

***STATE OF LOUISIANA
LEGISLATIVE AUDITOR***

Infrastructure

**Staff Study
February 1995**



Performance Audit Division

***Daniel G. Kyle, Ph.D., CPA, CFE
Legislative Auditor***

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Infrastructure

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Staff Study
Office of Legislative Auditor
State of Louisiana

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February 9, 1995

Honorable Samuel B. Nunez, Jr.,
President of the Senate
Honorable John A. Alario, Jr.,
Speaker of the House of Representatives
and
Members of the Legislative Audit Advisory Council

Dear Legislators:

This is our report of the staff study of the Department of Transportation and Development's priorities to address maintenance and overlay backlogs. This staff study was conducted as part of Phase Two of the Select Council on Revenues and Expenditures in Louisiana's Future (SECURE) project.

This staff study represents our findings, conclusions, and recommendations. We have also identified matters for legislative consideration. Included as Appendix B are the responses of the Department of Transportation and Development.

Sincerely,

A handwritten signature in cursive script that reads "Daniel G. Kyle".

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DGK/jl

(LEGLTR)



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A handwritten signature in cursive script that reads "Daniel G. Kyle".

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Legislative Auditor

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Office of Legislative Auditor

Executive Summary

Staff Study Infrastructure

The Louisiana Department of Transportation and Development is charged to administer, construct, maintain, repair, and regulate the public highways, bridges, and other transportation related facilities applicable by law. During Phase Two of the SECURE effort, the Legislative Auditor was assigned further study of the Department of Transportation and Development's priorities to address maintenance and overlay backlogs. Our study of this issue found that:

- ◆ The Department of Transportation and Development does not give highway maintenance the same importance as construction and reconstruction.
- ◆ Maintenance is currently done at the "safety threshold," little preventive maintenance is conducted, and maintenance planning and evaluation have been eliminated.
- ◆ The Department of Transportation and Development does not rank projects in the Highway Priority Program by order of importance.
- ◆ The Department of Transportation and Development uses a subjective process to identify highway needs, making it difficult to determine which project is of greater priority. This problem may be remedied by the implementation of the federally mandated Pavement Management System, which will provide objective information on pavement condition and cost effectiveness of repairs.

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Chapter One: Introduction

Study Initiation and Objectives

The Louisiana Legislature established the Select Council on Revenues and Expenditures in Louisiana's Future (SECURE) through Senate Concurrent Resolution (SCR) 192 in the 1993 Regular Legislative Session. The council was created to develop recommendations to improve the financial future of the state and the quality of life of its citizens. The resolution provided for the council to be composed of 27 members representing state and local government, private industry, education, labor, and special interest groups.

The SECURE effort has thus far consisted of two phases of study. In Phase One, SECURE contracted with the consulting firm of KPMG Peat Marwick (KPMG) to conduct a preliminary study of various facets of state government. In response to a directive in SCR 192, the Louisiana Legislative Auditor dedicated 35 members of his staff to work under the direction of KPMG.

During Phase One, staff from KPMG and the Office of Legislative Auditor conducted studies of Personnel and Benefits, Organization and Staffing, and State Cash Management Practices. The staff also conducted policy analyses on a variety of topics. These policy analyses identified areas with potential opportunities for immediate financial savings and issues with possible long term impacts that warranted further study. SECURE issued a report containing its recommendations to the legislature before the 1994 Regular Legislative Session. The Phase One report resulted in the passage of several concurrent resolutions and a constitutional amendment designed to improve the efficiency of state government operations.

The legislature re-authorized SECURE in the 1994 Third Extraordinary Legislative Session (Senate Concurrent Resolution 17) to continue its efforts in developing recommendations to improve the financial future of the state and the quality of life of its citizens. The composition of the council was increased from 27 to 30 members. This continuation of efforts became known as Phase Two of the SECURE project.

In Phase Two, the legislature again directed the Office of Legislative Auditor to provide services to the project and SECURE again contracted with KPMG. The scope of the work in Phase Two was to continue some studies begun in Phase One and to conduct other new studies. The Phase Two agenda consists of two performance audits, a tax policy and fiscal model analysis, and follow-up of various issues identified in the Phase One work. SECURE divided the individual study items between the Office of Legislative Auditor and KPMG and assigned the following Phase Two projects to the Office of Legislative Auditor:

- ◆ Performance Audit of Planning, Budgeting, and Program Evaluation
- ◆ Performance Audit of State Procurement Practices
- ◆ Follow-up to Performance Audit of Personnel and Benefits
- ◆ Further study of Corrections and Justice
- ◆ Further study of General Fiscal
- ◆ Further study of General Government
- ◆ Further study of Infrastructure

This report addresses the Phase Two staff study of state Infrastructure.

Report Conclusions

The Department of Transportation and Development does not give highway maintenance the same importance as construction and reconstruction. Maintenance is currently being done at the "safety threshold," little preventive maintenance is conducted, and maintenance planning and evaluation have been eliminated. State laws may contribute to this lack of emphasis on maintenance. It is impossible to determine exactly how much money is being allocated to maintenance or what priority it has among the department's other functions because maintenance is not budgeted separately within the department.

The department does not rank projects in the Highway Priority Program by order of importance. Because not all of

the 3300 miles of roads in poor condition can be repaired with the department's funding, the department considers all projects to be first priority.

The department currently uses a subjective process to identify highway needs, making it difficult to determine which project is of greater priority. This process will be replaced over the next few years with the federally mandated Pavement Management System, which will provide objective information on pavement condition and cost effectiveness of repairs. The department is unsure of how this information will be used or how this information will affect its maintenance and construction priorities.

Introduction

In Phase One, SECURE made the following recommendations regarding Infrastructure:

- ◆ **Revise statutes to give highway maintenance a higher priority than it now receives.**
- ◆ **Eliminate low priority projects from the Department of Transportation and Development's proposed construction program.**
- ◆ **Reallocate highway maintenance funding from authorized positions to contract maintenance consistent with peak load demands.**
- ◆ **Re-evaluate the Department of Transportation and Development's priorities to address maintenance and overlay backlog.**

In Phase Two, we examined the state's progress on the first three Phase One recommendations listed above. We also conducted further study of the Department of Transportation and Development's prioritization of maintenance and overlay projects. This report contains our findings and recommendations in those areas.

Overview of Department of Transportation and Development

Louisiana Revised Statute 48:21 charges the Department of Transportation and Development to administer, construct, maintain, repair, and regulate the public highways, bridges, and other transportation related facilities as applicable by law. This includes 16,600 miles of highways, bridges, ferry operations, ports, and airports. The organization of the department as of July 29, 1994, is not the same as the structure given in the Fiscal Year 1994-95 executive budget so both will be described here. According to the executive budget, the department is divided into three offices: Office of the Secretary, Office of Management and Finance, and Office of Engineering. Exhibit 1 below shows the breakdown of programs under each office.

Exhibit 1-1 Structure of the Department of Transportation and Development Per Executive Budget		
Office of the Secretary	Office of Management and Finance	Office of Engineering
Administration	Support Services	Engineering Support
Louisiana Offshore Terminal Authority	Public Transportation	Highways
		Bridge Trust Operations
		Water Resources
		Aviation
Source: Prepared by Legislative Auditor's staff from information in the Executive Budget Program Information for Fiscal Year 1994-95.		

The highways program in the Office of Engineering contains the primary services of the department. This program provides the following services:

- ◆ Planning, design, and construction of highways;
- ◆ Bridge maintenance and inspection;
- ◆ Maintenance of highway system;

- ♦ Traffic services;
- ♦ Permits issuances;
- ♦ Weight enforcement; and
- ♦ District operations for construction oversight and maintenance.

Act 15, the General Appropriations Act, of the 1994 Regular Legislative Session funded district operations as a separate program from the highways program. As shown in Exhibit 1-2 on the following page, the state is divided into nine districts. Each district is responsible for routine maintenance and oversight of construction contractors within its borders.

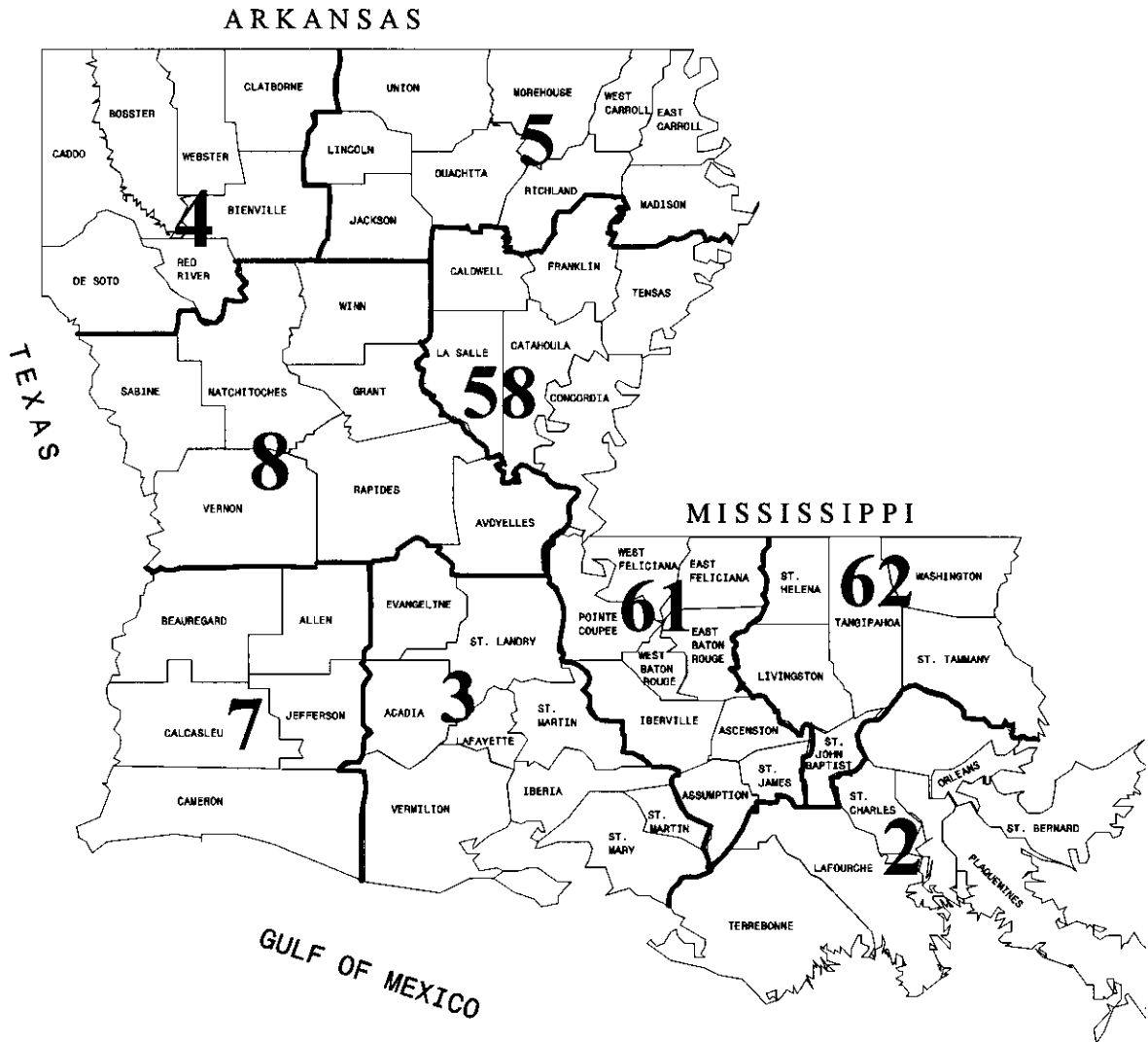
According to the department's organizational chart dated July 29, 1994, the department is not divided into the three offices mentioned previously. The department's organizational chart can be found in Appendix A. The department is broken down into six special staff sections, six operations staff directorate, eight boards and authorities, and nine districts. The Office of the Secretary exercises direct line authority over each of these subdivisions.

The Director of Construction and Maintenance is part of the operations staff. The construction and maintenance group has no line authority over the district staff who are responsible for carrying out routine maintenance and construction oversight.

The department's Fiscal Year 1994-95 operations funding is \$286.6 million. The federal government will provide \$33.5 million of this total. The department's capital outlay funding for Fiscal Year 1994-95 is \$394.7 million. Capital outlay funding is used for the department's construction and overlay programs. Federal funding for capital outlay totals \$255 million. The department staffs over 5500 permanent employees and also contracts with engineering and construction firms.

The department receives its funding from the Transportation Trust Fund. The trust fund was created by constitutional amendment in 1989. It was proposed as a way to ensure a stable and dedicated revenue source for road and bridge maintenance and construction, statewide flood control, ports, airports, transit, and state police traffic control. It also provides funding for the parish transportation program.

**EXHIBIT 1-2
DISTRICTS**
Louisiana
Department of Transportation
and Development



Source: Prepared by Legislative Auditor's staff using information obtained from Louisiana Department of Transportation and Development, Traffic and Planning Division, July 1987.

The trust fund derives its funding from state fuels taxes, motor vehicle license taxes, federal funds, and the trust fund's interest earnings.

Scope and Methodology

This report is a staff study and not a performance audit. Preliminary research began in August 1994 and fieldwork was completed in November 1994.

This staff study focused on SECURE's recommendation in the Phase One final report to re-evaluate the Department of Transportation and Development's priorities to address maintenance and overlay backlogs. We also examined the department's efforts to implement SECURE's other recommendations regarding Infrastructure.

To address the study objectives, we reviewed relevant state and federal laws and regulations, budget data, media information, performance audits of departments of transportation from other states, the Comparative Data Report on State Transportation Programs, and the Performance Audit of the Transportation Trust Fund issued by the Louisiana Office of Legislative Auditor in August 1992.

We interviewed headquarters and district officials of the Department of Transportation and Development and representatives of the Federal Highway Administration. We also interviewed legislative fiscal and committee staff, as well as officials of the Division of Administration.

In addition, we reviewed and analyzed the Department of Transportation and Development's maintenance policies and procedures. Officials of the Department of Transportation and Development were given an opportunity to provide written responses to report conclusions and recommendations. Their responses are included as Appendix B of this report.

Report Organization

The remainder of this report is organized into two additional chapters and two appendixes as follows:

- ♦ **Chapter Two** describes highway maintenance funding and planning in the Department of Transportation and Development.
- ♦ **Chapter Three** addresses the Department of Transportation and Development's process of prioritizing projects and the upcoming changes in that process.
- ♦ **Appendix A** provides the organizational chart of the Department of Transportation and Development.
- ♦ **Appendix B** provides agency response letters.

Chapter Two: Maintenance Planning and Budgeting

Chapter Conclusions

The Department of Transportation and Development does not give highway maintenance the same importance as construction and reconstruction. Maintenance is currently being done at the "safety threshold" and little preventive maintenance is conducted. State law may contribute to this lack of emphasis on maintenance.

It is impossible to determine from the budget how much money is being allocated to maintenance and what priority it has among the department's other functions. Highway maintenance is not budgeted separately within the department. Differing interpretations of the definitions of maintenance and construction by department officials contribute to the problem. Some items generally thought of as maintenance functions are considered construction functions by the department and vice versa.

The department has not kept its maintenance management system updated. Thus, there is no mechanism for planning and evaluating departmental maintenance activity. The department uses contractors to perform some maintenance work. However, there are no formal processes to determine if using contractors is cost effective or to evaluate the performance of these contractors. Furthermore, without an internal evaluation system, the department cannot be certain that using contractors is more cost effective than using its own work force.

Roads Not Being Maintained Adequately

The Department of Transportation and Development does not give highway maintenance the same priority as construction and reconstruction. According to department officials, maintenance is currently being done only at the "safety threshold." This means the department is only doing maintenance on the roads when conditions are considered to be hazardous to the safety of the motoring public.

The department has not done preventive maintenance for several years and is now only implementing it on a small scale. Less maintenance has resulted in the need for more costly reconstruction and overlay.

Louisiana law may contribute to the lack of emphasis on highway maintenance. LSA-R.S. 48:228.1 requires the department to develop and update a master plan for maintenance based on five categories of maintenance needs and report the work accomplished to the Joint Committee on Transportation, Highways and Public Works semi-annually. The law prohibits the plan from being used in preparing the annual needs study and from superseding the construction program. As a result of SECURE's Phase One recommendation, the department is attempting to eliminate this language from the statute. However, this revision may have little effect as we found that neither department officials or legislative staff were familiar with this statute or any reports being prepared by the department or submitted to the committee regarding a master plan for maintenance.

In LSA-R.S. 48:259, the department is required to maintain the state's roads, bridges, and other facilities **"to the extent that the revenues of the department will permit."** As a result of the October 1993 Annual Needs Study, the department rated 3300 miles of roads in poor condition. The roads continue to deteriorate at the rate of 700-800 miles per year, while the department only overlays approximately 450 miles of roads each year. According to department officials, insufficient funding has led to these backlogs in maintenance and overlay work.

The department receives its funding from the Transportation Trust Fund. The trust fund receives funding from several sources:

- ♦ state gasoline, motor fuels, and special fuels taxes;
- ♦ motor vehicle license taxes;
- ♦ federal funds; and
- ♦ the trust fund's interest earnings.

The Legislative Auditor conducted a performance audit of the Transportation Trust Fund in 1992. The auditor reported that although construction and operating costs had increased, revenues from the fuels taxes had not kept pace with inflation.

Exhibit 2-1**Transportation Trust Fund is a Flat Tax**

In Fiscal Year 1991, gasoline, motor fuels, and special fuel taxes provided approximately 72 percent of the trust fund's state revenues and 50 percent of the trust fund's total revenues. They are volume-based taxes. That is, the law specifies that a flat amount of tax is levied for each gallon of fuel sold. This amount is 20 cents a gallon. Four cents of this tax is allocated to the TIME account. The remaining 16 cents helps fund the Transportation Trust Fund.

Because this is a volume-based tax, the amount of tax collected does not rise with the price of fuel as it would if it were a "percentage-based" tax. Twenty cents is collected for each gallon sold whether fuel sells for \$1 a gallon or \$3 a gallon.

If the tax were a percentage-based tax, revenues would increase with inflation. Revenues from the volume-based tax are unaffected by inflation. Under a percentage-based tax method, a 20-cent tax on a gallon of fuel would translate into a 20 percent tax. If the cost of fuel were to rise to \$3, the amount of tax would increase to 60 cents (20 percent of \$3). Thus, the value of the tax collected would increase with the cost (value) of the fuel.

Source: Excerpt from Performance Audit of the Transportation Trust Fund.

The fuels taxes are a flat amount per gallon and do not increase with fuel prices. Exhibit 2-1 above is an excerpt from the 1992 Performance Audit of the Transportation Trust Fund. This excerpt describes an analysis of the fuels taxes based on 1991 data. Information gathered during this study led us to believe similar conclusions could be drawn with current data.

The Legislative Auditor concluded that the flat tax decreases the "buying power" of the revenues from the trust fund.

In a 1994 national study of State Highway Funding Methods, the Road Information Program (TRIP) found similar results. They reported that increased fuel efficiency and the effects of inflation resulted in motorists paying 27 percent less in federal motor fuel taxes marked for highway improvements in 1992 than in 1984.

TRIP's survey indicated that state motor fuel taxes are the largest source of state highway revenues, accounting for 31.9 percent of all state revenue in 1992. All 50 states have a tax on motor fuels and the average state gasoline tax is 19.2 percent per gallon. They found that nine states assess a sales tax for gasoline in addition to the tax per gallon.

Matter for Legislative Consideration

The legislature may wish to address the issue of erosion of the buying power of revenues to the Transportation Trust Fund because of the effects of inflation on the fuels tax. The legislature may also wish to consider a constitutional amendment that changes the fuels tax from a volume-based tax to a percentage-based tax.

Maintenance Not Funded as a Separate Program

The way the Department of Transportation and Development allocates funds for maintenance has been the subject of considerable legislative interest. Some believe that the department is sacrificing maintenance to fund construction.

It is impossible to determine from the budget how much money is actually being allocated to maintenance. The department's funding structure does not separate maintenance from other department functions. In the Fiscal Year 1994-95 General Appropriations Act, the legislature attempted to address this problem by separating the district offices from the rest of the highway program because the district offices perform most maintenance activities. However, funding the district offices does not ensure that all the money appropriated will be used for maintenance.

Although the districts have primary responsibility for maintenance, they perform several other activities as well. According to department policy, the districts are also responsible for the construction, traffic engineering, and design work of roads and bridges in the district. Furthermore, the districts do not perform all maintenance functions. Some maintenance functions are conducted at the headquarters level. The Maintenance Division at the department headquarters consists of the following units:

- ◆ Structures and Facilities (Bridge) Management
- ◆ Weight Enforcement and Permits
- ◆ Traffic Services
- ◆ Systems Management
- ◆ Maintenance Administration
- ◆ Emergency Management

These Maintenance Division units are responsible for maintenance planning, budgeting, data collection, and evaluation, as well as for performing several maintenance functions statewide. For example, the Central Sign and Signal Shops, statewide traffic services crews, and electrical maintenance units are housed in the Maintenance Division.

Differing Interpretations of Maintenance

According to department officials, department officials have different interpretations of what is maintenance, making it difficult to say just how much money is being spent on "maintenance." The department provided us with the following definition of maintenance from the Federal-Aid Highway Program Manual:

All routine actions, both responsive and preventative, which are taken by the State or other parties to preserve the pavement structure, including joints, drainage, surface, and shoulders as necessary for its safe and efficient utilization.

In LSA-R.S. 48:1, maintenance is similarly defined as a "continuous process of repairing or preserving an existing highway . . . to keep it at or near its original level or standard of usefulness." Construction is defined in the statute as the process of building a new road or bettering an existing one. According to department officials, there is no official definition of construction. Construction is generally understood to include the building of new roads and the reconstruction and rehabilitation of existing roads.

Some see the processes of reconstruction and rehabilitation, which are used to repair existing roads, more as maintenance than construction. Within the department, some discrepancies exist between the definitions and the way the work is categorized or funded. For example, we found adding a turn lane, which is a betterment and thus construction by definition, is sometimes performed by maintenance contract. These differences in interpretation are a problem when trying to determine the amount of money that should be spent on construction versus what should be spent on maintenance.

Recommendation

The Department of Transportation and Development should consistently apply the definitions of maintenance and construction when categorizing work.

Obsolete Maintenance Management System

The department's maintenance management system is no longer useful for planning and evaluating departmental maintenance activity. The department uses the system to develop and monitor the annual maintenance program, which is the department's plan of maintenance work for the year. The purpose of the annual program is two-fold:

1. To allocate the resources needed to maintain the roads and bridges.
2. To provide objectives by which to measure performance.

The annual program is supposed to contain an estimate of the cost, type and amount of work needed to "maintain the roads and bridges in an acceptable condition." According to department officials, the existing estimates are meaningless because they are based on data that has not been updated since 1986.

The Headquarters Maintenance Planning Section was responsible for updating the data and developing the annual program for each district and parish. Through attrition, there are no staff left in this section.

The program cannot fulfill its purposes based on standards that are obsolete. Without an up-to-date maintenance management system, the department cannot ensure accountability for maintenance work and costs. Furthermore, department officials cannot accurately assess the department's funding needs for maintenance.

Department officials stated that the department has a \$50 million maintenance backlog. They said this number could be documented by comparing the maintenance work quantities and costs reported to date with the planned quantities and costs in the annual program. Because the planned data is not up-to-date, we could not document this backlog.

Recommendation

The Department of Transportation and Development should:

1. Re-establish the maintenance planning function.
2. Update the annual program estimates for cost, type, and amount of maintenance work needed to maintain the roads and bridges.
3. Use the updated system to plan and evaluate departmental maintenance activity and to allocate resources.

Need for and Use of Contract Maintenance Not Formally Evaluated

The department does not have formal processes in place to determine the cost-effectiveness of using contract maintenance or to evaluate the performance of maintenance contractors. In the 1994 Third Extraordinary Legislative Session, the legislature through Senate Concurrent Resolution urged and requested the department to study and evaluate the feasibility of re-allocating funding for authorized positions to contract maintenance. This resolution was in response to a recommendation made by SECURE during Phase One of this project. An evaluation of the cost-effectiveness and performance of contract maintenance is necessary to ensure that the use of contractors is the most effective means of maintaining the state's roads.

The department informally assesses the need for contracting maintenance work based on the following criteria:

- ♦ available department maintenance forces
- ♦ contractor expertise and specialized equipment
- ♦ cost of performing the work

According to department officials, the assessment of the cost of performing the maintenance work does not include an evaluation of cost-effectiveness. One district official said if the cost of the maintenance project is "high," contract maintenance is used because the money is not available in the district's budget to do the work with district forces. The department budgets money separately for contract maintenance.

The districts are responsible for monitoring the performance of maintenance contractors. According to the same district official, the Parish Maintenance Superintendent or the Project Engineer, depending on the scope of the project, inspects maintenance contractors on a daily basis to ensure compliance with contract specifications. If the contractor is not meeting the specifications, the inspector provides this feedback to the contractor. Department policy does not require a written report of the inspection. If the contractor does not meet the requirements of the contract, department officials can write a warning letter and then terminate the contract.

For Fiscal Year 1994-95, the department has budgeted \$11.7 million for contract maintenance. The department divides this funding between three categories of maintenance contracts:

1. City maintenance agreements - \$3.3 million
(Municipality is responsible for traffic signals, mowing, and litter control on state routes within city limits.)
2. Interstate mowing - \$3.1 million
3. Special projects - \$5.3 million
(includes overlay, adding turn lanes, et cetera)

The department is in the process of letting a contract for a pilot project of total interstate maintenance by a contractor on a 30 mile stretch of Interstate 20 in north Louisiana. The work will include pothole patching, shoulder repair, and maintenance of four rest areas. Department officials estimate the project will cost \$840,000 for one year. When developing this estimate, department officials stated that they did not base the estimate on what it cost the department forces to do the work. Instead, they developed a figure based on what they thought the contractor would charge. Without comparing contractor's bids to the department's actual cost to do the work, department officials cannot ensure the work is being done by the most cost-effective means.

Recommendation

The Department of Transportation and Development should develop a formal process for evaluating the use of contract maintenance. This process should include an analysis of cost-effectiveness on a case-by-case basis, as well as a formal evaluation and report on the performance of maintenance contractors. This could be incorporated into the department's updated maintenance management system.

In the Office of Legislative Auditor's study of competitiveness initiatives, it is recommended that an independent, centralized commission be established to analyze the cost/benefit of all potential opportunities for privatization on a case-by-case basis. Consideration should be given to using this vehicle to evaluate the use of contract highway maintenance.

Chapter Three: Prioritization of Highway Projects

Chapter Conclusions

The Department of Transportation and Development does not rank projects in the Highway Priority Program by priority. Because of the high number of miles of roads in poor condition, the department considers all projects in the program to be of high priority.

The methods used to study highway needs make it difficult to determine which project is of greater priority. The current process is subjective, but will be replaced by federally mandated management systems, especially the Pavement Management System, which will provide objective information on pavement condition and cost effectiveness of repairs. The department is unsure of how information from the management systems will affect their maintenance and construction priorities.

The department has developed a plan and methodology for decreasing the size of the Highway Priority Program as requested by the Legislature. The Joint Committee on Transportation and Development has not yet approved this plan.

All Projects Considered Top Priority

Although required by law, the department does not rank projects by priority, but rather lists them by source of funds. According to one department official, with so much need and limited funding, all roads in the priority program are first priority. The department develops the Highway Priority Program each year based on the results of its annual needs study of the 16,600 miles of state maintained roads and available funding. The priority program consists of new construction, reconstruction, and rehabilitation of roads and bridges. Reconstruction and rehabilitation, or overlay, are performed on existing roads.

LSA-R.S. 48:229-232 require the department to provide the legislature with a priority list of construction projects for the coming fiscal year and a proposed list of projects for the following four fiscal years. The department is required to develop the priority program based on anticipated revenues and list the projects in priority order; however, "priority" is not clearly defined. The department may not undertake any project that is not included in the priority listing for that fiscal year.

The department submits the priority program to the Joint Legislative Committee on Transportation prior to the regular legislative session. The transportation committee then holds public hearings in each highway district to allow public comment on the priority program. Using this public input, the department then prepares the Highway Priority Program and submits it to the legislature. The legislature may delete any project that it determines not to be in proper order of priority, but may not add or substitute projects.

Exhibit 3-1				
Summary of Highway Construction Program				
	New Construction (miles)	Reconstruction (miles)	Overlay (miles)	Bridges (number)
1992 Balance	27.3	980	3,716	5,365
1993 Work	3.3	126	416	76
Remaining Needs	24	854	3,300	5,289
1994 Work	4	93	450	57
Remaining Needs	20	761	2,850	5,232
New Needs	0	90	890	530
1994 Balance	20	851	3,740	5,762
Source: Prepared by Legislative Auditor's staff from the Department of Transportation and Development's summary of the Highway Construction Program.				

Exhibit 3 - 1 above shows the number of miles of highway and the number of bridges that fall into each category of the highway program. New construction needs are decreasing while needs for existing roads and bridges continue to climb.

For example, 416 miles of roads were overlaid in 1993 and 450 miles were done in 1994. However, at the end of 1994, there were more roads needing overlay than there were at the end of 1992. Similar situations exist for reconstruction and bridges.

The cost of reconstruction and overlay are very high when compared with maintenance costs. In 1993, the cost of reconstruction projects was \$677,170 per mile and the cost of overlay was \$190,760 per mile. In the Southern Legislative Conference of the Council of State Governments' Comparative Data Report on State Transportation Programs, Louisiana reported an average maintenance cost per mile of \$3,780 for two-lane roads. Although it is not evident from this information *the number of lanes accounted for in the reconstruction and overlay costs*, it is still clear the difference between the costs is great.

The increases in need for overlay and reconstruction are evidence that more emphasis needs to be placed on preventive maintenance to avoid the higher costs of overlay and reconstruction.

Methods of Determining Priority

The methods used to study highway needs make it difficult to determine which project is of greater priority. Under the current process, each district conducts its own inspection and develops a list of priorities. Highway Program staff must make decisions regarding the department's priorities by comparing projects from each district. Comparisons are difficult because ratings are made by different people with differing needs and possibly different interpretations of highway standards.

Because of new federal mandates, the department will be changing the methods it uses to develop the priority program over the next few years. These methods will provide the department with objective data on which to base decisions regarding priority of projects.

The Federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) provides authorizations for funding for highways, highway safety, and mass transportation. Total funding of about \$ 155 billion will be available for fiscal years 1992-1997. The Act requires statewide planning and the development of six management systems to be used in decision-making processes. The following management systems

must be implemented by fiscal year 1996 or the state will suffer a 10 percent penalty of apportioned highway and transit funds.

1. Highway Pavement
2. Bridge
3. Highway Safety
4. Traffic Congestion
5. Public Transportation Facilities and Equipment
6. Intermodal Transportation Facilities and Systems.

Federal regulations require states to "consider" the information generated by the management systems in developing statewide transportation plans and improvement programs and in selecting projects under the federal Highway Code. States must also develop processes to evaluate the effectiveness of the management systems in improving the efficiency of transportation investment decisions and the state's transportation systems.

Although information from all six management systems will be employed, the Pavement Management System will eventually replace the department's current annual needs study. The federal-aid system does not include all state-maintained highways, but the department's Pavement Management System will encompass all state-maintained roads. Federal regulations require that the Pavement Management System provide the following information.

- ♦ A history of the road including:
 - Road composition, i.e. asphalt, concrete, etc.
 - Present condition
 - Date of last repair/treatment
 - Rate of decay
- ♦ Comparison of the appropriate treatment today versus treatment in the future
- ♦ Analysis of when it is most cost-effective to treat the pavement

In order to determine the condition of the roads, the department contracted with Southern Roadware, Incorporated to provide an Automatic Road Analyzer (ARAN) vehicle for one year. The ARAN vehicle is equipped with electronic equipment to gather information about pavement conditions. This

information will be analyzed to determine the most cost-effective method and time to treat the road surface. The department will use the results of these analyses in setting department priorities.

The department has already begun collecting information using the ARAN vehicle. They are currently averaging 250 miles of roads per day and estimate they will have gathered condition data on all 16,600 miles of state roads by February 1995. The department plans to use an ARAN vehicle to gather pavement condition data in each district once every two years.

Future Effects on Priorities Unknown

Although the department's work plan states that the Pavement Management System will be used to identify maintenance strategies and develop maintenance programs, department officials told us that the system will not affect maintenance conducted by the districts for several cycles of the Pavement Management process. Additionally, they said they are unsure at this time how the information from the management systems will be used in developing the department's priority program or how it will affect the prioritization of maintenance versus construction.

According to the department's work plan submitted to the Federal Highway Administration (FHWA), data generated by the Pavement Management System will be used to "identify appropriate strategies for maintenance, rehabilitation, and reconstruction" of road surfaces. The department proposes to use this information to produce single and multi-year maintenance, rehabilitation, and reconstruction programs. The planning section will synthesize these projects into a statewide transportation improvement program. The program will be submitted to the Programs Development Division for implementation within the department's budget.

Department officials agree that the management systems will help to identify preventive maintenance needs. Preventive maintenance would help to arrest the deterioration of the pavement so that major reconstruction is not needed. In addition to information from the management systems, department officials said they will consider the impact of financial, economic development, and other factors in developing department priorities.

Recommendation

The Department of Transportation and Development should:

- 1. Use information obtained from the management systems to annually determine the appropriate "mix" of construction and maintenance and request funding accordingly.**
- 2. Use information obtained from the management systems to prioritize maintenance as well as construction projects.**
- 3. Consider making preventive maintenance a higher priority in order to avoid the higher costs of reconstruction and overlay.**

Elimination of "Low" Priority Projects

In response to SECURE's recommendation in Phase One, the legislature adopted a Senate Concurrent Resolution during the Third Extraordinary Legislative Session of 1994, urging and requesting the Department of Transportation and Development to develop a plan to eliminate low priority projects from the Highway Priority Program. The department has developed a plan and methodology for decreasing the size of the priority program by eliminating projects that have not been started and projects that were begun, but delayed because of funding, environmental, or other problems.

According to department officials, the current program contains more projects than could be completed in 15 years. Because of the size, no new projects have been added to the priority program in the past few years. The department's plan would leave only projects in the priority program that could be ready to be let to contract within 8 years. One department official said decreasing the size of the priority program would allow the department to add projects to the priority program as projects were let and would decrease time spent designing projects that will never be let.

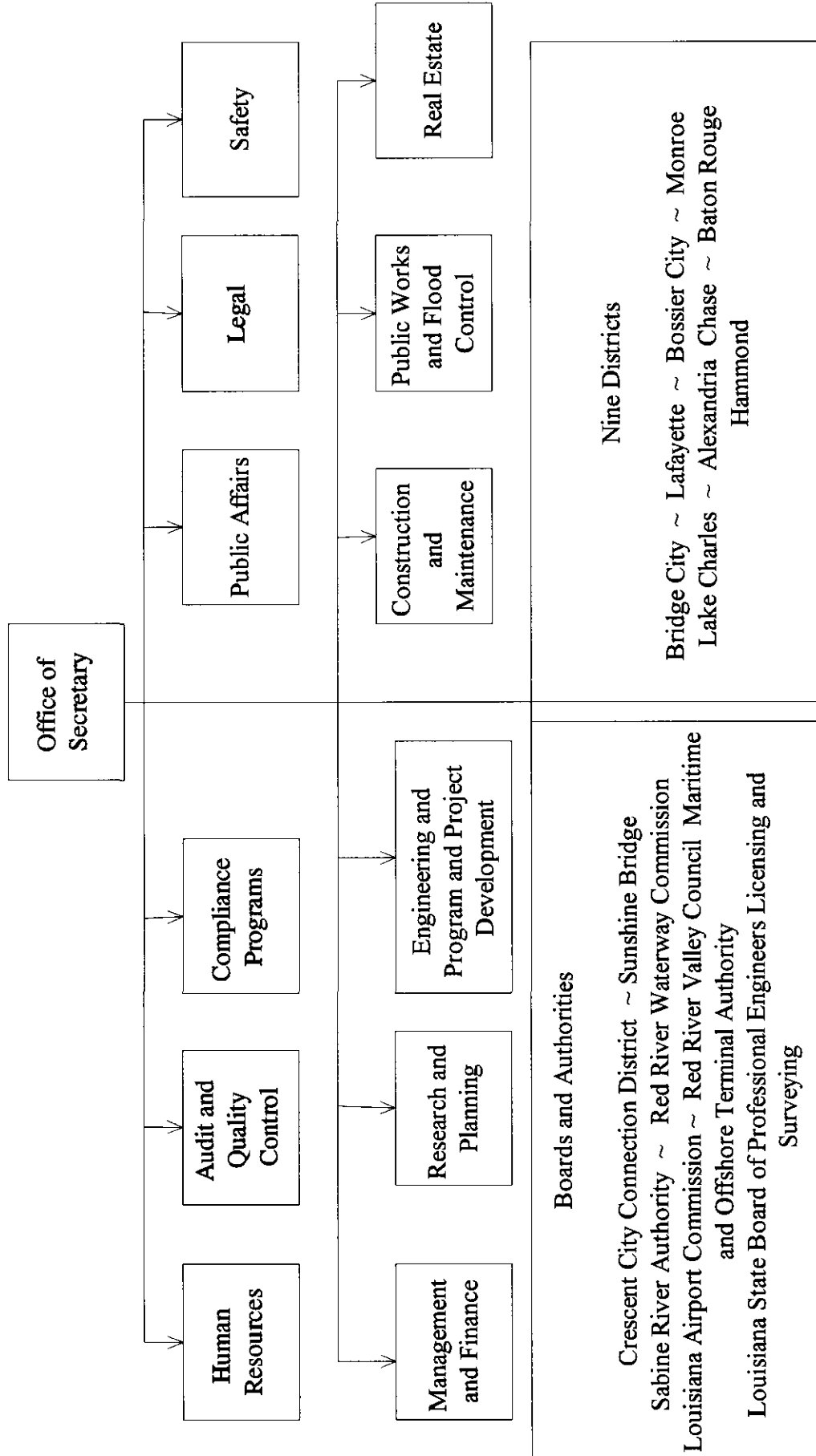
Department officials presented their plan to the chairs of the Joint Committee on Transportation and Development. The chairs requested that the department revise their plan to retain some long range projects that would take longer than 8 years to

let. For example, the department had left sections of the hurricane evacuation routes out of the proposed priority program because the entire project would take longer than 8 years to let. According to one department official, the chairs were concerned that the public would not understand that the department still planned to complete the entire project if some sections were not included in the priority program. The department is currently working on revising their plan to present to the Joint Committee on Transportation and Development.

Appendix A

Department of Transportation
and Development
Organizational Chart

Department of Transportation and Development Organizational Chart

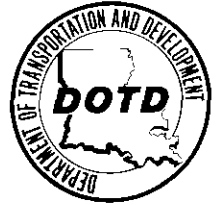


Source: Prepared by Legislative Auditor's staff from agency's organizational chart dated July 29, 1994.

Appendix B
Agency Responses



STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
P. O. Box 94245
Baton Rouge, Louisiana 70804-9245



EDWIN W. EDWARDS
GOVERNOR

February 8, 1995

JUDE W. P. PATIN
SECRETARY

Mr. Kerry E. Fitzgerald, CPA
Performance Audit Manager
Office of the Legislative Auditor
State of Louisiana
Post Office Box 94397
Baton Rouge, Louisiana 70804-9397

Dear Mr. Fitzgerald:

This is in response to your recent letter, enclosing the preliminary draft of your study on Infrastructure.

After reviewing the draft report, we would like to provide the following responses:

a. Chapter Two: Maintenance Planning and Budgeting.

(1) Report conclusion: The DOTD does not give highway maintenance the same importance as construction and reconstruction.

RESPONSE:

a. The idea that the highway construction program only refers to new construction is incorrect. In reality, there is very little new location construction, other than the TIME program. The projects in the highway priority program address current needs on the existing system, including condition and capacity needs. Granted, it would be very beneficial if roadways could be attended to before they require major work, however, due to lack of funding, only the most critical needs can be addressed. To divert a significant amount of funds to preventive maintenance on relatively good roadways would result in a large number of roadways degenerating to deplorable condition with little or no chance of being addressed in the near future. In theory, if this were done, eventually the entire system would be better off, but this would be a very long range prospect, and the reality of the current needs must be addressed. The entire system would have to be brought up to a reasonable condition before this type approach would be feasible.

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b. Highway maintenance has traditionally encompassed 3R-type projects (resurfacing, restoration, rehabilitation), as well as preventive measures such as seal coats, minor patching, etc. If 3R projects are considered maintenance, then the Department currently spends approximately \$133 million out of the approximately \$304 million annual construction budget on roadway maintenance type projects (44 percent). Parish maintenance gangs are funded out of the operating budget and are not considered in these figures. Currently, 73 percent of all Transportation Trust Funds in the Operating Budget are committed directly to maintenance (in FY93-94, \$135 million).

c. Considering that the Needs analysis has identified \$1.1 billion of "now" needs for major widening and \$819 million in "now" needs for 3R and reconstruction, it appears the spending percentages are proportionate to the proportions of "major widening" needs versus 3R-type needs. Major widening needs should not be dismissed because improvement in traffic flow is the major contributor to the economic gains realized in highway improvement projects.

(2) Report Conclusion: Maintenance is currently being done at the safety threshold.

RESPONSE:

a. While it might be said that in many cases, maintenance activity is performed as a reaction or response to a condition that demands immediate attention, this speaks to only a portion of the program. The majority of the day-to-day maintenance work consists of routine, repetitive work or services that continues the life cycle of the facility. For example, work crews all over the State are daily doing drainage ditch and culvert clean-out work to provide drainage for the base, surface, and shoulder of the highway. This is also a service to the adjacent land owners. Aggregate shoulders and gravel type roads are graded on a regular and routine basis; pavement markings and striping are being installed daily; signal light modifications and signal controller maintenance is performed daily; highway signs are continuously being refurbished and re-installed throughout the State, roadside improvements, such as brush removal and mowing is routinely done to ensure sight clearances; hot-mix machine leveling is done to restore roadway surfacing to enhance the riding surface.

b. In several of the districts a great deal of resources are put into the maintenance, upkeep, and operation of the 115 movable bridges in the State. In addition, each district has a bridge paint crew that stays fully occupied. Also, there are 33

active Interstate rest areas in the State, which are daily staffed doing routine work. Therefore, the majority of the maintenance work going on daily is regularly scheduled work that takes place long before the "safety threshold" level. Maintenance planning at the district- and section-level is an ongoing process. Every 2 weeks, each parish maintenance superintendent inspects all of the highways in his parish and prepares a pre-scheduling report to plan work activities in advance.

(3) Report Conclusion: Little preventive maintenance is conducted.

RESPONSE:

a. The lack of preventive maintenance has been contributory to why maintenance is now primarily at the "safety threshold" level. The DOTD is now in a position where most of its maintenance-type projects are for roads at or below minimum tolerable conditions.

b. Ten years of little or no preventive maintenance has put us in a position where most, but not all, of our maintenance-type work must concentrate on the large backlog of roads which are below minimum tolerable conditions. Ideally, of course, what is needed is a major influx of extra maintenance money, so that the backlog of roads below tolerable levels should be addressed to the point where a normal annual maintenance budget could be used to keep the entire system above minimum tolerable conditions.

c. The DOTD has responded by allocating \$3 million to a preventative maintenance program in FY94, and is requesting similar funding in FY95.

(4) Report Conclusion: State law may contribute to this lack of maintenance.

RESPONSE: In accordance with the Phase I recommendation, DOTD has submitted legislation to eliminate the language in the statute that may be interpreted as favoring construction over maintenance. This legislation will be considered in the 1995 session.

(5) Report Conclusion: It is impossible to determine from the budget how money is being allocated to maintenance and what priority it has among the departments other functions.

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RESPONSE: The Department has initiated a research project through the Louisiana Transportation Research Center entitled "Determination of Appropriate Funding For Maintenance." A Request For Proposal (RFP) has been sent to universities with the request that proposals be received no later than February 28, 1995. A project review committee is scheduled for March 1995, to review the responses. This study will greatly assist the Department and the Legislature with annual budgeting for maintenance. The research study evaluating the appropriate funding for maintenance is designed to define maintenance for budgeting purposes, to document current funding allocated to maintenance, to analyze the cost effectiveness of current preventive maintenance activities, and to define funding required to fully implement maintenance and equipment needs.

(6) Report Conclusion: Differing interpretations of the definition of maintenance and construction contribute to the problem.

RESPONSE: See Response to paragraph a(1).

Report Recommendation: The DOTD should consistently apply the definitions of maintenance and construction when categorizing work.

RESPONSE: See Response to paragraph a(1).

(7) Report Conclusion: The department has not kept its maintenance management system updated and thus there is no mechanism for planning and evaluating maintenance activity.

RESPONSE:

a. Maintenance management at Headquarters has been severely impacted in the past few years. What once was a fully staffed unit has been reduced to one person. It has been over 10 years since the Department had a re-seal program (preventive maintenance); however, the Department is now scheduling some preventive maintenance projects.

b. The maintenance planning function was not cut out voluntarily but forced on DOTD since 1979. The function will require significant additional expense and positions to restore.

Report Recommendation: The DOTD should reestablish the maintenance planning function, update the program with current data and use it to plan and evaluate departmental maintenance activity and to allocate resources.

RESPONSE: Concur; however, it will require additional staffing resources.

(8) Report Conclusion: There are no formal processes to determine if using contractors is cost effective or to evaluate the performance of these contractors.

RESPONSE:

a. With regard to evaluation, there are various processes currently being used. For the past 1-1/2 years, the headquarters Maintenance Division conducts a graded maintenance inspection in each district every quarter of the year. This program is entitled, "District Maintenance Performance Evaluation and Quality Assurance." Also, each district does its own evaluation through supervision. The district maintenance engineer and the district maintenance specialist are constantly engaged in the evaluation of work performed or neglected.

b. There are other reasons for using private contractors to perform selected maintenance activities. Other reasons include, but are not limited to, timing, expedience, expertise, specialized equipment, and lack of adequate on-board personnel. We do have processes to evaluate the performance of contractors. The Department requires adherence to plans and specifications and inspection of the work performed. Contract work is paid for only when it is satisfactorily performed. In addition to warning letters and default placement, the contractor is only paid for satisfactorily completed work. Also, on almost all contracts, construction inspection personnel provide the inspection and contract administration. Beginning this calendar year, the mowing contracts will also be inspected by construction inspectors whenever possible.

(9) Matter for Legislative Consideration: The legislature may wish to consider a constitutional; amendment that changes the fuels tax from a volume based tax to a percentage based tax.

RESPONSE: The DOTD strongly supports any legislative initiatives to provide additional revenues for maintenance and construction of the transportation infrastructure system in Louisiana. All of the organizational and managerial recommendations and improvements suggested in this report and others will not correct what is a \$3.3 billion backlog of critical needs.

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b. Chapter Three: Prioritization of Highway Projects.

(1) Report Conclusion: DOTD does not rank projects in the Highway Priority Program by priority.

RESPONSE: The research and development group within the Department, the Louisiana Transportation Research Center, is managing a study to develop a highway priority project assessment process. The study will prove the Department with several alternative architectures for using information from the pavement, bridge, and other management systems to develop the priority program.

(2) Report Conclusion: The current system is subjective but will be replaced by federally mandated management systems.

RESPONSE:

a. Although the pavement condition ratings used in the highway needs process are based on visual inspection, a large portion of the process is based on actual data collected and on standards with which to compare current conditions in order to define deficiencies.

b. It should be noted that much the same type data used by the highway needs study must also be used by the Pavement Management Systems Program, i.e., traffic counts, pavement condition, geometrics, etc., and a weighing factor will have to be assigned to the different factors, just as in the highway needs process. It should also be understood that the Management Systems will also have a high degree of subjectivity, since the method by which it will be used, and the relative weight given to the many different factors involved, will be subjective. Management systems are a tool to be used by decision makers---the decisions won't be made by the management systems. Thus, subjectivity will never be completely eliminated from programming and prioritizing.

Report Recommendation: DOTD should use information from management systems to determine appropriate mix of construction and maintenance and request funding accordingly; use information from management systems to prioritize both construction and maintenance; consider making preventative maintenance a higher priority.

RESPONSE: The Department will use the results of its research study as we continue to develop and implement the Management Systems.

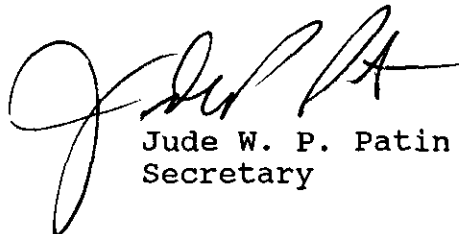
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(3) Report Conclusion: The DOTD has developed a plan and methodology for decreasing the size of the Highway Priority Program as requested by the legislature but it has not yet been approved.

RESPONSE: As a result of the feedback from the chairmen of the respective House and Senate Transportation committees the DOTD is developing a revised plan for their approval.

If I can be of further assistance, please contact me or Mr. John Basilica, my Chief of Staff, (504) 379-1200.

Sincerely,



Jude W. P. Patin
Secretary