A Review of

Construction Project Management at the Texas Building and Procurement Commission

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State Auditor

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Overall Conclusion

The Texas Building and Procurement Commission (Agency) <u>has done a significant amount of work to address long-standing construction issues</u>. It has fully or substantially implemented 13 (65 percent) of the 20 construction project management recommendations that were reviewed for this audit. The recommendations come from a process improvement study conducted by the University of Texas System in 2000 in response to long-standing construction project management problems originally identified by the Agency's internal audit department and the State Auditor's Office.

The Agency's corrective actions include developing written policies and procedures and a system for tracking construction projects. Audit testing also found that the Agency's construction expenditures were well supported. However, workforce management issues—including <u>significant and persistent turnover in the Facilities Construction and Space Management Division</u>—could undermine the Agency's progress.

Milestone information that management receives regarding construction and maintenance projects may not be accurate and reliable for decision making. For example, weaknesses in the construction project management information system could allow unauthorized manipulation or loss of data. Also, factors prevent certification of the Agency's key performance measure, "Percent of Completed Projects on Schedule and within Budget," reported to the Legislative Budget Board's Automated Budget and Evaluation System of Texas (ABEST).

Background

Senate Bill 1127 (76th Legislature, Regular Session) required the State Auditor's Office to contract with the University of Texas System (UT System) for a review of processes and procedures. The review was completed in 2000.

Audits conducted by the Agency's internal audit department between 1995 and 1998 and the State Auditor's Office in 1997 and 1999 (see page iii) cited the Agency's Facilities Construction and Space Management Division (Construction Division) for not implementing recommendations to correct deficiencies in its construction project management function.

In response to these findings, the Legislature required the State Auditor's Office to contract with the UT System for a process improvement study of the Construction Division. The UT System study started in 2000. One of its primary recommendations was the implementation of a project tracking system.

(See Appendix 2 for more information.)

Key Points

The Agency has done a significant amount of work to address long-standing construction issues.

The Agency has fully or substantially implemented 13 (65 percent) of the 20 recommendations reviewed for this audit. Auditors determined that 3 of these 20 recommendations were more significant than the others. The Agency has substantially implemented two of these three by implementing a project tracking system and developing written policies and procedures. It has only <u>minimally implemented</u> the other significant recommendation, which was to make construction project managers' salaries competitive with the market. As a result, workforce management issues—including significant and persistent turnover—could undermine the Agency's progress.

Construction expenditures are well supported.

Expenditures tracked through the Project Management Control System (PMCS) were well supported and were for appropriate project-related expenses, based on a statistical sample of construction expenditures tested.

The Agency could improve the accuracy of construction and facilities maintenance information.

The Agency needs to address weaknesses in construction and facilities maintenance information if it is to rely on this information for decision making or planning purposes. While the Agency has implemented a new project tracking system, the accuracy of and security over the information in the system could be improved. When we brought these deficiencies to the Agency's attention, it immediately began to seek solutions from the vendor who licenses the project management system's use. However, Agency management may delay some changes because of budgetary concerns.

In addition, factors prevent certification of the Agency's key performance measure, "Percent of Completed Projects on Schedule and within Budget," reported to ABEST for fiscal year 2004. Source documentation to support calculation of the measure according to its definition was not available.

Summary of Management's Response

Management generally agrees with our recommendations.

Summary of Objectives, Scope, and Methodology

The objectives of this audit were to determine whether:

➢ The Agency <u>has corrected long-standing problems</u> with construction project management and established a project management system to effectively plan, monitor, and control schedules and budgets for construction and maintenance projects.

➢ Construction and deferred maintenance expenditures are monitored and properly supported to ensure that funds are expended only for valid project costs and in accordance with the purpose for which the funds were appropriated.

➢ Management, including the governing body, has the information necessary to support decision making related to construction and maintenance projects.

The scope of our fieldwork included an assessment of progress made on prior audit and University of Texas System process improvement study recommendations to the Agency, specifically applying to the Facilities Construction and Space Management Division. We tested construction-related expenditures made from February 2003 through August 2004 for support. We reviewed a key performance measure reported by the Agency in ABEST to determine whether it was reported accurately. We also performed a limited application review of PMCS.

The methodology consisted of identifying significant recommendations, determining their status, selecting and testing a statistical sample of expenditures, conducting a survey of the Agency's clients and interviews of Agency employees, and testing PMCS.

Recent SAO Work		
Number	Product Name	Release Date
99-029	A Follow-Up Audit Report on Management Controls at the General Services Commission	February 1999
97-080	An Audit Report on Management Controls at the General Services Commission	August 1997

Contents

Detailed Results

The Agency Has Done a Significant Amount of Work to Address Long-Standing Construction Issues

The Texas Building and Procurement Commission (Agency) has fully or substantially implemented 13 (65 percent) of the 20 recommendations reviewed for this audit. Auditors determined that 3 of these 20 recommendations were more significant than the others. The Agency has substantially implemented two of these three by implementing a project tracking system and developing written policies and procedures. It has only minimally implemented the other significant recommendation, which was to make construction project managers' salaries competitive with the market. As a result, workforce management issues—including significant and persistent turnover—could undermine the Agency's progress.

Chapter 1-A
The Agency Has Substantially Implemented Two of the Three Most Significant Recommendations

Auditors determined that 3 of the 20 recommendations reviewed for this audit were more significant than the others. The Agency has substantially implemented two of these; it has minimally implemented the third.

The Agency has substantially implemented the recommendation to begin using a project management tracking system. In February 2003, the Agency implemented a system to monitor construction and deferred maintenance projects. As a result, the Agency is now able to monitor its projects and track expenditures through the Project Management Control System (PMCS). However, there are some weaknesses in this information system, which are discussed in Chapter 3. PMCS is the primary tool that the Facilities Construction and Space Management Division (Construction Division) uses to track its projects. The Agency leases PMCS from a vendor based on a five-year contract not to exceed $138,500.

PMCS tracks projects' costs and schedules from the planning phase through the end of construction and final project closeout. It is an interactive, Web-based information system. Agency management, contractors, client agency users, and all design and other consultants can access the system through the Web. Information such as billing requests, change order pricing information, and inspection reports can be entered in PMCS to become a part of the permanent project record.

The Agency has substantially implemented the recommendation to develop written policies and procedures. The Agency has developed written policies and

procedures and a flowchart of the project planning and construction process. The recommendation stated that the policies and procedures should cover project scheduling, monitoring, accounting, and reporting; and the lack of policies and procedures was a finding from a 1995 Agency internal audit report. We assessed the recommendation as substantially implemented because some construction accounting procedures were not complete.

The Agency has made only minimal progress toward making construction project managers' salaries competitive with the current market. The Agency has made adjustments to the salaries of project managers, but the adjustments fell short of significantly closing the gap with the current market. This issue is discussed further in Chapter 1-B.

The Agency has fully or substantially implemented 11 of the 17 recommendations of medium and low significance. Appendix 2 lists all the recommendations along with their implementation status.

We also conducted a customer feedback survey with using agencies to assess their satisfaction with the Construction Division's project management activities. Overall, the responding agencies were satisfied with the Construction Division. The detailed results of the survey are presented in Appendix 3.

Recommendations

The Agency should continue working to fully implement the recommendation made in the University of Texas System's process improvement study to develop a more complete customer response system that can be used by management for collecting constructive feedback from using agencies.

If factors in the project warrant Commission review, the Agency should consider implementing the recommendation that projects be approved by the Building and Procurement Commission upon completion of the Design Development Phase and before proceeding with the Construction Documents Phase.

The Agency developed methodologies to implement three recommendations from the process improvement study. It should consider implementing these methodologies when appropriate opportunities arise. The three recommendations are as follows:

- Adopt a percentage-based fee structure for services.

- Base organization on project delivery teams rather than on functional relationships to improve customer service. A team should be assigned to each using agency.

- Accommodate peak workload demands above staffing ratios for administrative positions through temporary employment agencies.

Management's Response

TPBC agrees with the recommendations and is taking the following actions to implement the recommendations:

- *Options to improve the customer feedback system are under evaluation. The target date for development of a new system is September 1, 2005.*

- *We will consider implementing the recommendation that projects be approved by the Building and Procurement Commission upon completion of the Design Development Phase and before proceeding with the Construction Documents Phase.*

- *We have evaluated and developed a plan to implement methodologies for using a percentage based fee structure, project delivery teams, and use of temporary employees for certain projects.*

Chapter 1-B
Workforce Management Issues Could Undermine the Agency's Progress Given Projected Increases in Construction

Although the Agency has made progress in improving its project management processes, it has not completely developed strategies to meet all of the requirements of effective workforce planning. For example, significant and persistent turnover among construction project managers and below-average construction project manager salaries could negatively affect the Construction Division's ability to achieve its mission as the project workload increases. The Construction Division's current workload of approximately $30 million in projects will expand by an estimated $152 million in new, renovation, and deferred maintenance construction projects from February 2005 through August 2007 (see Appendix 4).

Turnover. As of March 2005, the Construction Division has five project manager positions; two of these have been vacant since December 2004. The Agency posted the positions in mid-March 2005. Also, 12 project managers have left the Agency since 2000, and the operations manager for the Construction Division left during the course of our audit fieldwork. The Construction Division's turnover rate for project managers was 55 percent and 40 percent for fiscal years 2004 and 2005 (as of this audit), respectively, as shown in Table 1.

Table 1: Since fiscal year 2000, the turnover rate for the Agency's Construction Division has ranged from a low of 10 percent in fiscal year 2003 to a high of 55 percent in fiscal year 2004.

Auditor Analysis of Turnover Using Project Manager Termination Information Provided by the Agency			
Fiscal Year	No. of Project Managers Who Left	No. of Project Managers in Construction Division	Calculated Turnover Rate
2000	2	8	25.00%
2001	1	6	16.67%
2002	1	7	14.29%
2003	1	10	10.00%
2004	5	9	55.56%
2005 (as of this audit)	2	5	40.00%
Grand Total	12		

Source: State Auditor's Office calculations using unaudited data from the Building and Procurement Commission

Some projects have had as many as three different project managers because of turnover. This leads to strained relations with the Agency's clients, which are other state agencies. It could also have a detrimental effect on the projects' progress, including time schedules and budgets, if clear communications with the contractors and design consultants are not consistently maintained. Project manager turnover and excessive workloads were common concerns expressed by using agencies in a customer feedback survey conducted by the State Auditor's Office. (See Appendix 3 for the complete survey.)

Turnover is costly for entities: Compensation Resources, Inc., a human resource consulting firm, estimates that the cost of turnover is between 0.5 and 1.0 times an employee's annual salary. If the three vacancies discussed above are the only ones to occur during fiscal year 2005, the cost to the Construction Division to fill the positions will be between $85,500 and $171,000.

Auditors noted additional situations that could prevent the Construction Division from being able to attract and retain the number and types of professional staff it needs:

- For the Agency to attract project managers to replace those who left, it may have to pay incoming project managers more than it pays current project managers who have been at the Agency for several years.

- Over fiscal years 2004 and 2003, the Construction Division spent only 38 percent and 30 percent, respectively, of its training budget. One of the recommendations in the University of Texas System's process improvement study was for project managers to attend training to stay up to date with trends in the industry.

Below-average salaries. Based on auditor analysis, the Construction Division's project manager pay may be as much as 17 percent less than pay of similar government and private sector jobs (see Table 2).

Table 2: The average salary for a Texas Building and Procurement Commission project manager is approximately 83 percent of the calculated index average.
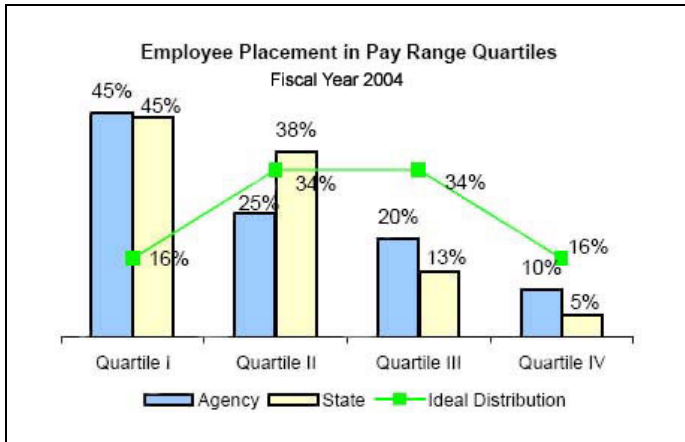
Comparison of Construction Project Manager Salaries				
Source	Job Title	Minimum	Maximum	Average
Bureau of Labor Statistics - Austin	Construction Manager	$ -	$ -	$74,309
Bureau of Labor Statistics - Texas	Construction Manager	$ -	$ -	$68,483
Texas A&M University System	Construction Project Manager	$58,680	$88,020	$73,350
Texas Department of Transportation	Transportation Engineer V	$54,300	$87,500	$70,900
Texas Parks & Wildlife Department	Construction Project Manager V	$54,264	$87,480	$70,872
Texas Tech System	Construction Project Manager	$52,400	$65,000	$58,700
The University of Texas System	Construction Project Manager	$67,589	$83,456	$75,523
Watson Wyatt 2004/2005 Survey (includes government and private sector)	Transportation Engineer V	$73,400	$95,300	$84,350
Average of Agencies + Outside Sources = Index Average				$72,061
Texas Building and Procurement	Project Managers	$50,000	$68,000	$59,700
Index Ratio				82.85%

To help establish a salary range for project managers in Texas, auditors requested salary information from the Associated General Contractors of Texas (AGC) regarding its member construction companies. According to the AGC, project manager salaries range from $75,000 to $125,000.

The Agency is paying its project managers at the lower end of the State Classification Salary Schedule range. There is room to increase salaries if the Agency chooses. Increasing project managers' pay was one of the significant recommendations from the University of Texas System's process improvement study. There are two possible reasons for the salary disparity:

▪ According to the State Classification Office's September 2004 report to the Legislature, the average state employee's pay is 17 percent less than the pay of similar jobs in government or private industry (*A Biennial Report on the State's Compensation System for Fiscal Years 2006 and 2007,* SAO Report No. 05-701).

▪ A January 2005 analysis performed by the State Classification Office found that the Agency may have room within its pay ranges to increase employee pay. The Agency cites budget constraints as a reason for not making full use of salary ranges. However, the cost of project management is included in the cost-recovery rate that the Agency bills its client agencies. Increasing this rate may allow the Agency to increase project managers' salaries. Ideally, 50 percent of employees' salaries should be in the top half of their pay range, with 34 percent in the third

Employee Placement in Pay Range Quartiles
Fiscal Year 2004

Source: Workforce Summary Document Prepared by the State
Classification Office for the Legislature, January 2005

quartile and 16 percent in the fourth quartile (as shown in Figure 1). However, in fiscal year 2004 only 30 percent of the Agency's employees were in the top half of their pay ranges.

Workforce planning. The State will be facing trends in the near future that make a functional and effective workforce plan more important:

- An aging and diversified workforce

- A shift toward higher-skilled "knowledge worker" jobs

- Increased competition for talent

- Workers changing values and expectations

- An increasing number of employees retiring, which may result in a reduction of collective knowledge at all levels.

What Is Workforce Planning?

Workforce planning is the systematic process for identifying the human capital required to meet agency goals and developing the strategies to meet these goals. It is an essential tool to identify appropriate workload staffing levels and justify budget allocations so that organizations can meet their objectives.

To assist agencies in developing their plans, the State Classification Office publishes a *Workforce Planning Guide* on its Web site: www.hr.state.tx.us.

In addition, agencies are required by Texas Government Code, Section 2056.0021, to conduct a strategic planning staffing analysis and develop a workforce plan. The Construction Division has a methodology for its workforce planning, but the process can be improved to help the Construction Division attract and retain the types of employees it needs.

Workforce planning consists of the following three elements:[1]

- Establishment of a systematic process that is integrated, methodical, and ongoing.

- Identification of the human capital required to meet agency goals, which consists of determining the number and skills of needed workers and where and when they will be needed.

- Development of the strategies to meet these requirements, which involves identifying actions that must be taken to attract and retain the number and types of workers the agency needs.

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[1] The National Academy of Public Administration, an organization chartered by the U.S. Congress to improve government at all levels, cited these three elements of workforce planning. See also the State Classification Office's online *Workforce Planning Guide* at www.hr.state.tx.us.

While the Construction Division has accomplished the first two elements, it has not been able to develop a strategy to attract and retain the type of professional staff it needs to achieve its objective of effective construction project management. Additionally, the Construction Division has not been able to successfully persuade executive management concerning the budget it needs to attract and retain professional staff.

Recommendations

The Agency should:

- Fill the project manager vacancies.

- Re-evaluate the cost-recovery rate it charges client agencies to determine whether raising the rate will allow it to make project manager salaries more competitive with the market.

- Utilize the whole range of the State Classification Salary Schedule applicable to project managers to address pay discrepancies as necessary.

- Consider performing its own salary study for construction project managers to establish a market index to use as its own benchmark. This should be reviewed and updated at least every two years.

- Identify the appropriate training needs and how these needs will be met. It should then ensure that training budgets are reasonable to meet the needs, and it should use the budgets it establishes.

- Ensure that it has in place all three key elements of effective workforce planning. It should consider using the Classification Office's *Workforce Planning Guide* as criteria for establishing a complete workforce plan.

Management's Responses

TBPC agrees with SAO's conclusion that workforce management and turnover issues are a strategic concern in addressing the state's future construction demands. TBPC will continue to diligently work to attract and retain highly qualified professional construction project managers. However, TBPC believes that the changes implemented in this area represent more than minimal progress towards addressing the issue.

For example, during the last five years, TBPC has taken significant strides to increase the competitiveness of compensation in the construction division. In that time TBPC has increased project manager and assistant director salaries 19 percent, senior project manager salaries 35 percent, and director salaries 37 percent. In addition, while turnover rates are higher than desired, as

noted by SAO in the report, they are not far out of line with TBPC's overall turn-over rates or the state as a whole during the same time period.

TBPC will implement the recommendations included in the audit report as follows:

- *The Facilities Construction and Space Management (FCSM) Division posted the vacant project manager positions in March 2005. The vacant positions were not posted immediately due to a decrease in the division workload and the use of outsourced labor to fill the gaps as needed.*

- *The FCSM Program Director, in consultation with the agency Deputy Executive Director and Executive Director, will perform a cost-benefit analysis to evaluate the full impact of increasing applicable cost-recovery rates. The study, using the full range of salary references available, will be completed by June 30, 2005.*

- *The study will also include consideration of the competitiveness of the rates charged to TBPC's client agencies and of employee compensation levels within the overall organization. Any necessary changes to rates will be implemented beginning September 1, 2005.*

- *The FCSM program director will also review opportunities to increase the quality and quantity of training provided to project managers, in an attempt to maximize the resources devoted to such efforts beginning in April 2005.*

Expenditures tracked through the Project Management Control System (PMCS) were well supported and were for appropriate project-related expenses, based upon a statistical sample of construction expenditures tested. Testing identified exceptions related to procedural inconsistencies that did not materially affect the expenditures. Auditors discussed these exceptions with management, and management agreed to make the necessary changes in the process. The expenditures tested were from projects tracked by PMCS from February 1, 2003, through August 31, 2004, and totaled $13.9 million out of a total population of $26.3 million.

While the expenditures were supported, additional testing identified that the Agency is not consistently reviewing change order pricing submitted by contractors for extra work performed.

In 39 change order pricing submissions that were approved by the Agency, contractors charged the Agency at least $32,000 more than allowed by contract requirements for change orders from seven of nine projects reviewed. In the other two projects, the Agency underpaid the contractors by approximately $700. The Agency's construction contracts contain provisions that detail how contractors are allowed to price change orders. For example, a provision may limit a contractor's markup (for overhead and profit) to 10 percent of actual costs for cost categories such as labor and materials. These limits vary according to the total cost per category. Generally, the markup percentage decreases as the contractor's costs increase.

Testing found that the Agency does not consistently review change order pricing. Auditors judgmentally selected nine projects and selected executed change orders within those projects to review for compliance with contract pricing requirements. Although the dollar amount of the exceptions identified is relatively small compared with the total value of the executed change orders on the projects reviewed ($9.8 million), the cost to the State can add up quickly if pricing submitted by contractors is not consistently reviewed for contract compliance.

The errors identified indicate that project architects (contracted consultants) and project managers (Agency employees) are not performing complete reviews of change order pricing. The project architect is responsible for the first review of all change order pricing and is required by contract to review all change order pricing for reasonableness. In addition, the Agency's project manager must review and approve change order pricing after the architect has approved it.

Recommendations

The Agency should ensure that contract requirements for pricing change orders are followed by having its project managers do the following:

- Ensure that the project architects understand and fulfill their responsibility to review change order pricing for compliance with contract pricing provisions.

- Review contractor pricing for compliance with the contract requirements.

The Agency should consider whether to attempt to recoup overcharges from contractors.

Management's Response

TBPC agrees with the recommendation to focus more attention on contract requirements and change order pricing. Effective March 1, 2005, program staff was instructed to pursue contract management and auditing in a more rigorous manner. To ensure the success of these efforts, management is increasing active participation in monitoring these actions. The FCSM Program Director will work with TBPC's financial and legal offices during April and May, 2005 to determine the feasibility and cost benefit of recovering overcharges from contractors.

The Agency Could Improve the Accuracy of Construction and Facilities Maintenance Information

The Agency needs to address weaknesses in construction and facilities maintenance information if it is to rely on this information for decision making or planning purposes. The Agency has implemented a new project tracking system, but the accuracy of and security over the information in the system could be improved. When we brought these deficiencies to the Agency's attention, it immediately began to seek solutions from the vendor who licenses the project management system's use. However, Agency management may delay some changes because of budgetary concerns.

In addition, factors prevent certification of the Agency's reporting of its key performance measure, "Percentage of Completed Construction Projects on Schedule within Budget," for fiscal year 2004. The Agency did not maintain adequate documentation to support results to calculate the measure according to its definition as reported in the Automated Budget and Evaluation System of Texas (ABEST). We could not recalculate the measure's performance because project information was in PMCS, which constantly updates budget and schedule information. Consequently, historical information (at a certain point in time) cannot be captured by PMCS.

Finally, the Agency has identified significant financial and business risks associated with the current system that the Facilities Management Division uses to track maintenance projects (MicroMain). These deficiencies include an inability to keep accurate inventory counts, collect or accurately report costs, or accommodate current Agency users without resulting in system failures.

Chapter 3-A
Controlled Dates in the Construction Project Management System Are Unreliable

Although the Agency has made significant progress in improving its project management process by implementing a project tracking system, PMCS, several weaknesses could materially affect the accuracy of the reported project schedule status. This information is important because the Construction Division uses PMCS to track and monitor all contracts associated with projects as well as to approve contract progress payments, schedules, and overall budgets. Also, Agency staff use PMCS to produce summary reports regarding project costs and schedules on a monthly basis for the Agency's executive management and governing board, who use the information for decision making. Below are some of the problems identified with PMCS.

Project dates are substantially inaccurate. We tested four key milestones for 105 projects and found that the information in the system data fields did not correspond to the definitions in the written internal procedures (user's guide)

from 89 to 92 percent of the time. The milestones in the system with erroneous schedule information, as defined in the Agency-developed user's guide, are as follows:

- The Budget Start field did not correspond to the Planned Funding Completed and Confirmed milestone (92 percent).

- The Budget Finish field did not correspond to the Planned Substantial Completion milestone (90 percent).

- The Original Contract Start field did not correspond to the Forecast Funding Completed and Confirmed milestone (89 percent).

- The Original Contract Finish field did not correspond to the Forecast Substantial Completion milestone (90 percent).

If the user guide information does not match the data fields in PMCS, inaccurate schedule data will continue to be entered as a result of the confusion.

Key data fields are subject to manipulation. Key data fields in PMCS required for milestone date input can be manipulated by anyone with access to the system. This can, in part, affect the reliability of performance measure results, as discussed in Chapter 3-B. Dates that are subject to unauthorized change include the "Date of Notice to Proceed" and the "Date of Substantial Completion," both of which are contractually significant. The notice to proceed date is the Agency's official written notification to the contractor to begin construction work after the contract has been signed. The time frame within which the contractor agrees to complete the project, which is stated in the contract, begins when the notice to proceed is given. The substantial completion date is the date that the Agency officially accepts the project from the contractor as ready to be used for its intended purpose.

Entering the substantial completion date officially stops the time or days charged against the construction contract. An accurate date is especially important in ensuring that the State is compensated in those cases where liquidated damages must be assessed against the contractor. If liquidated damages are included in the contract, which they generally are, the date of substantial completion is used as the stopping point in the project for calculating delay charges against the contractor. Liquidated damages, set at a daily rate, are considered a fair assessment of the cost a user agency and/or the Agency would incur for each day the project went beyond the agreed-upon number of days.

The system lacks audit trails. There is no audit trail to record who accessed and changed data in the system or when any data was changed. Audit trails are necessary so that individuals who manipulate data without the proper authorization can be held accountable.

The contractor did not annually test the disaster recovery plan. The contractor from whom the Agency is leasing PMCS did not comply with a contract requirement to annually test its disaster recovery plan. These tests are necessary so that the Agency is assured that the contractor is able to promptly and effectively recover the system and data used to track and manage construction projects. Although the contractor did not conduct the test in 2004, it did perform the test in December 2003. At that time, the contractor identified some issues and implemented corrective action to address them.

Recommendations

The Agency should:

- Validate data entry after fields are populated by project managers to ensure they are entered accurately. Additionally, the user's guide should be updated to match the system and better explain the requirements for entering data in these fields and to avoid confusion. This update should address changes to the contractor agreement schedule, and specifically the following fields:

  - Original Contract Finish = Substantial Completion Forecast at the start of the contractor agreement.

  - Forecast Finish = Substantial Completion Forecast as construction progresses.

  - Project Managers should estimate Substantial Completion Forecast using the Original Contract Complete date plus any Pending Extension Days.

- Develop a formal procedure for validating milestone and budget data within PMCS at the closing of a project or warranty phase.

- Ensure that key milestone dates in PMCS cannot be manipulated by unauthorized users.

- Minimize disruptions to business operations by ensuring that the PMCS vendor performs annual tests of the disaster recovery plan.

- Work with the PMCS vendor to enhance security for the system.

Management's Response

TBPC agrees with the need to address and control the flow of information within the PMCS software. The FCSM program management has been working with the software vendor for some time on these issues.

The specific recommendations included in the audit report are being discussed with or implemented by the system vendor. System improvements to address data entry validations for the "Original Contract Finish" and "Forecast Finish" fields were completed February 1, 2005. Additional data entry validations and updates to the user's guide are in progress and will be fully complete by June 1, 2005.

The vendor is studying milestone validation and security needs and is preparing additional options for implementation during FY 2005, including the introduction of a data entry audit trail. To address this issue in the interim, effective March 2005 program employees are required to submit key milestone changes to the division director for approval prior to making the change in the tracking software. Finally, because security is a continually evolving and adapting area that requires constant attention, FCSM is employing TBPC's internal information systems staff to assist with system security improvements.

Failure of the vendor to perform contractually required testing of their disaster recovery plan is a critical concern. FCSM management met with the vendor on February 1, 2005 to discuss this issue and receive a plan for vendor's full contractual compliance. FCSM will receive written acknowledgement of a completed successful test prior to the end of FY 2005. If no acknowledgement is received the program director will take the necessary actions to maintain the state's best interests, contractually and financially.

Chapter 3-B
Factors Prevent Certification of the Performance Measure Reporting Related to Construction Projects

The Agency's reporting of its key performance measure, "Percentage of Completed Construction Projects on Schedule within Budget" for fiscal year 2004 received a rating of "factors prevent certification."

The Agency did not maintain adequate documentation to support results to calculate the measure according to its definition as reported in ABEST. We could not recalculate the measure's performance because project information was in PMCS, which constantly updates budget and schedule information. Consequently, historical information (at a certain point in time) cannot be captured by PMCS.

The performance measure target was 90 percent on schedule and within budget, and the Agency's reported result was 75 percent (see Table 2). The Agency did not follow the approved measure definition; it included projects that had been issued a certificate of substantial completion instead of including only projects for which final payment had been made to the contractor.

Agency management asserts that it is more useful to report projects that are substantially complete instead of projects for which the contractor has received final payment because clients can use the buildings once they are certified substantially complete. Although the Agency has requested a change in the measure definition, it deviated from the definition without written approval from the Legislative Budget Board or the Governor's Office of Budget and Planning.

The information system issues discussed in Chapter 3-A also affect the Agency's ability to provide accurate performance measure information. These problems are as follows:

- Budget information can be changed in PMCS so that it is unclear whether projects were actually completed within budget.

- The Agency currently has to manually calculate when the final payment is made to the contractor because PMCS does not track all necessary milestone information. In order to obtain this final payment date, a user has to manually look up each project and then enter the date into a spreadsheet to calculate the elapsed time.

The Agency also does not review the performance calculation prior to submitting the information into ABEST. As a result, the Agency did not calculate the measure correctly even following the modified definition.

Table 3: Factors prevented the certification of the key measure audited.

Building and Procurement (Agency No. 303)			
Related Objective or Strategy, Classification	Description of Measure	Results Reported in ABEST	Certification Results
B

Outcome | Percentage of Completed Construction Projects on Schedule within Budget | 75% | Factors Prevent Certification |

A measure is **Certified** if reported performance is within +/-5 percent of actual performance and if controls appear adequate to ensure accuracy for collecting and reporting performance data.

A measure is **Certified With Qualification** if reported performance is within +/-5 percent of actual performance but controls over data collection and reporting are not adequate to ensure continued accuracy; or results are within +/-5 percent and controls are strong, but source documentation is unavailable.

A measure is **Inaccurate** when reported performance is not within +/-5 percent of actual performance or there are more than two errors in the sample tested.

Factors Prevent Certification when actual performance cannot be determined because of insufficient documentation and inadequate controls or when there is deviation from the measure definition and the auditor cannot determine the correct result.

Recommendations

The Agency should:

- Consult with the Legislative Budget Board and obtain clarification on whether a construction project should be counted for this measure and ensure that only data consistent with the measure definition and methodology are reported.

- Consider updating PMCS so that it tracks and calculates information necessary for performance measure reporting.

- Implement a review process to ensure that accurate data are calculated and reported.

Management's Response

TBPC agrees with the recommendation and will take immediate action to correct and address the issues concerning the construction project performance measure. Executive and program management believe the current measure definition and calculation do not accurately reflect the intent of the measure or the actual performance of the program.

The FCSM Program Director and agency budget staff will meet with the LBB to request changes to the measure definition which are necessary to align the definition with the current method of calculation. TBPC will make every attempt to incorporate this change into the performance measure definitions established for the FY 2006/2007 budget cycle.

Staff will review the PMCS system data for possible tracking improvements once they are completely comfortable with the measure definitions and methodologies. Beginning with the earliest possible reporting date, FCSM will implement a complete process for documenting and retaining all information relevant to quarterly and yearly performance measure entries. The process will include reviewing and auditing measure calculations and outcomes prior to final reporting. These tasks will be completed by May 31, 2005.

Chapter 3-C

The Agency Reports that Its Facilities Maintenance Management System Is Not Meeting Its Needs

The Agency has identified significant financial and business risks associated with MicroMain, the current system that the Facilities Management Division (Maintenance Division) uses to track maintenance projects, including deferred maintenance, inventory, and work orders. The Agency purchased this system in August 2003 and, as of November 2004, had expended $88,900 on it. The system's accounting feature is able to interface with the Agency's internal accounting system.

Deficiencies and associated risks that Agency staff found and reported to executive management include the following:

- **The system does not keep accurate inventory counts.** The system cannot account for approximately $2.9 million in maintenance inventory at 24 warehouse locations, causing the Agency to purchase duplicate parts and manually process almost $1 million in annual purchases.

- **The system cannot collect or accurately report costs.** Incomplete cost information creates a risk that the Agency will lose revenue due to its inability to accurately calculate chargeable reimbursements due from other state agencies for chargeable items.

- **The system cannot accommodate current Agency users.** The system cannot handle the current number of users accessing records without experiencing multiple system failures each day. As assets and users increase, additional system failures can be expected.

- **The system's security is insufficient and lacks detailed audit trails and access history.** System security levels cannot prevent users from manipulating sensitive data without authorization. For example, of the 34 current system users, 33 have full access to generate work orders and purchase orders. Changes to the data can be made without an adequate audit trial to show who made the changes and when they were made.

- **The vendor is unable to provide technical support.** Both the vendor and its subcontractors have been unable to solve system problems, errors, and operational interruptions. Instead, the Agency must use its own staff to

perform testing and troubleshooting that should be performed by the contractor.

For the October 20, 2004 Commission meeting, Agency staff included an agenda item to authorize purchase of a system to replace MicroMain. The estimated cost of the new system was $285,915, which took into account amounts that would not have to be expended during the rest of fiscal year 2005 on the current system. However, the Commissioners have not taken action on the staff recommendations, pending further information.

Recommendations

The Agency should evaluate and quantify the risk of financial loss to the State due to the deficiencies in its system, MicroMain, in comparison with the estimated cost to replace the system. If the Agency decides to implement a new system, it should follow the criteria for systems development as provided by the Department of Information Resources in its *Quality Assurance Guidelines* rule or subsequent updates to its information technology project management methodology. The guidelines explain and identify project management processes and procedures that address quality assurance compliance for major information resource projects.

Management's Response

TBPC agrees with the recommendations related to the MicroMain system.

TBPC staff has been working closely with the software vendor to identify, document, and improve system performance and address failure rates. These efforts, including implementing newer hardware and a more advanced network system at the off-site hosting facility, have resulted in greater system stability during recent months. While concerns remain about the potential volatile and unpredictable nature of a primary agency system hosted on hardware located thousands of miles out of reach, the consistent interruptions no longer negatively affect operations on a daily basis.

In addition, TBPC staff is formulating a plan to re-develop strategic segments of the MicroMain system to interact more fluidly with internal program operations. Current plans include:

- *Redesigning the system's web site interface to capture more accurate information from state employees and return more detailed user-friendly data to external agency customers.*

- *Refining data field lists to allow improved grouping of requests in report formats useful to management.*

- *Re-evaluating program processes and their relation to system operations.*

- *Updating system training for agency personnel.*

- *Reviewing agency inventory and warehouse functions.*

The Asset System's Program Manager will present executive management with a re-development plan and timeline by the end of May detailing an implementation structure for FY 2005.

Even so, many of the identified risks and issues associated with continued use of the MicroMain system will be difficult, if not impossible, to address without switching to a different system. Therefore, TBPC staff is continuing to research the availability and appropriateness of commercial systems that would meet program needs within current budget limits. Additionally, the Asset System's Program Manager and the Chief Information Officer are looking into possible internal technical solutions to the problems with the aim of providing potential internal system solution options to executive management by August 31, 2005.

Appendices

Objectives

The objectives were to determine whether:

- The Texas Building and Procurement Commission (Agency) has corrected long-standing problems with construction project management and established a project management system to effectively plan, monitor, and control schedules and budgets for construction and maintenance projects.

- Construction and deferred maintenance expenditures are monitored and properly supported to ensure that funds are expended only for valid project costs and in accordance with the purpose for which the funds were appropriated.

- Management, including the governing body, has the information necessary to support decision making related to construction and maintenance projects.

Scope

Scope of fieldwork included an assessment of progress made on prior audit and University of Texas System process improvement study recommendations to the Agency, specifically applying to the Facilities Construction and Space Management Division (Construction Division). The Construction Division is responsible for planning and managing construction of state building projects (except for agencies and universities that have been exempted). One of the most significant recommendations was to implement a project tracking system to better monitor construction projects. With this in view, we focused on the Agency's tracking system, the Project Management Control System (PMCS), which became operational in February 2003.

We tested construction-related expenditures made from February 2003 through August 2004, for support. In addition to expenditure testing, we judgmentally reviewed selected projects associated with the expenditures tested. From these projects, we reviewed selected change orders and looked for evidence that inspections were occurring on construction projects.

We reviewed the Agency's key performance measure, "Percentage of Completed Construction Projects on Schedule within Budget," for fiscal year 2004 reported by the Agency in the Automated Budget and Evaluation System of Texas (ABEST) to determine whether it was reported accurately and whether controls over reporting were adequate.

We also performed a limited application review of PMCS.

Methodology

The State Auditor's Office used the following procedures to perform the audit work:

- Identified significant recommendations from Agency internal audit and State Auditor's Office reports as well as the University of Texas System's process review and made a determination on whether they were implemented, substantially implemented, minimally implemented, or not implemented. Conclusions were drawn from the status of the recommendations we followed up on.

- Selected a statistical sample of construction-related expenditures from February 2003 to August 2004 and tested to determine whether they were adequately supported.

- Conducted customer feedback surveys and interviews with using agencies to assess overall satisfaction with the Agency's project management activities.

- Made site visits to completed construction projects.

- Reviewed selected project files.

- Interviewed Agency staff and management, including executive management.

- Tested PMCS by performing a limited application review.

Project Information

This audit was conducted in accordance with generally accepted government auditing standards. Fieldwork took place from December 2004 through February 2005. The following members of the State Auditor's staff performed this audit:

- Lucien Hughes (Project Manager)

- Michael Simon, MBA

- Bill Vanecek

- Gary Leach MBA, CQA (Information System Audit Team)

- Charles P. Dunlap, Jr., CPA (Quality Control Reviewer)

- Sandra Vice, CIA, CGAP (Audit Manager)

Overview of Past Construction Management Problems and Status of Recommendations from the University of Texas System Process Improvement Study

Audits conducted by the Agency's internal audit between 1995 and 1998 and by the State Auditor's Office in 1997 and 1999 cited the Agency's Facilities Construction and Space Management Division (Construction Division) for the following:

- A lack of policies and procedures for project scheduling, monitoring, accounting, and reporting for construction projects

- Repeat findings regarding a lack of a project management tracking system and an inability to determine project status

- Inconsistency of information and format of reports relating to construction projects

- Lack of a customer response system and poor customer relations

- Inadequate management of contracts

- Circumvention of procurement requirements for construction projects

In response to these findings, the Legislature required the State Auditor's Office to contract with the University of Texas System (UT System) for a process improvement study of the Construction Division (Senate Bill 1127, 76th Legislature, Regular Session). The UT System study started in 2000. One of its primary recommendations was the implementation of a project tracking system.

Other recommendations included the following:

- Reorganize the Construction Division to better accommodate project workloads.

- Pay competitive salaries to construction project managers.

- Outsource single projects greater than $10 million to private sector project management firms.

- Change the cost-recovery plan and fee structure.

- Improve project reviews and approvals.

- Authorize competitive sealed proposals.

Table 4 lists all the recommendations and their status.

Table 4

Status of Recommendations from Prior Audits and the University of Texas System's Process Improvement Study				
Recommendations	Fully Implemented	Substantially Implemented	Minimally Implemented	Not Implemented
Significance: High				
1. Pay salaries that are competitive with current market.			X	
2. Develop policies and procedures for project scheduling, monitoring, accounting, and reporting.		X		
3. Implement project management tracking system.		X		
Significance: Medium				
4. FCSM organization will accommodate an adjusted workload equivalent to FY 1998-1999 of about 37 projects for $65,000,000 construction cost.	X			
5. Evaluate, prioritize, and budget for essential cost recovery projects/function and associated costs to be recovered.	X			
6. Reorganize the division so that there are five project managers, each managing four projects at maximum of $10 million construction cost per project, for a total of 20 projects with a total maximum construction cost of $200 million.		X		
7. Develop a customer response system.			X	
8. Continue procedure of having project managers manage project through design and construction with primary reliance on the A/E for professional inspections. FCSM construction inspectors should inspect every project at least every two weeks, weekly when possible, to validate Architect/Engineer inspections.		X		
9. Outsource projects with construction costs of more than about $10 million to private sector project management firms.		X		
10. Conduct, at a minimum, formally scheduled review meetings with customers for their concurrence with the Facilities Program, Schematic Design Phase, Design Development Phase, 50 percent complete Construction Documents Phase, and 95 percent complete Construction Documents Phase.		X		
11. Accommodate peak workload demands above staffing ratios for professional positions through Indefinite Delivery Quantity (IDQ) contracts		X		
12. Staff Development and Training ▪ Maintain annual staff training budget for each full-time equivalent employee. ▪ Have staff pursue continuing education over and above minimum requirements for renewing pertinent registration. ▪ Designate individual staff members to represent FCSM in job-related professional organizations, such as the Design-Build Institute, to help FCSM stay current with developments in the design and construction industry. ▪ Determine what FCSM has accomplished or implemented regarding staff training and development to comply with the general recommendations from UTS/Office of Facilities Planning and Construction – Summarize Actions. Auditor Note: This recommendations was assessed as minimally Implemented because training budgets were established but they are not fully utilized or expended.			X	
13. Adopt fee structure similar to Office of Facilities Planning and Construction that is a percentage fee of total project cost as interpolated by project type. Collect 40 percent upon approval of design development and 60 percent at start of construction.		X		
14. Consolidate reporting procedures for interested parties into monthly reports containing relevant data that also build an historical project database.		X		

Table 4

Status of Recommendations from Prior Audits and the University of Texas System's Process Improvement Study				
Recommendations	Fully Implemented	Substantially Implemented	Minimally Implemented	Not Implemented
Significance: Low				
15. Before starting schematic design, FCSM have project A/Es prepare a more rigorous facilities program to validate analyses.		X		
16. Have projects approved by the TBPC Commission upon completion of the Design Development Phase and before proceeding with the Construction Documents Phase.			X	
17. Increase the delegation of authority incrementally to create an empowered team-based organization.		X		
18. Adopt a percentage-based fee structure for services.			X	
19. Base organization on project delivery teams rather than functional relationships to improve customer service. A team should be assigned to each using agency. (Including a Project Manager, Construction Inspector, and Administrative Assistant)				X
20. Accommodate peak workload demands above staffing ratios for administrative positions through temporary employment agencies.			X	
Totals	2	11	6	1
Percentage per implementation status category	10%	55%	30%	5%
Breakdown by significance of recommendation ▪ High (3)	0	2	1	0
▪ Medium (11)	2	7	2	0
▪ Low (6)	0	2	3	1

Results of Customer Feedback Survey Conducted by the State Auditor's Office

We conducted a survey of the four using agencies that had projects with the Agency to obtain information about their experiences with the Construction Division's project management on recent projects, which totaled 20. All agencies contacted responded to the survey except for the Department of Public Safety. We conducted follow-up interviews with each respondent, including the Department of Public Safety, to discuss each agency's experiences further. The results of the survey are presented below.

Table 5

SAO Survey Questions			
General Information			
1. What type of projects has TBPC managed for your agency?			
Building/Construction	38%	Environmental Hazards	19%
Building Repair & Maintenance	35%	Facilities Planning	8%
Communication			
2. From the time your agency received money for this project, how often were you in contact or how often have you been in contact with the TBPC project manager(s)?			
Once or Twice/Week	50%		
Once or Twice/Month	42%		
No Response	8%		
3. From the time your agency received money for this project, how often has the (or was the) project schedule and budget information communicated to you?			
Once or Twice/Week	50%		
Once or Twice/Month	42%		
Several Times/Year	8%		
4. TBPC provides (or provided) my agency timely and complete information about the project.			
Agree	64%		
Strongly Agree	27%		
Neutral	9%		
5. TBPC handles my agency's requests for services in a reasonable and timely manner.			
Agree	64%		
Strongly Agree	18%		
Neutral	18%		
Strongly Disagree	0%		
Disagree	0%		
6. If I filed a complaint against TBPC, it was handled in a reasonable and timely manner.			
My Agency Has not Filed a Complaint	100%		

Table 5

SAO Survey Questions			
7. Overall, how would your agency rate your interaction with TBPC's project manager(s)?			
Very Good	64%		
Good	36%		
Fair	0%		
Poor	0%		
Very Poor	0%		
Project Management			
8. If the project is still ongoing, is the project on schedule to end on the original agreed upon completion date?			
Yes	36%		
No Response	36%		
N/A	27%		
9. If the project is behind schedule, what are the factor(s) that may be contributing to the project delay? Select all that apply.			
Our Agency	31%	Architect/Engineers	13%
No Response	25%	Construction/Contractors	13%
Other Vendors	13%	TBPC Management	6%
10. If the project has been completed, did the project conclude on schedule with the original agreed upon completion date?			
N/A	55%	Yes	18%
No Response	18%	No	9%
11. If the project was behind schedule, what were the factor(s) that contributed to the project delay? Select all that apply.			
Our Agency	38%	Construction/Contractors	8%
No Response	31%	Natural Causes	8%
Other Vendors	15%		
12. If TBPC could improve in their project management function, in what specific area(s) could improvement be made? Select all that apply.			
No Areas Need Improvement	75%		
Other	17%		
Selection (vendor)	8%		
13. Overall, TBPC met my agency's project management needs.			
Agree	70%		
Strongly Agree	30%		
Strongly Disagree	0%		
Disagree	0%		

Table 5

SAO Survey Questions			
Budget			
14. If the project has not been completed, how does the projected cost compare with the original budget? (If the project has been completed, skip to question 16.)			
At Budget	55%	Slightly Under Budget	9%
Significantly Over Budget	18%	No Response	9%
Slightly Over Budget	9%		
15. If the project is projected to exceed the original budget, what factor(s) may have contributed? Select all that apply.			
Construction/Contractors	42%		
No Response	33%		
Our Agency	25%		
16. If the project has been completed, how did the final cost compare with the original budget?			
No Response	55%		
At Budget	45%		
17. If the project exceeded the original budget, what factor(s) may have contributed? Select all that apply.			
Our Agency	50%	Architect/Engineer	8%
No Response	33%	Construction/Contractors	8%
Automated Project Management System			
18. Which automated project management system does your agency have access to? (If you answer is "not sure" or "no access," skip to question 21.)			
ORBIT	53%		
IMPACT	35%		
No Access	12%		
19. If the answer to question 18 is IMPACT or Orbit, does your agency (or did your agency) find the information in the system to be useful?			
Yes	69%		
No Response	23%		
N/A	8%		
20. Overall, how would your agency rate your experience with the system?			
Good	55%	N/A	18%
Poor	18%	Very Good	9%
Very Poor	0%		
Overall			
21. Overall, my agency is satisfied with TBPC's management of this project.			
Agree	73%		
Strongly Agree	27%		
Neutral	0%		
Disagree	0%		
Strongly Disagree	0%		

Table 6

Estimated Workload through Fiscal Year 2007 by User Agency		
User Agencies	Projected Dollar Amount of Projects	Percent of Total Projects
Department of Public Safety	$48,000,000.00	31.6%
Department of State Health Services	$39,000,000.00	25.7%
Texas State Library Renovations	$20,000,000.00	13.2%
Stephen F. Austin (TBPC)	$4,000,000.00	2.6%
Various	$40,800,000.00	26.9%
Total Estimated Projects through FY 2007	$151,800,000.00	100.00%

Source: Facilities Construction & Space Management Division. Amounts subject to final appropriations approval.

Table 7

Estimated Project Workload through Fiscal Year 2007 by Type of Project			
Projects	Agencies	Estimated Capital Budget	Funding Source
Deferred Maintenance			
Various	Various	$35,800,000.00	Requested GO Bonds [a]
Subtotal Deferred Maintenance		$35,800,000.00	
Renovations			
SFA Abatement Renovation Completion	Building and Procurement Commission	$4,000,000.00	Requested GO Bonds
Miscellaneous Projects	Various	$5,000,000.00	Various
Texas State Library Renovations	State Library and Archives	$20,000,000.00	Requested GO Bonds
Multiple Area Offices Additions/Renovations	Department of Public Safety	$2,000,000.00	General Appropriations
Subtotal Renovations		$31,000,000.00	
New Construction			
Hidalgo County Border Regional Headquarters	Department of Public Safety	$25,000,000.00	Requested GO Bonds
Garland Regional Headquarters Lab	Department of Public Safety	$16,000,000.00	Requested GO Bonds
Multiple Area Offices – New Facilities	Department of Public Safety	$5,000,000.00	Requested GO Bonds
Harlingen/Brownsville STHCS Outpatient Projects	Department of State Health Services	$17,000,000.00	Existing GO Bonds
San Antonio – TCID TB Hospital	Department of State Health Services	$22,000,000.00	Existing GO Bonds
Subtotal New Construction		$85,000,000.00	
Total—All Project Types		$151,800,000.00	
[a] General obligation (GO) bonds are legally backed by the full faith and credit of the State of Texas.			

Source: Facilities Construction and Space Management Division. Amounts subject to final appropriations approval.