

FLORIDA TRANSPORTATION COMMISSION

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**EVALUATION OF THE FLORIDA
DEPARTMENT OF TRANSPORTATION'S
IMPLEMENTATION OF THE KPMG
PEAT MARWICK ACTION PLAN**

Price Waterhouse



Price Waterhouse



May 18, 1990

Ms. Jane Gargiulo, Executive Director
Florida Transportation Commission
605 Suwannee Street, MS-9
Tallahassee, Florida 32399-0450

Dear Ms. Gargiulo:

TRANSMITTAL OF THE ATTACHED FINAL REPORT

Price Waterhouse is pleased to present the results of our evaluation of the Florida Department of Transportation's implementation of the KPMG Peat Marwick Action Plan. As our report makes clear, we found that the Department has not been able to meet the implementation schedule included in the Action Plan — but that there were many valid reasons for this, including limited resources and the necessity to get new management in place before some recommendations could be implemented. Considering the challenges faced by the Department, we believe that progress on the Action Plan has been satisfactory.

The Commission also asked us to take a specific look at how well the Department was making use of modern Information Technology (IT) to accomplish its mission. As described in our report, we believe that the Department has indeed lost some ground in this area, both in comparison to peer departments of transportation around the country, and especially in relationship to the reputation that the Florida Department once held for being a leader among DOTs in the use of IT. Fortunately, the Department is now engaged in developing a long-range strategic plan for the use of IT; we hope that the observations and recommendations in this report will be of assistance to the Department during that planning effort.

May 18, 1990
Ms. Jane Gargiulo
Page 2



We appreciate the opportunity to serve the Commission, and look forward to future opportunities to work with you and the Department as the need arises.

Sincerely,

A handwritten signature in cursive script, appearing to read "Stephen L. Powlesland". The signature is fluid and somewhat stylized, with the first and last names being the most prominent.

Stephen L. Powlesland
Principal-in-Charge
Management Consulting Services
Sacramento Office

FLORIDA TRANSPORTATION COMMISSION

TABLE OF CONTENTS

Executive Summary

I. Background

II. Action Plan Status

III. Information Systems Environment

IV. Other Findings and Recommendations

Appendix A

Information Technology Comparative Model

EXECUTIVE SUMMARY

Price Waterhouse was engaged by the Florida Transportation Commission to conduct a special study of the Florida Department of Transportation (FDOT). This study had three major objectives:

1. Evaluate FDOT's progress in implementing the Action Plan recommendations presented in an April, 1989, report by KPMG Peat Marwick. According to the report, this Plan was intended to "address financial management and program management problems in" FDOT. The Plan included recommendations in the areas of organization and staffing, cash forecasting, financial data integrity and controls, computer system integration, use of information technology, and communications and training. *During our study, we found that FDOT had been unable to meet the report's proposed schedule for implementing these recommendations, but that considering the circumstances faced by FDOT management, satisfactory progress on implementation is being made.*
2. Evaluate and comment on FDOT's use of information technology (IT) generally, and determine if the FDOT's application of IT is at least comparable to peer DOT organizations. *During our study, we found that FDOT no longer has the integrated system environment it apparently did have prior to implementation of the State's SAMAS accounting system. We also found that the average age of many key business systems was significantly greater than at comparable DOTs — which would likely mean added maintenance costs, and reduced system flexibility, efficiency and effectiveness.*

3. Estimate the resources and effort needed to put FDOT at "the leading edge" among DOTs in the use of IT. *During our study, we found that FDOT had slipped from its leadership position among DOTs in the use of IT, and that the investment of substantial new resources in the next five years would be required to regain that position.*

Based on the information that could be gathered in the time allotted for this study, we developed the following specific findings, conclusions and recommendations:

1. **FDOT's Implementation of the Action Plan Recommendations**
 - a. *FDOT faced some unforeseen constraints and problems in attempting to implement the Action Plan recommendations, but has been making satisfactory progress in recent months. FDOT's ability to implement the recommendations as quickly as called for in the Action Plan schedule, was hampered by the lack of any additional resources being provided for that purpose. The Action Plan had recommended, for example, the extensive use of outside consultants to supplement the efforts of FDOT staff (at a rate of two consultant hours for each FDOT staff hour). Funding for this consulting assistance was not forthcoming, however. The implementation effort was also constrained by the general nature of some Action Plan recommendations (requiring further analysis before implementation could begin), and the fact that some implementation tasks could not begin before other tasks were completed. Perhaps for the above reasons, it appears that progress on implementation was somewhat sporadic until Secretary Watts revitalized and reorganized the effort in September, 1989, and until the new Assistant Secretary for Finance and Administration was hired in January, 1990.*

- b. *FDOT did not implement the organizational recommendations exactly as stated in the Action Plan — but the changes that were made seem reasonable to accomplish the objectives of reduced span of control, higher level control over financial management, and general strengthening of management practices. The primary difference between the Action Plan and FDOT's subsequent reorganization was the decision (per legislative enactment) to establish three rather than four Assistant Secretary positions.*
- c. *FDOT has not attempted to implement a single, "state-of-the art" cash forecasting system, as contemplated in the Action Plan — but the approach that is being taken (i.e., to develop a PC-based, long-range forecasting model that is compatible with the existing, mainframe-based short-range forecasting model) is sensible and may prove quite satisfactory. We understand that the decision to use this approach was due to limited resources. The existing mainframe-based model has been improved, however, and while not as flexible as might be desired, appears capable of producing reasonably reliable 36-month forecasts. The level of detail provided by this model is not required past that 36-month timeframe. It does not appear to us, moreover, that developing a "state-of-the-art" system (presumably for the mainframe computer) would be a wise use of limited resources anyway — especially given other IT needs identified below — unless FDOT finds in future years that there are serious discrepancies between forecasted and actual cash balances resulting from this approach.*
- d. *FDOT's approach to problems of financial data reconciliation and internal controls, involving SAMAS and the WPA, JCR and LAS/PBS systems, is less ambitious than appears to be called for in the Action Plan — but also may not be adequate to ensure reasonable data integrity in its financial systems. Data in the State's accounting system, SAMAS, must be in agreement with data in the Work Program Administration system (WPA), which allocates*

budgeted resources to actual projects, and with data in the Job Cost Reporting system (JCR), which provides basic cost allocations to projects and programs in the Department. Data agreement with the Statewide budget system, LAS/PBS, is also an important objective. If data do not agree (because of differences in the timing of data entry, or other discrepancies) it is difficult to know where the Department truly stands financially at any given time. The Action Plan appeared to recommend development of a mainframe-based "automated reconciliation subsystem" to facilitate correction and reconciliation of data between these systems. This effort would be relatively expensive. Instead, FDOT has chosen to focus on developing methods for checking data relationships in the various systems, and on improved procedures for controlling data entry and for correcting errors and discrepancies that produce reconciliation problems.

It is too early to tell if the results will be satisfactory, however. Substantial continuing efforts to improve the Department's financial systems will be required before optimum data integrity is achieved. It also appears to us that the most productive step toward improving data integrity would be to catch data errors and discrepancies when transactions are entered into the SAMAS system — not after they have passed through SAMAS to the other FDOT systems (as is the case now).

- e. *FDOT has chosen not to develop a new, integrated "Decision Support System" intended to assist management in operational decision-making, as recommended in the Action Plan — but instead to develop improved management reports based on extracting data from the existing systems. This appears to be a workable alternative.* FDOT's approach has been to develop the capability of extracting data from the existing financial systems and organizing that data into a so-called "superfile" for purposes of identifying data reconciliation problems among these systems (see

"d" above) and to produce a set of standard management reports. The choice of this approach appears again to be the result of limited resources. The development of the "superfile" data base for purposes of improved management reporting seems to be working. The decision not to implement the Action Plan's recommendations for integration of cash forecasting into this "superfile" system may need close monitoring, however. We are also concerned that "Decision Support" reporting seems to be primarily focused on tracking dollar commitments and expenditures, and does not do enough to track other measures of performance (i.e., are the dollars and other resources being used effectively and efficiently).

f. *FDOT is generally implementing the Action Plan recommendations relating to Information Technology, and to Communications and Training.* Our evaluation and comments on the subject of IT follow. With respect to Communications and Training, we believe FDOT's effort could be improved by doing more to train staff (especially district management) in the fundamentals of sound fiscal management and in the Department's particular financial environment, along with training them in the specific application of fiscal policies, procedures and associated systems.

2. **FDOT's use of Information Technology**

a. *FDOT appears to have lost ground during the 1980's in the use of modern information technology (IT), possibly because of limited resources available for that purpose.* FDOT once had the reputation of being a leader among DOTs in the use of IT. In our judgment, this reputation is no longer warranted — except perhaps in the use of Computer-Aided Design and Drafting (CADD) and related engineering systems. Based on what we have seen elsewhere in the country, we believe that in order to be a leader in the use of IT today, a DOT would have to have:

- Systems which are flexible enough to adapt rapidly to changing work programs and user requirements without major delays or system redevelopment efforts;
- Systems which are truly "user friendly;"
- Ready access by system users to information and equipment;
- A high degree of data integrity and sharing of data among business systems;
- Ability to take early advantage of advanced technology, such as geographic information systems; and
- Availability of sophisticated decision support and executive information systems.

The current IT environment at FDOT would not meet these criteria. One (but not the only) measure of FDOT's failure to stay abreast of its IT needs is budgetary. For many years, FDOT has been spending significantly less than the 1.0-1.2% of total DOT budget that would normally be required to maintain a "competitive position" among DOTs in the use of IT.

- b. The basic hardware, operating software and data communications architecture at FDOT is — with one exception — generally sound. The business applications (i.e., the actual programs installed on the computers to help perform the work of the organization) that are running in this environment provide ample cause for concern, however. We found that the average age of FDOT's key business management application systems is twelve years (about 50% older than such systems at leading DOTs). We also found that at least nine key application systems are in immediate need of replacement in order for FDOT to be functioning at a level commensurate with peer DOTs. These applications support such fundamental areas of*

DOT management as highway maintenance (an increasingly expensive program), contract estimating and administration, job cost reporting, project scheduling, and accounts receivable. When replaced these applications could, and probably should, be developed using the state-of-the-art, CICS/DB2 environment recommended by the Action Plan.

The one exception to the general soundness of the current technical environment is the continued use of IBM 8100 minicomputers in the district offices and in headquarters, which are being used primarily to support office systems. This equipment is essentially obsolete, and is no longer being supported by IBM. They will have to be replaced soon.

- c. *The Business Information Systems Plan (BISP), which is now under development by FDOT staff, has the potential to provide FDOT with a strategic direction and plan for regaining leadership in the use of IT. For that reason, the BISP effort should be augmented with stronger technology and information resources management expertise.* A BISP is a long-range information systems plan for supporting a business entity. BISPs are usually strategic and tactical in scope. This BISP effort began in March, 1990. It seems to be off to a positive, productive start. There were, however, only very preliminary results on hand for us to evaluate. The planning team is currently weighted toward staff who are more knowledgeable about DOT programs than they are about IT. This is appropriate in the initial stages of the BISP, where the objective is to model the business purposes and functions of FDOT. From our experience with strategic systems planning, we believe that additional IT-oriented expertise will be required to translate this "business model" into a strategic IT plan that produces a truly modern and cost-effective IT environment for the Department.

3. Key Recommendations

- a. *Continue to implement the cash forecasting system approach now being taken by FDOT, rather than the approach recommended in the Action Plan. Also continue to use the "superfile" technique to assist in identifying and reconciling data discrepancies among the financial systems, as well as to produce management reports involving data from more than one system, rather than developing new systems for these purposes. We believe, however, that the Department should add other performance measures, along with dollar expenditure tracking, to Decision Support (i.e., management) reporting.*

- b. *Over the next five years, provide \$3-5 million annually to modernize FDOT's aging inventory of business management systems, and to produce greater integration among these systems. Also invest \$3-4 million annually for the next five years in order to significantly upgrade networked computer equipment (including new work stations and replacements for the IBM 8100 minicomputers) needed by the districts to support their expanded workloads. The specific expenditures and priority/scheduling of IT improvement activities should be identified and presented as a result of the BISP planning effort. For purposes of this limited study, we could only provide a "ballpark estimate" of what is required to meet FDOT's needs for up-to-date and accurate management information at the districts and at Headquarters.*

- c. *Do not pursue the decentralized data processing environment recommended by the Action Plan until it can be demonstrated that this is cost beneficial. Consequently, the strategy of implementing a decentralized data processing environment should be carefully evaluated in the BISP process. As referred to in the Action Plan, a decentralized (or distributed) data processing environment is one in which the storage and processing of data, as well as data entry and*

reporting, is "distributed" among a number of different sites (e.g., the district offices) rather than concentrated at one site (e.g., Headquarters) — but with mechanisms that facilitate the automatic sharing of data between sites without sacrificing data integrity. Due to the complexities and cost inherent in achieving the latter objective, we see that broadly decentralized or distributed data processing is still being targeted toward business situations where the benefits of this type of processing are substantial. The consensus in the DOT industry seems to be that implementation of this type of data processing environment, for large information systems, is not cost-beneficial for DOTs at this time — and we tend to agree.

d. Develop a "front end" data editing /validation system that would cleanse data prior to entering transactions into SAMAS, in order to reduce the problems associated with subsequent data reconciliation and processing delays. Also review the WPA system to determine if it can provide more automated support for tracking Federal fund participation ratios, on specific projects, which are different than the standard ratios expected for such projects as a class. We believe that many of the problems with financial data integrity being experienced by FDOT result from the fact that SAMAS only checks the editing and validity of the financial data it uses, and does not check the editing and validity of the data which is only passed through SAMAS to other key FDOT financial systems (e.g, WPA and JCR) for use by those systems. When those FDOT systems discover an error in this pass-through data, the transactions containing that data must be corrected and re-entered through SAMAS. In the meantime, however, data in the various systems are inconsistent and cannot be easily reconciled. This situation could be significantly improved by developing an editing/validation module that would check all of the data in transactions before the data is entered into SAMAS.

The second part of the recommendation deals with a technical, but nonetheless significant, problem that occurs when the WPA "assumes" one level of Federal funding participation in the work program, while actual participation on individual projects in the work program is different. This discrepancy can have a material impact on: (1) determining the amount of state vs. federal money required to implement the work program for a given year; and (2) the accuracy of short-term cash forecasts since Federal funds must be included in projections of both revenues and expenditures.

- e. Augment the BISP team with DOT applications, technology and information resource management specialists.* We have already described the reasons for this in our discussion of findings above. We believe this should be done at the point after the BISP team has finished collecting and analyzing business information "needs," and translating those needs into a business data model, and before the team begins to define the desired architectures (business applications, technical environment, and IT management structure) and identifies the associated IT development projects.
- f. Conduct a review of the district decentralization effort in order to assess the cost benefit of even greater decentralization of administrative functions than currently exists. Also conduct a review of district administrative functions in order to ensure that there is at least a minimum level of standardization and consistency in staffing and procedures among the districts.* This recommendation is the result of observations we made while conducting our study. We believe that implementing this recommendation would facilitate achieving the objectives of decentralization and would improve productivity of administrative activities.

- g. Develop mechanisms by which districts can approve supplemental agreements on their own, within preset contingency amounts that are encumbered when construction contracts are approved.*

Supplemental agreements represent "add-ons" or modifications to existing contracts. Such agreements are an inevitable and expected part of construction contract administration. Similar to "f" above, this recommendation is intended to enhance the ability of FDOT to realize the benefits of decentralization. While there have been problems in the past with controlling the issuance by districts of supplemental agreements, we believe that making districts more accountable for budgetary discipline generally is a better solution than the use of piecemeal controls on routine decision-making.

- h. Consolidate the function of tracking accounts receivable and, to the extent possible, develop a single automated system to support this function.* As discussed in our report, the monitoring and processing of accounts receivable is fragmented among several different organizations within the FDOT (depending upon the type of receivable). We believe that this approach is inherently inefficient and likely reduces FDOT's overall control of receivables — and also reduces cash and interest income.

I. BACKGROUND

Of the management challenges and opportunities facing the Florida Department of Transportation (FDOT) in the 1990s, many can be tied directly or indirectly to a series of key events which occurred in the mid-1980s. Without attempting to suggest any particular order of importance, these events were:

1. The decision to decentralize FDOT's production and operations management.

As is true with many DOTs across the country, FDOT is seeking to establish the optimum balance in authority and responsibility between Headquarters and District offices. The FDOT effort appears to be aimed at aggressively shedding centralized control over operations and resource management (as directed by legislative mandate), while maintaining centralized quality control review, and administrative and financial support functions. This represents a substantial change over the approach in place only a few years ago. Moving from a highly centralized to a generally decentralized management structure is a major undertaking for any large DOT — one that would rightfully consume a large amount of available management attention in order to ensure a successful transformation to the new organization.

2. The conversion of FDOT's accounting system to the State Agency Management Accounting System (SAMAS).

Sound financial management of a large DOT, as compared with other agencies of state government, is a relatively complex and demanding

administrative and management function. A typical DOT must accurately track the budgeting, expenditure, billing and receipt of a wide variety of Federal, State, and local funds. These funds in turn are spent on many different kinds of one-time and continuing projects and activities, through the application of resources that include large numbers of state employees, major equipment, material inventories, construction contractors, contract labor and consulting services. As a result, financial management of a DOT requires that the accounting system maintains close linkages with other management systems (e.g., work program, Federal billing, highway maintenance, equipment management, etc.). From what we have learned in this study, moreover, it appears that FDOT's specific financial management requirements are even more complex than is true of most other DOTs (e.g., the need to manage expenditure allocations so as to ensure district "equity"). As a result, replacement of FDOT's accounting system with an entirely new system would, by its nature, be one of the more complex and demanding projects that could be undertaken by management. Such a project would require thorough planning and careful implementation — in particular to maintain interfaces with other management systems — and would typically consume a considerable amount of available management attention to ensure the conversion was a success. The implementation of SAMAS forced on FDOT by the State did not seem to allow for such considerations.

3. **The rapid expansion of FDOT's work program in anticipation of significant new (and/or more aggressive expenditure of existing) transportation funding.**

The rationale for, and the consequences of, the decision to expand FDOT's work program by hundreds of millions of dollars virtually "overnight," are still being debated. Regardless of the merits, however, implementation of such a policy decision could not help but seriously challenge the ingenuity and resources of DOT management and staff alike. This management initiative required the DOT to quickly "gear up" on all phases of project development and administration —

planning, engineering, contracting, inspecting and accounting, etc. — that are required to produce quality results quickly. Substantial management attention would normally be required to meet such a challenge effectively.

As if these events were not enough, FDOT has also been hampered by a relatively frequent turn-over in top management during the 1980s. Changes at the executive level usually consume a substantial amount of management attention to ensure a successful transition and the subsequent initiation of any new policies, organizational strategies and/or other management directives. We also noted (but only in the form of "anecdotal evidence") that there seems to be a relatively high degree of legislative involvement in, and scrutiny over, activities of the DOT. Again, without commenting on the merits of this involvement and scrutiny, it would tend to create a significant distraction for top DOT management.

Finally, as will be discussed in more detail in later sections of this report, we observed that during the 1980s, FDOT expenditures for information technology were significantly lower (when calculated as a percentage of total FDOT budget) than we would expect for an organization of this size and consequence. Limitations in the resources available for information technology would tend to make it more difficult for FDOT management and systems to respond effectively and efficiently to the events and trends described above.

In consideration of these events and trends, all of which occurred (or continued) at roughly the same time in the mid- to late-1980s, it is not surprising to us that FDOT experienced problems of the sort which ultimately led to the KPMG Peat Marwick study. On the contrary, it is something of a tribute to the talent and dedication of the managers and staff of FDOT that problems of a more severe nature were averted.

Nevertheless, there were indeed significant problems that resulted directly or indirectly from these events and trends. The KPMG Peat Marwick study

I. BACKGROUND

provided a set of recommendations and associated action plan intended to help address some of these problems. Our report is designed to provide a follow-up review on how, and how well, the Department is implementing those recommendations — but also to provide a broader diagnosis of the Department's condition as it enters the 1990s, with particular emphasis on FDOT's use of information technology to pursue its mission in the most efficient and effective manner.

II. ACTION PLAN STATUS

This chapter describes and analyzes the Department's efforts to implement the recommendations from the April 1989, KPMG Peat Marwick report, specifically the Action Plan developed by KPMG Peat Marwick as part of the report.

Before describing the Department's efforts to implement the Action Plan, however, we believe that five key observations should be discussed first.

These are:

1. The KPMG Peat Marwick report recognized the limited availability of FDOT staff resources to implement the Action Plan. The Action Plan and schedule was predicated on using a ratio of two hours of consultant resources for every hour of FDOT staff resources. FDOT received no budgetary authority for external resources and thus had to proceed with the plan using internal resources only. These resources had other duties which prevented them from being committed to this effort full-time.
2. The Action Plan required that a significant number of tasks be undertaken concurrently. In some cases, the interrelationships and dependencies among tasks were not adequately considered in preparing the Plan, particularly with respect to ordering and placement of the tasks. As a result, it would have been difficult to meet the Action Plan Schedule under the best of circumstances.

II. ACTION PLAN STATUS

3. The Action Plan contains some tasks that are defined at a general level. These tasks required additional analysis by Department staff to identify specific work tasks or accomplishments to be achieved. Time was required to do that analysis.
4. It appears that initial efforts in response to the Action Plan were not productive or sustained. In September 1989, Secretary Watts re-emphasized the implementation of the Action Plan as a priority item. He reassigned and restructured Action Plan teams and established an Action Plan Coordinator who reports directly to him. Progress seems to have improved since that time. Further, the new Assistant Secretary, Administration and Finance, has reaffirmed the Department's commitment to implementation of the Action Plan as a top priority item since his appointment in January 1990.
5. Major management changes have occurred at FDOT subsequent to the KPMG Peat Marwick report. Many of these changes were anticipated in the Action Plan; however, some key organizational changes were not implemented until after January 1, 1990. This was some number of months *after* the target dates identified in the Action Plan. As a consequence, some new members of the management team were assigned specific responsibility for Action Plan items with target dates that had already elapsed prior to their date of hire.

The remainder of this section is organized to correspond to the six major areas for improvement addressed by the Action Plan:

- A. Organization and Staffing;
- B. Cash Forecasting;
- C. SAMAS, WPA, and JCR Systems and Internal Controls;

II. ACTION PLAN STATUS

- D. System Integration;
- E. Information Technology; and
- F. Communications and Training.

For each major area, we provide a narrative evaluation of the Department's overall efforts, as well as a matrix which identifies the status of each item in the Action Plan. Each matrix contains the following information:

1. *KPMG Recommended Action* — Specific step from the Action Plan.
2. *Responsibility* — Individual or group assigned by the Action Plan with responsibility for a specific step.
3. *Action Plan Date* — Original target completion date from the Action Plan.
4. *Target Date* — **Current** planned date for completion of a specific step from the Action Plan. Note that a "(c)" beside the date indicates the **actual** completion date.
5. *Status/Accomplishment* — Our perception of FDOT's progress as supported by evidence and discussions.
6. *Comments* — Additional considerations relating to FDOT's actual accomplishment or progress.

At the conclusion of this chapter we provide some specific recommendations relating to implementation of the Action Plan.

II. ACTION PLAN STATUS

A. ORGANIZATION AND STAFFING

The KPMG study pointed out the responsibilities for cash forecasting, financial planning, work program development, financial management and work program monitoring were fragmented and in need of clarification in light of the DOT's recent decentralization and actions to accelerate its 5 year transportation plan.

Establishing and filling of the position of Assistant Secretary - Finance and Administration would strengthen the focus on these areas and, along with establishing and filling of the other Assistant Secretary positions, would reduce the number of direct reporting relationships to the Secretary from thirteen to eight.

FDOT's implementation of the Action Plan recommendations on Organization and Staffing seems to be relatively complete. The Secretary's "span of control" has been reduced through the establishment and filling of three Assistant Secretary positions:

- Finance and Administration;
- Planning and Engineering; and
- Operations.

Although the Action Plan called for four Assistant Secretary positions, the current DOT organization, as enacted by the 1989 Legislature, is reasonable. It is certainly an improvement over the previous FDOT top management structure.

The issue of strengthening the DOT's organization, staffing, and management practices in the financial management area is a much larger task and one which we believe is a long-term "process." We view the Department's reorganization as an important first step in this process. We further view the Department's overall accomplishments relative to the Action Plan as positive steps in the process.

**FLORIDA DEPARTMENT OF TRANSPORTATION
ACTION PLAN STATUS**

| KPMG RECOMMENDED ACTION | RESPON- SIBILITY | ACTION PLAN DATE | TARGET DATE | STATUS/ACCOMPLISHMENT | COMMENTS |
|--|---------------------------|---------------------|----------------|--|---|
| ISSUE AREA: 1. Organization and Staffing | | | | | |
| 1.1 Reorganize the DOT in accordance with Exhibit 1 to reduce Secretary's span of control and strengthen DOT's management. | Legislature/ Secretary | 6/30/89 | 10/24/89(c) | <ul style="list-style-type: none"> • Reorganization accomplished with minor deviations from recommended organization structure (see Action 1.2 status). | <ul style="list-style-type: none"> • Organization and Staffing Team established. |
| 1.2 Establish positions of Assistant Secretary for: Finance and Administration, Planning and Engineering and for District Operations and appoint to Executive Committee. Establish position of Administrator for Turnpike and Toll Operations. | Legislature/ Secretary | 6/30/89 | 10/24/89(c) | <ul style="list-style-type: none"> • Assistant Secretary Finance and Administration and Assistant Secretary Planning and Engineering established. • Assistant Secretary District Operations as defined in KPMG report established as Assistant Secretary Operations with additional responsibility for Turnpike. • Assistant Secretary Operations as defined in KPMG report not established — duties spread among other Assistant Secretaries. • Administrator for Turnpike and Toll Operations not established. | <ul style="list-style-type: none"> • Toll Operations reports to Asst. Secretary Finance and Administration. • Motor Carrier Compliance and Safety report to State Transportation Engineer. • Human Resources Development and Quality Improvement are separate positions reporting to Assistant Secretary Finance and Administration. |
| 1.3 Conduct search for and hire to fill new Assistant Secretary and Administrator positions. | Secretary | 7/31/89 | 1/8/90(c) | <ul style="list-style-type: none"> • Admin. Turnpikes - March 1989. • Asst. Secretary Planning - January 5, 1990. • Asst. Secretary Operations - January 5, 1990. • Asst. Secretary Finance and Administration - January 8, 1990. | |
| 1.4 Assign Comptroller, OMB, IS&S, and Administration to new (or acting) Assistant Secretary for Finance and Administration. | Secretary | 9/30/89 | 1/22/90(c) | <ul style="list-style-type: none"> • Accomplished. Toll Operations, Human Resource Development and Quality Improvement also assigned to Assistant Secretary Finance and Administration. | |
| 1.5 Revise and strengthen organization, staffing and management practices of the DOT's Financial Management Functions/Units. | Secretary | 9/30/89 | Ongoing | <ul style="list-style-type: none"> • Districts made responsible for managing work programs particularly with respect to ensuring supplemental agreements do not impact other District work programs. • Procedures being developed which formalize and strengthen fiscal controls. | |

B. CASH FORECASTING

The KPMG study acknowledged the complexities of a DOT environment where multi-year commitments must be balanced with current cash and future revenues. Developing a state-of-the-art cash forecasting system and reports that assure that the various units at FDOT would have the same current, accurate information which was appropriately integrated with other FDOT Management Systems would facilitate improved cash planning and management.

The Action Plan, as we understand it, calls for the Department to define and develop a *single*, sophisticated, state-of-the-art cash forecasting system (i.e., that addresses both short-and long-term projections). FDOT has clearly *not* implemented this recommendation of the Action Plan. However, in defense of the Department's approach, two factors must be kept in mind:

1. Development of the new system was anticipated to require \$450,000 in consultant resources for which the Department did not have available budget; and
2. The Action Plan recommendation was not necessarily the only way to meet the key objective: accurate, valid forecasting of FDOT's future cash position.

A number of improvements have been made relative to the Department's cash forecasting process:

- Both the short-term (36-month) and long-term (five-year program plan) models have been modified to utilize a common reporting format. This simplifies not only the use of the information from the models by FDOT managers but facilitates reconciliation between the models.

II. ACTION PLAN STATUS

- A reconciliation process has been developed to identify and resolve differences between the models.
- The Federal Aid Participation Ratio Committee has been established to monitor and revise effective participation rates (portion of costs funded by sources other than State sources) on a regular basis. These rates which specify the actual share of federal, state and other funds used in work programs are used by both models. The effect of this action should be to improve the accuracy of both models.
- A new short-term model has been developed and will be implemented as soon as crosswalks (relationships between state account coding structure and FDOT's traditional coding structure) with SAMAS data are refined.

To the extent that the short-term and long-term models produce consistent, accurate cash forecasts, it is our opinion that the Department's current approach is valid. To determine the extent to which they do in fact produce accurate cash forecasts, the Department should closely monitor the previously forecasted cash balance against the actual balance. Based on the results of this monitoring effort, FDOT can then determine the need to proceed with development of a more sophisticated system as specified in the Action Plan. We believe that developing a new, state-of-the-art Cash Forecasting System would become a lower priority than specified in the Action Plan, should FDOT's current efforts provided useable results.

**FLORIDA DEPARTMENT OF TRANSPORTATION
ACTION PLAN STATUS**

| KPMG RECOMMENDED ACTION | RESPON- SIBILITY | ACTION PLAN DATE | TARGET DATE | STATUS/ACCOMPLISHMENT | COMMENTS |
|--|---------------------|---------------------|----------------|--|--|
| ISSUE AREA: 2. Cash Forecasting | | | | | |
| 2.1 Establish a multidisciplinary project team that includes information technology, transportation operation, accounting, financial, and management professionals to address cash forecasting improvements. | Secretary | 4/30/89 | 10/23/89(c) | <ul style="list-style-type: none"> Team established. | <ul style="list-style-type: none"> Cash Forecasting Team. |
| 2.2 Review, enhance, and continue to use current cash forecasting system until new system is operational. | Project Team | 5/30/89 | 7/1/90 | <ul style="list-style-type: none"> Continuing to use existing model. Updated payment rates being used. Minor adjustments made in data classification to facilitate reconciliation with five-year program plan. | |
| 2.3 Use a structured methodology to develop initial system requirements and the prototyping for a new cash forecasting system. | Project Team | 7/31/89 | 7/1/90 | <ul style="list-style-type: none"> Five-year model enhanced to allow gaming - 4/16/90. New three-year model defined and developed (not yet implemented). Common reporting format defined for both systems. Draft procedure defined to reconcile current three-year cash forecast and five-year program plan model results - 10/5/89. | <ul style="list-style-type: none"> The KPMG report appears to recommend the development of a single state-of-the-art system to replace both the 36-month cash forecasting system and the five-year program plan model. This is clearly not the direction taken by the Department. |
| 2.4 Integrate the cash forecasting system reports into the management decision at all levels of the DOT. | Secretary | 6/30/89 | 6/30/90 | <ul style="list-style-type: none"> Presentation made to Executive Committee on 3/15/90 on Cash Position/Forecast. Formal committee established to review past experience and recommend matching ratios to be used in models and management actions in order to better predict effective participation — 9/15/89. | <ul style="list-style-type: none"> Federal Aid Participation Ratio Committee. |
| 2.5 Train DOT management in the importance of the cash forecasting process and the characteristics of the new system. | Project Team | 9/30/89 | 9/30/90 | <ul style="list-style-type: none"> Project team members have received training on how to develop course to train DOT management on importance of cash forecasting process and characteristics of new 36-month cash forecasting system. | <ul style="list-style-type: none"> A course outline has been prepared. |
| 2.6 Design, test, and implement the new cash forecasting system. | Project Team | 3/31/90 | 7/1/90 | <ul style="list-style-type: none"> New 36-month cash forecasting system developed and tested with controlled data. Awaiting input data from SAMAS for final testing and implementation. The crosswalk for the SAMAS data is not fully developed. | <ul style="list-style-type: none"> The new system to be implemented 7/1/90 is not the system identified in the Action Plan but rather a new version of the 36-month model. |

C. SAMAS, WPA, AND JCR SYSTEMS AND INTERNAL CONTROLS

In their study, KPMG pointed to the Auditor General's audit findings which identified problems in such areas as inadequate coordination of systems that affected the DOT's ability to schedule projects within budget expenditure authority, insufficient edits of data, and lack of internal system controls related to the adopted five-year work program.

Developing an automated reconciliation system and the institution or re-institution of improved internal controls would improve the Department's ability to ensure proper financial control over its current year and five-year work programs.

It appears that the intent of the Action Plan was for the Department to develop and implement an automated system to facilitate the reconciliation of SAMAS, WPA, JCR, and LAS/PBS data. Given the lack of budgetary support for this system (estimated costs of \$650,000) the Department has proceeded to identify and define procedures aimed at improving controls and reconciling inter-system discrepancies. In addition, the Decision Support System has been used to provide reports to facilitate reconciliation.

Some of the more significant accomplishments by FDOT to date include:

- Establishing a Code Integrity Committee, which must approve all changes to SAMAS/WPA/JCR accounting codes;
- Developing draft procedures for reconciling SAMAS, WPA, JCR, and LAS/PBS and performing the majority of the reconciliations on a regular basis;
- Expanding and strengthening the WPA/JCR Users Committee to include District membership;

II. ACTION PLAN STATUS

- Improving the procedural controls in the encumbrance (commitment) input process;
- Gaining verbal agreement from the State Comptroller Office to provide daily SAMAS tape input to JCR; and
- Working with the Systems Integration Team to develop a decision support data base which integrates data from SAMAS, WPA, and JCR and using that data base to provide reports which facilitate the reconciliation process.

In addition, FDOT is proceeding to do the following:

- Finalizing procedures and including them in a formal Finance and Administration procedures manual;
- Distributing finalized procedures to affected users;
- Training users, especially District users, on the meaning and use of procedures and on the overall workings of the Department's financial systems; and
- Implementing any procedures which have been defined but not yet implemented.

Our overall assessment of this Action Plan area is that the efforts to date have yielded significant improvements in reconciling data among the different systems, particularly in light of budgetary and resource constraints; however, the Department must strive to improve its financial systems to the point where the data in SAMAS, WPA, JCR, and LAS/PBS is perceived as having a high degree of integrity.

**FLORIDA DEPARTMENT OF TRANSPORTATION
ACTION PLAN STATUS**

| KPMG RECOMMENDED ACTION | RESPON- SIBILITY | ACTION PLAN DATE | TARGET DATE | STATUS/ACCOMPLISHMENT | COMMENTS |
|---|---------------------|---------------------|----------------|---|---|
| ISSUE AREA: 3. SAMAS, WPA, and JCR Systems and Internal Controls | | | | | |
| 3.1 Review District project manager's needs to manage financial control of work orders and supplemental agreements and expenditures at a cost control level, document the control procedures, and establish budgetary expenditure authority within SAMAS at the cost-control level. | Comptroller | 6/30/89 | 7/1/90 | <ul style="list-style-type: none"> • SAMAS Appropriation Category determined to be common reporting level. • Permanent Code Integrity committee established. All changes to WPA/JCR/SAMAS codes must be approved by committee. • Budgetary control level determined to be Level 2. • Formal documentation of control procedures in process. | <ul style="list-style-type: none"> • SAMAS/WPA/JCR Team established with two groups: <ul style="list-style-type: none"> - Accounting Integrity Group - JCR Group. |
| 3.2 Review allotment control processes within JCR, document the procedures for establishing allotment control within JCR and coordinate WPA and JCR using the allotment control processes at the time work orders and supplementals are entered into WPA. | Comptroller | 6/30/89 | 7/1/90 | <ul style="list-style-type: none"> • Procedures for allotment control defined in Financial Administration Training Manual. • Planning to allow SAMAS Encumbrance transaction "drive" allotment process. WPA/JCR will extract SAMAS data to post allotment. | <ul style="list-style-type: none"> • This should reduce the chance of different data appearing in each system as a result of multiple inputs. |
| 3.3 Review procedures for monitoring jobs by district project managers, document the procedures, and re-establish the 90/10 allotment/expenditure report to assist the District project managers in monitoring job cost overruns. | Comptroller/ OMB | 6/30/89 | 7/1/90 | <ul style="list-style-type: none"> • 90/10 report re-established • Draft procedures for use of 90/10 report currently being reviewed by FDOT executives. | |

**FLORIDA DEPARTMENT OF TRANSPORTATION
ACTION PLAN STATUS**

| KPMG RECOMMENDED ACTION | RESPON- SIBILITY | ACTION PLAN DATE | TARGET DATE | STATUS/ACCOMPLISHMENT | COMMENTS |
|---|---------------------|---------------------|----------------|--|--|
| <p>3.4 Review requirements for data integrity checks within SAMAS, WPA, and JCR, document the data integrity checks, and coordinate the establishment of data integrity within SAMAS, WPA, and JCR.</p> | <p>OMB</p> | <p>6/30/89</p> | <p>9/1/91</p> | <ul style="list-style-type: none"> • System flows and integrity checks between SAMAS and JCR documented. • System flows and integrity checks between JCR and WPA documented. • Plan to develop on-line edit of program number to fund/phase crosswalk table in WPA and FPA to ensure accuracy of SAMAS/FPA and WPA/LAS-PBS budget allotments by 7/31/90. • Developed draft quality assurance procedure (360-030-020-a) to verify accuracy of WPA information. • Developed automated crosswalk edit of SAMAS appropriation category to WPA program number for SAMAS encumbrance and expenditure transactions. • Developed draft procedure to facilitate correction of appropriation category edit errors in suspense file. • Plan to add work program fund code to job cost data base and Federal accounting data base by 9/1/91. • Plan to refine program number/appropriation category crosswalk so that no single program number will crosswalk to more than one appropriation category by 7/1/90. • Conducted survey of Disticts to determine if Cost Center charges across District lines is an integrity problem. Determined that edits are not necessary but report identifying cross-District charges will be produced for District follow-up. | <ul style="list-style-type: none"> • Scheduled to coincide with other WPA changes to minimize staffing impacts. • Implementation awaiting refinement of crosswalk. • Major system modification which will provide a common funding link between WPA, JCR, and FPA. This is key to development of an automated "sources and purposes" report. • Needed to ensure integrity of legislative appropriations within FDOT systems. |

**FLORIDA DEPARTMENT OF TRANSPORTATION
ACTION PLAN STATUS**

| KPMG RECOMMENDED ACTION | RESPON- SIBILITY | ACTION PLAN DATE | TARGET DATE | STATUS/ACCOMPLISHMENT | COMMENTS |
|---|-----------------------------|---------------------|--------------------|---|---|
| <p>3.5 Develop procedures to reconcile SAMAS, WPA, LAS/PBS, and JCR, and perform such reconciliations on a monthly basis between SAMAS, WPA, and JCR.</p> | <p>OMB/ Comptroller</p> | <p>9/30/89</p> | <p>Ongoing</p> | <ul style="list-style-type: none"> • Identified necessary reconciliation procedures to be developed 1/31/90. • Developed draft reconciliation procedures for: <ul style="list-style-type: none"> - SAMAS budget allotment to LAS/PBS appropriation ledger; - SAMAS budget allotments, appropriations, and releases to State Comptroller accounts; - SAMAS budget allotments and commitments to WPA program allotments and commitments; - WPA program amounts to WPA allocations by fund type; - WPA program categories to fund allocations; - FDOT Federal Aid records to FHWA; - Annual tentative and adopted work programs to Legislative Budget Request and Program Resource Plan; - JCR encumbrance to SAMAS encumbrance balance by project; - SAMAS record count and dollar totals on tapes to JCR count and totals processed; and - Prior year commitments in SAMAS to prior year commitments in WPA. • Currently performing SAMAS to LAS/PBS, SAMAS to WPA, and SAMAS to State Comptroller reconciliations monthly. • Currently performing Federal Aid reconciliation using Lotus spreadsheets. • Currently beginning to perform other reconciliations on a monthly basis as applicable. | <ul style="list-style-type: none"> • Decision Support System producing reports to facilitate reconciliation process. • Quality Assurance Program will ensure compliance |
| <p>3.6 Strengthen a User Committee for WPA and JCR with representatives from the Districts, Comptroller and OMB and convene regular meetings.</p> | <p>OMB</p> | <p>9/30/89</p> | <p>2/23/90 (c)</p> | <ul style="list-style-type: none"> • Existing committee expanded to include additional District membership. • Monthly meetings planned. | |

**FLORIDA DEPARTMENT OF TRANSPORTATION
ACTION PLAN STATUS**

| KPMG RECOMMENDED ACTION | RESPON- SIBILITY | ACTION PLAN DATE | TARGET DATE | STATUS/ACCOMPLISHMENT | COMMENTS |
|--|---------------------|---------------------|----------------|--|---|
| 3.7 Establish a daily interface from SAMAS to JCR to record encumbrances and expenditures providing JCR with up-to-date financial information. | OMB | 9/30/89 | 6/1/90 | <ul style="list-style-type: none"> • Verbal approval from State Comptroller. | |
| 3.8 Establish a project team with representatives from the Districts, Comptroller, and OMB to define and develop monthly management reports for monitoring the business operations of the DOT. | OMB | 9/30/89 | 7/1/90 | <ul style="list-style-type: none"> • Team established. • Five reports identified (see Action 4.3 status). | <ul style="list-style-type: none"> • Assigned to System Integration Management Reporting Team. |
| 3.9 Review and document the policies, procedures, and internal controls in certifying the funds for commitments as it relates to work orders and supplemental agreements on each contract document. | Comptroller | 9/30/89 | 2/6/90(c) | <ul style="list-style-type: none"> • Revised encumbrance input procedures address improved controls in the approval of work orders and supplemental agreements. | <ul style="list-style-type: none"> • Included in Finance and Administration Training Manual. |
| 3.10 Establish a group responsible for developing and conducting training workshops on the policies, procedures, and internal controls of managing the business operations of the DOT and establish an internal group to provide ongoing training. | OMB | 12/29/89 | Ongoing | <ul style="list-style-type: none"> • Developed overview training package - 4/19/90 • Plan presentation of overview training to Executive Committee as test audience on 5/16/90. • Plan to develop detail (Phase II) training plan by 5/31/90. | <ul style="list-style-type: none"> • Assigned to Communications and Training Team. |

D. SYSTEMS INTEGRATION

The KPMG study observed that the DOT was constrained by the lack of an effective and timely reporting mechanism that adequately integrates the systems being utilized for planning, budgeting and monitoring, and which further supports the decision making process at the critical district and central DOT executive levels.

Developing a decision support system which effectively integrates and facilitates access to the current financial data base for top management use would aid Department management in making sound financial and work program decisions.

The Systems Integration Team at FDOT is, in our view, attempting to meet two major objectives:

1. Integrate data from the various financial management systems so that the entire financial picture can be viewed from the perspective of the users of any system (i.e., the same costs may be viewed or reported by SAMAS Budget Category Code, Project or Job Number, or Work Program Plan Area); and
2. Provide a Decision Support System which encompasses data from Cash Forecasting, WPA, and JCR to facilitate management decision-making.

Our assessment of the Systems Integration effort is that:

1. The Department has made substantial progress in meeting the first objective. The primary focus of the Decision Support Team to date has been to develop a "superfile" (data extracted from various systems and electronically stored in a table organized for easy access by users in preparing management reports) or Decision Support data base which could facilitate reconciliation of data among the various

II. ACTION PLAN STATUS

systems at FDOT. The team has developed several prototype decision support reports and identified others which will provide meaningful financial management information. The reports developed to date have focused on comparing data from the various systems. The initial reconciliation of data among these systems is nearly complete. Some difficulties remain, however, with regard to attributing in-house and indirect costs to appropriate program plan categories.

2. Relative to the second objective, cash forecasting data has not been *integrated into* the Decision Support system as defined by the Action Plan. Instead, data *from* Decision Support is to be used by the new 36-month cash forecasting model. In view of the limited budget and resource availability, if this approach provides adequate information for successfully managing the Department's finances, including cash balancing, it may be acceptable. We are not in a position to make that assessment at this time.

3. It appears that Decision Support information focuses primarily on dollar commitments and expenditures as measures of "performance." This type of information answers the question, "Did I spend money where I was supposed to spend it?" and "Did I spend no more than I had to spend?" Clearly these financial oriented questions were quite difficult to answer until data from SAMAS, JCR and WPA was reconciled and thus appear to have been the principal focus of the team. Productivity and accomplishment information is also necessary in order to answer questions such as "Did I do as much work as I was supposed to for the money I spent?" and "Did I do the work that I had planned to do?" Resource information is also needed to answer questions such as "Do I have the resources needed to do the work?" and "Do I have too many resources in some areas?" Some of this non-financial data is available in other

II. ACTION PLAN STATUS

systems which were not identified in the Action Plan and could be eventually integrated into the Decision Support System. However, we did not identify a plan to do so.

**FLORIDA DEPARTMENT OF TRANSPORTATION
ACTION PLAN STATUS**

| KPMG RECOMMENDED ACTION | RESPON- SIBILITY | ACTION PLAN DATE | TARGET DATE | STATUS/ACCOMPLISHMENT | COMMENTS |
|--|---------------------|---------------------|----------------|---|---|
| ISSUE AREA: 4. System Integration | | | | | |
| 4.1 Assign a multidisciplinary project team to document the requirements for a decision support system for the DOT. | Secretary | 9/30/89 | 10/23/89(c) | • Team assigned. | • System Integration Team established with two groups: - Management Reporting Group - Performance Measurement Group. |
| 4.2 Use a structured methodology that allows the development of initial system requirements and prototyping for a new decision support system. | Project Team | 2/1/90 | 2/2/90(c) | • Draft design document developed and circulated to management for comments. | |
| 4.3 Integrate the data collected from cash forecasting, WPA, and JCR into management information derived from the decision support system. | Project Team | 5/1/90 | 7/1/90 | • Five reports identified and defined: - Program Plan Progress Report developed as prototype; - Budget Status Report is developed and in use; - Production Accomplishment Report is developed as a part of SAMAS and in use. - Automated Production Agenda Package currently being developed. - Work Program/Budget/SAMAS Report currently developed as prototype. | • Cash forecasting has not been integrated in Decision Support System (DSS) - new Cash Forecasting system is awaiting DSS actual cost data for its use. • Decision Support System being used to facilitate reconciliation process. • Some expenditures in the in-house category and some indirect costs have not been classified as to program plan category. • The automation of the Production Agenda Package appears to be a sizeable effort. The target date of 7/1/90 will likely not be met for this report. |
| 4.4 Train the DOT in the importance of the decision support system and the characteristics of the new system. | Project Team | 6/30/90 | 6/30/90 | • Project Team to attend Course Design / Instructor Training 4/30 - 5/3. • Considering whether to develop one course or two - one for manager and one for technical staff. | |
| 4.5 Implement the new decision support system. | Project Team | 6/30/90 | 7/1/90 | | |

E. INFORMATION TECHNOLOGY

The KPMG study found that with the decentralization of the DOT, a transformation of the data processing capabilities and use of technology must move away from the traditional approach of a centralized and consolidated data processing environment to one which is capable of directly supporting district operations.

To set the stage for this transformation and to better position FDOT in the use of information technology, the Department should create the position of Chief Information Officer, an Information Technology Steering Committee, and a Business Systems Support Group and a long range information technology plan.

The Department's status relative to the Action Plan steps identified for Information Technology is as follows:

1. The position of Chief Information Officer (CIO) has been established and filled.
2. An Information Resource Management Steering Committee has been established to define policies, priorities, and direction for IS&S. This committee meets on a monthly basis.
3. A draft reorganization plan for IS&S to provide a Business Systems Support Group has been developed. Its implementation awaits the completion of the Business Information Systems Plan.

II. ACTION PLAN STATUS

4. A team has been assigned and work has begun on the development of the Business Information Systems Plan (BISP). The target date for completion of the BISP is September 12, 1990. The BISP effort appears to be on schedule to meet that date — assuming that tasks are being accomplished in a satisfactory manner.

Our assessment of this area of the Action Plan is that the Department experienced some delay while filling the CIO position but that efforts are progressing. We suggest that the Department consider augmenting the BISP team with more technical staff during those latter stages of the BISP effort as appropriate in order to address more technical issues (i.e., technology requirements, resource estimates for systems development, etc.).

**FLORIDA DEPARTMENT OF TRANSPORTATION
ACTION PLAN STATUS**

| KPMG RECOMMENDED ACTION | RESPON- SIBILITY | ACTION PLAN DATE | TARGET DATE | STATUS/ACCOMPLISHMENT | COMMENTS |
|--|---------------------|---------------------|----------------|--|---|
| ISSUE AREA: 5. Information Technology | | | | | |
| 5.1 Establish the position of Chief Information Officer (CIO) as head of IS&S. | Secretary | 5/31/89 | 10/24/89(c) | <ul style="list-style-type: none"> • Position established. • Stan Bittner began as CIO on 3/5/90. | |
| 5.2 Establish an Information Technology Steering Committee (ITSC). | Secretary, CIO | 6/30/89 | 9/18/89(c) | <ul style="list-style-type: none"> • Committee established. • Meets first Wednesday of each month. | <ul style="list-style-type: none"> • Information Resource Management Steering Committee. |
| 5.3 Reorganize the IS&S to provide for a business systems support group. | CIO | 9/30/89 | 9/30/90 | <ul style="list-style-type: none"> • Draft reorganization plan developed. • Business system support group finalization pending completion of BISP. | <ul style="list-style-type: none"> • Five of nine newly authorized positions have been hired. They are currently being used to augment existing IS&S functions (i.e., BISP support, quality assurance, development). |
| 5.4 Develop the strategic system plan and organization plan. | CIO | 12/31/89 | 9/12/90 | <ul style="list-style-type: none"> • BISP effort initiated 3/12/90. | <ul style="list-style-type: none"> • BISP project appears on schedule at this point. |

F. COMMUNICATIONS AND TRAINING

While steps 1 thru 5 of the Action Plan laid out a number of steps which would improve the Department's fiscal and program management, the success of the effort is dependant upon effectively communicating changes internally within the DOT as well as externally to the Governor's office, the Legislature and others, as well as developing an effective program to provide technical training to the central office and district staff.

In this step, the Action Plan provided for the formulation and implementation of such communications and training programs.

The Communications and Training items outlined in the Action Plan are of an "ongoing" nature. In the communications area, a monthly "Action Fact" bulletin has been instituted to keep key groups informed about Action Plan efforts. In the training area, several Action Teams have participated in a class which teaches how to develop specific classes themselves. These teams are now developing classes to train departmental management and user staff on the use of systems and procedures.

A potential training need we have observed is in the area of educating users, particularly District management, as to what tools (i.e., reports, inquiries, procedures) are available to help them manage the financial functions. The classes currently being planned are certainly appropriate; however, they typically address the use of a specific system or function. We believe that a high-level overview type of training that addresses the basics of DOT financial management from the perspective of the districts would be beneficial.

**FLORIDA DEPARTMENT OF TRANSPORTATION
ACTION PLAN STATUS**

| KPMG RECOMMENDED ACTION | RESPON- SIBILITY | ACTION PLAN DATE | TARGET DATE | STATUS/ACCOMPLISHMENT | COMMENTS |
|--|---|-------------------------------|-------------------------------|---|----------|
| <p>ISSUE AREA: 6. Communications and Training</p> <p>6.1 Design and carry out program for communicating new and interim DOT financial management and program management policies, procedures, and systems for the DOT staff and external groups (i.e., Legislature, Governor's Office, cities and counties, public interest groups).</p> <p>6.2 Design and conduct internal technical training for managers and staff performing financial management and program management functions.</p> | <p>Secretary, Comptroller, and OMB with support from the Communications Officer</p> <p>OMB, Comptroller</p> | <p>Ongoing</p> <p>Ongoing</p> | <p>Ongoing</p> <p>Ongoing</p> | <p>• Monthly "Action Fact" bulletin issued electronically since 6/23/89 to keep key groups informed about Action Plan efforts.</p> <p>• Several Action Teams have participated in class which teaches how to develop specific classes. These teams are preparing to present classes to FDOT management and users.</p> | |

II. ACTION PLAN STATUS

ACTION PLAN RECOMMENDATIONS

1. If, after monitoring for a period of time, the results of the current cash forecasting efforts are acceptable, do not develop and implement the new cash forecasting system as described by the Action Plan — at least not as a priority item.
2. Continue the current reconciliation efforts with a focus on automating as many reconciliation tasks as feasible through the use of the Decision Support "superfile."
3. Incorporate non-financial measures of accomplishment and productivity into the Decision Support System being developed.
4. Provide training oriented to overall understanding of the Department's fiscal management process and related, available systems/tools. This should be in addition to training conducted on specific systems.

III. INFORMATION SYSTEMS ENVIRONMENT

In addition to reviewing the Department's implementation of the Action Plan, this report is also intended to evaluate FDOT's use of Information Technology as compared to other DOTs. Some background on this context would be useful.

State transportation agencies have been major users of Information Technology (IT) since the early 1960s. During the 1960s, most of the applications that were developed supported specific functions such as accounting, payroll, accident records, hydraulics, structural analysis, geometrics and roadway design. Each system tended to operate independent of other systems and, in some cases, even on separate computers. As computer technology rapidly advanced during the late 1960s and 1970s, Departments kept pace by expanding the breadth of functions — particularly management oriented functions — supported by information technology and by developing more comprehensive, integrated information systems. On-line processing, data base concepts and management, and end-user computing (such as CADD - Computer Aided Design and Drafting) became increasingly employed by DOTs as we moved through the 1970s and into the early 1980s. During much of this period, particularly toward the latter part, Florida DOT was generally recognized by American Association of State Highway and Transportation Officials (AASHTO) members (State and Provincial Departments of Transportation) as one of the leaders in the use of information technology.

III. INFORMATION SYSTEMS ENVIRONMENT

In fact, throughout the 60s, 70s, and 80s, DOTs in various states were periodically recognized as leaders in specific areas or applications of information technology. The work of these departments was shared with others, through AASHTO and HEEP (Highway Engineering Exchange Program), to the benefit and advancement of all. Texas and Florida are two states which maintained a leadership position continuously through much of this period, ending in the early 1980s. Since that time, other states have emerged as leaders: Pennsylvania, after having made major investments and advances in information technology in all areas; Virginia and Wisconsin on smaller scales but across the board; and California (only in engineering computing support: CADD, engineering workstations, etc.) along with Texas. Florida DOT is still considered a leader by many in the industry, partly as a result of its early and continuing work in CADD; however, with respect to overall Information Technology use today that position has realistically deteriorated.

At FDOT, already experiencing an era of budget austerity for information technology development/expansion through much of the 1980s, and particularly the last half of the decade, the installation of the statewide State Agency Management Accounting System (SAMAS) had a major impact. The State mandated installation took place without allowing sufficient planning for conversion of other systems that were previously integrated with the replaced accounting system. FDOT also lacked a management strategy and plan for information technology. These were all contributors to a series of IT setbacks experienced by the Department.

Our evaluation of FDOT's use of information technology, and its position relative to other State DOTs considered to be leaders or on the leading edge, is based upon general indicators. It is not intended to be an in-depth examination of the many facets of information technology at FDOT, other State DOTs, or the industry in general. Our objective is to provide an indication of how well FDOT is doing now in employing information technology and to identify key steps the Department should take to re-establish a leadership position among State DOTs.

III. INFORMATION SYSTEMS ENVIRONMENT

One area of information technology at FDOT that we intentionally omitted from review is that of data center operations. Our reasoning is that these operations mainly support the IT environment implemented by an organization, not lead it. Many State DOTs do not operate their own data centers; rather they use central state data centers.

To illustrate the general condition of information technology at FDOT and put it into perspective, we prepared two models. The first is a diagnostic model that we developed in order to assess FDOT's status in information technology. The second is a comparative model (Appendix A) that relates conditions in a selection of other State DOTs to those of FDOT. The other State DOTs were chosen based upon their generally perceived leadership position, their comparable computer hardware/software architecture, and/or level of recent IT activity.

Following the diagnostic model, we present our conclusions based upon observations made in the diagnostic model and from data included in the comparative model in Appendix A.

**FLORIDA DEPARTMENT OF TRANSPORTATION
LEADERSHIP IN INFORMATION TECHNOLOGY
Diagnostic Model**

| CATEGORY/COMPONENT | CRITERIA FOR LEADERSHIP | WHAT WE FOUND AT FDOT |
|---|--|--|
| A. APPLICATIONS/SYSTEMS | | |
| Age of Major Business Application Systems | Systems no more than eight years old, assuming maintenance and enhancements have been adequate. | Major business management application systems are an average of 12 years old. (See Exhibit III-1) |
| Business Functions Supported by Systems | No major business functions at the DOT lacking needed management/operations support oriented application systems. Executive Information Systems at least partially developed and operational. (See Appendix A) | All major business functions at FDOT are supported. See Exhibit III-2 for identification of key business management application systems. Age of current systems plus required use of several statewide systems impair flexibility. No formal Executive Information System is operational at this time; however, Action Plan initiatives could be viewed as a beginning. |
| Use of Office Systems | Generally available to all user areas needing these capabilities through networked terminals/workstations (shared processors or local area networks.) | The capabilities are available at FDOT although the number of terminals/workstations are insufficient in district offices and the IBM 8100 processors used by FDOT are no longer supported by the vendor. |
| Integration of Key Business Application Systems | Strategy and direction adopted for a Roadway Management System concept, or more broadly an enterprise data model with significant development progress in key applications. | FDOT develops, and has developed, most of its key business management systems using data bases and data base management software (IMS). (See Exhibit III-3) Integration of common data has been a realized objective. Considering the time span over which these applications have been developed it is not apparent that a roadway management concept, or model, was utilized to direct the developments. Integration of engineering design CADD files with construction records/files has not yet occurred but is being pursued. |

**FLORIDA DEPARTMENT OF TRANSPORTATION
LEADERSHIP IN INFORMATION TECHNOLOGY
Diagnostic Model**

| CATEGORY/COMPONENT | CRITERIA FOR LEADERSHIP | WHAT WE FOUND AT FDOT |
|--|--|--|
| <p>B. HARDWARE/SOFTWARE/COMMUNICATIONS</p> <p>Availability of Workstations (terminals, PCs, CADD, etc.)</p> <p>Access to Needed Systems and Data</p> <p>Use of Data Base Technology</p> | <p>Workstations are readily accessible to all staff needing them. Average number of staff per available workstations should be about 3:1. Excluding highway maintenance staff, it should be between 1.5-2:1. (See Appendix A)</p> <p>Workstations should have access to all systems and data relevant to the business function that the workstations are supporting. This generally requires a combination of local and wide area networking for accessing system/data resident on hardware in different locations (headquarters, districts, state offices, etc.)</p> <p>Most business management application systems utilize a formal DBMS, (nonrelational) with relational DBMS technology being used for new development/redevelopment. Several major systems would be operational under the relational DBMS or a combination of relational-nonrelational DBMSs. Movement toward relational technology for key systems may be cautious due to performance considerations.</p> | <p>On a total staff basis, FDOT has slightly over a 3:1 staff to workstation ratio. This includes highway maintenance staff. District and remote offices have higher ratios with some districts, significantly higher, suggesting that the headquarters office is well positioned. Decentralization will increase needs in the districts. (See Appendix A)</p> <p>FDOT's workstations are generally included in a communication network that meets the criteria. Although decentralized processing (at the district level) is not supported by most business management applications, the need to provide this level of service is questionable for an organization the size of FDOT.</p> <p>All key business management application systems under the control of FDOT utilize a nonrelational DBMS (IMS). Data is extracted from these data bases for use in a relational DBMS (DB2) for reporting and other purposes. No key systems are developed or being developed using DB2. Recently, small systems have been developed with FOCUS and DB2. (See Exhibit III-3)</p> |

**FLORIDA DEPARTMENT OF TRANSPORTATION
LEADERSHIP IN INFORMATION TECHNOLOGY
Diagnostic Model**

| CATEGORY/COMPONENT | CRITERIA FOR LEADERSHIP | WHAT WE FOUND AT FDOT |
|--|--|---|
| <p>B. HARDWARE/SOFTWARE/COMMUNICATIONS (Con't)</p> <p>Availability of User-Oriented Information Processing Tools</p> <p>Pursuit of Newer Technologies</p> | <p>A variety of tools are available that are relatively easy to use and users are effectively supported in their use by an information center/user support services group. (See Appendix A)</p> <p>Studies or pilot projects in Geographic Information Systems (GIS), in Image processing systems and on advances in automation of roadway/structures design functions, including CADD, are underway. (See Appendix A)</p> | <p>FDOT uses FOCUS, SAS, GDDM, and GIS (General Information System) as its principle tools. ORACLE is being utilized by the Transportation Statistics Office. INTELLECT is also available. These tools allow users to readily access and process data from existing data bases and to create their own data bases. FDOT maintains an Information Center to support users. (See Appendix A)</p> <p>FDOT continues to pursue advances in engineering support, but has been hampered by budgetary constraints. No significant efforts on the remaining areas are in progress, except for GIS, where FDOT is attempting to establish a direction. Previous to March 1989, FDOT operated a GIS committee to research this area. (See Appendix A)</p> |

**FLORIDA DEPARTMENT OF TRANSPORTATION
LEADERSHIP IN INFORMATION TECHNOLOGY
Diagnostic Model**

| CATEGORY/COMPONENT | CRITERIA FOR LEADERSHIP | WHAT WE FOUND AT FDOT |
|---|--|---|
| C. RESOURCES/MANAGEMENT | | |
| Role of Information Technology in DOT Management | The Chief of Information Technology would report directly to an Executive Officer (one of four or five in a DOT.) They would not report to an Administrative Services Unit unless that unit was broadly scoped and included all financial functions. | FDOT's recent reorganization and adoption of a Chief Information Officer (responsible for the Information Resources Division) reporting to an Assistant Secretary fully meets the criteria. |
| Organization and Staffing of IT Unit (Excluding Data Center Operations) | A high level information technology policy committee is in place. The information technology organization is adequately organized and staffed to support users in all key locations, to provide adequate turnaround on maintenance requests and to be involved in major system development/redevelopments. | An Information Technology Steering Committee was formed in September 1989 and meets monthly on policy and priority matters. FDOT's IR staff appears well trained but have not been able to keep up with user service requests for maintenance/enhancement or to handle significant new development over the last five to six years. Local support in the district offices has been particularly good; however, the full impact of decentralization with respect to IT could change this. In the Engineering Computing areas, FDOT has been able to provide a higher level of service than in the business management areas. |
| Information Systems Planning | A current Strategic Information System Plan is in place as well as the procedures and organizations for monitoring/updating the plan. | FDOT had not developed an information system plan in over twelve years prior to beginning the Business Information Systems Plan, in March 1990 as recommended in the Action Plan. The BISP Team and Steering Committee are in place and work on the BISP is scheduled for completion in September 1990. |

III. INFORMATION SYSTEMS ENVIRONMENT

CONCLUSIONS

We believe that FDOT has lost ground in information technology relative to other leading State DOTs, at least during the last half of the 1980s, and is not well positioned at present to regain it. FDOT is still more advanced in IT than many departments, particularly ones with annual budgets under one billion dollars; however, many of these departments are actively expanding IT capabilities in the directions established by the leaders.

Nevertheless, our objective of this study was to assess FDOT's IT capabilities from a leading edge or leadership perspective. We have thus focused our assessment, not on those issues where the department is more advanced or progressive in IT than other State DOTs, but on those areas where timely actions could position FDOT back in a leadership situation. Our conclusions are:

General

- a. FDOT's expenditures for IT have been substantially below the 1.0 — 1.2% of total DOT budget that we believe is a reasonable amount for maintaining a DOT's "competitive position" in use of IT. Additional amounts would be required for FDOT to regain a leading edge position. This additional amount could run up to 0.5% of the total DOT budget for the next five years.

Application Systems

- b. Too many of FDOT management and support information systems are in need of replacement or redesign due to some combination of age, inflexibility, non-responsiveness and/or disuse. Some systems, such as Maintenance Management, have largely been abandoned due to these problems, while others have seen more limited use than in years past.

III. INFORMATION SYSTEMS ENVIRONMENT

The average age of FDOT's key business management systems is twelve years. This is about fifty percent older than leading DOTs.

- c. Business management (and support) application systems that appear in immediate need of replacement include:

Contract Administration System (CAS)
Contract Estimating System (CES)
Contract Reporting System (CRS)
Job Cost Reporting System (JCR)
Maintenance Management System (MMS)
Multi-project Scheduling System (MPS)
Personnel/Payroll System (PPS) - Reporting
Function Only
Turnpike Toll System (TOL)
Accounts Receivable Billing (ARB)

- d. In Engineering Systems, including CADD, FDOT will maintain a preeminent position as long as it can expand and continually upgrade related hardware and software, particularly in the districts.
- e. FDOT is prevented from controlling some of its IT environment to the extent that it must rely on the use of, and data from, statewide systems that are controlled by other state agencies. These business related systems include SAMAS, COPES (payroll), and LAS/PBS (budgeting). There is some additional expense associated with this loss of control.

III. INFORMATION SYSTEMS ENVIRONMENT

f. The process by which DOT-related data is entered into SAMAS and then passed through to other DOT systems, including WPA and JCR, is cumbersome since SAMAS does not have the capability of providing all of the needed editing and validation of the data. As a result, many errors are caught only after the transactions have passed through SAMAS, and often correction of those errors requires that the original transactions be reversed, and corrected transactions passed through SAMAS again. This process is relatively expensive, it contributes to the perception of data integrity problems between interfacing systems, and it delays (somewhat) the availability of needed management information.

**Hardware/
Software/
Communications**

g. FDOT's computer hardware architecture has not lagged except for the IBM 8100 minicomputers in the districts and headquarters that are used for office automation and communications. These minicomputers never really achieved the objectives set for them by many organizations that implemented them as distributed processors. Support for these systems from IBM has been terminated as of February 1990.

h. Existing minicomputer hardware, in the district offices, will not support expanded decentralized processing of business application systems beyond that currently provided for CADD and

III. INFORMATION SYSTEMS ENVIRONMENT

engineering systems. This would limit such decentralization if that in fact is what FDOT ultimately intends.

Resources/ Management

- i. Information Resources staff available for systems development and maintenance (35 programmers/analysts for non-engineering applications and 13 engineers/programmers for engineering applications) are not adequate to handle existing workloads and to undertake a significant program of enhancement, redevelopment, and new development. Addition of the nine new positions approved by the 1990 Legislature for the Business System Support Group will help.

Due to the impact of the implementation of SAMAS on FDOT's systems in 1985, IR development staff have been impaired in responding to service requests for system modifications and improvements, particularly where redevelopment would be the proper approach for the many aging systems.

- j. Should the Department pursue a decentralized processing strategy for its information systems, the IT support in each district office would have to be increased substantially over the current level, which otherwise appears quite adequate.
- k. The Department is committing significant resources and time to the development of a Business Information System Plan. The team is large (nine staff) and provides a good cross-

III. INFORMATION SYSTEMS ENVIRONMENT

section of FDOT's experience. It is heavily weighted with non-IT staff. For the first phase of the BISP where much of the emphasis is on defining the business model of FDOT, the team is ideal. For subsequent phases, a team augmented with stronger skills in technology and information resources management may prove more beneficial to the Department.

III. INFORMATION SYSTEMS ENVIRONMENT

INFORMATION TECHNOLOGY RECOMMENDATIONS

1. Implement the following IT-related conclusions and recommendations into the Business Information Systems Plan project now in progress at FDOT. Recommendations that are adopted by the Department should influence target strategies for applications, technology and resources, and in setting priorities and timeframes for IT projects.
2. Augment the BISP team with more technical staff during the latter stages of the project as appropriate in order to address issues which typically become more technical in nature.
3. For the next five years, FDOT should allocate \$3 to \$5 million additional funds for staff and consulting services to modernize its aging inventory of business application systems that support management decision making.
4. FDOT should pursue developing a "front end" to SAMAS as a top priority project in order to improve the integrity of its financial data, reduce current error correction efforts needed to keep SAMAS and FDOT's systems synchronized, as well as to improve the timeliness of financial data in FDOT's systems.
5. FDOT should plan for increasing the amount of networked computer equipment particularly in the district offices. This equipment would include engineering workstations and microcomputer workstations with associated software in the near term, and replacement of the IBM 8100 architecture to a new architecture in the medium term. We expect that \$3 to \$4 million dollars per year for the next five years should be allocated for this purpose.
6. In spite of FDOT's move toward full decentralization, we do not recommend that FDOT pursue a highly distributed data processing environment as discussed in the Action Plan (except for Engineering and Office Systems). Evidence is not persuasive that it would be cost

III. INFORMATION SYSTEMS ENVIRONMENT

beneficial. Other DOTs have chosen not to adopt a truly decentralized processing direction for most of their business management application systems, as well.

7. FDOT should develop easy-to-use guides (on-line help and information catalog, fold-out cards, etc.) for its key business applications to assist casual and potential users in understanding and using the systems.

FLORIDA DEPARTMENT OF TRANSPORTATION
Business Application Systems Inventory

| System Abbreviation | System Name | Age (years) | Number of Programs | Language | Data Bases | Interfaces | Last Modified | ISS Staff | Average Monthly Cost |
|---------------------|-------------------------------------|-------------|--------------------|-------------------------------------|--------------------------|----------------------|---------------|-----------|----------------------|
| AAR | Accident Analysis and Reporting | 4 | 20 | COBOL | IMS Tape Files | RCI | None | 0 | 8,643.00 |
| AMI | Aviation Management Inventory | 1 | 1 | MARK IV | DB2 | None | 1990 | 1 | 15,158.00 |
| API | Archive Project Inventory | 10 | 2 | COBOL | Tape File | None | None | 0 | 1.00 |
| ARB | Accounts Receivable Billing | 20 | 24 | COBOL MARK IV | IMS Tape Files | DAS SAMAS | 1984 | 2 | 1,355.00 |
| ASI | Application Systems Inventory | 15-20 | 260 | COBOL MARK IV MARK V FOCUS | IMS DB2 Tape Files | Most DOT Systems | None | 4 | 395.00 |
| BAM | Bid Analysis Management | N/A | N/A | N/A | N/A | N/A | N/A | 0 | 3,753.00 |
| BCT | Board/Commission Tracking | 3 | 28 | FOCUS | FOCUS | None | 1989 | 4 | 30.00 |
| CAS | Contract Administration System | 18 | 22 | COBOL | IMS Tape Files | CES CRS, BAM | N/A | 2 | 4,838.00 |
| CCQ | Consultant/Contractor Qualification | 7 | 20-25 | COBOL MARK IV | IMS | JOP | 1990 | 2 | 6,990.00 |
| CEB | Contract Electronic Bidding | 2 | 3 | dBase III | Tape Files | CAS | 1990 | 1 | 0.00 |
| CES | Contract Estimating System | 18 | 30 | COBOL | IMS Tape Files | CAS, CQR WPA | 1990 | 2 | 7,242.00 |
| CFS | Cash Forecasting System | 25-30 | N/A | MARK IV GIS | IMS Tape Files | DAS | N/A | 1 | 2,619.00 |
| CLT | Contract Logging and Tracking | 2 | 26 | FOCUS | FOCUS | None | 1990 | 3 | 237.00 |
| CQR | Construction Quality Reporting | 3 | 25 | COBOL | IMS DB2 | CES, CRS RCI, WPA | None | 2 | 2,442.00 |

FLORIDA DEPARTMENT OF TRANSPORTATION
Business Application Systems Inventory

| System Abbreviation | System Name | Age (years) | Number of Programs | Language | Data Bases | Interfaces | Last Modified | ISS Staff | Average Monthly Cost |
|---------------------|--------------------------------|-------------|--------------------|-------------------------------------|-------------------|--------------------------|---------------|-----------|----------------------|
| CRS | Contract Reporting System | 18 | 38 | COBOL | IMS Tape Files | CAS, CQR WPA | No Date | 2 | 7,718.00 |
| CSI | Computer Software Inventory | 15-20 | 9 | COBOL | IMS | None | None | 4 | N/A |
| CTS | Correspondence Tracking System | 3 | 8 | MARK IV MARK V | IMS | None | None | 1 | 213.00 |
| DAS | Departmental Accounting System | 6 | 20 | COBOL MARK IV | IMS Tape Files | ARB SAMAS | No Date | 2 | 10,887.00 |
| DCP | District Contract Prototype | 2 | 27-32 | MARK IV MARK V | IMS | WPA | None | 2 | 2,100.00 |
| EPR | Environmental Permit Subsystem | 10 | 2 | COBOL | IMS | None | 1990 | 2 | 561.00 |
| FLO | Formal Legal Opinions | 2 | 9 | FOCUS | DB2 | None | None | 3 | 55.00 |
| FPA | Federal Project Accounting | New | 48 | COBOL MARK IV MARK V FOCUS | IMS Tape Files | DAS, JCR WPA SAMAS | N/A | 3 | 14,423.00 |
| GCD | Petroleum Credit Cards | 25-30 | 6 | COBOL | Tape Files | PET | 1985 | 1 | 110.00 |
| IAR | Industrial Accident Reporting | 20 | 200 | C | N/A | None | 1989 | 1 | 50.00 |
| JCR | Job Cost Reporting | 13-15 | 21 | COBOL MARK IV | IMS | FPA, WPA SAMAS | None | 2 | 859.00 |
| JOP | Job Order Processing | 4 | 20 | MARK IV MARK V | IMS | CCQ | None | 2 | 225.00 |
| KOM | Kommand Billing Information | 6 | 33 | MARK IV COBOL | Tape Files | SAMAS | 1988 | 1 | 3,450.00 |
| LCT | Legal Case Tracking | 2 | 23 | FOCUS | FOCUS | None | 1988 | 3 | 75.00 |

FLORIDA DEPARTMENT OF TRANSPORTATION
Business Application Systems Inventory

| System Abbreviation | System Name | Age (years) | Number of Programs | Language | Data Bases | Interfaces | Last Modified | ISS Staff | Average Monthly Cost |
|---------------------|----------------------------------|-------------|--------------------|----------------------------|---------------------------------|-------------------------------|---------------|-----------|----------------------|
| LPO | Local Purchase Orders | 2 | 29 | FOCUS | FOCUS | None | 1989 | 3 | 65.00 |
| LPR | Legislative Programs Reporting | 2 | 30 | FOCUS | DB2 | None | None | 3 | 464.00 |
| MEQ | Mobile Equipment | N/A | 6 | COBOL MARK IV | Tape File | PET SAMAS | 1983 | 1 | 2,668.00 |
| MMS | Maintenance Management System | 17 | N/A | COBOL | IMS | BMI, MEQ MSI, RCI SAMAS | None | 2 | 1,877.00 |
| MPR | Minority Programs Reporting | 6 | 20-27 | COBOL | FOCUS DB2, IMS Tape Files | WPA | None | 0 | 3,613.00 |
| MPR2 | MPR - Consultant Tracking | 1 | 40 | FOCUS | DB2 | None | None | 4 | Incl MPR |
| MPS | Multi-Project Scheduling | 19 | 11 | COBOL | IMS | WPA | None | 2 | 4,931.00 |
| MSI | Materials and Supplies Inventory | 3 | 50 | MARK IV MARK V | IMS Tape Files | Purch. | None | 2 | 21,643.00 |
| ODA | Outdoor Advertising | 3 | 18 | COBOL MARK IV MARK V | IMS | None | 1989 | 1 | 1,677.00 |
| PET | Petroleum | 25-30 | 19 | COBOL MARK IV | IMS Tape Files | GCD SAMAS | No Date | 2 | 1,197.00 |
| PPS | Personnel/Payroll | 16 | 90-100 | COBOL MARK IV MARK V | IMS, DB2 FOCUS Tape Files | COPE SAMAS | 1989 | 5 | 44,269.00 |
| | Purchasing | N/A | N/A | FOCUS | N/A | MSI | None | 1 | 1,954.00 |
| QAR | Quality Assurance Reporting | 1 | 27 | FOCUS | DB2 | None | None | 1 | 1,705.00 |
| QIR | Quality Improvement Reporting | 2 | 19 | FOCUS | DB2 | TTR | 1990 | 3 | 2,630.00 |

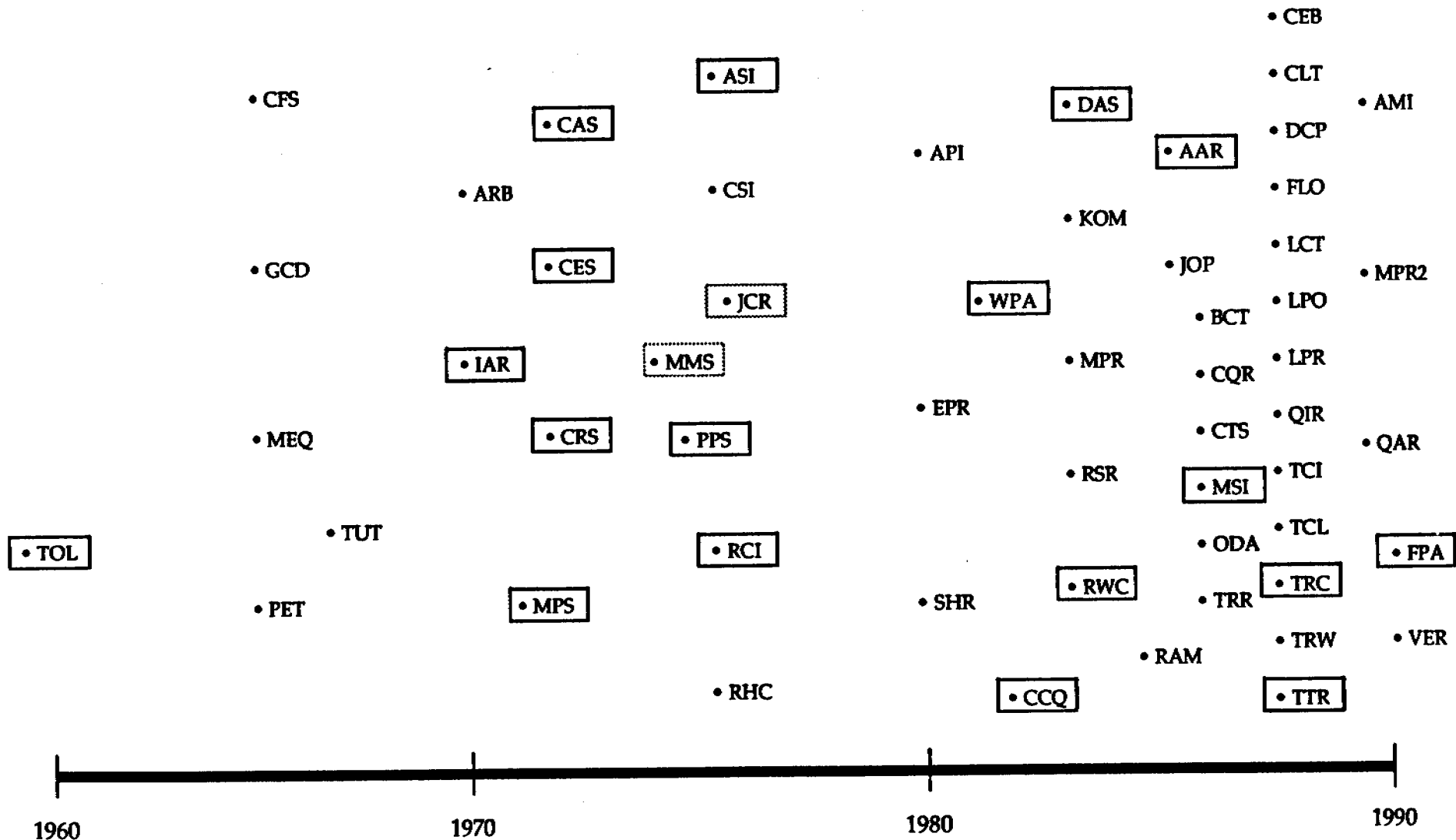
FLORIDA DEPARTMENT OF TRANSPORTATION
Business Application Systems Inventory

| System Abbreviation | System Name | Age (years) | Number of Programs | Language | Data Bases | Interfaces | Last Modified | ISS Staff | Average Monthly Cost |
|---------------------|-----------------------------------|-------------|--------------------|-----------------------------|-------------------|----------------------------------|---------------|-----------|----------------------|
| RAM | Recommendations & Actions Mgmt. | 5 | 15 | MARK IV MARK V | IMS | None | None | 1 | 98.00 |
| RCI | Roadway Characteristics Inventory | 15 | 50 | COBOL MARK IV MARK V | IMS Tape Files | AAR, MMS TCL, TRC TRW, WPA | 1988 | 2 | 6,736.00 |
| RHC | Rail Highway Crossing | 15 | 7 | COBOL | IMS | ASI | No Date | 1 | 1,892.00 |
| RSR | Reproduction Support Reporting | 6 | 2 | MARK IV | Tape Files | None | None | 1 | 1.00 |
| RWC | Right of Way Control | 6 | 62 | COBOL MARK IV MARK V | IMS Tape Files | WPA | 1990 | 3 | 14,499.00 |
| SHR | Skid Hazard Reporting | 10 - 15 | 1 | COBOL | Tape File | None | 1988 | 1 | 182.00 |
| TCI | Traffic Characteristics Inventory | 2 | 6 | COBOL | IMS | None | None | 1 | N/A |
| TCL | Traffic Classifications System | 2 | 15 | COBOL MARK IV MARK V | IMS Tape Files | RCI | No Date | 2 | 2,922.00 |
| TOL | Turnpike Toll System | 33 | 15-20 | COBOL Assembler | N/A | None | 1970 | 2 | 26,259.00 |
| TRC | Traffic Counts | 2 | 50 | COBOL MARK IV MARK V | IMS Tape Files | RCI | No Date | 2 | 12,637.00 |
| TRR | Travel Reimbursement Reporting | 3 | 35 | FOCUS | FOCUS DB2 | PPS, QIR SAMAS | None | 1 | 262.00 |
| TRW | Traffic Weights System | 2 | 6 | COBOL MARK IV FORTRAN | IMS DB2 | RCI | None | 1 | 278.00 |
| TTR | Training Tracking Reporting | 2 | 33 | FOCUS MARK IV | FOCUS DB2 | QIR TRR | 1990 | 2 | 8,120.00 |

**FLORIDA DEPARTMENT OF TRANSPORTATION
Business Application Systems Inventory**

| System Abbreviation | System Name | Age (years) | Number of Programs | Language | Data Bases | Interfaces | Last Modified | ISS Staff | Average Monthly Cost |
|---------------------|-----------------------------|-------------|--------------------|----------------------------|-------------------|----------------------------------|---------------|-----------|----------------------|
| TUT | Telephone and Utilities | 25-30 | 3 | COBOL | Tape File | SAMAS | No Date | 0 | 29.00 |
| VER | Value Engineering Reporting | New | 1 | FOCUS | DB2 | None | None | 2 | 189.00 |
| WPA | Work Program Administration | 8 | 42 | COBOL MARK IV MARK V | IMS Tape Files | CRS, FPA JCR, MPS RCI, RWC | 1989 | 4 | 56,450.00 |

Florida Department of Transportation Implementation Timeline Major Business Application Systems

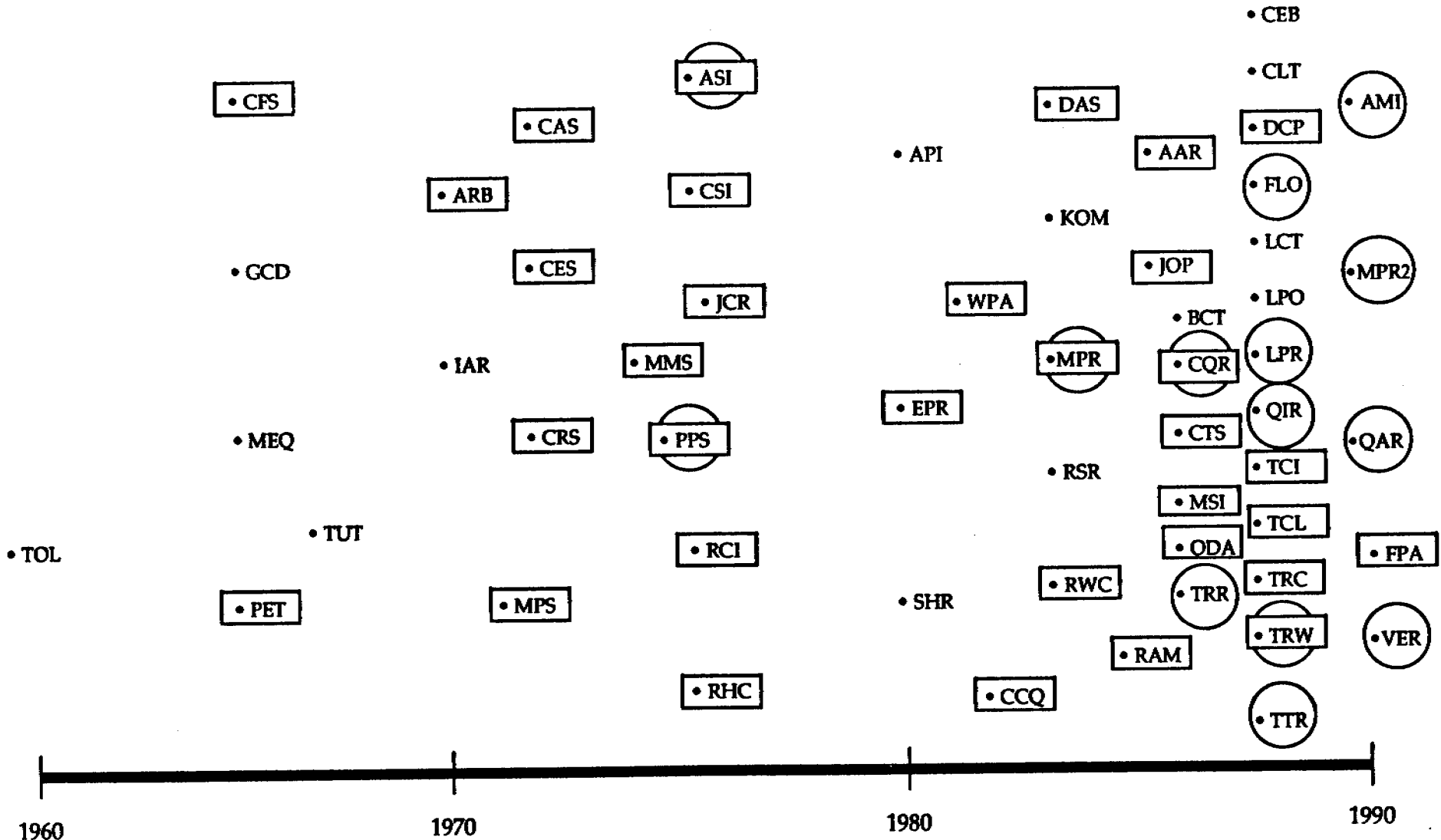


= Systems consisting of more than 40 programs or systems consisting of more than 5 programs and costs over \$4,000.00 per month.

= Systems that DOT's usually consider major, but did not meet the above criteria.

Florida Department of Transportation Implementation Timeline Data Base Usage

Exhibit III-3



1960

1970

1980

1990

◻ = IMS

◯ = DB2

◡ = IMS and DB2

IV. OTHER FINDINGS AND RECOMMENDATIONS

Lastly, we have several observations concerning FDOT management practices that are related to the Action Plan or financial/program management in general. For each observation in this last group, we first discuss our findings and immediately follow with our recommendation to FDOT.

1. Decentralization

In spite of an overall posture of decentralization, too many administrative procedures still are centralized — particularly in the financial area. Even a rudimentary function such as depositing funds received in the District office into a local bank, is not allowed (funds must be sent from the District to headquarters by mail or courier). The advent of charging access permit fees to property owners will result in some Districts handling in excess of a million dollars annually from this source alone (assuming current practices persist).

Clearly, with the varied staffing and organizational structures that can be found among the Districts, and the lack of formally organized and published procedure manuals, delegating many responsibilities quickly would not be prudent. Should FDOT eventually overcome these constraints, productivity, responsiveness, and in some cases increased revenues (by establishing depository functions in the districts) would likely result.

IV. OTHER FINDINGS AND RECOMMENDATIONS

RECOMMENDATION

FDOT should review the administrative services functions and activities under the Assistant Secretary, Finance and Administration, looking for viable opportunities for delegating these to districts and their administrative services units. This review should be done in conjunction with our recommended review of district office administrative service organization.

2. District Organization — Administrative Functions

From a review of the organization charts of each of the seven Districts it is clear that no standard or blueprint exists for directing how the administration services functions are to be organized. Computer (and CADD) services, financial, budget, purchasing/inventory, and personnel responsibilities are not organized in the same fashion, are not consistent in terms of the responsibilities, and accordingly are not staffed in a consistent manner. This lack of consistency will present a barrier to decentralizing some administrative functions (particularly financial) where it is necessary to ensure that staff follow policies and procedures established by Headquarters.

RECOMMENDATION

Conduct a review of current District organizations in conjunction with the review of administrative functions recommended above. Where administrative functions are to be decentralized, prepare staffing and organizational guidelines that must be followed by the District in order to effectively manage and perform their responsibilities.

IV. OTHER FINDINGS AND RECOMMENDATIONS

3. Non-Standard Federal Fund Participation Ratios

Many construction projects that FDOT undertakes utilize federal funds in ratios that differ from the standard State-Federal matching ratio associated with each Federal fund source. Where this occurs, it generally means that Federal funds will actually represent a smaller portion of the total project funding than the standard matching ratio for the specific Federal fund category. The Action Plan addresses this problem by recommending that FDOT review the matching ratios used in the Work Program Administration System and adjust them to reflect average planned project funding and thus improve the quality of data used by the Cash Forecasting System. These ratios are defined at the project type level which provides a gross estimate of effective Federal participation. What is lacking, however, is specific funding mix by project, phase, and fiscal year.

RECOMMENDATION

Review the structure of the data in the Work Program Administration System (WPA) and determine if it can or should be modified to reflect actual amounts and fund sources at the project, phase, and fiscal year levels. This may require a significant modification to WPA and/or the programming of projects/phases at a more detailed level; however, it will likely remain a difficult problem for FDOT and the new Federal Participation Committee until it can be handled automatically.

4. Construction Contract Supplemental Agreements

Construction Contract supplemental agreements previous to the Action Plan were a source of financial control problems at FDOT. Districts simply forwarded them to headquarters for approval with no responsibility to determine where the funds would come from or how the Department's work programs might be affected. Steps taken by

IV. OTHER FINDINGS AND RECOMMENDATIONS

FDOT to improve its financial controls placed responsibility for funding supplementals on the responsible District.

Presently, supplemental agreements on construction contracts are first processed in the Districts to assure that funds to cover additional costs are available within the District's allocations. Once District funds are identified and earmarked for the supplemental it is then sent to the DOT Comptroller who by law must commit the funds before the supplemental agreement is valid. This process must be observed regardless of the size of the supplemental agreement. Although Districts have devised methods for minimizing the time required to process supplementals through approval, it usually requires two to three days minimum, plus handling by numerous staff in the Districts and Headquarters.

We understand that a key reason for Comptroller (who must approve all commitments) involvement in this process is that, at present, construction contracts are encumbered/ committed in their exact amount, thereby requiring that additional funds be encumbered/committed regardless of the size of the supplemental.

RECOMMENDATION

The Department should explore the possibility of encumbering a contingency amount similar to what is done when obligating Federal funds for construction whenever a construction contract is approved. The contingency should be an amount of between five and ten percent. Moreover, supplementals that are within the contingency limit (individually and cumulatively on any given contract) could be approved by the responsible District office.

IV. OTHER FINDINGS AND RECOMMENDATIONS

5. Accounts Receivable (non-FHWA)

From discussions with Comptroller Office staff, we learned that accumulation of costs, billing, and tracking for accounts receivable take place in a number of separate systems. We further learned that billing and collection for damage to State property is handled by the Department's Legal Office. This distribution of responsibility to multiple offices could significantly reduce the effective management and collection of receivables. It seems that legal staff should certainly be involved in any litigation or disputes which arise from damage to State property; however, the accounts receivable functions of billing, collecting, and tracking should probably reside within the fiscal area.

RECOMMENDATION

FDOT should review the feasibility of managing accounts receivable which result from damage to State property within the Comptroller Office once the receivable is identified (i.e., the responsible party is determined and the amount due the Department agreed to).

FDOT should also review the feasibility of integrating the Department's billing, tracking, and collection activities for accounts receivable into a single system. This system could accept input from numerous cost collection systems in order to generate appropriate billings. A further benefit of this approach would be to standardize the format of all FDOT billings and follow-up correspondence, thereby presenting a better image to the public.

APPENDIX A

Information Technology Comparative Model

APPENDIX A

The Information Technology Comparative Model is a set of three matrices prepared to compare FDOT with other State DOTs. The first matrix is a comparison of FDOT with recognized DOT leaders, Pennsylvania, Texas, and Virginia. Unfortunately, Pennsylvania DOT did not respond by the report deadline. The second is a comparison of FDOT with DOTs that have comparable technical environments, Arizona, Illinois, and Wisconsin. Although Wisconsin is presented in the second matrix, it is also a recognized DOT leader. The final matrix is a comparison of FDOT with representative peer DOTs, Georgia, New Jersey, and New York.

FLORIDA DEPARTMENT OF TRANSPORTATION
Information Technology Comparative Model
Matrix 1: Comparison of FDOT with Recognized DOT Leaders

| | Recognized DOT Leaders | | | Florida |
|------------------------------|------------------------|---|--|--|
| | Pennsylvania | Texas | Virginia | |
| IT Budget % of DOT Budget | 1.8** | 1.4 | 0.7 | 0.7 |
| Formal Methodology | | SPECTRUM | In-house | IEF |
| Data Base Management Systems | | ADABAS | ADABAS | IMS DB2 |
| CASE Tools | | Excelerator | None | IEF |
| Reporting Tools | | SAS NATURAL MARK IV | Super Natural SAS DYL — 280 | GIS SAS FOCUS GDDM ESS INTELLECT Mark IV |
| District Hardware | | 19 VAX/Intergraph 200/252 4 VAX/Intergraph 350 12 MicroVax II 1 Wang 986 PCs 5,742 Terminals | 9 VAX 6220 Cluster 9 VAX 8350 Cluster 1,200 PCs 1,100 Terminals | 9 IBM 8100 12 IBM 3x74 3 IBM 3780 1 IBM 4331 6 Intergraph 250 6 Intergraph Micro VAX 800 PCs 1200 Terminals |
| Total Workstations per Staff | 0.45** | 0.48 | 0.24 | 0.32 |

** From prior Florida DOT study.

FLORIDA DEPARTMENT OF TRANSPORTATION
Information Technology Comparative Model
Matrix 1: Comparison of FDOT with Recognized DOT Leaders

| | Recognized DOT Leaders | | | Florida |
|------------------------------|------------------------|---------------------|---------------------|------------------|
| | Pennsylvania | Texas | Virginia | |
| Information Systems | | | | |
| Executive Information System | | Being Developed | No System | No System |
| Financial/Accounting | | Centralized | Decentralized | Centralized |
| Purchasing | | Being Developed | Centralized | Centralized |
| Payroll/Personnel | | Centralized | Decentralized | Centralized |
| Program/Project Management | | PC-Based | Decentralized | Centralized |
| Project Scheduling | | PC-Based | Decentralized | Centralized |
| Maintenance Management | | Centralized | Centralized | Centralized |
| Pavement Management | | Being Developed | Decentralized | Being Developed |
| Roadway Information | | Being Redeveloped | Decentralized | Centralized |
| Equipment Management | | Centralized | Decentralized | Centralized |
| Fuel Issuance | | No System | Decentralized | Centralized |
| Permits Issuance | | Centralized | Centralized | Centralized |
| Contract Management | | Centralized | Decentralized | Centralized |
| BAMS | | Centralized | Centralized | Centralized |
| Construction Management | | Centralized | Decentralized | Centralized |
| Bid Estimating | | Centralized | Decentralized | Centralized |
| Laboratory/Material Testing | | Centralized | Decentralized | No System |
| Motor Vehicle Registration | | Being Redeveloped | Not in DOT | Not in DOT |
| Usage of CADD | | | | |
| Drafting/Mapping | | Decentralized | Decentralized | Decentralized |
| Roadway Design | | Decentralized | Decentralized | Decentralized |
| Structures Design | | Centralized | Decentralized | Decentralized |
| Construction | | Not Used | Not Used | Decentralized |
| GIS Direction | | Under Investigation | Under Investigation | Under Evaluation |
| Image Processing Direction | | Under Investigation | Project in Progress | None |

** From prior Florida DOT study.

FLORIDA DEPARTMENT OF TRANSPORTATION
Information Technology Comparative Model
Matrix 2: Comparison of FDOT with Comparable DOT Technical Environments

| | Comparable DOT Technical Environment | | | Florida |
|------------------------------|--------------------------------------|--|-----------------------|--|
| | Arizona | Illinois | Wisconsin | |
| IT Budget % of DOT Budget | 1.3 | 0.2 | 1.6 | 0.7 |
| Formal Methodology | None; Under Evaluation | None | IEF | IEF |
| Data Base Management Systems | IMS Oracle Evaluating DB2 | IMS Nomad II ACMS DB2 | DB2 IMS Oracle | IMS DB2 |
| CASE Tools | None; Preparing RFP for Aquisition | None | 1EF | IEF |
| Reporting Tools | MARK IV Evaluating 4 GLs | Nomad II SAS GDDM IGDS Easytrieve + Datatrive Harvard Graphics | MARK IV SAS SQL | GIS SAS FOCUS GDDM ESS INTELLECT Mark IV |
| District Hardware | 205 PCs 600 Terminals | 9 Wang VS 5000 9 Wang VS 8100 300 PCs 500 Terminals | N/A | 9 IBM 8100 12 IBM 3x74 3 IBM 3780 1 IBM 4331 6 Intergraph 250 6 Intergraph Micro VAX 800 PCs 1200 Terminals |
| Total Workstations per Staff | 0.73 | 0.15 | N/A | 0.32 |

FLORIDA DEPARTMENT OF TRANSPORTATION
Information Technology Comparative Model
Matrix 2: Comparison of FDOT with Comparable DOT Technical Environments

| | Comparable DOT Technical Environment | | | Florida |
|------------------------------|--|---------------------|-----------------------------------|------------------|
| | Arizona | Illinois | Wisconsin | |
| Information Systems | | | | |
| Executive Information System | Centralized | No System | No System | No System |
| Financial/Accounting | Centralized | Centralized | Both | Centralized |
| Purchasing | Centralized | Centralized | Both | Centralized |
| Payroll/Personnel | Centralized | Centralized | Both | Centralized |
| Program/Project Management | Decentralized | Centralized | Both | Centralized |
| Project Scheduling | Decentralized | Centralized | Decentralized | Centralized |
| Maintenance Management | Decentralized | Centralized | Decentralized | Centralized |
| Pavement Management | Centralized | Centralized | Decentralized | Being Developed |
| Roadway Information | Centralized | Centralized | Both | Centralized |
| Equipment Management | Centralized | Centralized | Decentralized | Centralized |
| Fuel Issuance | Decentralized | Centralized | Decentralized | Centralized |
| Permits Issuance | Both | Centralized | Centralized | Centralized |
| Contract Management | Centralized | Centralized | Decentralized | Centralized |
| BAMS | Centralized | No System | Centralized | Centralized |
| Construction Management | Centralized | Centralized | Decentralized | Centralized |
| Bid Estimating | Centralized | Centralized | Both | Centralized |
| Laboratory/Material Testing | Being Developed | Centralized | Both | No System |
| Motor Vehicle Registration | Decentralized | Not in DOT | Centralized | Not in DOT |
| Usage of CADD | | | | |
| Drafting/Mapping | Centralized | Decentralized | Both | Decentralized |
| Roadway Design | Centralized | Decentralized | Both | Decentralized |
| Structures Design | Centralized | Centralized | Both | Decentralized |
| Construction | Limited Use | Not Used | Both | Decentralized |
| GIS Direction | Project in Progress | Project in Progress | ARC/INFO with Apollo Workstations | Under Evaluation |
| Image Processing Direction | PSR in FY 90-91 DMV Project in Progress | Under Investigation | DMV - Project in Progress | None |

FLORIDA DEPARTMENT OF TRANSPORTATION
Information Technology Comparative Model
Matrix 3: Comparison of FDOT with Varied DOTs

| | Sample of Varied DOTs | | | Florida |
|------------------------------|--------------------------|-----------------------|---------------------|--|
| | Georgia | New Jersey | New York | |
| IT Budget % of DOT Budget | 0.5 | 0.5 | 0.2 | 0.7 |
| Formal Methodology | None | Adopting SPECTRUM | Summit-D | IEF |
| Data Base Management Systems | RDB/VMS | ADABAS Oracle | DSM II Oracle | IMS DB2 |
| CASE Tools | None | None | Excelerator | IEF |
| Reporting Tools | SAS Datatrieve | Ramis FOCUS SAS | SAS GDDM IGDS | GIS SAS FOCUS GDDM ESS INTELLECT Mark IV |
| District Hardware | 82 PC's 500 Terminals | 72 PCs | N/A | 9 IBM 8100 12 IBM 3x74 3 IBM 3780 1 IBM 4331 6 Intergraph 250 6 Intergraph Micro VAX 800 PCs 1200 Terminals |
| Total Workstations per Staff | 0.9 | 0.15 | 0.11 | 0.32 |

FLORIDA DEPARTMENT OF TRANSPORTATION
Information Technology Comparative Model
Matrix 3: Comparison of FDOT with Varied DOTs

| | Sample of Varied DOTs | | | Florida |
|------------------------------|-----------------------|------------------|------------------|------------------|
| | Georgia | New Jersey | New York | |
| Information Systems | | | | |
| Executive Information System | No System | No System | No System | No System |
| Financial/Accounting | Centralized | Centralized | Being Developed | Centralized |
| Purchasing | Centralized | Centralized | Being Developed | Centralized |
| Payroll/Personnel | Centralized | Centralized | Being Developed | Centralized |
| Program/Project Management | Centralized | Decentralized | Decentralized | Centralized |
| Project Scheduling | Centralized | Decentralized | Decentralized | Centralized |
| Maintenance Management | Centralized | Centralized | Decentralized | Centralized |
| Pavement Management | No System | No System | No System | Being Developed |
| Roadway Information | Centralized | No System | Decentralized | Centralized |
| Equipment Management | Centralized | Centralized | Decentralized | Centralized |
| Fuel Issuance | Centralized | Centralized | Decentralized | Centralized |
| Permits Issuance | Centralized | Decentralized | Centralized | Centralized |
| Contract Management | Centralized | Centralized | Centralized | Centralized |
| BAMS | Centralized | Centralized | Decentralized | Centralized |
| Construction Management | No System | Centralized | Decentralized | Centralized |
| Bid Estimating | Centralized | No System | Decentralized | Centralized |
| Laboratory/Material Testing | Centralized | No System | Centralized | No System |
| Motor Vehicle Registration | Not in DOT | Not in DOT | Not in DOT | Not in DOT |
| Usage of CADD | | | | |
| Drafting/Mapping | Both | Centralized | Decentralized | Decentralized |
| Roadway Design | Both | Centralized | Not Used | Decentralized |
| Structures Design | Centralized | Centralized | Decentralized | Decentralized |
| Construction | Not Used | Centralized | Not Used | Decentralized |
| GIS Direction | None | Under Evaluation | Under Evaluation | Under Evaluation |
| Image Processing Direction | None | None | None | None |

