes. In recent years, MDEQ has increased inspection and as expected, violations have increased. Across all divisions of MDEQ, pollution violations have increased almost 330% since 2007.

One source of the increase in violations includes sanitary sewer overflow. Sewer overflows the collection pipe network when excessive rain enters through manholes or existing cracks in underground sewer pipes. The older the sewer collection system, the more infiltration points exist. When the sewer system is filled with runoff water, the sewer overflows through manholes, as well as inundates the sewer treatment facilities, which forces sewer through the treatment process too quickly. This results in violations in the effluent and bacterial limits in outfall streams and rivers.

25% of households in the United States depend on an on-site septic system, while approximately 42% of Mississippi's effluent is treated on-site. An estimated 10 to 20 percent of these systems malfunction each year causing pollution problems and public health threats. It is estimated that as many 5,000 new on-site systems are being installed every year in this State. These systems pose a serious threat to surface pollution and in some cases groundwater pollution if they are not properly maintained.

Conditions

Mississippi has made great strides to improve and expand central collection and treatment systems over the last 40 years. The Clean Water Act of 1972 (CWA) provided leadership and funding to clean up industrial pollution and wastewater overflow. The MDEQ Office of Pollution Control was created in 1978 from the consolidation of previous agencies by act of the State legislature. This office now consists of six divisions – Air, Surfacewater, Groundwater, Environmental Permits, Environmental Compliance & Enforcement, and Field Services.

Once home to America's most notorious open ditch sewer; Sugar Ditch in Tunica County, MS, the State has worked to reduce the health threat of untreated sewer for millions of Mississippians. With the previous expansion work completed, additional funding sources are not available to provide sufficient maintenance and replacement funds for these systems. Likewise funds are not available to continue to connect new users and reduce the need for on-site collection and treatment.

Due to the agricultural nature of much of the State with large tracts of farmed land bordering streams and rivers, non-point pollution is a major concern, as storm water carries existing chemicals and animal wastes directly into surface water features. According to the latest EPA, Clean Watersheads Survey in 2008, Mississippi is noted as one of the 5 worst states in non-point source pollution.

Funding and Future Needs

Mississippi requires an estimated $2.1 billion (adjusted for inflation) in total funding over the next 20 years in order to provide adequate collection and treatment of the public's wastewater. Currently, only 70% of this base level funding is available from existing sources. At the end of the 20 year study period, this shortfall will result in a $600 million funding gap for wastewater infrastructure. This funding gap combines federal estimates of need based on the latest Clean Watersheds Needs Survey and Assessment from the EPA as well as estimates of funds required by State sources, municipalities and rate payers.

Municipal sewage treatment rates are not adequately set to cover these funding gaps. Low and moderate income population areas cannot provide the revenue necessary to support modern wastewater treatment and collection systems.

The total need for wastewater, based on EPA findings, equates to $105 million per year with approximately $75 million per year available in consistent public funding. The total need used in these estimates includes replacement costs, repairs, expansions, and facility upgrades to meet current Federal and State enforced regulations. A shortfall in funding of this magnitude will force wastewater system agencies to provide a lower level of service than is needed to meet current regulations. Due to the low level of funding available most systems are focusing on repairs and maintenance only as they are unable to provide for replacement of the system facilities over time. This will most certainly become a public health threat.

With every passing year, the funding gap between what is needed to maintain and safely operate sewer systems and what is available in funding sources is becoming greater and greater. As funding revenue flattens (or is reduced) the pollution controls and regulation are increasing as public policy continues to reduce pollution limits to improve quality of life. This is an unfunded mandate that cannot be continued. According to EPA reports, if funding levels are not improved, we could see a return to pre-1960's level pollution as early as 2016 in some parts of the country. Prior to the CWA, 70-80% of our nations water bodies were pollution impaired. Lake Erie was declared a dead zone and the Cuyahoga River caught on fire in Cleveland, OH.

Grade

Based on Mississippi's public funding shortfall, rural use of on-site sewer treatment plants, low tax base, and slow economic growth; there is a very real potential for wastewater pollution in our wonderful natural streams and rivers.

During the data compilation of this report, it was noted that a database of violations and inspections is not available. A database of all inspection data should be developed to help the State and communities in the State. While the smaller communities are not experiencing unsustainable growth, they cannot afford to pay for system failures or regulatory-required improvements in a timely manner. In many cases timely response and payment of fines is next to impossible.

The larger population centers are facing a veritable funding cliff that will force unprecedented tax increases to make up for the lack of Federal and State funding. The implications of continued low levels of funding may further hinder Mississippi in its economic growth and standard of living.

The ASCE-MS report card committee assigned Wastewater a grade of "C."

Aerial Shot of Wastewater Treatment Plant

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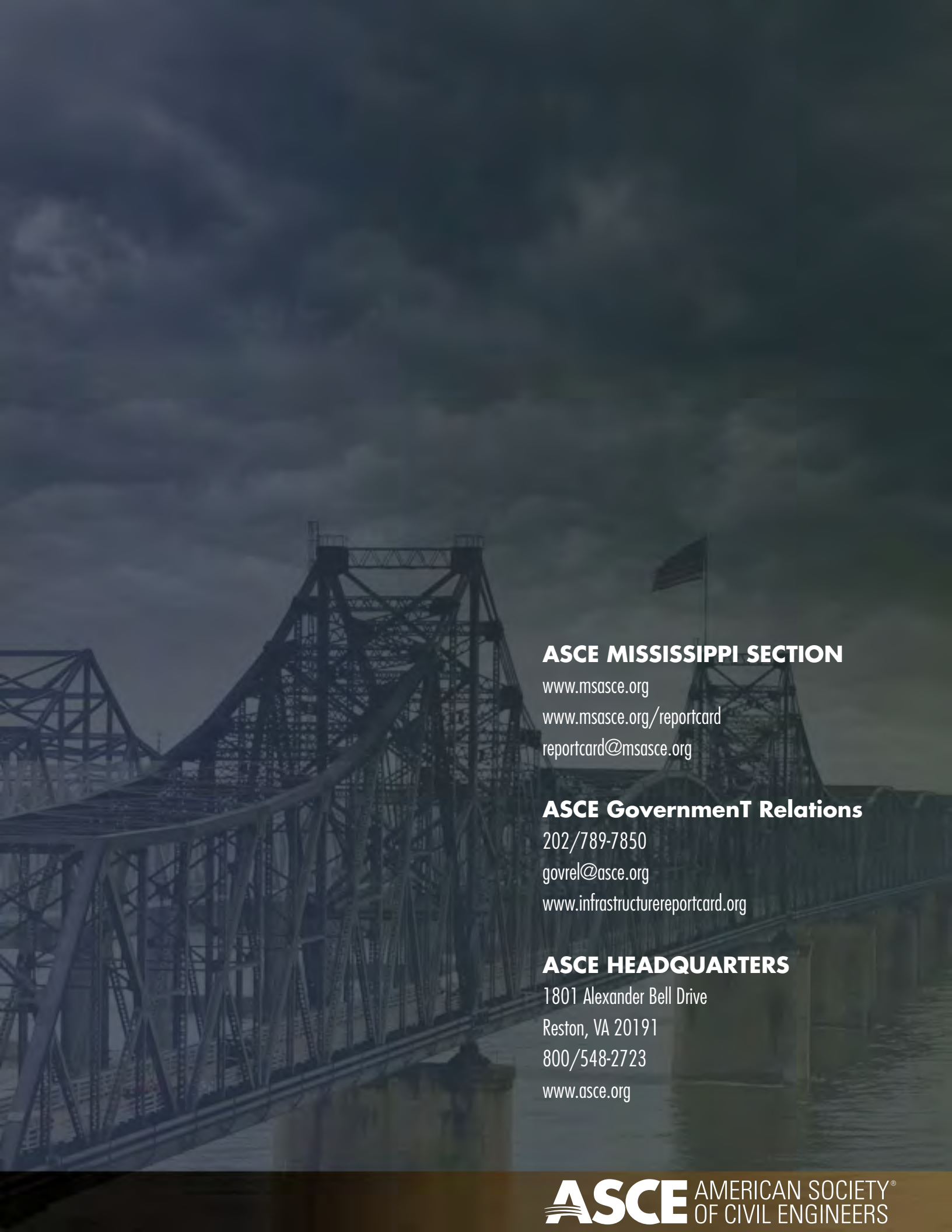

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