

Highway Construction and  
Engineering and Transportation  
System Maintenance Programs  
Florida Department of Transportation

Report 99-29 January 2000

*Office of Program Policy Analysis  
and Government Accountability*

*an office of the Florida Legislature*



*oppaga*

# Justification Review

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## Highway Construction and Engineering and Transportation System Maintenance Programs Florida Department of Transportation

Report 99-29 January 2000

*Office of Program Policy Analysis  
and Government Accountability*

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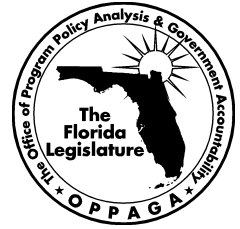
*Project supervised by Tom Roth (850/488-1024)*

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# The Florida Legislature

## OFFICE OF PROGRAM POLICY ANALYSIS AND GOVERNMENT ACCOUNTABILITY



John W. Turcotte, Director

January 2000

The President of the Senate,  
the Speaker of the House of Representatives,  
and the Joint Legislative Auditing Committee

I have directed that a program evaluation and justification review be made of the Highway Construction and Engineering and Transportation System Maintenance Programs administered by the Florida Department of Transportation. The results of this review are presented to you in this report. This review was made as a part of a series of justification reviews to be conducted by OPPAGA under the Government Performance and Accountability Act of 1994. Mark Frederick, Lyndon Rodgers, Wade Melton, Ron Patrick, Ken Hawkins, and Amy McKee conducted this review under the supervision of Tom Roth.

We wish to express our appreciation to the staff of the Florida Department of Transportation for their assistance.

Sincerely,

John W. Turcotte  
Director



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# Highway Construction and Engineering and Transportation System Maintenance Programs

## Purpose

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This report presents the results of our program evaluation and justification reviews of two programs administered by the Florida Department of Transportation, the Highway Construction and Engineering Program and the Transportation System Maintenance Program. We combined our reviews into a single report because the studies addressed similar issues for both programs. State law directs our office to complete a justification review of each state program operating under a performance-based program budget. Our office reviews each program's performance and identifies alternatives for improving services and reducing costs

## Background

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### *Highway Construction and Engineering Program*

The Highway Construction and Engineering Program is responsible for planning, designing, and constructing the state highway system.

Department staff are responsible for developing various long- and short-range transportation plans. The Florida Transportation Plan (commonly known as the 2020 FTP, specifies the department's long-range goals and objectives for developing a coordinated statewide transportation system, and guides the development of its Five-Year Work Program. The work program identifies transportation projects that will be undertaken during the five-year period and the estimated costs of these projects.

As part of the program, department staff and consultants design the construction projects included in the work program. In a project's development phase, department staff develop and review environmental

## *Executive Summary*

studies, determine a project's location, complete a preliminary project design, and solicit public comment on the project. In the engineering design phase, a project's final design plans are prepared and all required permits are obtained.

Department staff also let contracts for transportation construction projects while private contractors perform actual construction tasks.

In Fiscal Year 1999-2000, the department allotted the Highway Construction and Engineering Program an estimated \$2.6 billion and 3,777 full-time equivalent (FTE) positions.

### *Transportation System Maintenance Program*

The Transportation System Maintenance Program is responsible for maintaining roads and bridges. The program provides services in three major areas: routine maintenance, rest area maintenance, and maintenance support and warehousing (also known as Centralized Mobile Equipment).

Routine maintenance work includes filling potholes, repairing road shoulders, mowing grass, removing litter, planting wildflowers, and clearing drainage systems on the roadways comprising the State Highway System. Bridge maintenance activities are performed to identify and correct bridge deficiencies and help ensure that all bridges meet federal safety standards.<sup>1</sup>

The program is also responsible for security and maintenance services at 73 rest areas on the State Highway System, including four state welcome centers. These services are intended to provide motorists and the traveling public with clean, attractive, and secure rest areas.

The program's maintenance support and warehousing activities support its other functions and furnish supplies for the entire Florida Department of Transportation. These activities include maintaining the department's 6,587 motor vehicles and heavy equipment, managing 38 facilities that warehouse vehicle parts and maintenance supplies, and manufacturing highway signs and sign support structures.

In Fiscal Year 1999-2000, the Transportation System Maintenance Program was allocated \$370 million for program operations, \$15 million for fixed capital outlay, and had 3,210 positions.

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<sup>1</sup> Requests to repair bridges owned by other government agencies, such as the Federal Park Service, are also handled through the Transportation System Maintenance Program. The benefiting agency reimburses the department for the cost of the repairs.

# Program Benefit, Placement, and Performance

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Both the Highway Construction and Engineering Program and the Transportation System Maintenance Program are responsible for essential functions that benefit the public. The state's highway and bridge network is important to Florida's economy and provides businesses with access to markets and enables residents and tourists to reach jobs and Florida's attractions. Discontinuing the programs would lead to deterioration in the state's road and bridge systems and thereby jeopardize the safety of commuters and travelers. It would also likely worsen motor vehicle congestion problems in various parts of the state and adversely affect the state's economy. OPPAGA did not identify any benefit from transferring the programs' functions and activities to another agency. (See page 8.)

*Both programs benefit the public, are highly privatized, and should be continued*

Both programs are already highly privatized. Private contractors perform all of the department's road and bridge construction, and the programs have also privatized the majority of their planning, design, inspection, and maintenance activities. The department needs to retain some program functions in order to effectively manage program operations, administer and monitor contracts, and conduct engineering inspections. (See page 9.)

*The construction program performed reasonably well, but cost overruns continue to be a concern*

Both programs are functioning reasonably well. In Fiscal Year 1998-99, the Highway Construction and Engineering Program met or exceeded 5 of 11 performance-based program budgeting (PB<sup>2</sup>) standards and was reasonably close to the standards for the 6 remaining measures. For example, the program let 96% of the construction contracts it had planned to let compared to a standard of 95%, and the number of days required to complete construction projects exceeded the number of days specified in original contracts by 28.6% compared to a standard of less than 30%. (See page 10.)

The Highway Construction and Engineering Program met its PB<sup>2</sup> standard for completing construction projects on time, but did not meet its standard for minimizing cost overruns. The final dollar amount paid for completed construction projects exceeded amounts in original contracts by 14.2% compared to a standard of less than 10%. However, data for the first quarter of Fiscal Year 1999-2000 shows that overruns are decreasing. While these results are encouraging, they need to be sustained over a longer period of time, since overruns remain too high. (See pages 10 and 28-29.)

Further, the backlog of deficient lane miles of pavement on the State Highway System has increased over time. The costs of repairing roads

## Executive Summary

that are allowed to deteriorate are significantly higher than the costs of providing routine maintenance when needed. This problem could worsen as a result of several factors, including the Legislature's decision to create the Small County Road Assistance Program, the department's decision to divert \$125 million in resurfacing funds over the next five years to fund this new initiative, and more heavy trucks running with higher tire pressure. A recent OPPAGA report on the Department's Motor Carrier Compliance Program concluded that most of the state's roadway wear is due to truck traffic and that the road damage caused by overweight vehicles increases exponentially at higher vehicle weights. (See pages 10 and 12-18.)

*The transportation program met the standard for its outcome measure*

The Transportation System Maintenance Program met the standard for its PB<sup>2</sup> outcome measure, which assesses the condition of the state's roadways based on a rating system. The overall rating based on this scale in Fiscal Year 1998-99 was 82 compared to a standard of 80. However, the department has not established any output measures for the program. Potential output measures would include the number of lane miles maintained and the unit cost per lane mile maintained. (See page 11.)

## Options for Improvement

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### *Highway Construction and Engineering Program*

*The department needs to allocate resources to deal with the resurfacing backlog*

To reduce the backlog of deficient roads, we recommend that the department allocate sufficient resources each year to meet the annual needs for resurfacing the State Highway System. To do this, the department needs to establish minimum annual targets to prevent further growth in the backlog of deficient lane miles needing resurfacing. In establishing its annual targets, the department needs to reassess how fast the road types become deficient and how soon should roads be scheduled for resurfacing after becoming deficient. (See pages 12-18.)

The department has several options it should consider in deciding how to achieve its resurfacing goals. First, it needs to reassess its current policy for identifying resurfacing funding needs. Approximately \$0.62 of each dollar allocated to resurfacing arterial roads actually goes to resurfacing. The remaining \$0.38 goes for these supplemental items, such as widening existing roads and adding shoulder erosion control, drainage, signs and signals, and other items. If the department decided to allocate \$0.70 of each dollar in its current budget for resurfacing and \$0.30 for supplemental items, it would be able to resurface an additional 205 lane miles on arterial roads. This 70/30 allocation, coupled with department plans to increase resurfacing, would be sufficient to begin to address the backlog of deficient pavement. Another option would be to fully fund the cost of resurfacing roads to work through the current backlog of projects

and supplemental items and to prevent similar backlogs from occurring in the future. However, this approach would affect new construction. (See page 18.)

*These recommendations could improve the department bid and contract administration process*

The program is generally performing well in letting consultant and construction contracts. To improve the project construction bid and contract administration process, we recommend that the department

- revise its standard contract specifications to allow its staff to make price adjustments to minor work items with unreasonably high unit prices whose quantities increase significantly above original bid estimates; this could save up to \$1.35 million (see pages 20-23);
- revise its standard contract specifications to allow it to retain payment for certain front-end-loaded items of work that contractors priced substantially above average bid prices in their original bids; this would help the department avoid making advance payments for front-end-loaded work; this could save up to \$444,880 (see page 24); and
- continue its efforts to modify contracting methods and requirements that increase consultant costs without adding value to the state. The department then needs to evaluate whether these efforts are successful in reducing consultant costs and making them more comparable to the costs of work performed by in-house staff. If this evaluation determines that consultant costs continue to significantly exceed in-house costs, the department should conduct a make-versus-buy analysis to determine whether its current mix of consultant and in-house work should be continued in the future (see pages 24-26).

We also recommend that the department continue its efforts to minimize construction time and cost overruns. Although more current data indicates overruns are decreasing, these results need to be sustained over the long term. The department should expand the use of alternative construction contracting techniques. Projects completed using alternative contracting techniques still experience time and cost overrun problems, but less so than projects completed using traditional contracting practices. (See pages 28-32.)

Notwithstanding the potential benefits of alternative construction contracting techniques, the continuing problem of overruns warrants legislative consideration of applying disincentives to agency management, such as salary reductions. Under performance-based program budgeting, the Legislature can award incentives and disincentives based on agency performance. (See page 37.)

## *Executive Summary*

*Better communication with local governments on the Advance-Reimbursement Program is recommended*

To help the department complete projects at an earlier date and reduce the severity of congestion on a more timely basis, we recommend that the department better inform local governments about the Local Government Advance-Reimbursement Program. If more local governments used this program, projects that could address congestion problems could be initiated earlier than planned by the department. We also recommend that the Legislature amend the law to allow revenue-producing projects to be advanced by local governments. (See pages 33 - 37.)

*More public-private partnerships could help traffic congestion problems*

To help ameliorate traffic congestion problems in Florida's urban areas and maximize the use of state resources, we recommend that the department proactively seek to establish more public-private partnerships with developers to design, plan, build, operate, and maintain roads and toll plazas on the State Highway System. We also recommend that the department proactively solicit private developers to participate in the Private Transportation Facilities Program, which allows the developers to fully build, operate, own, and finance transportation facilities. (See pages 33-37.)

### *Transportation System Maintenance Program*

*Federal laws need amending to allow for rest area franchising*

The program could potentially reduce its costs if it were able to franchise rest area facilities. We recommend that the Legislature work with Florida's U.S. Congressional delegation to amend the federal law to allow the department to pursue franchising interstate rest areas. This would save up to \$15 million annually. (See pages 38-39.)

*The department should close the maintenance program's central warehouse*

The department should close the program's central warehouse and contract with private vendors to provide a just-in-time distribution system capable of providing needed supplies to local staff while reducing the need for warehouse facilities. Closing the central warehouse would eliminate 12 full-time positions and the warehouse's operating costs (\$672,989 in Fiscal Year 1998-99). The department should also explore opportunities to reduce the number of local warehouse facilities. As part of this effort, the department should develop a comprehensive business plan that specifies its short- and long-term strategies consolidating or closing facilities as a result of factors such as expanded use of private contractors and just-in-time distribution systems, and future increases in the availability of private vendors in what are currently less developed areas of the state. (See pages 39-41.)

The program has increased its use of privatized services, but it needs to retain sufficient in-house capacity to be able to provide price competition and respond to situations when contractors fail to perform. We recommend that the Department of Transportation periodically re-evaluate the program's level of privatized services to determine whether it continues to be cost-effective, and whether the program has retained sufficient capacity (staffing and equipment) to maintain flexibility

and reassume performing maintenance activities if necessary. (See pages 42-45.)

## Agency Response ---

The Director for Highway Operations for the Florida Department of Transportation provided a written response to our findings and recommendations. Although the director generally agreed with the report, he also commented on portions of report content that he considered to be either incorrect or inappropriate. His complete written response and our comments regarding the accuracy and appropriateness of our data is available in Appendix C starting on page 53.





# Introduction

## Purpose

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This report presents the results of our program evaluation and justification reviews of two programs administered by the Florida Department of Transportation, the Highway Construction and Engineering Program and the Transportation System Maintenance Program.<sup>1</sup> We combined our reviews into a single report because the studies addressed similar issues for both programs.

The Government Performance and Accountability Act of 1994 directs OPPAGA to conduct a justification review of each program during its second year of operating under a performance-based program budget.<sup>2</sup> Justification reviews assess agency performance measures and standards, evaluate program performance, and identify policy alternatives for improving services and reducing costs. In February 1999, we published reports presenting our analyses of the two programs' performance measures and standards and their performance using these measures.<sup>3</sup> This report analyzes policy alternatives for improving program services and reducing costs. Appendix A summarizes our conclusions regarding the nine issue areas the law requires to be considered in a program evaluation and justification review.

The Florida Department of Transportation's mission is to provide a safe, interconnected statewide transportation system for Florida's citizens and visitors that ensures the mobility of people and goods, while enhancing economic prosperity and sustaining the quality of the environment. The State Highway System consists of 11,941 miles of roadway and 6,213 state-

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<sup>1</sup> In accordance with state law, OPPAGA informs the Legislature of actions taken in response to earlier reports on state programs. This report includes our assessment of the extent to which the findings and recommendations included in [Report No. 96-85](#), *Review of the Florida Department of Transportation Construction Bid and Contract Administration Process*, May 1997, may have been addressed by the Florida Department of Transportation.

<sup>2</sup> The Highway Construction and Engineering Program and the Transportation System Maintenance Program began operating under a performance-based program budget in Fiscal Year 1997-98.

<sup>3</sup> *Highway Construction and Engineering Program Meets Most Standards; Accountability System in Need of Strengthening*, [OPPAGA Report No. 98-58](#), February 1999, and *Transportation Maintenance Program Meets Standards; Its Accountability System in Need of Strengthening*, [OPPAGA Report No. 98-59](#), February 1999. Appendices E and F contain the full text of these reports.

owned bridges, which carry two-thirds of the traffic in the state.<sup>4</sup> Since 1993, daily vehicle miles traveled on the system increased by 47 million miles or 24%.

# Highway Construction and Engineering Program

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## Background

The Highway Construction and Engineering Program is responsible for planning, designing, and constructing the state highway system.

*The Highway Construction and Engineering Program is responsible for planning, designing, and constructing the State Highway System*

**Planning.** Program staff are responsible for developing various long- and short-range transportation plans.

- The Florida Transportation Plan (commonly known as the 2020 FTP), which serves as the transportation component of the State Comprehensive Plan, includes the department's long-range goals and objectives for developing a coordinated statewide transportation system. The 2020 FTP also contains a short-range component that serves as the department's Agency Strategic Plan. The 2020 FTP's long and short-range components guide the development of the department's Program Resource Plan and Five-Year Work Program.
- The Program and Resource Plan translates the 2020 FTP into specific programs and serves as the basis for developing the department's Five-Year Work Program. This plan indicates the resources the department expects will be available based on projections of available state and federal revenues and the proposed allocation of those resources based on legislative directives, adopted policies, and funding priorities.
- The Five-Year Work Program identifies transportation projects that will be undertaken during the five-year period and the estimated costs of these projects. This program, which is updated annually, is developed through a cooperative planning process that involves state, regional, and local government officials and the public. As required by federal law, the department uses a bottom-up planning process in which local government Metropolitan Planning Organizations develop local transportation improvement plans that identify projects that meet their transportation needs. Department staff incorporate

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<sup>4</sup> There are 39, 416 lane miles within the State Highway System. State Highway System lane miles represents the sum of the number of miles of roadway in the system multiplied by the number of lanes in each mile of roadway.

these projects into the program, which is presented to the Secretary for approval. Department in-house staff, consultants, and local planning organizations develop these transportation plans. In Fiscal Year 1998-99, in-house staff performed 34% of the program's planning activities, while private consultants and local government planning organizations performed 66%. The in-house staff also collect and analyze data and develop planning documents, while private consultants conduct studies on individual projects.

**Design.** As part of the program, department staff and consultants design the construction projects included in the work program. This occurs in a two-step process that includes project development and engineering design. In a project's development phase, department staff develop and review environmental studies, determine a project's location, complete a preliminary project design, and solicit public comment on the project. They also coordinate their efforts with other state and federal agencies, including the Florida Department of Environmental Protection and the Federal Highway Administration. Although department district office staff has the lead role in project development, central office staff reviews each major activity to ensure it complies with department design requirements. In the engineering design phase, a project's final design plans are prepared and all required permits are obtained. Florida law requires the department to ensure that project design plans and descriptions are complete and accurate prior to advertising the project for competitive bid. These design plans contain blueprints that contractors are to follow during construction, specify the materials needed for the project (types and quantities), and establish a schedule for construction steps to be followed. In Fiscal Year 1998-99, program staff performed 19% of the design services activities while private consultants performed 81%.

**Construction.** As part of the program, department staff let contracts for transportation construction projects while private contractors perform actual construction tasks. During the construction phase, department staff administer construction contracts, monitor contractor compliance with contract terms and conditions, and inspect construction work in progress. District office staff perform these activities with oversight by central office personnel. In Fiscal Year 1998-99, program staff performed 22% of the construction engineering and inspection activities while private consultants performed 78%.

## *Resources*

The department allotted the Highway Construction and Engineering Program an estimated \$2.6 billion and 3,777 full-time equivalent (FTE) positions for Fiscal Year 1999-2000. Exhibit 1-1 shows the estimated allocations for the program's planning, design, and construction functions for Fiscal Years 1997-98 through 1999-2000. The program's activities in

## Introduction

building roads and bridges are primarily funded from state fuel taxes, motor vehicle fees, and federal apportionments/grants that are deposited into the State Transportation Trust Fund. Florida Turnpike projects are funded by toll collections, concession revenue, and revenue bond proceeds.

### Exhibit 1-1 Highway Construction and Engineering Program Allocations Increased by \$695 Million from Fiscal Year 1997-98 to Fiscal Year 1999-2000

Program Functions	1997-98		1998-99		1999-2000	
	Estimated Allocations <sup>1</sup>	Staff <sup>2</sup>	Estimated Allocations <sup>1</sup>	Staff <sup>2</sup>	Estimated Allocations <sup>1</sup>	Staff <sup>2</sup>
Planning	\$ 45,803,502	297	\$ 45,595,089	297	\$ 56,756,156	301
Design	347,914,878	1,373	343,373,211	1,382	443,920,037	1,396
Construction	1,581,061,672	2,069	1,872,803,612	2,075	2,169,501,106	2,080
<b>Total</b>	<b>\$1,974,780,052</b>	<b>3,739</b>	<b>\$2,261,771,912</b>	<b>3,754</b>	<b>\$2,670,177,299</b>	<b>3,777</b>

<sup>1</sup> Fixed capital outlay for materials testing, materials testing, research, and traffic operations estimated allocations are included in the construction function figures.

<sup>2</sup> Staff expressed as full-time equivalent positions.

Source: Florida Department of Transportation Budget Office.

# Transportation System Maintenance Program

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## *Background*

*The Transportation System Maintenance Program is responsible for maintaining roads and bridges*

The Transportation System Maintenance Program is responsible for maintaining roads and bridges. The program provides services in three major areas: routine maintenance, rest area maintenance, and maintenance support and warehousing (also known as Centralized Mobile Equipment). In Fiscal Year 1997-98, private contracted services accounted for 67% of the program's total expenditures.

### *Routine Maintenance*

To help protect the public's investment in the State Highway System, program staff perform various road and bridge maintenance activities, including inspections and permitting.

- **Road Maintenance.** Road maintenance work includes filling potholes, repairing road shoulders, mowing grass, removing litter, planting wildflowers, and clearing drainage systems. Program staff respond to road emergencies, install highway signs, paint symbols, re-stripe lanes, perform storm and emergency-related repairs and environmental site cleanup, and install and maintain motorist aid call boxes on the State Highway System. Further, they issue several types of permits, such as permits for overweight/oversized vehicles and trailers, house moving, and roadway access. They also annually assess State Highway System road conditions.<sup>5</sup>
- **Bridge Maintenance.** These activities are performed to identify and correct bridge deficiencies and maintain 6,213 state-owned bridges.<sup>6</sup> The program is also responsible for inspecting all bridges in the state, including 5,032 bridges owned by local governments and other agencies, and determining that all bridges are safe and in compliance with the Federal Highway Administration's National Bridge Safety Standards.<sup>7</sup>

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<sup>5</sup> The program has developed a methodology, the Maintenance Rating Program (MRP), that is used to assess the State Highway System's condition. The MRP assesses road conditions annually and assigns ratings on a scale ranging from 1 to 100. The ratings are used for allocating resources and to report performance under performance-based program budgeting.

<sup>6</sup> Program staff also inspect and maintain one tunnel in Fort Lauderdale.

<sup>7</sup> Requests to repair bridges owned by other government agencies, such as the Federal Park Service, are also handled through the Transportation System Maintenance Program. The benefiting agency reimburses the department for the cost of the repairs.

## Introduction

### *Rest Area Maintenance*

The program is also responsible for security and maintenance services at 73 rest areas on the State Highway System, including four state welcome centers. These services are intended to provide motorists and the traveling public with clean, attractive, and secure rest areas.

### *Maintenance Support and Warehousing*

Maintenance support and warehousing activities support the program's direct maintenance activities and furnish supplies for the entire Florida Department of Transportation. These activities include maintaining the department's 6,587 motor vehicles and heavy equipment, managing 38 facilities that warehouse vehicle parts and maintenance supplies, and manufacturing highway signs and sign support structures.

## Resources

The Transportation System Maintenance Program is allocated funds from three of the department's five budget entities: district operations, planning and engineering, and turnpike operations. In Fiscal Year 1999-2000, the program was allocated \$370 million for program operations and \$15 million for fixed capital outlay, and had 3,210 positions. The program's activities are primarily funded from state fuel taxes, motor vehicle fees, and federal apportionments/grants that are deposited into the State Transportation Trust Fund. Exhibit 1-2 shows allocations for the program's three program areas for Fiscal Years 1997-98 through 1999-2000.

### Exhibit 1-2

#### The Transportation System Maintenance Program's Allocations Increased While Staffing Decreased Over the Last Three Fiscal Years

Program Areas	1997-98		1998-99		1999-2000	
	Allocations	FTEs	Allocations	FTEs	Allocations	FTEs
Routine Maintenance <sup>1</sup>	\$ 267,071,467	2,942	\$286,896,600	2,810	\$307,619,857	2,850
Maintenance Support and Warehousing	60,448,239	376	61,894,797	369	62,832,035	360
Fixed Capital Outlay	18,284,782		28,516,052		14,992,561	
<b>Total Program Allocations<sup>2</sup></b>	<b>\$345,804,488</b>	<b>3,318</b>	<b>\$377,307,449</b>	<b>3,179</b>	<b>\$385,444,453</b>	<b>3,210</b>

<sup>1</sup> Rest area maintenance is performed primarily by contracted companies. The program allocates approximately \$15 million annually to rest area maintenance and records approximately 38,000 in-house maintenance staff hours per year, which equates to approximately 18 in-house routine maintenance staff.

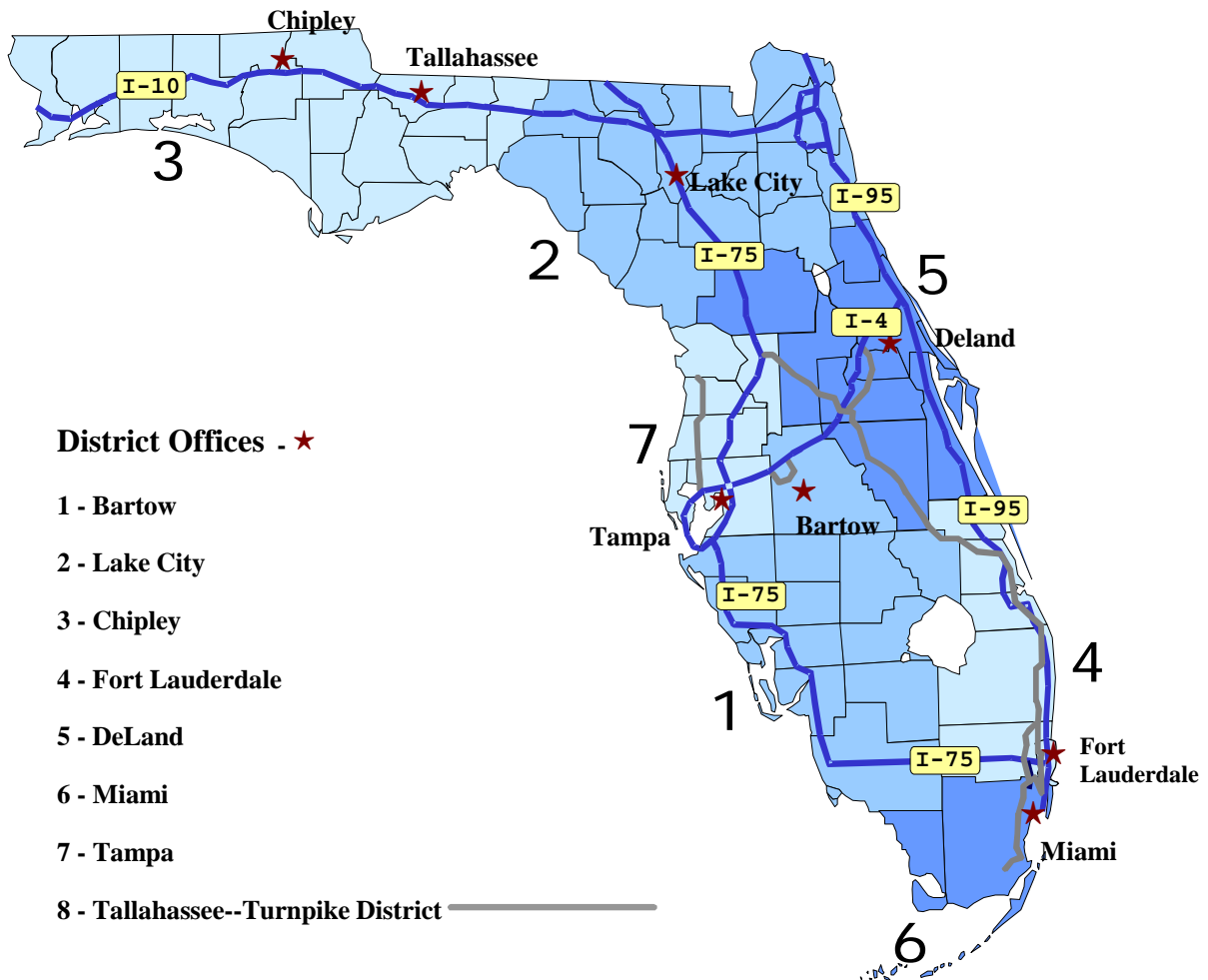
<sup>2</sup> Total program budgetary allocations have increased primarily due to increased contracting and equipment replacement allocations.

Source: Florida Department of Transportation Budget Office.

# Organization

Both the Highway Construction and Engineering and the Transportation System Maintenance Programs operate in a decentralized manner. In both programs, central office staff develop statewide policies and procedures and conduct quality assurance reviews to ensure the eight district offices consistently apply policies and procedures. The district offices are responsible for program functions such as transportation project planning and design and contract administration. The eight district offices are located in Broward, Columbia, Miami-Dade, Hillsborough, Leon, Polk, Volusia, and Washington counties. (See Exhibit 1-3 below.)

Exhibit 1-3  
Florida Department of Transportation District Offices



Source: Florida Department of Transportation.

# Program Benefit, Placement, and Performance

## Program Benefit and Impact of Abolishment

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*The Highway Construction and Engineering Program and the Transportation System Maintenance Program should be continued*

Both the Highway Construction and Engineering Program and the Transportation System Maintenance Program are responsible for essential functions that benefit the public. The state's highway and bridge network is important to Florida's economy and provides businesses with access to markets and enables residents and tourists to reach jobs and Florida's attractions.

Discontinuing the programs would lead to deterioration in the state's road and bridge systems and thereby jeopardize the safety of commuters and travelers. It would also likely worsen motor vehicle congestion problems in various parts of the state and adversely affect the state's economy. Discontinuing them could also negatively affect the state's ability to organize resources and distribution points needed to respond to hurricanes and other natural disasters that pose a significant threat to Florida's citizens and visitors. Further, discontinuing the programs would jeopardize the state receiving federal grants totaling \$1.2 billion annually.

## Organizational Responsibility

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*The Florida Department of Transportation should continue to administer these programs*

There are no compelling benefits to transferring either the Highway Construction and Engineering Program or the Transportation System Maintenance Program to another state agency. The programs are logically placed at the Florida Department of Transportation because this agency is responsible for constructing and maintaining highways and would be the agency most adversely affected by inadequate program performance.

Further, the programs' major functions are not unnecessarily duplicative with those of other agencies. While local governments also build and



maintain roads, transferring responsibility for these functions solely to local governments would not be sound public policy. Many local governments would lack the expertise needed to manage large transportation projects, and it would be difficult to coordinate statewide transportation projects if responsibility for such projects was highly fragmented.

Both programs are already highly privatized. Private contractors perform all of the department's road and bridge construction, and the programs have also privatized the majority of their planning, design, inspection, and maintenance activities. It would not be desirable to privatize all program functions. The department needs to retain some program functions in order to effectively manage program operations, administer and monitor contracts, and conduct engineering inspections.

## Program Performance

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### *Both programs are functioning reasonably well*

*The Highway Construction and Engineering Program met or was close to meeting most of its performance standards*

**Highway Construction and Engineering Program.** In Fiscal Year 1998-99, the program met or exceeded 5 of 11 standards and was reasonably close to the standards for the 6 remaining measures. For example, 91% of the bridges on the State Highway System did not need to be repaired or replaced compared to a standard of 94%. However, program managers indicated that the reported percentage of bridges not needing repair or replacement is based on an estimate having an error rate of  $\pm 3\%$ . Consequently, they concluded that the department substantially met its performance-based program budgeting (PB<sup>2</sup>) standard. The department met the performance standard established in its 1999-2006 Agency Strategic Plan that at least 90% of the bridges on the State Highway System did not need repair or replacement.

However, it is important to note that the backlog of deficient lane miles of pavement on the State Highway System has increased over time (see Chapter 3). The costs of repairing roads that are allowed to deteriorate are significantly higher than the costs of providing routine maintenance when needed. Accordingly, it is critical that the department resurface roads in a timely manner and avoid creating large backlogs.

The program also met its PB<sup>2</sup> standards related to production. In Fiscal Year 1998-99, the program let 96% of the construction contracts it had planned to let compared to a standard of 95%.

## *Program Benefit, Placement, and Performance*

### *Project cost overruns are still problematic*

The program's performance in completing construction projects on time met its PB<sup>2</sup> standards, but the program did not meet its PB<sup>2</sup> standard for minimizing cost overruns. In Fiscal Year 1998-99, the number of days required to complete construction projects exceeded the number of days specified in original contracts by 28.6% compared to a standard of less than 30%. During this period, the final dollar amount paid for completed construction projects exceeded amounts in original contracts by 14.2% compared to a standard of less than 10%. Data for the first quarter of Fiscal Year 1999-2000 shows that overruns are decreasing. While these recent results are encouraging, they need to be sustained over a longer period of time, since overruns remain too high.

### *Traffic congestion is worsening*

As discussed in our earlier report on the program's PB<sup>2</sup> measures, the program did not have measures for assessing its performance in several key areas, such as ameliorating traffic congestion problems.<sup>8</sup> We reviewed available data from other department sources and determined that traffic congestion on the State Highway System has increased over the past five years (from 17.8% of the system being severely congested in 1993 to 19.1% in 1998) and is expected to worsen as the state population grows in the future.<sup>9</sup> Traffic congestion causes wasted motor fuel, travel time delays, lost productivity, and outdoor air pollution, and is particularly problematic in areas with large urban populations, such as Miami, Tampa, and Orlando. Road travelers in Florida's major urban cities can presently expect to be delayed an average of 46 hours per year due to traffic congestion problems.<sup>10</sup>

### *The department cannot "build" its way out of traffic congestion problems*

Nevertheless, it is doubtful that the department will be able to "build" its way out of congestion problems in the future given prohibitively high costs and the need to protect the state environment and control urban sprawl. The department estimated that it would need a total of \$28 billion in construction projects to increase the Florida Intrastate Highway System's capacity to accommodate forecasted transportation demand by 2010. However, it also expects that its funding for capacity improvements during this period will be only \$6 billion.

Given these concerns, the department will need to take steps to increase the cost-efficiency of its construction projects and consider alternatives to building new roads to reduce congestion, such as increasing the use of public-private partnerships for highway construction and public transportation. Our review of issues related to the use of public

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<sup>8</sup> *Highway Construction and Engineering Program Meets Most Standards; Accountability System in Need of Strengthening*, [OPPAGA Report No. 98-58](#), February 1999.

<sup>9</sup> The state's population is projected to increase from its current level of 15 million to 18 million by the year 2010.

<sup>10</sup> Congestion refers to the reduction of average speed relative to that possible under free-flow conditions.

transportation is presented in a separate justification review of the department's Public Transportation Program.

*The Transportation System Maintenance Program met its standard for maintaining the highway system*

**Transportation System Maintenance Program.** This program met the standard for its PB<sup>2</sup> outcome measure. The program's outcome measure assesses the condition of the state's roadways based on a rating system. The overall rating based on this scale in Fiscal Year 1998-99 was 82 compared to a standard of 80.

Our earlier report on the program's PB<sup>2</sup> measures noted that the program has not established any output measures (see Appendix E).<sup>11</sup> Output measures report the amount of activity or services provided by a program and are needed to meaningfully evaluate the program's performance and the unit costs of program activities. Potential output measures for this program would include the number of lane miles maintained and the unit cost per lane mile maintained. Program managers indicated they plan to develop valid output measures in the future.

## Options for Improvement \_\_\_\_\_

**Highway Construction and Engineering Program.** While the department has taken action to address concerns identified in prior OPPAGA reports regarding the Construction and Engineering Program, construction project time and cost overruns continue to be problems. Chapter 3 of this report contains our conclusions and recommendations for improving the department's performance in resurfacing roads. Chapter 4 presents our conclusions and recommendations for improving the department's contracting processes and use of consultants. Chapter 5 presents our conclusions and recommendations regarding alternative contracting practices the department could use to build highway capacity.

**Transportation System Maintenance Program.** The department generally has performed well in maintaining the state transportation system. Chapter 6 presents our conclusions and recommendations for reducing program costs. Chapter 7 presents our conclusions and recommendations regarding the Transportation System Maintenance Program's efforts to privatize its services.

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<sup>11</sup> *Transportation Maintenance Program Meets Standards; Its Accountability System in Need of Strengthening*, [OPPAGA Report No. 98-59](#), February 1999. See Appendix D.

# Highway Construction and Engineering Program: Preservation of the State Highway System

## Introduction

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One of the department's primary responsibilities is to preserve the state's investment in existing roads and bridges. Costs to repair or replace bridges and roads that are allowed to deteriorate are significantly higher than the costs of providing routine maintenance when needed. Accordingly, it is critical that the department repair bridges and resurface roads in a timely manner and avoid creating large backlogs. The department has maintained a reasonable backlog of bridges needing repair or replacement. However, it has allowed the backlog of deficient lane miles of pavement on the State Highway System to increase over time. This problem could worsen as a result of several factors, including the Legislature's decision to create the Small County Road Assistance Program, the department's decision to divert \$125 million in resurfacing funds over the next five years to fund this new initiative, and more heavy trucks running with higher tire pressure. A recent OPPAGA report on the Department's Motor Carrier Compliance Program concluded that most of the state's roadway wear is due to truck traffic and that the road damage caused by overweight vehicles increases exponentially at higher vehicle weights.<sup>12</sup>

### *The department has generally controlled its backlog of bridges needing repair or replacement*

The department's policy is to inspect all bridges at least once every two years. Its goal is to ensure that at least 90% of its bridges meet structural standards and that all bridges open to the public are safe. To achieve this goal, the department schedules all structurally deficient bridges for repair or replacement within six years of deficiency identification. If department

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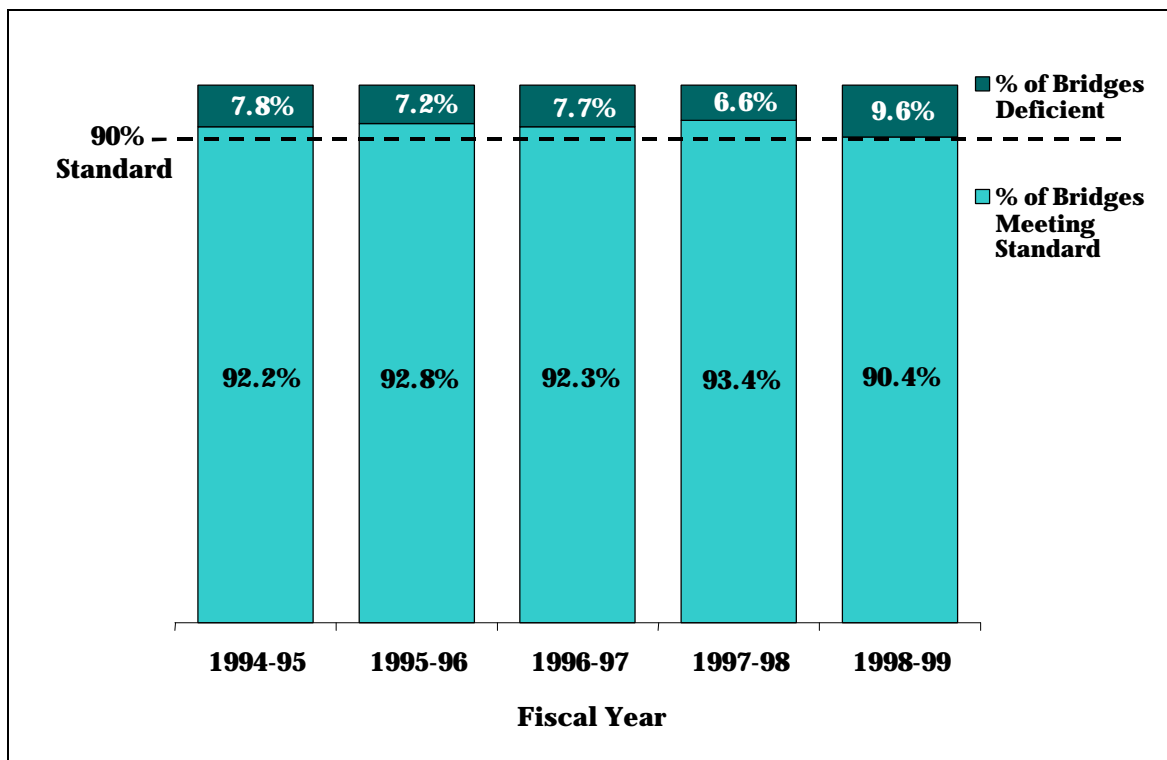
<sup>12</sup> Justification Review of the Motor Carrier Compliance Program, [OPPAGA Report No. 98-86](#), June 1999.

*Highway Construction and Engineering Program:  
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staff determine that it is more cost-effective to replace a bridge than to repair it, the policy is to replace these bridges within nine years of deficiency identification. Monitoring the condition of bridges is particularly important because slightly over half of the states' bridges are over 30 years old.

As shown in Exhibit 3-1, the department has met its goal of having 90% of all bridges on the State Highway System meet standards for the last five fiscal years. In Fiscal Year 1998-99, the percentage of bridges that were deficient increased to 9.6%, but the overall goal was still met. In order to meet its 90% goal, the department repaired 1,069 (17.2%) bridges and replaced 204 (3.3%) bridges over the five-year period.<sup>13</sup> Accomplishing this workload required the department to commit substantial resources from its Highway Construction and Engineering Program and the Transportation System Maintenance Program for bridge repair and replacement.

**Exhibit 3-1**  
**The Department Is Meeting Its Goal That at Least 90% of Bridges Meet Standards**



Source: Florida Department of Transportation.

<sup>13</sup> Data for prior fiscal years is not presented because the criteria for rating bridges was substantially revised during Fiscal Year 1994-95.

## *Highway Construction and Engineering Program: Preservation of the State Highway System*

Of the 597 bridges presently identified as deficient, the department has identified only 36 as needing to be replaced. Most of the rest are in need of periodic or routine maintenance.<sup>14</sup> As such, the department should be able to control the backlog of structurally deficient bridges.

*Some older bridges that are structurally sound are scheduled for replacement or repair to meet current standards*

Almost one-fourth of Florida's bridges are classified as functionally obsolete. According to the department, bridges in this classification are rated structurally sound but do not meet current design standards for width, bridge railings, or other features. Some of these bridges are also scheduled for replacement or repair to bring the bridges up to current standards. For example, the program has scheduled 100 bridges for replacement over the next five years that are not currently on the list of structurally deficient bridges.

## *The backlog of deficient roads has increased*

While the department has met its standards for bridges, the backlog of deficient roads has substantially increased over time. The department's policy is to inspect its roads at least once a year to identify current conditions, as well as any deficiencies. These inspections review pavement conditions for predefined standards relating to pavement cracking, rutting, and rideability. The department's short- and long-range goal is to preserve the system by ensuring that 80% of the pavement on the State Highway System meets standards. Failure to timely resurface a road results in damage to the road base, necessitating costly reconstruction work in addition to resurfacing.

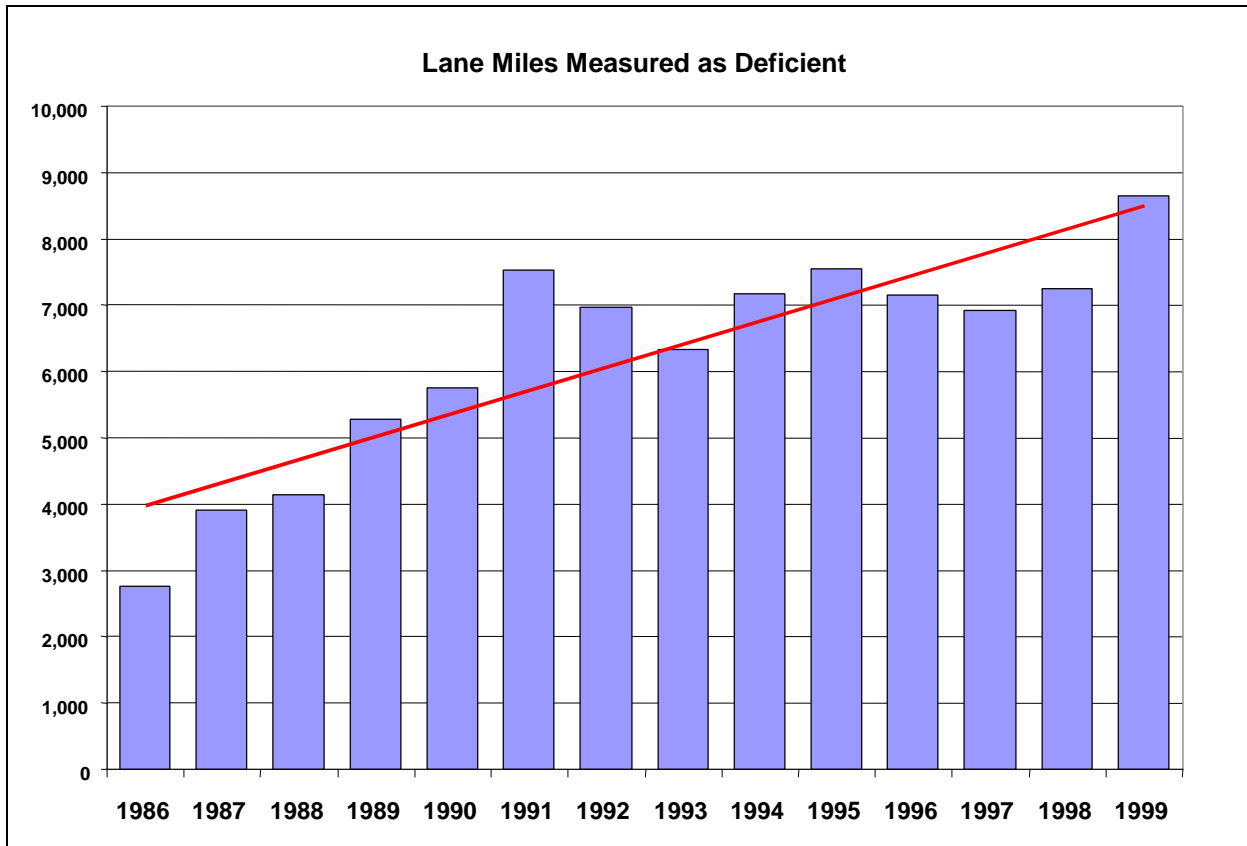
The number of deficient lane miles on the State Highway System has been increasing over the past 14 years. As shown in Exhibit 3-2, the number of deficient lane miles has increased from a low of 2,758 in 1986 to a high of 8,655 in 1999. This increase in the number of deficient lane miles indicates that the State Highway System's infrastructure is slowly deteriorating.

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<sup>14</sup> Although a bridge may be classified as deficient, it does not necessarily mean it is unsafe for traffic.

Exhibit 3-2

The Number of Lane Miles Measured as Deficient Has Increased



Source: Department of Transportation records.

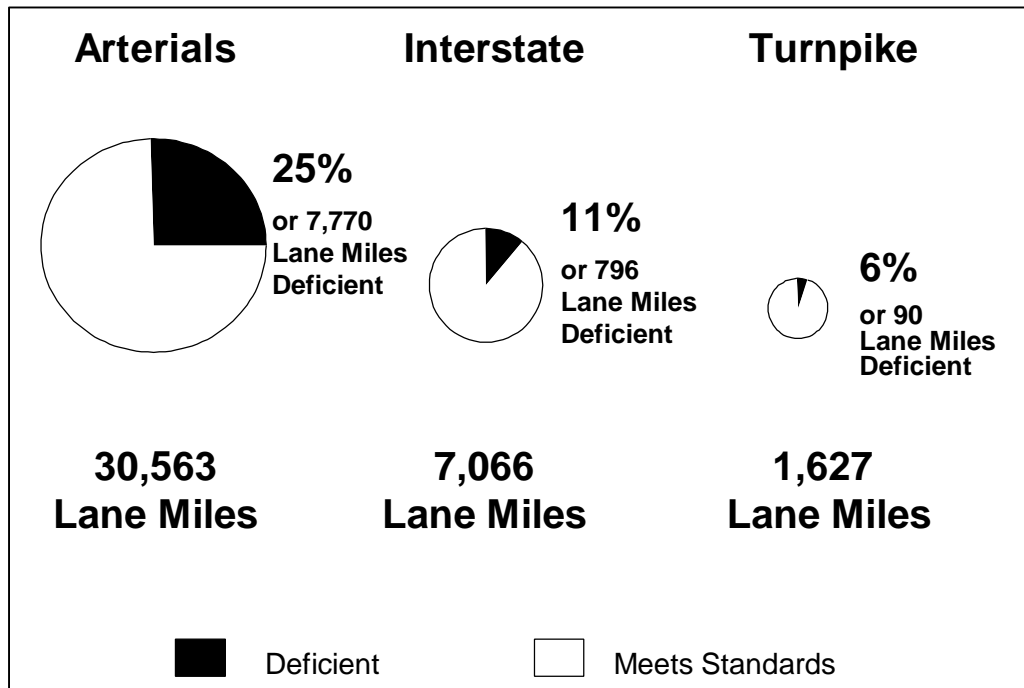
Some of the growth in deficient lane miles that occurred over the last 13 years is due to changes in technology for measuring pavement deficiencies. For example, in Fiscal Year 1998-99, the department upgraded its methods for collecting data on pavement ride and rut conditions through the use of laser technologies and adopted new roughness indicators. The department estimates that these changes in Fiscal Year 1998-99 had the effect of adding an additional 800 lane miles to the backlog.

*Most of the backlog of deficient lanes is on arterial roads*

Further analysis of the deficient lane miles shows that most of the deficiencies are on arterial roads and that the backlog of deficient lane miles on interstate and turnpike roadways are comparatively small. While arterial roads generally have less traffic volume, they comprise 78% or 30,563 lane miles of the State Highway System. As shown in Exhibit 3-3, over 25% of the system's arterial lane miles (7,770 miles) was deficient in Fiscal Year 1998-99 compared to 11% of interstate and 6% of turnpike lane miles, respectively.

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Exhibit 3-3  
Most Deficiencies Are on Arterial Roadways



Source: Department of Transportation.

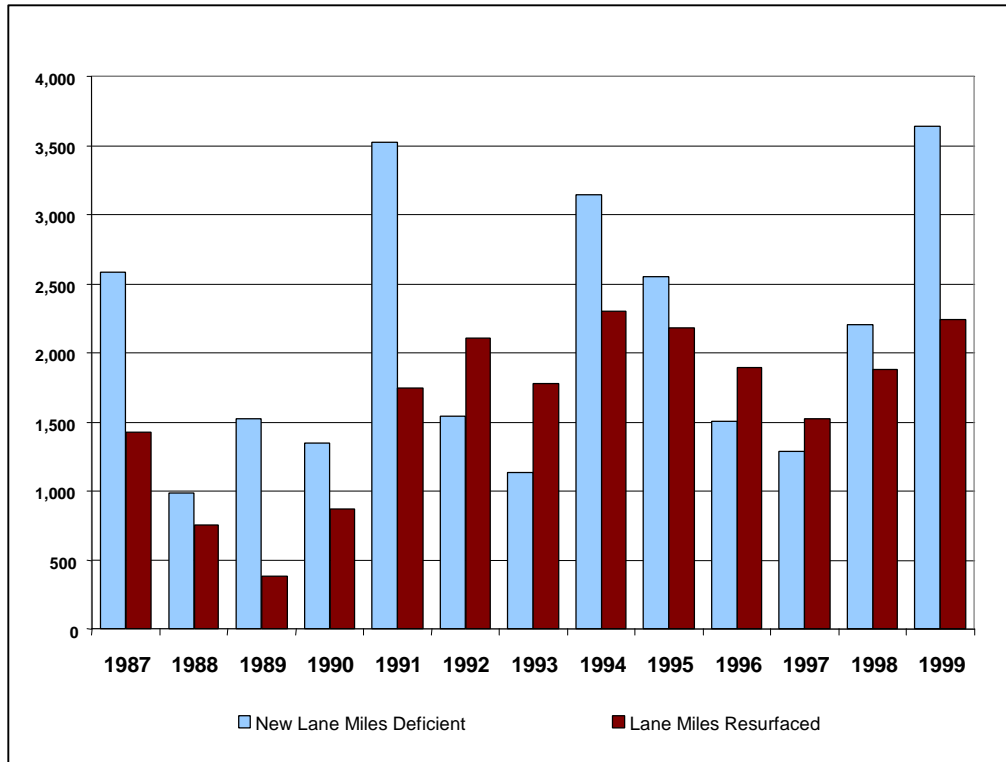
The major cause for the growth in deficient lane miles appears to be department decisions to not allocate sufficient resources to resurfacing efforts. In order to keep the backlog from increasing, the department needs to resurface enough lane miles to offset the number of new lane miles becoming deficient during a period of time. However, as shown in Exhibit 3-4, the department has scheduled and resurfaced enough lane miles to offset new deficiencies in only 4 of the last 13 years. To illustrate the problem, the program resurfaced 9,707 lane miles during the last five fiscal years or an average of 1,941 lane miles per year. However, 11,189 lane miles became deficient during the same period. Consequently, the program's resurfacing efforts fell short of offsetting new deficiencies by a total of 1,482 miles over the five-year period or an average of 296 miles per year.



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**Exhibit 3-4**

**The Number of New Lane Miles Becoming Deficient Exceeded  
the Number of Lane Miles Resurfaced in 9 of the Last 13 Fiscal Years**



Source: Florida Department of Transportation.

*Although the department has set goals to reduce the backlog, the backlog continues to grow*

In recent years, department management has acknowledged the resurfacing backlog problem and established goals for improving the situation. For example, in 1995, the department established goals for reducing the backlog of structurally deficient lane miles to 5% of interstate and turnpike lane miles and 10% of arterial highway miles by the end of Fiscal Year 2002-03 by resurfacing 2,200 miles a year. However, the backlog has grown and the department is now projecting that the backlog will continue to grow through Fiscal Year 2002-03.

Further, the resurfacing backlog problem could worsen in the future as a result of several factors.

- Recent department decisions have diverted funding from resurfacing to other activities. Department management recently decided to divert \$125 million from department resurfacing projects over the next five years to fund the Small County Road Assistance Program created by the 1999 Legislature. This program is intended to help small counties preserve the pavement of their high priority roads. This funding decision will result in the department having to reduce its resurfacing efforts by an average of 163.4 lane miles per year or 817

## *Highway Construction and Engineering Program: Preservation of the State Highway System*

lane miles over the next five years. This is significant because the condition of roads needing resurfacing will continue to decline until this work is completed. If the roads deteriorate to the point where the road foundation itself is damaged, the department will have to perform costly reconstruction work in addition to resurfacing. The cost per-lane mile cost of reconstruction is estimated to be about double the cost of resurfacing.

- Recent studies contracted for by the department suggest that pavements may be deteriorating at faster rates than previously expected due to increased traffic volume and more heavy trucks running with higher tire pressure. These conclusions are consistent with findings of a recent OPPAGA report on the Department's Motor Carrier Compliance Program, which concluded that most of the state's roadway wear is due to truck traffic and that the road damage caused by overweight vehicles increases exponentially at higher vehicle weights.<sup>15</sup> This report further concluded that the state's overweight penalty structure failed to deter repeat and more serious violations, which do more severe damage to highways.

Based on consideration of these factors, we concluded that the department's goal of annually resurfacing 2,200 lane miles may not be sufficient to preserve the system and that the annual goal may need to be raised to 2,450 miles per year. The department is currently planning to resurface 2,435 miles in Fiscal Year 2004-2005, which, if achieved, will help prevent this problem from further worsening, but would not significantly reduce the backlog of deficient pavement.

## Recommendations

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*The department needs to allocate resources to deal with the resurfacing backlog*

We recommend that the department allocate sufficient resources each year to meet the annual needs for resurfacing the State Highway System. To do this, the department needs to establish minimum annual targets to prevent further growth in the backlog of deficient lane miles needing resurfacing. In establishing its annual targets, the department needs to reassess how fast the road types become deficient and how soon should roads be scheduled for resurfacing after becoming deficient.

*The department should reassess current policy and reallocate sufficient funds to reduce the backlog*

The department has several options it should consider in deciding how to achieve its resurfacing goals. First, it needs to reassess its current policy for identifying resurfacing funding needs. The department's resurfacing budget includes resurfacing funds as well as funds for supplemental items, such as widening existing roads and adding shoulder erosion control, drainage, signs and signals, and other items. Approximately

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<sup>15</sup> *Justification Review of the Motor Carrier Compliance Program*, [OPPAGA Report No. 98-86](#), June 1999.

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\$0.62 of each dollar allocated to resurfacing arterial roads actually goes to resurfacing. The remaining \$0.38 goes for these supplemental items. If the department decided to allocate \$0.70 of each dollar in its current budget for resurfacing and \$0.30 for supplemental items, it would be able to resurface an additional 205 lane miles on arterial roads. This 70/30 allocation, coupled with department plans to increase resurfacing, would be sufficient to begin to address the backlog of deficient pavement. The 70/30 allocation is very similar to the department's current allocation for the interstate system. The department will have to assess whether revising its allocation would affect the safety of its roads.

Another option would be to fully fund the cost of resurfacing roads to work through the current backlog of projects and supplemental items and to prevent similar growth in backlogs from occurring in the future. However, this approach would affect new construction. The department needs to explore these and other options as means for preventing further costly deterioration of the State Highway System.

# Highway Construction and Engineering Program: Improving Construction Contract Management

## Introduction

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The Florida Department of Transportation's Highway Construction and Engineering Program is generally performing well in letting consultant and construction contracts. However, our review identified three areas in which the department's bid and contract administration process could be improved.

- In some instances, the department paid substantially higher than average prices for work items that overran the quantities included in its original bid specifications. This is due to department contracts not including provisions for adjusting the prices of minor items for which there were cost overruns during a construction project.
- The department made advance payments to some contractors whose construction contracts contained work items in early project phases that were priced substantially above average bid prices. This resulted in the contractors receiving higher than reasonable progress payments.
- Construction engineering and inspection work by consultants appears to be more costly than similar work by department staff. The department needs to continue efforts to reduce consultant costs.

***Due to unbalanced bidding on certain work items, the department paid a premium of \$1.35 million in cost overruns***

Chapter 334, F.S., requires the department to construct and maintain the state transportation system in the most efficient and cost-effective manner. Since the department does not have the in-house personnel and

## *Highway Construction and Engineering Program: Improving Construction Contract Management*

equipment necessary to build roads and bridges, it contracts with private contractors to carry out these projects.

Federal and state laws require the department to award construction contracts through a competitive bid process to the lowest responsible bidder.<sup>16</sup> Before letting projects for bid, department staff develop a confidential construction cost estimate for each project. This estimate is made using the project design plans, which specify work items to be included in the project. Work items include the quantity of materials, labor, and equipment necessary to complete the project. Department staff estimate the cost of each project based on historical bid prices and equipment, labor, and material costs. These design plans are then provided to construction contractors who use them in developing their bids. The department automatically awards a contract to the lowest qualified bidder if the bid is within an acceptable range of the average bid price.<sup>17</sup>

*Unbalanced bidding can result in higher cost overruns when construction contracts are modified to include additional work*

When submitting bids, contractors specify the unit price that they will charge for each work item required by the design plans, the sum of which equals the total bid price for the project. Although the contractor who is awarded a contract typically has submitted the lowest overall bid, this contractor may have bid a unit price for a specific work item that is substantially above or below the item's average costs or significantly higher than the price bid by other contractors. This situation, referred to as unbalanced bidding, makes little difference when the quantity of work items is correctly specified in the design plan, as the department will pay the lowest price for the total project. However, when more work is required to complete the project, it may pay a significant premium if the contractor has bid a high price for the affected work item. For example, if a contractor bid off-duty law enforcement at \$50 per hour and the average bid for that project is \$20 per hour, each additional hour over the planned quantity would carry a \$30 per hour premium.

Although construction contracts specify the prices to be paid, actual project needs often vary from the design plans in terms of the quantity of work that needs to be done. Changes in the quantity of work are usually due to factors such as unforeseen field conditions, design plan errors, changes in project specifications, alternative methods of construction, and unfavorable weather conditions. Changes in the quantity of work are

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<sup>16</sup> In some cases, the department may award construction contracts using methods other than low bid, such as in emergencies or for projects that combine design and construction into a single bid. Also, the law authorizes the department to consider construction time as well as cost in determining the lowest competitive bidder.

<sup>17</sup> The department may reject low bids if the bid is 25% or more below or 10% or more above its estimate, the contractor has failed to meet Disadvantaged Business Enterprise goals, the bid is not prepared in accordance with department specifications, or only a single bidder responds. Bid proposals that have these problems must be reviewed and approved by a committee composed of department staff.

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generally made through change orders and supplemental agreements to contracts.

The department's *Standard Specifications for Road and Bridge Construction* states that the department will pay the unit prices specified in a construction project contract unless there is a significant change to a "major" work item. A major work item is one that represents more than 5% of the original overall contract cost. Significant changes in work items are those that modify the character of work to be done or increase the quantity of an item by more than 125% of the amount specified in a contract or decrease the quantity by more than 75%. The department's specifications authorize staff to adjust a contract's unit prices only if there is a significant change to a major work item. However, staff are not authorized to do so if the changes fall below these thresholds or involve minor work items (items representing less than 5% of the original contract cost). In a prior report, we determined that most changes to construction project contract work items were not subject to price adjustments.<sup>18, 19</sup>

*The department has developed systems to reduce cost overruns due to unbalanced bids. However, it continues to experience cost overruns due to unbalanced bidding on some items*

Our prior report concluded that while the department's bid analysis system was among the most sophisticated in the country in detecting and eliminating major problems with unbalanced bids, the department was subject to paying high prices due to unbalanced bidding on minor items that are not subject to price adjustments. For the 108 contracts we examined, the department paid a total premium of \$702,000 when additional work was needed on minor items bid with high unit prices.

In recent years, the department has taken steps to reduce the likelihood of unbalanced bids unnecessarily increasing state costs. For example, department staff have enhanced their review of project design plans to ensure that estimated quantities of work are reasonably accurate.

In this review, we determined that the department is still continuing to experience some potentially avoidable cost increases due to unbalanced bids on minor work items. We examined bid and final cost data for 377 construction contracts completed during Fiscal Year 1997-98. Of these 377 contracts, 342 (91%) were "mathematically" unbalanced as they contained items of work priced substantially (60% or more) above the average bid.<sup>20</sup>

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<sup>18</sup> *Review of the Florida Department of Transportation Construction Bid and Contract Administration Process, OPPAGA Report No. 96-85*, May 1997.

<sup>19</sup> Although two-thirds of the 11,386 work items we reviewed in our prior report experienced quantity changes during construction, less than 1% of the items were major work items and were not subject to price adjustments.

<sup>20</sup> The Florida Department of Transportation's bid analysis process uses two mathematical thresholds. In this process, department staff use 45% above or below the average price of the bids received for a project as a threshold for excluding bid prices as being unreasonably high or low. After a revised average bid price is calculated based on the remaining bids, staff use 60% above the revised average as a threshold for identifying bid prices that are mathematically unbalanced.

## *Highway Construction and Engineering Program: Improving Construction Contract Management*

This resulted in the department paying premium prices for some work that overran during construction. In the 377 contracts we reviewed, the department paid a net premium of \$1,352,711 for work with high unit prices that overran original bid quantities that were considered minor items and did not meet the department's thresholds for making price adjustments.<sup>21, 22</sup>

*In one example, the department paid over \$59,645 instead of \$3,645 for additional materials due to unbalanced bidding*

This problem can be illustrated by one project in which the department's original design plans specified that 660 square yards of plastic filter fabric would be needed to prevent erosion. The project's contractor bid the high unit price for this item of \$32.99 per square yard, for a total cost of \$21,773.40. The average bid price of the other bidders was \$1.94 per square yard, or \$31.05 per square yard less than the winning firm's bid. The quantity of fabric actually used was 2,468 yards, or an increase of 1,808 yards. As a result, the department paid \$59,645 for the 1,808 square yards of additional fabric used by the contractor, but would have paid only \$3,508 if it paid the average unit price bid by other contractors. According to department specifications, this example would be considered a minor work item and would not be subject to price adjustments.

The department could address this problem by modifying its specifications to allow staff to adjust the prices of minor work items that significantly increase in quantity during a construction project and unnecessarily increase state costs.

### *The department made advance payments to some contractors for early-phase construction work priced substantially above average bid prices*

While not expressly provided for or prohibited by law, the department may award construction projects to contractors who "front-load" or structure their bids in order to receive higher payments for work performed during the early phases of work. Some items of work, such as clearing land and contractor mobilization of equipment and resources are usually completed earlier in project implementation than are others. When these items of work are bid unreasonably high, the contractor

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<sup>21</sup> In making our estimate, we used prices paid  $\pm 45\%$  of the average bid price. For instance, if the average price was \$1, any amount paid above \$1.45 or below \$0.55 was summed for each additional unit over the planned quantity. We used this range because the Florida Department of Transportation uses  $\pm 45\%$  of the average bid price in its bid analysis as a threshold for determining whether bid prices are reasonable.

<sup>22</sup> The projects encountered quantity overruns that cost \$1,918,599 more for work that overran original bid quantities on items bid with high unit prices, less \$565,888 for work that was bid with low unit prices, for a net excess cost of \$1,352,711.

## *Highway Construction and Engineering Program: Improving Construction Contract Management*

receives higher than reasonable progress payments in relation to the work completed. Also, by making advance payments on front-loaded work, the department could lose the opportunity to earn additional interest on moneys that would otherwise have remained in the State Transportation Trust Fund and been available for investment.

*The department is losing potential interest earnings to contractors who "front-load" bids*

The department is losing potential interest earnings by making advance payments to some contractors that "front-load" their bids to receive higher payments for work performed during a project's early phases. For example, as part of a larger project, a contractor bid \$1,475,000 to clear land compared to \$565,983 bid by the other contractors. By making advance payments to this contractor, the department lost potential interest earnings of \$54,541. For the 377 contracts we reviewed, the department lost a total of approximately \$444,880 in potential interest earnings as a result of advance payments to contractors that "front-loaded" their bids.<sup>23</sup>

The department believes that its policy as defined in its standard specifications that allows it to make advance payments to contractors adhere to guidelines of the American Association of State Highway and Transportation Officials (AASHTO), which are used by many states in administering their construction programs. However, we note that transportation agencies in some other states, such as the North Carolina Department of Transportation, retain payments on certain front-end-loaded items and make price adjustments to minor items that overrun original bid quantities. North Carolina transportation officials state that these contract provisions have helped ensure fair and reasonable prices are paid for contract work. Further, the Federal Highway Administration and AASHTO recognizes North Carolina's specifications on retaining payment on front-end-loaded work as a promising and innovative technique for controlling construction costs.

## *Consultant construction engineering and inspection work more costly than similar work done in-house*

*The department's use of consultants to perform construction engineering and inspection has increased since the 1980s*

Historically, the Florida Department of Transportation contracted with private-sector companies to construct state roads and bridges while performing most design and inspection work with in-house staff. However, it has significantly increased its use of private-sector consultants to perform preliminary engineering (PE) and construction engineering and inspection (CEI) activities since the 1980s. (See Exhibit 4-1.) During Fiscal Year 1997-98, most of the department's

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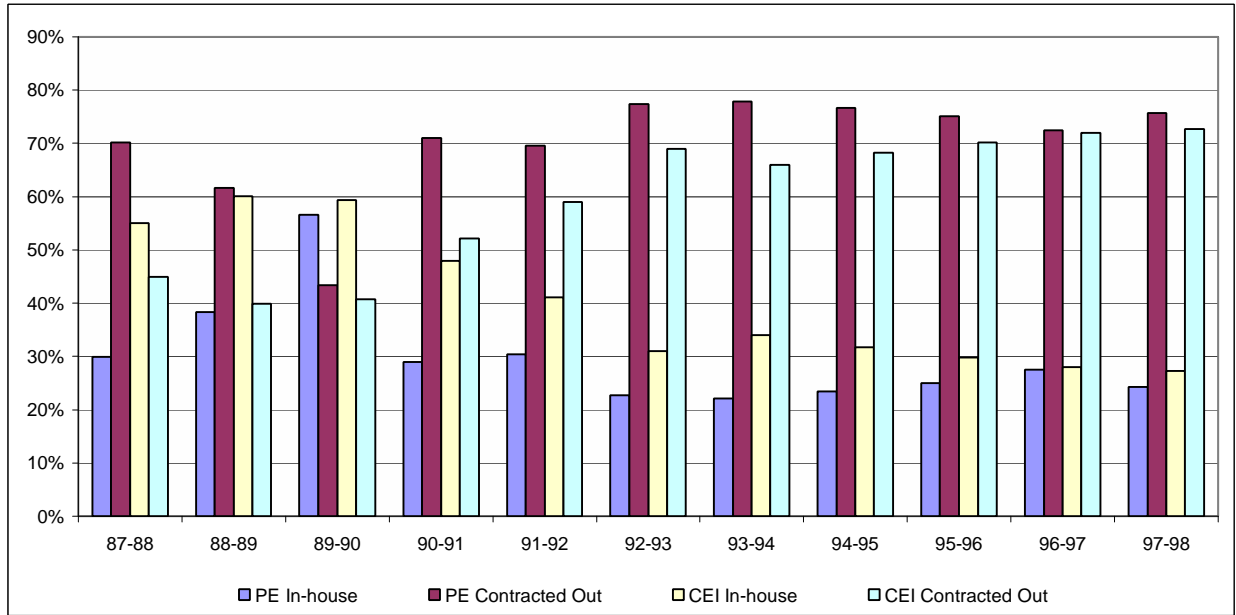
<sup>23</sup> OPPAGA previously commented on this practice resulting in lost interest earnings in its *Review of the Florida Department of Transportation Construction Bid and Contract Administration Process, Report No. 96-85*, May 1997.



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preliminary engineering and construction engineering and inspection workload was performed by consultants (76% and 73%, respectively). Program managers stated the department's reliance on consultants is the result of state policy decisions to increase highway construction in the 1980s and 1990s without hiring more staff.

**Exhibit 4-1**  
**Department Contracting of Preliminary Engineering (PE) and Construction Engineering and Inspection (CEI) Activities Has Increased Since the 1980s<sup>1</sup>**



<sup>1</sup> Dollar amounts shown in the chart were adjusted to 1987 dollars using U.S. Bureau of Labor Statistics government and private sector price indexes.

Source: Florida Department of Transportation.

*The department believes there are several benefits to using consultants for construction engineering and inspection*

Department managers believe the use of consultants has several benefits. Consultants are used to supplement in-house resources and perform tasks for which there are insufficient in-house staff or which require certain specialized expertise that is not available when needed in-house. Each year, district office managers determine which projects in-house staff or consultants will complete. Factors such as job complexity, project length, the necessity of specialized expertise, and travel concerns are considered in deciding whether to use in-house staff or consultants. Program managers indicated that the primary reason for using consultant engineers is a lack of in-house staff to complete planned projects.

However, consultants appear to be more costly than in-house staff. As shown in Exhibit 4-2, our review of 377 transportation (road and bridge) construction projects that were completed during Fiscal Year 1997-98 determined that construction engineering and inspection services performed by consultants averaged 17% of total project construction costs

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compared to 11% for in-house staff. See Appendix B for more detailed information on these cost comparisons.

**Exhibit 4-2  
Construction Engineering Inspection (CEI) Work by Contractors  
Is More Costly Than Work by Department Staff**

CEI	Number of Contracts	Construction Cost	CEI Cost <sup>1</sup>	Average Percent
Consultant	127	\$ 867,881,231	\$146,908,086	17%
In-house	250	441,031,387	48,014,874	11%
<b>Total</b>	<b>377</b>	<b>\$1,308,912,618</b>	<b>\$194,922,961</b>	<b>15%</b>

<sup>1</sup> CEI costs include both direct and indirect costs. Direct costs are cost items that only benefit and thus are totally chargeable to a service, such as consultant contract costs and in-house salaries and benefits. Indirect costs are cost items that benefit not only the target service, but other services as well. They include administrative and support services, such as administering consultant contracts, personnel management, and vehicle acquisition and operations. Indirect costs must be allocated to a project to determine its total cost. Indirect rates used are 4.18% for contracted services and 7.13% for in-house services bases on Fiscal Year 1998-99 estimates. Actual indirect cost may vary.

Source: OPPAGA analysis of Florida Department of Transportation data.

*The department is exploring means to reduce consultant costs*

Department managers said that there are many factors that may be responsible for consultant costs exceeding in-house costs, such as consultant salaries, overhead rates, and profits. They also noted that department is reviewing its contracting practices to determine whether they may inadvertently increase consultant costs without adding value to the state. One approach under consideration is establishing a single long-term consultant contract encompassing a larger group of construction projects. Department managers said this practice is intended to allow consultants to make more efficient use of their personnel resources, which should result in lower costs to the department.

## Recommendations

*Allowing department staff to adjust minor work item prices would save up to \$1.35 million*

We recommend that the department

- revise its standard contract specifications to allow its staff to make price adjustments to minor work items with unreasonably high unit prices whose quantities increase significantly above original bid estimates, which could save up to \$1.35 million;
- revise its standard contract specifications to allow it to retain payment for certain front-end-loaded items of work that contractors priced substantially above average bid prices in their original bids; this would help the department avoid making advance payments for front-loaded work, which could save up to \$444,880; and

*Retaining payment for front-end-loaded items priced substantially above average would save \$444,880*

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- continue its efforts to modify contracting practices that increase consultant costs without adding value to the state. The department then needs to evaluate whether these efforts are successful in reducing consultant costs and making them more comparable to the costs of work performed by in-house staff. If this evaluation determines that consultant costs continue to significantly exceed in-house costs, the department should conduct a make-versus-buy analysis to determine whether its current mix of consultant and in-house work should be continued in the future.

# Highway Construction and Engineering Program: Alternative Practices May Minimize Time and Cost Overruns and Build Capacity

## Introduction

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Florida Department of Transportation data for Fiscal Years 1994-95 through 1998-99 show that time and cost overruns continue to be of concern. The department has taken action to reduce overruns and more recent data suggest that both time and cost overruns are decreasing. However, data over a large period of time are needed to more fully assess the results of department actions. Early results indicate that projects completed using alternative contracting techniques still experience time and cost overruns, but less so than projects completed using traditional contracting practices.

The department should take two other actions to help it complete projects at an earlier date and reduce the severity of congestion on a more timely basis.

- Improve its promotion of the Local Government Advance-Reimbursement Program as a means for expediting the timely completion of needed construction projects.
- Increase the use of public-private partnerships and private toll roads as a means to increase road capacity while minimizing state costs.

### *Decreasing highway construction time and cost overruns encouraging, but need to be sustained*

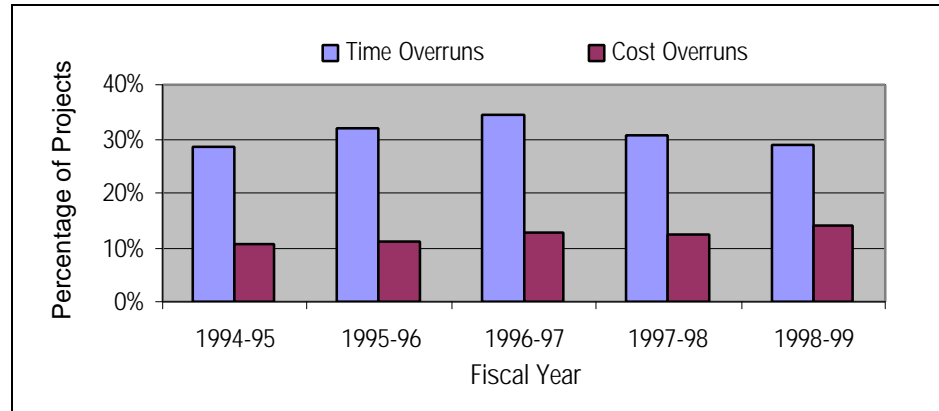
*Recent decreases in overruns are encouraging, but need to be sustained*

Florida citizens expect highway construction projects to be completed on time and within budget. Time and cost overruns occur when calendar time and dollar amounts originally specified in highway construction contracts are exceeded. As shown in Exhibit 5-1, time and cost overruns

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on completed projects remained high during the period covering Fiscal Years 1994-95 to 1998-99. Further, cost overruns worsened in Fiscal Year 1998-99 from 12.3% in Fiscal Year 1997-98 to 14.2%. However, overruns decreased during the first quarter of Fiscal Year 1999-2000. These results are encouraging but need to be sustained for the remainder of this fiscal year and beyond.

**Exhibit 5-1  
Percentage of Construction Projects Experiencing  
Time and Cost Overruns Remains High**



Source: Florida Transportation Commission.

*Some avoidable cost overruns do not add value to projects and are unacceptable*

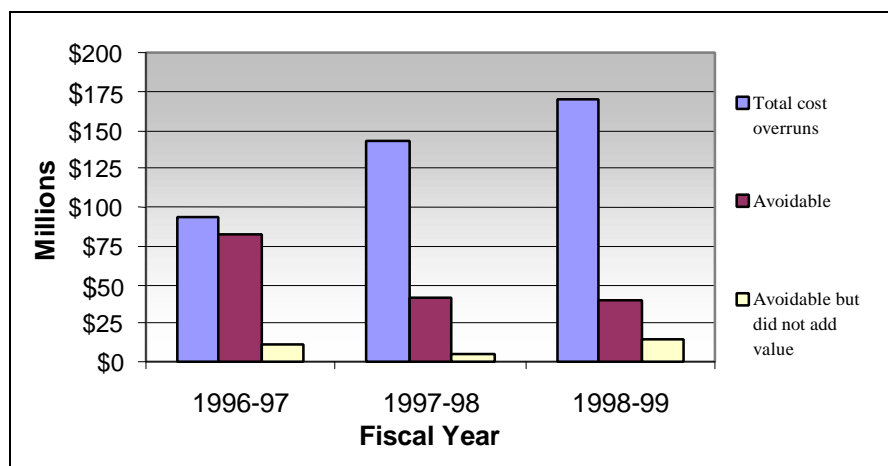
In prior OPPAGA reports, we recognized that some cost and time overruns are unavoidable and cannot be reasonably prevented, such as those due to unanticipated events.<sup>24</sup> However, overruns due to design plan or project management problems are avoidable because they could have reasonably been foreseen and prevented. We also recognized that some avoidable overruns may add value when they involve work that was omitted from the department's design plans, but was clearly needed to be done, such as adding sod to control erosion. However, overruns that do not add value represent wasted money and are not acceptable. For example, no value is added when a contractor has to replace an asphalt roadway due to faulty design specifications.

Given these considerations, we are concerned that avoidable cost overruns that did not add value increased from Fiscal Year 1997-98 to Fiscal Year 1998-99 (\$5.5 million to \$14.6 million). (See Exhibit 5-2.)

<sup>24</sup> Follow-Up Report on the Florida Department of Transportation's Performance in Controlling Construction Cost Overruns and Establishing Accountability for These Problems, [Report No. 98-24](#), December 1998.

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**Exhibit 5-2  
Avoidable Cost Overruns That Do Not Add Value  
Increased in Fiscal Year 1998-99**



Source: Florida Transportation Commission.

Our prior report noted that the department was developing various strategies to address the problem of time and cost overruns. These strategies included implementing alternative contracting techniques intended to reduce contract completion time and costs.

## *Alternative contracting techniques appear to help control construction time and cost overruns*

*The 1996 Legislature authorized alternative contracting techniques to reduce project time and costs*

In 1996, the Florida Legislature amended the law to authorize the department to use alternative contracting techniques to expedite project completion and help reduce project time and cost increases. Specifically, the department was authorized to establish an innovative contracting demonstration program (s. 337.025, F.S.), to use time-plus-money contracts (s. 337.11(4), F.S.), to provide incentives to contractors for early project completion and additional sanctions for completion delays (s. 337.18(4), F.S.), and to use design-build contracts in which a project's design and construction phases are combined in a single contract (s. 337.11(7), F.S.)<sup>25</sup> These statutory changes were consistent with recommendations in prior OPPAGA reports.<sup>26</sup> Exhibit 5-3 provides a description of these alternative contracting techniques.

<sup>25</sup> According to provisions of Ch. 99-385, Laws of Florida, innovative contracts let under s. 337.025, F.S., are not to exceed a total contract amount of \$120 million annually. Prior to this law's enactment, the limit for letting innovative contracts was \$60 million.

<sup>26</sup> Florida Department of Transportation's Performance in Controlling Cost Overruns and Delays When Building Roads and Bridges, [OPPAGA Report No. 95-30](#), January 1996.

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**Exhibit 5-3**

**The Department Is Authorized to Use Various Alternative Contracting Techniques**

Type of Contract	Description
A + B (cost-plus-time)	Contracts are awarded based on a combination of the bid for the contract pay items (A) and the associated cost of the time (B) needed to complete the work according to the formula $A+B=$ Total Bid where $A=$ Standard Bid and $B=$ Time Bid (days x costs per day). The A +B bidding concept is designed to shorten the total contract time by allowing each contractor to "bid" the number of days in which the work can be accomplished.
No Excuse Bonus	Provides an incentive on accomplishing a specific milestone within a contract for the purpose of completing an element or elements within the prescribed time regardless of whether unforeseen conditions, weather delays and other factors that normally extend contract time are encountered. Contractors may receive bonuses as a reward for early completion, which reduces the disruption and inconvenience to the public. Savings in construction engineering inspection and administrative costs due to a shorter construction period could offset the bonus amount paid.
Incentive /Disincentive	Provides an incentive to the contractor for early completion, but also increases the penalty for failure to complete a project on time. Savings in construction engineering inspection and administrative costs due to a shorter construction period could offset the incentive amount paid.
Lane Rental	Contracts are awarded based on a combination of a bid for the contract pay items and associated time that a lane will be closed during work. Contractors using more lane rental days than which they bid are charged lane rental fees.
Liquidated Savings	Provides an incentive payment for early project completion. The amount of incentive is based on the direct savings to the department related to construction engineering inspection and administration costs
Bid Averaging	The contractor with the bid closest to the average of all the bids is awarded the contract. This technique is intended to get the contractor to bid the true and reasonable costs for a project in order to minimize claims and cost overruns during construction.
Lump Sum	The contractor submits a lump sum bid for the entire contract. The intent is to reduce quantity overruns due to design plan errors in quantity calculations and contract administration costs associated with quantity verification and measurement.
Design/Build	Combines the design and construction phases of a project into a single contract. The intent is to save time since construction can begin before all design details are finalized
Warranty	Guarantees the integrity of a product and of the contractor's responsibility for the repair or replacement of deficiencies in highways.

Source: Florida Statutes and Florida Department of Transportation documents.

We assessed whether the department's alternative contracting techniques have been effective in helping to control project cost and time overruns. We reviewed 137 construction projects let by the department's central office since 1996 that were identified by department staff as having used

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one or more alternative contracting techniques. (See Exhibit 5-4 for a breakdown of the alternative contracting techniques for these projects.)<sup>27</sup> Of the 137 projects, 56 (41%) had construction completed as of May 1999, which accounted for \$168,028,054 (15%) of the \$1,090,996,638 in total original contract awards for the 137 projects. Most of the other projects not yet completed were large or recently let projects and were not expected to be completed for several years.<sup>28</sup> The department has scheduled 113 alternative construction contracts to be let during Fiscal Year 1999-2000.

*Alternative contracting techniques still have overruns, but to a lesser degree than traditional contracting*

While some time and cost overruns are unavoidable, these problems need to be minimized. Early results indicate that projects completed using alternative contracting techniques still experience overrun problems, but less so than projects completed using traditional contracting practices. As shown in Exhibit 5-4, alternative construction contracts had an average cost overrun of 3.6% compared to an average of 12.4% for contracts completed in Fiscal Year 1997-98 that were awarded using traditional techniques. Further, alternative construction contracts had an average time overrun of 7.1% compared to 30.7% for traditional contacts. However, these results need to be interpreted with some caution since department staff do not select projects for alternative contracting that they anticipate will have problems due to delays that are beyond the contractor's control.

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<sup>27</sup> Our analyses do not include innovative contracts that may have been let by the department's district offices, since information on such contracts is not included in the department's contract reporting system.

<sup>28</sup> Of the 137 projects, 22 (16%) were let during Fiscal Year 1998-99, 74 (54%) were let during Fiscal Year 1997-98, 40 (29%) were let in Fiscal Year 1996-97, and 1 (0.7%) were let prior to Fiscal Year 1995-96. The average contract had a cost of \$8 million while the 56 completed projects had an average cost of \$3 million.



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**Exhibit 5-4  
Alternative Construction Contracts Completed in Fiscal Year 1997-98  
Have Lower Time and Cost Overruns Than Traditional Construction Contracts**

Non-Traditional Contracting Technique <sup>1</sup>	Number of Contracts	Construction Award	Percent Cost Overrun	Contract Days	Percent Time Overrun
A+B (cost-plus-time)	9	\$ 48,527,280	3.5%	2,283	8.1%
No Excuse Bonus	8	30,991,918	7.2%	2,110	1.5%
Incentive/Disincentive	12	28,577,800	8.4%	2,835	5.8%
Lane Rental	8	16,847,048	-4.1%	1,535	5.7%
Liquidated Savings	9	18,174,776	-1.8%	1,171	13.2%
Bid Averaging	2	17,205,296	4.5%	790	7.2%
Lump Sum	8	7,703,934	-0.7%	915	16.0%
<b>Total</b>	<b>56</b>	<b>\$ 168,028,054</b>	<b>3.6%</b>	<b>11,639</b>	<b>7.1%</b>
<b>Traditional Low Bid Contract</b>	<b>375</b>	<b>\$1,162,868,676</b>	<b>12.4%</b>	<b>87,861</b>	<b>30.7%</b>

<sup>1</sup>Program managers reported that the department has not yet completed any central office let design-build construction projects or construction contracts with warrantee clauses. However, the department has let a design-build contract to replace a bridge in Franklin County.

Source: Florida Department of Transportation data.

## *The department should boost promotion of the Local Government Advance-Reimbursement Program*

The Local Government Advance-Reimbursement Program enables local governments (cities, counties, and transportation authorities) to expedite state transportation projects. Under this program, local governments propose to contribute cash, goods, and/or services to the department in order to initiate projects at an earlier date than scheduled in the department's work program. If the project is feasible, the department completes the project from one to seven years earlier than initially planned and reimburses the local government in the year that the project was originally scheduled in the department's work program. By completing the project at an earlier date, the department can lessen the severity of traffic congestion problems on a more timely basis as well as avoid future price increases in planning, design, right-of-way, and construction costs.

The department has advanced local governments funds for 42 construction projects since Fiscal Year 1987-88. (See Exhibit 5-5.) These projects were completed an average of 2.5 years ahead of the schedule in the department's work program.

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**Exhibit 5-5  
Local Government Participation in the Advance-Reimbursement Program  
Has Increased**

	Fiscal Years 1987-88 to 1994-95	Fiscal Years 1995-96 to 1998-99	Total
Number of local governments participating	19	23	42
Number of projects	19	29	48
Approximate total amount loaned	\$17.5 million	\$108.7 million	\$126.2 million
Amount reimbursed by the department as of August 1999	\$19.2 million <sup>1</sup>	\$307,400	\$19.5 million
Lane miles added	9	40	49
Estimated inflation cost avoided by projects	\$1.2 million	\$7.9 million	\$9.1 million

<sup>1</sup> Department data on the amount reimbursed exceeds the amount loaned because the department reimbursed local governments for their contributions of goods and services. Data on the amount loaned did not include local contributions of goods and services.

Source: Florida Department of Transportation.

In a prior report on the program released in 1995, we concluded that cities and counties did not participate in the program because of several factors, including a lack of program awareness, concerns about repayment, and having other priorities.<sup>29</sup> Subsequent to our report, the department took action to improve awareness of the program, and concerns about the Legislature appropriating money for repayment have lessened since all scheduled reimbursements were paid. The department's policy is to pay all prior commitments before entering into new obligations. However, many local government officials believe that special circumstances such as the need to meet concurrency requirements, relieve traffic congestion, or alleviate safety hazards must exist before they would loan funds to the department.

*Transportation facilities  
that collect tolls from  
users are excluded  
from the Advance-  
Reimbursement  
Program*

One factor that limits use of the program is that revenue-producing projects are excluded by law from being advanced by local governments. Revenue-producing projects are transportation facilities that collect toll monies from highway users, such as the Seminole Expressway located near Orlando. In Fiscal Year 1997-98, this expressway collected \$12.2 million in toll revenues. Department and legislative committee staff were not aware of the basis or rationale for excluding revenue-generating projects from advancement. They believed that the prohibition may have been based on past department funding and project management practices, and may no longer be needed.

<sup>29</sup> *Review of the Local Government Advance/Reimbursement Program*, [OPPAGA Report No. 95-03](#), August 2, 1995.

## *The department should increase the use of public-private partnerships and private toll roads*

The department could also leverage state transportation funds by promoting private sector participation in transportation projects. Current law authorizes two types of this participation, public-private partnerships and private toll roads. To date, neither of these options has been widely used.

**Public-Private Partnerships.** Under a public-private partnership, a contractual arrangement is formed between the department and private sector contractors in which both entities are responsible for designing, planning, building, operating, and maintaining roads and toll plazas on the State Highway System. Both also share project costs. Developer's costs typically include right-of-way acquisition, project design, and maintenance. Developers may also donate cash towards the cost of a project. Their contributions are generally made as a result of needing to meet state growth management requirements or desiring to provide access to places of economic activity such as shopping malls or amusement parks.

*The department reports savings of \$188 million since 1994 through the use of public-private partnerships*

Since 1994, 26 highway construction projects having a total cost of \$578 million have been completed using public-private partnerships. For these projects, the state's share of project expenditures has ranged up to 50%, with the remaining amounts paid for by developers. Department data indicates the state saved \$188 million as a result of these partnerships. An example of a transportation facility built through a public-private partnership is the Southern Connector Extension near Orlando. The project, which is a six-mile, four-lane limited access toll facility, was built at cost of \$153 million.

Department district office staff indicated the department has not extensively used public-private partnerships because it has taken a passive approach in identifying developers willing to partner with the state. A majority of the staff we interviewed in the department's eight district offices reported they typically relied on developers to take the initiative and approach them with proposals for building transportation facilities. Staff in only three district offices reported they proactively attempt to identify developers with which to partner. For example, Turnpike District staff reported that they attended local public hearings and held discussions with metropolitan planning organizations in an effort to identify potential developer partners. District 4 staff reported that the district primarily identified potential partners from contract monitoring or follow-up activities.

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**Private Transportation Facilities.** Private Transportation Facilities are projects proposed by private contractors and projects where the department solicits contractors to build, operate, own, and finance transportation facilities. With this approach, the department's primary role would be to regulate the amount and use of toll or fares to prevent unreasonable costs to users of the facilities. Private transportation facilities would be constructed at no cost to the state.

*Since 1991, only two proposals for private transportation facilities have been received by the department*

The department has received only two proposals to date to construct private transportation facilities since this option was authorized by the Legislature in 1991. One proposal was submitted by a developer in 1994 to build and operate a 10-mile tolled expressway near Miami. The project's cost was estimated to total \$255 million. However, the proposal had difficulty receiving the needed approvals from city and county governments and the local expressway authority. In addition, the proposal was not well received by local residents because of concerns about the project's impact on their community. Discussions with the project's developers and staff of the Metropolitan Planning Organization (MPO) for the Miami area indicate that the project has now been modified to resolve community resident and local government objections. MPO staff reported that the project is being revised to be an eight-mile toll expressway that will no longer have a corridor going through the community opposing the project's original design. In the second proposal, department staff recently received a proposal to construct a private toll road in St. Lucie County. This project would be three miles in length and would have a total cost of approximately \$24 million. Department staff is currently reviewing the project proposal to determine whether it complies with statutory requirements, such as having adequate safeguards to prevent service disruptions to the traveling public in the event of cancellation of the agreement by the department.

Program managers attributed the paucity of proposals to a lack of developer and public awareness about the program. Department staff reported that the department does not market or promote the program to developers. They also believe that opposition from local governments and other groups to initial project proposals has discouraged developers. Representatives of developers that submitted or plan to submit proposals reported that they learned about the program from each other rather than by being contacted by the department.

# Recommendations

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*Department should expand the use of alternative construction techniques to help reduce overruns*

We recommend that the department continue its efforts to minimize construction time and cost overruns. Although current data indicate overruns are decreasing this trend needs to be sustained in the future. To address this problem, the department should expand the use of alternative construction contracting techniques. Projects completed using alternative contracting techniques experience lower time and cost overruns than projects completed using traditional contracting practices.

If the department is unable to continue its performance in decreasing overruns, the legislature should consider applying disincentives to agency management. Under performance-based program budgeting, the Legislature can award incentives and disincentives based on agency performance. Disincentives may be financial, such as decreases in managerial salaries or program appropriations, or non-financial, such as decreases in budget flexibility or mandatory quarterly appearances before the Legislature to report progress in improving performance.

*Better communication with local governments on the Advanced Reimbursement Program is recommended*

To help the department complete projects at an earlier date and reduce the severity of congestion on a more timely basis, we recommend that the department better inform local governments about the Local Government Advance-Reimbursement Program. If more local governments used this program, projects that could address congestion problems could be initiated earlier than planned by the department. We also recommend that the Legislature amend the law to allow revenue-producing projects to be advanced by local governments.

*The department should proactively seek more public-private partnerships to help reduce traffic congestion problems*

To help ameliorate traffic congestion problems in Florida's urban areas and maximize the use of state resources, we recommend that the department proactively seek to establish more public-private partnerships with developers to design, plan, build, operate, and maintain roads and toll plazas on the State Highway System. We also recommend that the department proactively solicit private developers to participate in the Private Transportation Facilities Program, which allows the developers to fully build, operate, own, and finance transportation facilities.

# Transportation System Maintenance Program: Cost Savings

## Introduction

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The department would be able to potentially reduce its costs for maintaining the State Highway System if it could franchise highway rest areas. Although federal law currently prohibits states from franchising rest areas on the interstate highway, there is a national effort among states to lift these restrictions.

A recent department inspector general report concluded the program's central warehouse was not consistently providing office supplies at a cost savings compared to a private retailer.<sup>30</sup> The report recommended that program management consider two alternatives for acquiring and delivering office supplies: contracting with a private retailer or developing department contracts that require vendors to deliver directly to end users.

We concluded that the department should close this warehouse and use contemporary best business practices, such as just-in-time distribution systems, that would eliminate the need for products to be handled and warehoused by program staff. Closing the central warehouse would eliminate 12 full-time positions and the warehouse's operating costs (\$672,989 in Fiscal Year 1998-99). The department should also explore opportunities to reduce the number of local warehouses.

### *The program could potentially reduce its costs by franchising highway rest areas*

The program could potentially reduce its costs if it were able to franchise rest area facilities. The program currently spends \$15 million annually to provide security and maintenance services at 73 rest areas (including four welcome centers) on the State Highway System. Most of these rest areas are located on Florida's interstate highways. Franchised rest area facilities

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<sup>30</sup> *Central Warehouse*. Office of the Inspector General, Florida Department of Transportation, Report 07H-9006, August 1999.

are operated by retail food or travel service enterprises in exchange for lease payments to the state. Florida has established franchised facilities along state limited access highways such as the Florida Turnpike.<sup>31</sup> At these facilities, a variety of food vendors and service stations offers services to travelers.

*Federal laws would need to be amended to establish franchised rest areas on the interstate system*

Although federal law currently prohibits states from franchising rest areas on the interstate highway, there is a national effort among states to lift these restrictions. Program officials believe that if the federal law were amended to allow rest area franchising, it would be feasible for the department to franchise some rest areas and recover a portion of its costs to maintain and provide security at these sites.<sup>32</sup> Successful franchising strategies could also provide the state with long-term revenues from leasing land to private-sector companies that would be responsible for capital improvements and facility operations. Department staff have worked with organizations such as the American Association of State Highway and Transportation Officials (AASHTO) in an effort to have Congress change federal law to allow states to franchise interstate rest areas. If continued, these efforts could be successful and enable Florida to establish franchises.

## ***The department should close the program's central warehouse and contract with vendors to provide just-in-time distribution systems***

The program manages various types of facilities to support program and department activities.

- A central warehouse in Gainesville that furnishes supplies and materials to the entire Department of Transportation
- Fifty-three maintenance yards and sub-yards throughout the state that are geographically placed to provide maintenance services on the State Highway System
- Thirty-seven local warehouses that warehouse vehicle parts and maintenance supplies used in supporting program services
- Thirty-four repair shops that maintain the program's and other department motor vehicles and equipment

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<sup>31</sup> Florida is not restricted from franchising rest areas on state limited access highways that are not part of the interstate system. The Florida Department of Transportation presently franchises rest areas on the Florida Turnpike.

<sup>32</sup> It is unlikely that the department could recoup its full cost of maintaining rest areas through franchising because some of these rest areas are located near roadway exits that already have commercial centers with available food, gas, and repair services. As a result, it would be more feasible for the department to seek to franchise rest areas located in more isolated areas.

## *Transportation System Maintenance Program: Cost Savings*

*Program operations are significantly different now than when many support facilities were originally built*

Many of these facilities have existed for several decades. However, the program is now operating under conditions that significantly differ from those existing when the facilities were initially planned and constructed.

- When the facilities were initially built, they may have been needed because department staff performed all road and bridge maintenance services. However, in recent years, the department has taken several actions, such as reducing the number of in-house program staff while increasing the use of private contractors. To illustrate, the department has reduced the program's allotment of full-time employees by 212 positions since Fiscal Year 1996-97. Further, privatized services now account for 67% of the program's total expenditures. As a result of these actions, the program reduced the amount of equipment it operates and maintains. The program has also privatized some maintenance and repair work on program and department vehicles

and equipment.

- Further, when the facilities were built, it was general practice for an entity to operate its own warehouses to provide needed supplies and commodities. However, contemporary best business practices, such as just-in-time distribution systems, are now being used extensively by private sector companies and the federal government to reduce the need to operate warehouses and improve the efficiency of support functions. With a just-in-time distribution system, supplies are ordered directly from a prime vendor and are delivered directly to the location where the supplies are needed without intervening handling and warehousing by program staff. Private sector company and federal program experience indicates that use of these systems significantly reduced the need for warehouse space and related warehousing costs.

*The department's inspector general recommended alternatives to using the central warehouse for office supplies.*

In a recent report, the department's inspector general concluded the program's central warehouse was not consistently providing office supplies at a cost savings compared to a private retailer.<sup>33</sup> The report recommended that program management consider two alternatives for acquiring and delivering office supplies: contracting with a private retailer or developing department contracts that require vendors to deliver directly to end users.

*The department should use business practices that eliminate the need for a central warehouse*

We concur with the inspector general's conclusions. The department should use contemporary best business practices, such as just-in-time distribution systems, that would eliminate the need for products to be handled and warehoused by program staff.

The department should also explore opportunities to further reduce the number of local warehouses. As part of this effort, the department should develop a comprehensive business plan that specifies its short- and long-

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<sup>33</sup> *Central Warehouse*. Office of the Inspector General, Florida Department of Transportation, Report 07H-9006, August 1999.



term strategies for consolidating or closing facilities as a result of factors such as expanded use of private contractors and just-in-time distribution systems; and future growth in state population and businesses, which should increase in the availability of private vendors in what are currently less developed areas of the state.

## Recommendations

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*Federal laws need to be amended to allow for rest area franchising*

We recommend that the Legislature work with Florida's U.S. Congressional delegation to amend the federal law to allow the department to pursue franchising interstate rest areas. If the department could franchise rest areas, it would be able to reduce its costs for maintaining the facilities by up to \$15 million annually.

*Closing the central warehouse would save \$672,989*

We also recommend that the department close the program's central warehouse and contract with private vendors to provide a just-in-time distribution system capable of providing needed supplies to local staff while reducing the need for warehouse facilities. Closing the central warehouse would eliminate 12 full-time positions and the warehouse's operating costs (\$672,989 in Fiscal Year 1998-99).

The department should also explore opportunities to reduce the number of local warehouse facilities. As part of this effort, the department should develop a comprehensive business plan that specifies its short- and long-term strategies consolidating or closing facilities as a result of factors such as expanded use of private contractors and just-in-time distribution systems, and future increases in the availability of private vendors in what are currently less developed areas of the state.

# Transportation System Maintenance Program: Privatization of Services

## Introduction

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The Transportation System Maintenance Program has increased its use of private contractors in recent years. While privatization may have benefited the program, private contractors almost exclusively perform some program activities. As a result, the program may not be in a position to readily compete to provide those services or to resume providing them should the contractors fail to perform as expected or go out of business.

### *Privatized service use increases, but program needs to keep in-house capacity for price competition and response to contractors' failure to perform*

In recent years, the Transportation System Maintenance Program has reduced its in-house staff and increased the use of private vendors to provide services. Program managers indicated that in-house staff was reduced by 103 positions in Fiscal Year 1997-98 and a total of 411 positions over the last four years.

The program has established a goal that private contracted services should account for 65% of the program's total expenditures. The program established this privatization percentage based on a computer-based model that determines a statewide contracting goal based on factors such as the unit cost of various activities and the expected volume of work to be performed. In Fiscal Year 1997-98 (the last year for which data are available), the program exceeded its goal and contracted for 67% of the program's total expenditures.

Decisions to issue bids and contract for services are made at the district level. District managers use a system that identifies the in-house unit costs of performing a wide variety of maintenance tasks such as mowing, embankment repairs, and shoulder repairs. The district managers compare these in-house unit costs to prices bid by private contractors for

*Transportation System Maintenance Program:  
Privatization of Services*

the services. While price is a primary factor in determining whether to privatize a service, the managers also consider factors such as availability of equipment and spare parts, maintenance agreements with cities and counties, staffing levels in the maintenance units, and the expertise of in-house staff to do the work in deciding whether to use contracted services to perform maintenance activities.

*Privatization can be a vehicle to reduce costs and improve efficiency*

We reviewed the cost comparisons done by the districts and determined that district managers are generally picking the lowest cost option (in-house versus contractor) for maintenance services. We did identify cases in which it appeared that the districts could have saved additional money by either shifting more work to contractors or to in-house staff. However, we concluded there were reasonable explanations for the cost differences in these cases.

We identified a potential concern in the program's use of privatized services. As we noted in a report on privatization in Florida state government, privatization can be a vehicle to reduce costs and increase efficiency.<sup>34</sup> However, these results are attributable to market competition rather than privatization itself. Competition causes government and private businesses to seek ways to reduce costs and improve service.

*For highly privatized activities, the program would have difficulty competing or in reassuming conduct of them in an emergency*

The program will need to use care to ensure that it retains sufficient in-house capacity to be able to perform reasonable comparisons of in-house and contractor prices, as well as to adequately manage the process. As discussed in our privatization report, while privatization can produce significant benefits, this option has risks that need to be carefully managed. An agency's recourse in the event of poor contractor performance is generally limited to terminating the contract. This can be problematic if service disruptions cannot be tolerated or if there are few or no alternatives to the current contractor. Once a service is privatized, agencies typically lose their authorization to hire staff to perform the service in-house and may not have the funding to purchase needed equipment. Agencies can thus be in a poor bargaining position, which reduces their ability to maximize competition and ensure that needed public services are delivered in a cost-effective manner. This is important, as contractors can "low-ball" bids in the first years of privatization to get the business, then substantially raise their prices when an agency no longer has the capacity to provide the service in-house.

Private contractors now almost exclusively perform many of the program's maintenance activities. Program managers report that the program has substantially reduced its equipment inventory to reflect the increased productivity. As a result, the program may not be in a position to readily compete to provide services or to reassume certain functions should that alternative become necessary. Exhibit 7-1 shows program

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<sup>34</sup> *Assessing Privatization in State Agency Programs*, [OPPAGA Report No. 98-64](#), February 1999.

*Transportation System Maintenance Program:  
Privatization of Services*

activities for which the percentage of work performed by contractors is 70% or higher.

**Exhibit 7-1  
The Transportation System Maintenance Program  
Has Almost Fully Privatized Certain Maintenance Activities**

<b>Activity</b>	<b>Percentage of Activity Privatized<sup>1</sup></b>
Weed control	73%
Concrete sidewalk repair	79%
Pavement symbols	80%
Pavement striping (large machine)	81%
Intermediate machine mowing	83%
Fertilizing	83%
Large machine mowing	85%
Sod installation	92%
Highway lighting maintenance	78%
Rest area maintenance	95%
Roadside litter removal	95%
Small machine mowing	95%
Asphalt repair (mechanical)	90%
Bridge operations	90%
Edging and sweeping	95%
Raised pavement marker replacement	94%
Landscape area maintenance	99%
Road sweeping (mechanical)	96%

<sup>1</sup>The percentage of workload contracted is the average aggregate contracted percentage for all districts performing the activity. Some districts are contracted at levels significantly higher or lower than the aggregate levels.

Source: OPPAGA review of the Transportation System Maintenance Program's Unit Cost Report for Fiscal Year 1997-98.

It will be critical that program managers periodically re-evaluate the level and cost-effectiveness of privatized services to determine whether contractors continue to provide good prices for services. The program also needs to ensure that it retains adequate in-house capacity to provide price competition and to be able to respond to situations when contractors fail to perform. If the program terminates a contractor, program staff will need to provide services in-house until another contractor's services can be secured.

# Recommendations

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We recommend that the Department of Transportation periodically re-evaluate the program's level of privatized services to determine whether it continues to be cost-effective, and whether the program has retained sufficient capacity (staffing and equipment) to maintain flexibility and reassume performing maintenance activities if necessary.

## Appendix A

# Statutory Requirements for Program Evaluation and Justification Reviews

Section 11.513(3), F.S., provides that the OPPAGA Program Evaluation and Justification Reviews shall address nine issue areas. Our conclusions on these issues as they relate to the Construction and Engineering Program are summarized in Table A-1 while our conclusions as they relate to the Transportation System Maintenance Program are summarized in Table A-2. As appropriate, Tables A-1 and A-2 make reference to pages in this report and Appendices E and F where our analysis of the program's performance based on its performance-based program budgeting measures and standards is discussed at greater length. Appendices E and F contain the full text of our earlier performance reports, OPPAGA Report Nos. 98-58 and 98-59, February 1999.

**Table A-1**  
**Summary of the Program Evaluation and Justification Review of the Construction and Engineering Program**

Issue	OPPAGA Conclusions
The identifiable cost of the program	For Fiscal Year 1999-2000, the department's estimated allocation to the Highway Construction and Engineering Program was \$2,670,177,299 (including \$2,169,501,106 for construction, \$443,920,037 for design, and \$56,756,156 for planning).
The specific purpose of the program, as well as the specific public benefit derived therefrom	The program's major purpose is to build and maintain roads and bridges on the State Highway System for the safe and efficient movement of people and freight, while sustaining the environment and enhancing economic development.  The program performs essential functions and benefits the public by building and roads and bridges that connect the state's rural, metropolitan, and coastal areas. The state's highway and bridge network is important to Florida's economy and provides businesses with access to markets and enables residents and tourists to reach jobs, businesses, and Florida's attractions. Discontinuing the programs would lead to deterioration in the state's road and bridge systems and thereby jeopardize the safety of commuters and travelers. Discontinuing it would also likely worsen motor vehicle congestion problems in various parts of the state and adversely affect the state's economy.
Progress toward achieving the outputs and outcomes associated with each program	The Highway Construction and Engineering Program is functioning reasonably well. In Fiscal Year 1998-99, the program met or exceeded 5 of 11 standards and was close to the standards for the 6 remaining measures.  The program met its PB <sup>2</sup> standards related to production. In Fiscal Year 1998-99, the program let 96% of the construction contracts it had planned to let compared to a standard of 95%.

Issue	OPPAGA Conclusions
	<p>In Fiscal Year 1998-99, the number of days required to complete construction projects exceeded the number of days specified in original contracts by 28.6% compared to a standard of less than 30%. Further, cost overruns worsened in Fiscal Year 1998-99 (from 12.3% in Fiscal Year 1997-98 to 14.2%). However, overruns decreased in the first quarter of Fiscal Year 1999-2000. While these results are encouraging, they need to be sustained over a longer period of time.</p> <p>The program does not have PB<sup>2</sup> measures for assessing its performance in several key areas, such as ameliorating traffic congestion problems. Traffic congestion on the State Highway System has increased over the past five years (from 17.8% of the system being severely congested in 1993 to 19.1% in 1998) and is expected to worsen as the state population grows in the future. However, it is doubtful that the department will be able to "build" its way out of congestion problems in the future given prohibitively high costs and the need to protect the state environment and control urban sprawl.</p> <p>The number of deficient lane miles on the State Highway System has been increasing. The number of deficient lane miles increased from a low of 2,758 in 1986 to a high of 8,655 in 1999. This increase indicates that the State Highway System's infrastructure is slowly deteriorating.</p>
<p>An explanation of circumstances contributing to the state agency's ability to achieve, not achieve, or exceed its projected outputs and outcomes, as defined in s. 216.011, F.S., associated with the program</p>	<p>It is unlikely that the department will be able to "build" its way out of congestion problems in the future given prohibitively high costs and the need to protect the state environment and control urban sprawl. The department estimated that it would need a total of \$28 billion in construction projects to increase the Florida Intrastate Highway System's capacity to accommodate forecasted transportation demand by 2010. However, its also expects that its funding for capacity improvements during this period will be only \$6 billion.</p> <p>The major cause for the growth in deficient lane miles appears to be the department decisions to not allocate sufficient resources to resurfacing efforts. In order to keep the backlog from increasing, the department needs to resurface enough lane miles to offset the number of new lane miles becoming deficient during a period of time. However, it has scheduled and resurfaced enough lane miles to offset new deficiencies in only 4 of the last 14 years. To illustrate the problem, the program resurfaced 9,707 lane miles during the last 5 fiscal years or an average of 1,941 lane miles per year. However, 11,189 lane miles became deficient during the same period. Consequently, the program's resurfacing efforts fell short of offsetting new deficiencies by a total of 1,482 miles over the five-year period or an average of 296 miles per year.</p>
<p>Alternative courses of action that would result in administering the program more efficiently and effectively</p>	<p>There are no compelling benefits to transferring the program to another state agency. The program is logically placed in the Florida Department of Transportation because this agency is responsible for constructing highways and would be the agency most adversely affected by inadequate program performance. The program is also already highly privatized.</p> <p>However, to improve its performance in resurfacing roadways, the department should budget sufficient resources each year to meet the annual needs for resurfacing the State Highway System. To do this, the department needs to establish minimum annual targets to prevent further growth in the backlog of deficient lane miles needing resurfacing. It should also reassess the sufficiency of its annual goals for resurfacing lane miles.</p> <p>Although the department is generally performing well in letting consultant and construction contracts, it could improve the its management of construction contracts by</p>

## Appendix A

Issue	OPPAGA Conclusions
	<ul style="list-style-type: none"> <li>▪ revising its standard specifications to provide for making price adjustments in construction contracts, including thresholds for both major and minor work items upon which price adjustments are subject (which could save up to \$1.35 million);</li> <li>▪ revising its standard specifications to allow it to retain payment for certain front-end-loaded items of work that contractors priced substantially above average bid prices (which could save up to \$444,880);</li> <li>▪ closely monitoring constructor changes to a project during construction to ensure only fair and reasonable prices are paid for work that overruns originally bid quantities; and</li> <li>▪ continuing its efforts to modify contracting methods and requirements that increase consultant costs without adding value to the state. The department needs to evaluate whether these efforts are successful in reducing consultant costs and making them more comparable to the costs of work performed by in-house staff. If this evaluation determines that consultant costs continue to significantly exceed in-house costs, the department should conduct a make-versus-buy analysis to determine whether its current mix of consultant and in-house work should be continued in the future.</li> </ul> <p>The department should also</p> <ul style="list-style-type: none"> <li>▪ increase the use of innovative contracting techniques that appear to help control construction time and cost overruns;</li> <li>▪ improve its promotion of the Local Government Advance-Reimbursement Program as a means for expediting the timely completion of needed construction projects; and</li> <li>▪ increase the use of public-private partnerships and private toll roads as means to increase road capacity while minimizing state costs.</li> </ul>
The consequences of discontinuing the program	Discontinuing the program would lead to deterioration in the state's road and bridge systems, and thereby jeopardize the safety of commuters and travelers. It would also likely worsen motor vehicle congestion problems in various parts of the state and adversely impact the state's economy. Discontinuing the programs would jeopardize the state receiving federal grants totaling \$1.2 billion annually.
Determination as to public policy, which may include recommendations as to whether it would be sound public policy to continue or discontinue funding the program, either in whole or in part, in the existing manner	Revenues from user fees such as fuel tax, vehicle registration fees, toll collections, and federal grants primarily fund the Highway Construction and Engineering Program. No general revenue is used to fund this program. We concluded that user fees are appropriate because they help ensure that entities that benefit from the program's efforts pay for those benefits.
Whether the information reported pursuant to s. 216.031(5), F.S., has relevance and utility for the evaluation of each program	The program's performance measures are generally relevant and useful in evaluating program performance.
Whether state agency management has established control systems sufficient to ensure that performance data are maintained and supported by state agency records and accurately presented in state agency performance reports	<p>The program reported reasonably accurate performance data to the Legislature for its performance-based program budgeting measures.</p> <p>The department's inspector general has validated the reliability of the processes used to collect data for performance measurement purposes.</p>



**Table A-2  
Summary of the Program Evaluation and Justification Review of the  
Transportation System Maintenance Program**

Issue	OPPAGA Conclusions
The identifiable cost of the program	The Transportation System Maintenance Program was allotted \$370,451,892 for operations and \$14,992,561 for Fixed Capitol Outlay for Fiscal Year 1999-2000.
The specific purpose of the program, as well as the specific public benefit derived therefrom	<p>The program’s purpose is to protect the public's investment in Florida's State Highway System and help make highway travel safe and easy.</p> <p>The Transportation System Maintenance Program is of benefit to the public because it helps to preserve the condition of the State Highway System. This benefit includes monitoring the safety of bridges and performing bridge maintenance, as well as maintaining the state's rest areas in a safe and clean condition.</p>
Progress toward achieving the outputs and outcomes associated with each program	<p>The Transportation System Maintenance Program has generally performed well in helping to preserve the transportation system.</p> <ul style="list-style-type: none"> <li>▪ <b>Routine Maintenance.</b> The program has met its road maintenance outcome performance standard for the past five years.</li> <li>▪ <b>Rest Area Maintenance.</b> Although the program does not measure and report performance using specific outputs and outcomes for rest area activities, program staff monitor the performance of contracted providers to assure that they perform in accordance with contractually stipulated terms and conditions.</li> </ul> <p>The program has not developed any PB<sup>2</sup>output measures. Output measures report the amount of activity or services provided by a program and are needed to meaningfully evaluate the program's performance and the unit costs of program activities.</p>
An explanation of circumstances contributing to the state agency’s ability to achieve, not achieve, or exceed its projected outputs and outcomes, as defined in s. 216.011, F.S., associated with the program	The program has been able to achieve its performance standards because of its performance monitoring process. Program managers review performance accomplishments every four months and integrate this information when planning maintenance work assignments. The program also does not budget on a continuation method but annually re-assesses maintenance and resource needs when making annual requests for funding appropriations.

## Appendix A

Issue	OPPAGA Conclusions
<p>Alternative courses of action that would result in administering the program more efficiently and effectively</p>	<p>The program's road and bridge maintenance activities are decentralized within the department and are not unnecessarily duplicative with those of other agencies. We did not identify any compelling benefit from transferring these functions to another agency. The Florida Department of Transportation is the only state agency with a role of providing statewide transportation system maintenance services for state-owned roads and bridges. The program is also already highly privatized. However, some alternative courses of action could improve program efficiency and help it reduce its costs.</p> <p>The program could reduce its operating costs if federal law were amended to allow the department to franchise rest area facilities on interstate highways. Franchising rest area facilities could reduce costs and provide the state with long-term revenues from land holdings leased to franchisers. This would save up to \$15 million annually.</p> <p>The department's inspector general recently issued a report that concluded the program's central warehouse was not providing office supply commodities at a cost savings compared to a private retailer and recommended that consideration be given to contracting with a private contractor or developing contracts that require vendors to deliver products directly to users. We agree with the inspector general that the department should close the central warehouse and use private vendors to provide just-in-time distribution systems. Closing the central warehouse would eliminate 12 full-time positions and the warehouse's operating costs (\$672,989 in Fiscal Year 1998-99). The department should also explore opportunities to reduce the number of local warehouses.</p>
<p>The consequences of discontinuing the program</p>	<p>The Transportation System Maintenance Program's activities should be continued because of their benefit in helping protect the public's investment in transportation systems. If the program were discontinued, customer (motorists, business owners, commercial motor carriers, commuters, and tourists) mobility would be adversely affected as State Highway System roads and bridges begin to deteriorate.</p>
<p>Determination as to public policy, which may include recommendations as to whether it would be sound public policy to continue or discontinue funding the program, either in whole or in part, in the existing manner</p>	<p>The Transportation System Maintenance Program is funded primarily from state fuel taxes, motor vehicle fees, and federal appropriations/grants that are deposited into the State Transportation Trust Fund. These funding mechanisms are reasonable and appropriately associated with users of the road and bridge systems.</p>
<p>Whether the information reported pursuant to s. 216.031(5), F.S., has relevance and utility for the evaluation of each program</p>	<p>The program needs to develop output measures to assess the amount of activity and services it provides. The program also needs to develop internal measures for assessing its performance in maintaining rest areas and providing security at these facilities.</p>
<p>Whether state agency management has established control systems sufficient to ensure that performance data are maintained and supported by state agency records and accurately presented in state agency performance reports</p>	<p>The program reported accurate Fiscal Year 1997-98 performance data to the Legislature for its performance-based program budgeting outcome measure. (See Appendix E.)</p>

## Appendix B

# Comparison of In-House Versus Consultant Construction Engineering and Inspection Cost

**Table B-1**  
**Construction Engineering and Inspection Consultant Costs Exceeded In-House Costs on Highway Projects**

Work Mix	Construction Cost		In-House Staff/Consultant Performing Work	CEI as Percentage of Total Project Cost
Resurfacing	\$0 to \$2.5 million	(n=61)	In-house	12%
			Consultant	19%
	\$2.5 million to \$5 million	(n=24)	In-house	8%
			Consultant	16%
Adding Lanes	\$0 to \$5 million	(n=12)	In-house	13%
			Consultant	24%
	\$5 million to \$10 million	(n=11)	In-house	14%
			Consultant	18%
Multi-Lane Reconstruction	\$0 to \$5 million	(n=5)	In-house	13%
			Consultant	18%
	\$5 million to \$10 million	(n=7)	In-house	9%
			Consultant	18%

Source: Florida Department of Transportation.

**Table B-2**  
**Construction Engineering and Inspection Consultant Costs Exceeded In-House Costs on Bridge Projects**

Work Mix	Construction Cost		In-House Staff/Consultant Performing Work	CEI as Percentage of Total Project Cost
Bridge Repair	\$0 to \$5 million	(n=9)	In-house	10%
			Consultant	27%
Low-Level Bridge Replacement	\$0 to \$2 million	(n=13)	In-house	14%
			Consultant	35%

Source: Florida Department of Transportation.

# Response from the Florida Department of Transportation

In accordance with the provisions of s. 11.45(7)(d), F.S., a draft of our report was submitted to the Secretary of the Florida Department of Transportation his review.

A written response was received from the Director of Highway Operations and has been reproduced herein beginning on page 53. Where necessary and appropriate, OPPAGA comments have been inserted into the body of the response.



## Florida Department of Transportation

JEB BUSH  
GOVERNOR

THOMAS F. BARRY, JR.  
SECRETARY

January 13, 2000

Mr. John W. Turcotte, Director  
Office of Program Policy Analysis and Government Accountability  
Post Office Box 1735  
Tallahassee, Florida 32301

Dear Mr. Turcotte:

The following responds to the justification review performed on the Department of Transportation's Construction and Engineering Program and Transportation System Maintenance Program. I have responded to each recommendation and have also provided comments on portions of the report, which contain inaccuracies.

**Page 15, Exhibit 3-2** - This chart includes a trend line of significant system deterioration that is misleading and inaccurate. Three separate pavement measurement methods have been displayed on one graph, resulting in a misrepresentation of measured conditions. The 1991-year begins a new methodology; then again in 1999 updated equipment and technology cause another adjustment in methodology and results. If the period 1991 through 1998 were presented separately, it would be obvious that pavement condition has remained relatively stable, and the department has met its performance objective. The department reassesses resurfacing goals and targets each year.

**OPPAGA Comment**

Exhibit 3-2 does not misrepresent measured conditions. Rather, it depicts the number of lane miles measured by the department as being deficient and needing to be scheduled for resurfacing. OPPAGA has changed the titles of Exhibit 3-2 to more clearly reflect the number of lane miles measured.

**Page 18, recommendation one** - *"We recommend that the department allocate sufficient resources each year to meet the annual needs for resurfacing the State Highway System. To do this, the department needs to establish minimum annual targets to prevent further growth in the backlog of deficient lane miles needing resurfacing. In establishing its annual targets, the department needs to reassess how fast the road types become deficient and how soon should roads be scheduled for resurfacing after becoming deficient. "*

Response: We concur. In fact, the department has used this approach each year when developing the resurfacing program for more than a decade. The numbers in Exhibit 3-2

## Appendix C

illustrate that the department has consistently met its objective to ensure 80% of pavement meets standards (no more than 20% deficient, approximately 7,850 miles). Because of the change in measurement methods in 1999, it is estimated that 800 miles of additional backlog were added to the deficient lane mile report for 1999 (as acknowledged on page 15 of the report). With that taken into consideration, the department is appropriately addressing the State Highway System resurfacing needs and will continue to do so.

**Page 18, recommendation two** - *"The department has several options it should consider in deciding how to achieve its resurfacing goals. First, it needs to reassess its current policy for identifying resurfacing funding needs. The department's resurfacing budget includes resurfacing funds as well as funds for supplemental items, such as widening existing roads and adding shoulder erosion control, drainage, signs and signals, and other items. Approximately \$0.62 of each dollar allocated to resurfacing arterial roads actually goes to resurfacing. The remaining \$0.38 goes for these supplemental items. If the department decided to allocate \$0.70 of each dollar in its current budget for resurfacing and \$0.30 for supplemental items, it would be able to resurface an additional 205 lane miles on arterial roads. This 70/30 allocation, coupled with department plans to increase resurfacing, would be sufficient to begin to address the backlog of deficient pavement. The 70/30 allocation is very similar to the department's current allocation for the interstate system. The department will have to assess whether revising its allocation would affect the safety of its roads. "*

Response: The department has emphasized the need to get the most pavement resurfacing possible out of each dollar placed in the resurfacing program, but there are legitimate safety and economic issues which must be considered on a project by project basis.

**Page 19, recommendation three** - *"Another option would be to fully fund the cost of resurfacing roads to work through the current backlog of projects and supplement items and to prevent similar growth in backlogs from occurring in the future. However, this approach would affect new construction. The department needs to explore these and other options as means for preventing further costly deterioration of the State Highway System. "*

Response: The department annually reviews the total agency program needs (including the resurfacing program), taking into consideration statutory requirements, Performance Based Budgeting standards, and agency performance measures and objectives. The preservation and prevention of deterioration of the State Highway System is strongly considered throughout this process.

**Pages 22 and 23** - Reference is made to unbalanced bidding on minor items of work. Contractors do bid significantly different dollar values for items of work, but many times this results from contractors approaching the work differently and therefore bidding the projects differently. As in the OPPAGA example (on page 23), the filter fabric pay item may have included site preparation work for placement in the successful bid, while other bids may have placed the site preparation work in other pay items. A single pay item cannot always be independently compared without considering other pay items. In the project example, the successful contractor bid above the 45% level (as identified on page 23) on 16 pay items, but

was below on 13 pay items out of the 453 pay items bid. If the department were to adjust the pay items on this particular project to the average bid amount for those 29 pay items that were either 45% above or below the average bid by the final contract quantities, the department would have expended an additional \$148,771 to complete the project.

**OPPAGA Comment**

Unlike the analysis presented in the department's response, we did not adjust prices to the average bid price for two reasons. First, the department's analysis masks the tendency of contractors to bid items that overrun at very high prices rather than very low prices. Second, the actual price that would be most reasonable and fair to pay is not the average bid price. The department should be trying to purchase work at the lowest possible price rather than the average price bid. Thus, we raised the price of items that overran and were bid extremely low to 45% below the average to ensure the lowest reasonable cost. We also lowered the price of items that overran and were bid extremely high to 45% above the average to be fair to contractors whose costs may be higher than the average contractor's costs to do the same work. Our conclusion that the department could potentially save up to \$1.35 million for all the projects reviewed is based on this approach.

**Page 26, recommendation one** - *"We recommend that the department revise its standard contract specifications to allow its staff to make price adjustments to minor work items with unreasonably high unit prices whose quantities increase significantly above original bid estimates, which could save up to \$1.35 million;"*

Response: The department surveyed other states and received eight responses relative to their practices for price adjustments for minor work items that overrun. A summary of the survey was attached to the response of OPPAGA's update report dated November 25, 1998. The Department operates consistently with most other states and our practices are in accordance with common industry practices. Additionally, we do not concur with OPPAGA's claim of a \$1 .35 million savings; see our above response concerning pages 22 and 23.

**Page 26, recommendation two** - *"We recommend that the department revise its standard contract specifications to allow it to retain payment for certain front-end loaded items of work that contractors priced substantially above average bid prices in their original bids; this would help the Department avoid making advance payments for front-loaded work, which could save up to \$448,880;"*

Response: The department evaluated its business process concerning payment for front-end-loading items and determined that the process of retainage payments and bid evaluation appropriately addresses front-end-loaded bidding. See attachment "A" of the response to OPPAGA's update report dated November 25, 1998 for a description of our process for evaluating unbalanced bidding and front-end-loading. Additionally, OPPAGA's claim of saving \$448,880 (out of a contracted amount of \$1.165 billion) is significantly overstated as a result of not considering partial payment schedules used by the department.

## Appendix C

**Page 26, recommendation three** - *"We recommend that the department continue its efforts to modify contracting practices that increase consultant costs without adding value to the state. The department then needs to evaluate whether these efforts are successful in reducing consultant costs and making them more comparable to the costs of work performed by in-house staff. If this evaluation determines that consultant costs continue to significantly exceed in-house costs, the department should conduct a make-versus-buy analysis to determine whether its current mix of consultant and in-house work should be continued in the future. "*

Response: The department will continue to look for ways to optimize consultant usage. In an effort to become more efficient, the department is grouping construction projects within consultant construction engineering and inspection contracts to gain efficiencies. In addition, the department has contracted with the University of Florida to research nationwide the use of consultant construction engineering and inspection. This research will help the department to improve its use of consultants for construction engineering and inspection.

**Page 37, recommendation one** - *"We recommend that the department continue its efforts to minimize construction time and cost overruns. Although current data indicate overruns are decreasing this trend needs to be sustained in the future. To address this problem, the department should expand the use of alternative construction contracting techniques. Projects completed using alternative contracting techniques experience lower time and cost overruns than projects completed using traditional contracting practices. "*

Response: The department is continuing to expand the use of alternative construction contracting techniques as reported to OPPAGA, and as recognized in this report.

**Page 37, recommendation two** - *"If the department is unable to continue its performance in decreasing overruns, the legislature should consider applying disincentives to agency management. Under performance-based program budgeting, the Legislature can award incentives and disincentives based on agency performance. Disincentives may be financial, such as decreases in managerial salaries or program appropriations, or non-financial, such as decreases in budget flexibility or mandatory quarterly appearances before the Legislature to report progress in improving performance. "*

Response: The department intends to continue to decrease overruns and meet Performance Based Budgeting standards. The majority of supplemental agreements involve unavoidable issues inherent to highway construction. The department has made significant improvements without such extreme measures as being proposed that do not also reward managers for what has or would be accomplished.

**Page 37, recommendation three** - *"To help the department complete projects at an earlier date and reduce the severity of congestion on a more timely basis, we recommend that the department better inform local governments about the Local Government Advance-Reimbursement Program. If more local governments used this program, projects that could address congestion problems could be initiated earlier than planned by the department. We also recommend that the*



*Legislature amend the law to allow revenue-producing projects to be advanced by local governments. "*

Response: The department has been and will continue to work with local governments in identifying and advancing projects where appropriate. As identified in Exhibit 5-5, it should be noted that the department is continuing to place emphasis on this program.

**Page 37, recommendation four** - *"To help ameliorate traffic congestion problems in Florida's urban areas and maximize the use of state resources, we recommend that the department proactively seek to establish more public-private partnerships with developers to design, plan, build, operate, and maintain roads and toll plazas on the State Highway System. We also recommend that the department proactively solicit private developers to participate in the Private Transportation Facilities Program, which allows the developers to fully build, operate, own, and finance transportation facilities. "*

Response: The department will continue to pursue the use of public-private partnerships where appropriate.

**Page 41, recommendation one** - *"We recommend that the Legislature work with Florida's U.S. Congressional delegation to amend the federal law to allow the department to pursue franchising interstate rest areas. If the department could franchise rest areas, it would be able to reduce its costs for maintaining the facilities by up to \$15 million annually. "*

Response: We concur with the recommendation to pursue franchising of rest area operations. The department has been actively pursuing this possibility for several years, both with the congressional delegation and the American Association of State Highway and Transportation Officials.

**Page 41, recommendation two** - *"We also recommend that the department close the program's central warehouse and contract with private vendors to provide a just-in-time distribution system capable of providing needed supplies to local staff while reducing the need for warehouse facilities. Closing the central warehouse would eliminate 12 full time positions and the warehouse's operating costs (\$672,989 in Fiscal Year 1988-99). "*

Response: It is rather unusual that OPPAGA makes a recommendation for an operational area they have not reviewed. It is a gross over-simplification of a significant functional operation to make a blanket statement to acquire commodities from "just-in-time" vendors. If OPPAGA had reviewed the Central Warehouse operation it would have been apparent that many commodities stocked in the Central Warehouse are not commodities available from "just-in-time" vendors. The department's Inspector General recently reviewed the Central Warehouse and recommended consideration of alternatives for acquiring and delivering office supplies because these particular commodities are readily available from "just-in-time" vendors. Accordingly, the department is currently developing a Management plan to address all issues identified by the Inspector General.

## Appendix C

### OPPAGA Comment

OPPAGA staff conducted on-site visits to the department's central warehouse and warehouse facilities in other parts of the state to observe operations, interview managers, and review inventory records. OPPAGA staff were also aware of the in-depth review of the central warehouse being conducted by the department's inspector general, and generally concurred with the inspector general's findings and conclusions. Our research of modern, successful warehousing practices used by the private sector and other government entities, and our review of recent department facility improvements led us to conclude that the department has sufficient local warehousing capacity and access to vendors to allow it to close its central warehouse without adversely affecting department operations.

**Page 41, recommendation three** - *"The department should also explore opportunities to reduce the number of local warehouse facilities. As part of this effort, the department should develop a comprehensive business plan that specifies its short- and long- term strategies consolidating or closing facilities as a result of factors such as expanded use of private contractors and just-in time distribution systems, and future increases in the availability of private vendors in what are currently less developed areas of the state. "*

Response: We concur with the recommendation to review our facility needs based upon our balance of in-house and contracted resources, maintenance workload and long range program plans. Five years ago, the department developed a long-range facilities plan for Maintenance. This plan has identified several maintenance facilities for closure or consolidation. We continue to review, modify and update this plan to meet the needs of our customers, and to deliver the maintenance program in the most efficient way possible.

**Page 45, Recommendation** - *"We recommend that the Department of Transportation periodically re-evaluate the program 's level of privatized services to determine whether it continues to be cost-effective, and whether the program has retained sufficient capacity (staffing and equipment) to maintain flexibility and reassume performing maintenance activities if necessary."*

Response: The department agrees with the recommendation to periodically reevaluate the maintenance program. As evidenced in the documentation provided to OPPAGA, we have and will continue to review and compare the performance and cost effectiveness of in-house and contract maintenance and consider that information in future program planning. To address the issue of contractor failure or "low-ball" bids the department has numerous options at its disposal, and continues to develop other options. Some of these options include the expedited execution of contracts for maintenance, as authorized under Chapter 337.11(6)(b), F.S., contracting with local governments and state agencies, use of youth work experience programs, hiring of temporary labor, and the reassignment of in-house maintenance personnel.

**OPPAGA Comment**

In our opinion, prior disagreements between the department and OPPAGA regarding the appropriateness of developing unit cost measures for the Transportation System Maintenance Program were made moot by the 1999 Legislature's passage of CS/HB1 (Ch. 99-377, Laws of Florida). This law requires agencies to report to the Governor and the Legislature by September 1 of each year the unit costs for programs operating under performance-based program budgeting and for major services for agencies operating under traditional line-item budgeting. The Florida Department of Transportation's report to the Governor dated September 1, 1999, included estimates of the unit costs for the number of lane miles maintained. This is consistent with the our current report's proposal that the department needs to develop output measures for the Transportation System Maintenance Program, such as the number of lane miles maintained and the unit cost per lane mile maintained. The department's complete written response to *Transportation Maintenance Program Meets Standards: Its Accountability System in Need of Strengthening*, OPPAGA Report No. 98-59, February 1999, remains available on request.

**Appendix E, Last page** - Department Response to the Maintenance Office Performance Measures Report - In February, 1999, the department responded to all of the OPPAGA PB<sup>2</sup> Performance Measures Reports. In the response, we explained our concerns with the reporting of unit costs. OPPAGA did not summarize our concerns; they simply stated that the department was opposed to the use of unit cost measures and then issued a rebuttal. We believe it is important for the Legislature to consider the reasoning behind our agency's opposition in order to fully assess the issue of unit costs. An informed decision requires complete disclosure and careful consideration of our concerns along with those of OPPAGA.

In closing, I would like to extend my appreciation to OPPAGA management and staff for their courteous and attentive review of our program. We particularly appreciate the opportunity to discuss these issues prior to the finalizing of the report. While we continue to disagree on some issues, many more issues have been successfully discussed and resolved.

Sincerely,

/s/

William H. Albaugh, P.E.  
Highway Operations Director

WHA:wa

cc: Ken Morefield  
Cecil Bragg



*Appendix D*

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**Highway Construction and Engineering  
Program Meets Most Standards;  
Accountability System in Need of  
Strengthening, [OPPAGA Report No. 98-58](#),  
February 1999.**



*Appendix E*

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Transportation Maintenance Program Meets Standards; Its Accountability System in Need of Strengthening, [OPPAGA Report No. 98-59](#), February 1999.

