



Office of Program Policy Analysis And Government Accountability



John W. Turcotte, Director

November 27, 1996

REVIEW OF THE FLORIDA DEPARTMENT OF TRANSPORTATION'S PERFORMANCE IN CONTROLLING CONSTRUCTION COST OVERRUNS AND ESTABLISHING ACCOUNTABILITY FOR THESE PROBLEMS

REPORT ABSTRACT

- In 102 recently completed projects with initial budget of \$302.7 million, the Department of Transportation experienced construction cost overruns of \$28.6 million (9.5%). Over half of this amount (\$15.6 million or 5.2% of budget) was classified as avoidable costs, and the remaining amount was considered to be unavoidable.
- About \$4.2 million (1.4% of budget) in avoidable cost overruns did not add value for citizens and represents wasted money. Responsibility for cost overruns is shared among consultants, third parties, and Department staff.¹
- Department practices limit its effectiveness in recovering cost overruns or sanctioning those responsible for overruns. The Department needs to take additional steps to hold consultants, third parties, and its staff accountable for cost overruns.
- The Department is taking steps to minimize cost overruns, the impact of which may not be known for several years.

¹ Third parties include utility companies, permitting agencies, and local governments.

PURPOSE OF REVIEW

The Joint Legislative Auditing Committee requested that our Office examine the Department of Transportation's (FDOT) performance in controlling cost overruns in transportation construction projects. Our review addressed two questions:

- To what extent are construction cost overruns avoidable and what additional costs does the state pay for transportation projects because of these problems? and
- What actions can the Department take to minimize construction cost overruns and to improve accountability for these problems?

BACKGROUND

Chapter 334, F.S., requires FDOT to build and maintain the State Highway System in the most efficient and cost-effective manner. The State Highway System consists of about 12,000 centerline miles of roads and carries about two-thirds of the total vehicle miles traveled in Florida.²

The Department follows a multi-step process in constructing transportation projects. Through a cooperative planning process that involves state,

² As defined by s. 334.03, F.S., the State Highway System includes the interstate highways and urban and rural roads that provide service that is relatively high traffic volume, long average trip length, high operating speed, and high mobility importance. Centerline miles are the length of a road measured along the centerline of the road right-of-way regardless of the number of lanes.

regional, and local government officials and the public, FDOT identifies transportation needs and develops a Five-Year Work Program. The Work Program, which is updated annually, identifies the transportation projects that will be undertaken during the five-year period and the estimated costs of these projects.

Once a project is approved and placed on the Work Program, FDOT conducts engineering research (e.g., to identify soil and environmental conditions in the area) and develops design plans for the projects. These plans include construction blueprints, an inventory of materials needed for the job, and a schedule for construction. The plans may be developed either by in-house FDOT staff or by private consultants. Plans developed by consultants may be based on engineering research data provided by FDOT staff. The Department reviews design plans at various stages of completion to ensure accuracy. Depending on available funds and project complexity, the project design stage may take several years to complete.

While design plans are being developed, FDOT acquires needed right-of-way, coordinates the project with local governments, holds public hearings, and acquires necessary permits. Once these steps are completed, FDOT advertises the construction project for competitive bid and awards the job to the lowest qualified bidder. During construction, FDOT performs materials testing and construction engineering inspections to monitor the contractor's performance. These design and inspection activities may be performed by in-house staff or consultants.

Although construction contracts specify the price to be paid and the amount of time allowed for a project to be completed, FDOT may agree to changes in contract provisions. These changes may be required due to errors or omissions in the design plans, changes in project specifications (e.g., adding an additional driveway access), and/or unfavorable weather conditions. These changes are generally made through supplemental agreements to contracts.

Cost overruns can be either avoidable or unavoidable. Overruns are avoidable when they occur due to design plan or project management problems that could have

reasonably been foreseen and prevented. Cost overruns are unavoidable when they cannot be reasonably prevented.

Cost overruns may add value to projects by producing a better product, or may add no value and represent wasted money. Overruns may add value when extra work is done that produces a better roadway for citizens, such as adding an access road to a project. Overruns may also add value when they involve work that was omitted from design plans but clearly needed to be done, such as adding sod to control erosion on an embankment. However, some overruns may not add value for citizens and represent wasted money if they do not result in a better product. For example, no value is added when a contractor puts down an asphalt roadway, but then has to tear it out and replace it due to faulty design specifications.

To determine whether FDOT's cost overruns are avoidable and add value for citizens, we reviewed, with FDOT's assistance, 102 road and bridge projects that were completed between July 1, 1995, and December 31, 1995.³ In our analysis, we worked with FDOT staff to determine whether each cost overrun in the projects was avoidable or unavoidable, and whether these increases added value for the state.

FINDINGS

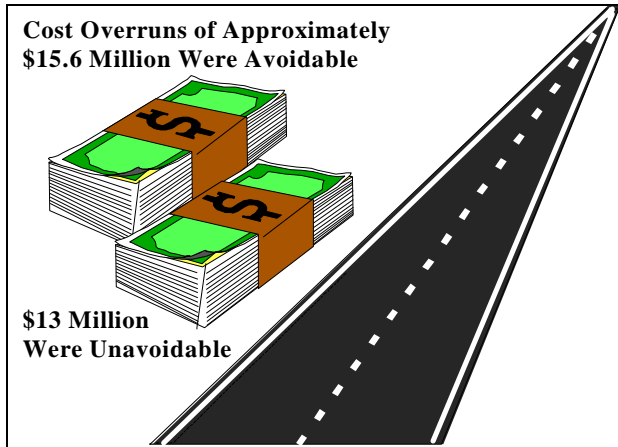
In 102 recently completed projects with initial budget of \$302.7 million, the Department of Transportation experienced construction cost overruns of \$28.6 million (9.5%). Over half of this amount (\$15.6 million or 5.2% of budget) was classified as avoidable costs, and the remaining amount was considered to be unavoidable.

The projects we examined had original budgets totaling \$302.7 million; however, cost overruns for these projects amounted to \$28.6 million, raising the final costs to \$331.3 million. Thus, the projects experienced a total cost overrun of 9.5%. Over half (\$15.6 million or 5.2%) of the cost overruns were

³ Project status was determined by FDOT during August 1996.

classified by FDOT staff as avoidable, and remaining \$13 million were considered to be unavoidable. (See Exhibit 1.)

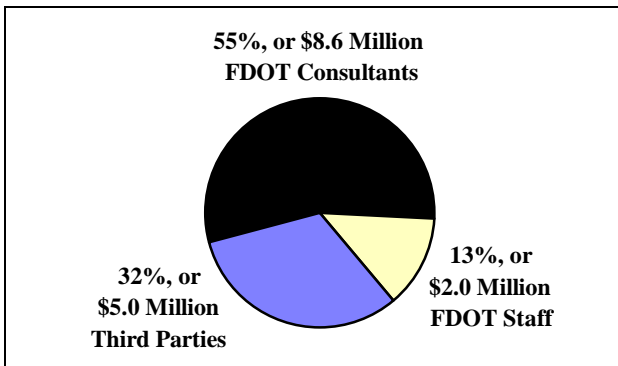
Exhibit 1
Over Half of the \$28.6 Million
In Cost Overruns Were Avoidable



Source: Florida Legislature, Office of Program Policy Analysis and Government Accountability summary of Florida Department of Transportation for 102 projects completed between July 1, 1995, and December 31, 1995.

Of the \$15.6 million of avoidable costs overruns, \$8.6 million (55%) were attributable to design consultants retained by the Department. (See Exhibit 2.)

Exhibit 2
Responsibility for
\$15.6 Million in Avoidable Cost Overruns
Were Shared by FDOT Consultants,
Third Parties, and FDOT Staff



Source: Florida Legislature, Office of Program Policy Analysis and Government Accountability summary of Florida Department of Transportation.

Design problems included inaccurate or missing design specifications of needed construction material and inaccurate quantity calculations or construction directions. Another \$5 million were attributed to third parties, such as utility companies, local governments, and permitting agencies. For instance, some overruns occurred because utility companies failed to move utility lines as required or local governments requested project design changes after construction had begun. The remaining \$2 million of avoidable overruns were attributed to design problems by FDOT employees. Problems with design plans developed by FDOT in-house staff were similar to those of consultants.

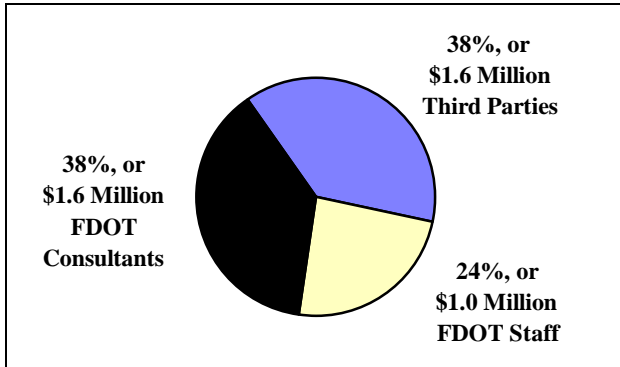
About \$4.2 million (1.4% of budget) in avoidable cost overruns did not add value for citizens and represents wasted money. Responsibility for cost overruns is shared among consultants, third parties, and Department staff.

The Department determined that most (\$11.4 million) of the \$15.6 million in avoidable cost overruns in the construction projects we examined added value to the projects. However, the Department also determined that the remaining \$4.2 million did not add value to the projects.

Although this \$4.2 million represents only 1.4% of the budgeted amount, it can be categorized as waste because it produced no value for Florida's citizens. Some level of waste is probably unavoidable in construction projects, and we found no indications that the Department had acted improperly in these cases. However, we believe that FDOT management should view any such costs as waste and therefore unacceptable.

Responsibility for the \$4.2 million was shared among consultants retained by the Department, third parties, and FDOT in-house staff. About 38% of these costs (\$1.6 million) were attributed to consultants and another 38% to third parties. The remaining 24% (\$1 million) in costs were attributed to FDOT staff. (See Exhibit 3.)

Exhibit 3
Responsibility for
\$4.2 Million in Avoidable Cost Overruns
That Did Not Add Value to Projects
Were Shared by FDOT Consultants,
Third Parties, and FDOT Staff



Source: Florida Legislature, Office of Program Policy Analysis and Government Accountability summary of Florida Department of Transportation.

Fifty of the 102 projects we reviewed experienced avoidable cost overruns that did not add value. Appendix A provides a description of the problems associated with 10 projects with the largest such overruns. These projects accounted for approximately 86% of the avoidable cost overruns that did not add value.

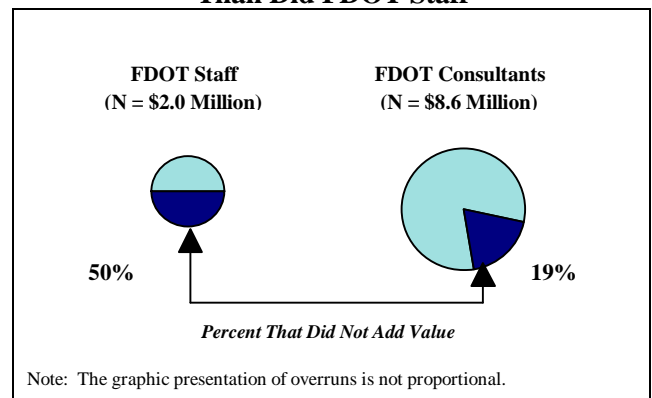
Design consultants accounted for a lower percentage of cost overruns that did not add value than did FDOT's in-house design staff.

An issue in construction management is the degree to which FDOT consultants are responsible for design errors that result in cost overruns. FDOT has significantly increased its use of design consultants in recent years, and these consultants provided 65% of the project designs and half the inspection services for construction contracts completed during fiscal year 1995-96. Therefore we compared avoidable cost overruns that resulted from errors in design by either FDOT consultants or Department staff.

We determined that, although FDOT consultants accounted for more of the avoidable cost overruns than FDOT in-house staff, they were responsible for a

lower percentage of the cost overruns that did not add value to the projects. FDOT consultants accounted for \$8.6 million of the avoidable overruns. However, only \$1.6 million or 19% of these cost overruns did not add value to projects. By comparison, FDOT in-house staff accounted for \$2 million in avoidable cost overruns, but \$1 million or 50% of these cost overruns did not add value to projects. Thus, for the 102 projects we examined, consultants had a lower rate of cost overruns that did not add value than did FDOT's in-house staff. (See Exhibit 4.)

Exhibit 4
FDOT Consultants Had a Lower Percentage of
Cost Overruns That Did Not Add Value
Than Did FDOT Staff



Source: Florida Legislature, Office of Program Policy Analysis and Government Accountability summary of Florida Department of Transportation.

While cost overruns cannot be eliminated, FDOT can take additional steps to minimize these problems.

Cost overruns on some transportation construction projects are inevitable. Due to the time required to design and build roads and highways, site conditions can change after project research is conducted and design plans are developed. As a result, overruns can occur when contractors find that site conditions are different than design plans. Also, FDOT faces trade-offs when determining the amount of project research to be done. Conducting more research on site conditions may be a good investment if the extra tests find conditions that would significantly affect construction, but may be an unnecessary expense if these tests do not find such problems.

We identified several steps that FDOT could take to help minimize cost overruns that do not add value for the state and hold responsible parties more accountable for these problems. These steps include:

- Improved tracking of contract adjustments;
- Improved procedures for holding consultants and in-house design staff responsible for the quality of their work;
- Continuing efforts to improve project planning; and
- Continuing efforts to coordinate projects with third parties.

FDOT is starting to address some of these areas but its efforts could be strengthened.

Improved Tracking of Contract Adjustments

The first step FDOT could take to reduce cost overruns is to improve its system for tracking contract adjustments. This system maintains data on the reasons that overruns occur on construction projects and identifies responsible parties. For example, the system identifies who is responsible for the cost increases (such as design consultant, in-house design, and third party), whether the cost increase is avoidable, and the amount of costs that was incurred that did not add value to the project. This system can be valuable to FDOT management in identifying trends and needed corrective actions.

Although FDOT has recently made some improvements to the tracking system, the system still has limitations that weaken the Department's ability to monitor and control cost overruns. We compared the information in the tracking system to the results of our project review and found that the system did not identify the reasons for some cost overruns in enough detail to enable FDOT to identify the precise nature of the problem and responsible parties. For example, one of the most frequently cited reasons for cost overruns in the tracking system was "administrative policy decisions." Without further information,

FDOT cannot evaluate whether these decisions were appropriate or unnecessarily increased costs. Similarly, the tracking system attributed about \$1 million of avoidable cost overruns to FDOT design staff. However, the system did not identify the type of design problem encountered (e.g., pavement design, traffic operations, drainage, or structures). As a result, the Department cannot readily identify which of its internal units may need additional guidance or training to avoid such problems.

Holding Design Staff Accountable

Another step FDOT could take to help control cost overruns is to improve its systems for holding consultants and its in-house staff accountable for the quality of their work. FDOT staff are to issue performance grades to consultants at the completion of each project. FDOT is to conduct annual performance appraisals of its in-house staff involved in the design process. Finally, FDOT has a procedure for investigating errors and omissions found in consultant design plans and for recovering cost overruns that are caused by these problems. There are limitations in each of these accountability mechanisms. These are discussed below.

Performance Grades of Design Consultants.

Although FDOT staff are to evaluate design consultants on project management, timeliness, quality, and the constructability of their designs, these evaluations are frequently not done. FDOT staff are to issue project management, timeliness, and quality grades when a design is accepted, while the constructability grade is to be issued when project construction is completed. These grades are to be entered into a data base and are to be used to evaluate a consultant's past performance when awarding future design contracts. Consultants may be suspended from consideration for future design contracts if they receive a project management, timeliness, or quality grade of 70 or below. Consultants are not currently suspended for receiving a poor constructability grade.

Department staff frequently do not issue performance grades to consultants as required. As of April 1996, final design grades had not been entered into the data base for one-third of the contracts that had been completed during calendar year 1995, more than four

months after these grades were due. In addition, constructability grades had been entered into the data base for less than a quarter (14) of the 64 projects we examined that had been designed by consultants, although construction on all these projects had been completed. Without these grades, FDOT staff lack information on these consultant's performance when awarding new design contracts. FDOT staff indicated that grading consultant performance generally has not been a high priority and that construction staff who are responsible for issuing constructability grades are often unaware of this requirement.

The Department has recently developed a monthly report that will identify overdue performance grades and the project managers responsible for preparing these grades. These efforts may improve the completion of grades in the future. FDOT has also revised its evaluation forms to make them easier for staff to use and to make them more objective.

Performance Evaluation of FDOT Staff. Although FDOT conducts annual performance appraisals of its in-house staff, these evaluations generally do not include issuing quality or constructability grades for projects they either designed or provided engineering research services. As discussed on page 3, in-house staff involved in the design process were deemed responsible for a larger percentage of cost overruns that did not add value to projects than were consultants. Consequently, it appears to be appropriate for FDOT to track the performance of its in-house staff in the same manner as it does for its consultant designers. This would enable FDOT to identify staff training needs and to consider the impact of overruns when evaluating staff performance.

Currently, one of FDOT's eight districts considers cost overruns when evaluating the performance of in-house design staff. If implemented statewide, this system could improve FDOT's ability to hold in-house staff accountable for the quality of their work.

Cost Recovery. While it probably is not practicable to attempt to recover costs for in-house design errors, FDOT could seek to recover cost overruns that are attributed to consultants. FDOT requires consultants to carry a minimum of \$250,000 in professional liability insurance or performance bonds against which the Department could make a claim. FDOT generally has not sought to recover these costs. For example, as of July 1996 the Department had not initiated actions to recover any of the \$1.6 million in costs that did not add value that were attributed to consultants in the projects we examined. FDOT staff said that the Department generally has not sought cost recovery because it is difficult to document responsibility as it is often shared. In addition, FDOT staff asserted that it is frequently not cost effective to pursue recovery of cost overruns because the administrative and legal costs can be higher than the potential recovery. However, FDOT has not identified the level of overruns that are cost effective to pursue.

Exhibit 5 shows that avoidable costs that added no value to the projects were attributed to 31 of the 96 consultant contracts we examined. In 17 of these cases the costs were less than \$10,000 and it may not have been cost effective for FDOT to pursue recovery.

Exhibit 5
A Few Consultant Contracts Account for Most of the Avoidable Costs That Add No Value

Range of Avoidable Cost Overruns That Add No Value	Number of Consultant Contracts	Avoidable Cost Overruns	
		Total	Percent of Total
Over \$500,000	1	\$ 832,211	50%
\$100,001 to \$500,000	3	404,740	25%
\$50,001 to \$100,000	3	232,319	14%
\$10,001 to \$50,000	7	128,245	8%
\$1 to \$10,000	17	48,588	3%
Total	<u>31</u>	<u>\$1,646,103</u>	<u>100%</u>

Source: Office of Program Policy Analysis and Government Accountability summary of Florida Department of Transportation data.

However, among the remaining contracts, avoidable costs ranged from approximately \$13,000 to over \$830,000. Only a few contracts (4) accounted for 75% of the avoidable cost overruns that did not add value. Although FDOT did not seek recovery from consultants for any of the 31 contracts, it may have been cost-effective to recover costs from consultants deemed responsible for the larger cost overruns.

The Department has recently increased its efforts to initiate recovery of cost overruns from consultants. Districts reported that they are reviewing about \$10 million in cost overruns to determine whether to pursue recovery. Three districts reported that they have initiated actions to recover approximately \$2 million from consultants, and one district reported collecting \$38,000. Given the level of cost overruns that are attributed to consultants in some cases, FDOT should adopt a policy of pursuing such recovery.

Improved Project Planning

The Department could also reduce cost overruns by continuing to improve the quality of design plans before they are let for construction. Most of the avoidable cost overruns in the projects we examined were attributed to design plan problems.

As discussed in our 1995 report, two primary factors have contributed to problems with plan designs. First, FDOT has significantly increased its construction volume over the last five years. Over the fiscal year 1990-91 through 1994-95 period, FDOT's construction spending increased 54%, from \$845 million to over \$1.3 billion. To meet this increased workload, FDOT used less experienced staff and consultants to design construction projects. Second, FDOT has placed an emphasis on meeting production schedules. As a result, plans had not always been carefully reviewed before being released for bid.

Since the issuance of our 1995 report, FDOT district offices have developed strategies to improve the quality of construction plans. These strategies include enhanced on-site reviews to better identify actual site conditions, performing constructability reviews that examine whether projects can be

readily built as designed, and enhanced training for staff and consultants on contract management. The effectiveness of these efforts in controlling cost overruns may not be known for several years, as projects take many years to proceed through the planning and construction cycle. FDOT should continue these efforts and monitor progress toward reducing cost overruns.

Better Coordination With Local Governments and Utility Companies

Another step FDOT should take to reduce cost overruns is to continue its efforts to improve coordination with local governments, utility companies, and other affected parties. Local governments and utility companies are provided design plans during project development to identify potential conflicts and project requirements. However, local governments may not always have the expertise needed to review design plans and identify plan problems before construction starts, and utility companies often lack accurate records about the precise locations of their underground utility lines. As a result, local governments often request plan changes after projects have been bid and construction has begun, and contractors frequently encounter utility lines that need to be moved before construction can proceed. Both of these situations result in delays and overruns.

The Department has increased its efforts to coordinate with third parties. For example, FDOT has initiated a "partnering" process to address potential construction conflicts during the initial construction phase. As this process continues to evolve a reduction in conflicts and delays is expected. In addition, FDOT is increasing its efforts to locate underground utilities. FDOT managers noted that it can be less expensive to pay these up-front costs than to pay for project delays if the utility conflicts are found during construction. Also FDOT is pursuing recovery from third parties where responsibility is clear cut and is cost effective to do so. As third parties were deemed responsible for \$1.6 million in overruns that did not add value for citizens in the projects we examined, FDOT should continue these efforts.

CONCLUSIONS AND RECOMMENDATIONS

Completing transportation projects on time and within budget has been a problem for FDOT. The 102 road and bridge projects (totaling \$302.7 million) we examined experienced cost overruns totaling \$28.6 million, an increase of 9.5% from the initial budgeted amount. Over half (\$15.6 million or 5.2%) of these overruns were classified as avoidable, and \$4.2 million (1.4% of budget) of these overruns did not add any value for the state. Responsibility for these overruns was attributed to FDOT consultants, third parties such as local governments and utility companies, and FDOT staff involved in the design process. While all cost overruns in transportation projects cannot realistically be eliminated, FDOT could take several steps to minimize cost overruns from occurring and to hold responsible parties accountable. Specifically, we recommend the Department:

- Develop statewide criteria to assess whether it may be cost effective to pursue recovery of cost overruns that are attributable to consultants that did not add value to projects. If it is determined that it is not cost effective to pursue recovery FDOT should seek obtaining in-kind benefits such as additional design work from consultants;
- Develop criteria for including avoidable cost overruns that did not add value in the selection process for awarding future contracts to its consultants;
- Develop criteria for including avoidable cost overruns that did not add value in determining the constructability grades for design work;
- Provide an interim constructability grade during the construction process in addition to a final grade. Since construction projects can last several years, an interim grade would provide more timely information to the Department as new design contracts are being awarded;
- Monitor responses to the monthly report of consultant performance grades. This may provide staff an impetus for completing these evaluations in a more timely manner;
- Modify FDOT personnel policies and procedures to include evaluating FDOT staff who are involved in the design process (including those providing engineering research services) for the impact of avoidable cost overruns that do not add value. This could be accomplished by providing a grade to the project when it is completed as is currently done in one district;
- Modify the supplemental agreement tracking system to more closely identify all the factors contributing to cost overruns. For example, cost overruns attributable to FDOT engineering research should be identifiable regardless of whether design plans were developed by consultants or in-house staff. For projects designed by in-house staff, the system should identify the engineering specialty within FDOT that was responsible for the design problem. FDOT should provide guidance and training to district staff to help ensure that these staff offices evaluate cost overruns in a consistent manner. FDOT should also examine this process during its district Quality Assurance Reviews;
- Continue implementing strategies to improve the quality of construction plans to resolve plan problems prior to letting contracts for bid, and monitor progress toward reducing cost overruns; and
- Continue improving on coordinating with third parties to incorporate design changes and identifying utility lines as plans are developed minimize cost overruns due to delays in making design changes during construction. FDOT should consider pursuing recovery of costs that add no value to projects from these entities where it can be shown that the Department gave ample notice of its construction plans but these other entities did not meet their statutory responsibilities to avoid construction conflicts.

AGENCY RESPONSE

FLORIDA DEPARTMENT OF TRANSPORTATION

November 15, 1996

Mr. John W. Turcotte, Director
Office of Program Policy Analysis
and Government Accountability
111 West Madison Street, Room 312
Tallahassee, Florida 32302

Dear Mr. Turcotte:

We are pleased to respond to the preliminary and tentative findings and recommendations concerning the Review of the Florida Department of Transportation's Performance in Controlling Construction Cost Overruns and Establishing Accountability for These Problems. In accordance with section 11.45(7)(d), Florida Statutes, our response to the preliminary report is attached.

We agree with the findings identified by this review. We have already begun most of the processes included in the recommendations but will further emphasize them along with implementing the others.

The Department continues to work on controlling project costs and time. We have completed the analysis for all projects completed in FY 1995-96. Findings are included in the Florida Transportation Commission Report dated 8/29/96. Our figures for the year are comparable to those presented in OPPAGA's report which included only the first two quarters. Out of the total contract amount of \$739,952,839 only \$11.1 million (1.5%) was avoidable/no-value added. While this is a concern to

us, we do think it speaks highly of both our in-house and consultant staff.

We are concerned with the implications on page four of OPPAGA's report that FDOT perceived consultants are producing a lower quality project. This is not accurate. Consultants have delivered quality services to the Department. We consider them an extension of our staffing and many are experienced former FDOT staff. Also, the comparison of avoidable/no-value cost as is done in Exhibit 4 and statements in the report that design consultants account for a lower percentage of cost overruns that did not add value than did FDOT's in-house design staff is misleading. All studies to date have shown clearly that both in-house and consultant plans quality are relatively equal. This has been and continues to be our position on this issue.

We will utilize this report to further our efforts to reduce costs in time and money with a firm commitment to delivering to the traveling public a quality transportation system. We appreciate the efforts of you and your staff. If you have any questions please contact Cecil Bragg, our Inspector General, at 488-2501.

Sincerely,

/s/ Ben G. Watts, P.E.
Secretary

BGW/ctb
Attachment

The Secretary's detailed responses to our specific findings and recommendations are a public record of the Office and are available upon request.

Appendix A

Construction Projects With the Ten Largest Avoidable Cost Overruns That Did Not Add Value⁴

Palm Beach County (\$832,000)

This project involved construction of an interchange, widening of roadway and construction toll plazas in Palm Beach County on the Florida Turnpike. The original construction budget was \$16,672,000; however, the project experienced \$1,998,000 in cost overruns, of which approximately \$832,000 the FDOT considered as avoidable costs that did not add value. Responsibility for this overrun was attributed to a consultant designer.

The original plans did not accurately show the proper location of a bridge over a canal because the consultant's survey did not properly identify the width and depth or the location of an existing canal along the Turnpike. The contractor had to create a structure to stabilize the bridge footers. FDOT paid the contractor for his delay in completing other time sensitive work and extra for materials such as fill dirt and concrete that were not in the original plans.

Leon County (\$798,000)

This project involved resurfacing part of I-10 in Leon County. The original construction budget was \$2,340,000; however, the project experienced \$999,000 in cost overruns, of which approximately \$798,000 the FDOT considered as avoidable costs that did not add value. Most of these costs were attributed to third party and FDOT in-house design staff.

The original plans did not accurately reflect the proper specifications for the asphalt. The contractor laid the asphalt as planned and had to tear it out and replace it. FDOT paid the contractor for the delays in completing this work.

Polk County (\$560,000)

This project involved resurfacing of state road 555 in Polk County. The original construction budget was \$888,000; however, the project experienced \$775,000 in cost overruns, of which approximately \$560,000 the FDOT considered as avoidable cost that did not add value. Responsibility for this overrun was attributed to a third party.

The original plans specified that the contractor would dispose of unusable project site excavation material onto an adjacent property owned by a mine company. The county secured an agreement with the mine company to dispose of this material. However, when construction began, the contractor could not use the land as originally planned. The mine company had just initiated reclamation of the land and would no longer accept the unsuitable material as originally planned. It took approximately three months to locate an alternative site to dispose of the unsuitable material. This time suspension extended the window of construction and forced the contractor to perform weather-sensitive activities during the rainy season resulting in delays and inefficiencies in operations. For example, the contractor planned to do earthwork during the dry season. However, this work was done during the rainy season. This caused washouts of work that was completed to be redone and slowed other work while waiting earthwork to dry.

⁴ Project status was determined by FDOT during August 1996. Dollar amounts rounded to the nearest thousand.

Jackson County (\$549,000)

This project involved reconstruction of U.S. 231 in Jackson County. The original construction budget was \$7,349,000; however, the project experienced \$672,000 in cost overruns, of which approximately \$549,000 the FDOT considered as avoidable costs that did not add value. Responsibility for this overrun was shared by a city, FDOT in-house design staff, and a consultant designer.

Most of the avoidable cost overruns that did not add value (\$375,000) occurred because a city did not accurately identify its underground sewage pipe system in the plans. The contractor had to remove the existing sewage pipe and replace it. FDOT paid the contractor for the delays in completing this work. FDOT paid another \$92,000 that could have been avoided because the asphalt mix designed by FDOT failed. The contractor had to tear up the asphalt and replace it. FDOT paid the contractor for the delays in completing this extra work. Lastly, FDOT paid \$82,000 for construction materials that were not included in the original plans and for extra work because of a faulty drainage design by the consultant. Specifically, the plans did not accurately show that a concrete pipe, which handles storm water runoff, was too high to allow proper drainage. The contractor had to tear up the pipe and relocate it to properly drain water from the roadway. In addition, the contractor had to excavate and regrade slopes to alleviate erosion and improve drainage.

Lee County (\$226,000)

This project involved reconstruction of Edison Bridge in Lee County. The original construction budget was \$36,052,000; however, the project experienced \$1,160,000 in cost overruns, of which approximately \$226,000 the FDOT considered as avoidable costs that did not add value. Most of the cost overruns were shared by a third party and FDOT.

The original plans provided a route to haul construction materials through a residential area. The route was approved by the local governments. However, during construction the residents objected.

The contractor had to build another access route to the construction site. This included extra work to clear trees and add landscaping and fencing which were not included in the original plans. In addition, FDOT paid the contractor for the added time the trucks used to go around the residential area. In addition, the original plans were adequate for driving the pilings for the bridge footers; however, FDOT altered the pile driving requirements during construction causing the contractor additional work delays.

Flagler County (\$173,000)

This project involved resurfacing and widening of a bridge on I-95 in Flagler County. The original construction budget was \$6,150,000; however, the project experienced \$397,000 in cost overruns, of which approximately \$173,000 the FDOT considered as avoidable costs that did not add value. Responsibility for this overrun was attributed to FDOT in-house design.

The original plans did not accurately reflect that the contractor would be required to work at night during the entire project to avoid day-time traffic congestion. When the contractor became aware of this requirement for increased work at night, he had to shut down a concrete plant and adjust its operations. FDOT paid the contractor for delays to adjust his work schedule.

Jefferson County (\$161,000)

This project involved resurfacing of I-10 in Jefferson County. The original construction budget was \$3,988,000; however, the project experienced \$1,004,000 in cost overruns, of which approximately \$161,000 the FDOT considered as avoidable costs that did not add value. Most of this overrun was attributed to a consultant designer.

The consultant miscalculated the amount of asphalt material to complete the project. The plans showed the amount of asphalt needed in inches, contrary to FDOT standards, which requires calculating asphalt by density. As a result, the contractor laid 14,100

additional tons of asphalt than needed to complete the project. Although FDOT received extra asphalt thickness, which should extend the use of the road, the extra thickness was not necessary to meet standards.

Dade County (\$143,000)

This project involved resurfacing and widening of several bridges in Dade County on the Florida Turnpike. The original construction budget was \$9,079,000; however, the project experienced \$563,000 in cost overruns, of which approximately \$143,000 the FDOT considered as avoidable costs that did not add value. Responsibility for this overrun was attributed to a consultant designer.

During construction, the original plans were changed to add two extra lanes and some medians. The plans were also amended to change the configuration of the interchange and change the composition of the road's foundation. Therefore, night work was required to complete the project. However, the plans did not include materials such as lighted message boards used for night work. The contractor was paid for his delays in completing the work and for materials not included in the original plans.

Duval County (\$107,000)

This project involved construction of 9A east loop around Jacksonville in Duval County. The original construction budget was \$9,100,000; however, the project experienced \$1,243,000 in cost overruns, of which approximately \$107,000 the FDOT considered as avoidable costs that did not add value. Responsibility for this overrun was attributed to a consultant designer.

The bridge supports were inaccurately shown in the original plans. FDOT paid more for the bridge supports than if these supports were included in the original plans. In addition, the drainage design was not adequate to accommodate storm water run-off. The FDOT paid the contractor for delays in completing the additional work and more for the drainage materials because they were not included in the original plans.

Clay County (\$82,000)

This project involved resurfacing of U.S. 17 in Clay County. The original construction budget was \$3,971,000; however, the project experienced \$672,000 in cost overruns, of which approximately \$82,000 the FDOT considered as avoidable costs that did not add value. Responsibility for this overrun was attributed to a consultant designer.

The drainage system was not accurately shown in the original plans. The contractor was delayed from other work to complete the drainage system. In addition, FDOT paid the contractor for delays in completing the additional work and for the drainage materials because they were not included in the original plans.

This project was conducted in accordance with applicable evaluation standards. Copies of this report may be obtained by telephone (904/488-1023 or 800/531-2477), by FAX (904/487-3804), in person (Claude Pepper Building, Room 312, 111 W. Madison St.), or by mail (OPPAGA Report Production, P.O. Box 1735, Tallahassee, FL 32302). Web site: <http://www.state.fl.us/oppaga/>

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