



**REPORT OF
THE
STATE AUDITOR**

**DEPARTMENT OF TRANSPORTATION
CASH AND PROJECT MANAGEMENT
PERFORMANCE AUDIT**

February 2000

**LEGISLATIVE AUDIT COMMITTEE
2000 MEMBERS**

Representative Jack Taylor
Chairman

Representative Carl Miller
Vice-Chairman

Senator Norma Anderson
Senator Doug Lamborn
Senator Doug Linkhart
Senator Peggy Reeves
Representative Sue Windels
Representative Brad Young

State Auditor's Office Staff

J. David Barba
State Auditor

Joanne Hill
Deputy State Auditor

Becky Richardson
Kerri L. Hunter
Legislative Auditors



STATE OF COLORADO

J. DAVID BARBA, CPA
State Auditor

OFFICE OF THE STATE AUDITOR
(303) 866-2051
FAX (303) 866-2060

Legislative Services Building
200 East 14th Avenue
Denver, Colorado 80203-2211

January 25, 2000

Members of the Legislative Audit Committee:

This report contains the results of the performance audit of the Colorado Department of Transportation's Cash and Project Management practices. The audit was conducted pursuant to Section 2-3-103, C.R.S., which authorizes the State Auditor to conduct audits of all departments, institutions, and agencies of state government. The report presents our findings and recommendations, and the responses of the Department of Transportation.

TABLE OF CONTENTS

	PAGE
REPORT SUMMARY	1
Recommendation Locator	3
OVERVIEW	5
 FINDINGS AND RECOMMENDATIONS 	
CHAPTER 1. CASH AND PROJECT MANAGEMENT	
Cash Balances Have Been Growing	11
Performance Measurement and Project Management Are Linked to Cash Flow	18
Project Management Systems Are Needed	21



**STATE OF COLORADO
OFFICE OF THE STATE AUDITOR
J. DAVID BARBA, CPA
State Auditor**

REPORT SUMMARY

**Department of Transportation
Cash and Project Management
Performance Audit
February 2000**

Authority, Purpose, and Scope

This performance audit was conducted under the authority of Section 2-3-103, C.R.S., which authorizes the State Auditor to conduct audits of all departments, institutions, and agencies of state government. The audit was conducted in accordance with generally accepted governmental auditing standards. Our audit procedures included reviewing documentation, interviewing Department staff, and analyzing data such as Colorado Financial Reporting System (COFRS) reports. The purpose of the audit was to review the Department's policies and practices relating to cash and project management. The following summary provides highlights of the comments, recommendations, and agency responses contained in the report.

Background

In recent years, Department of Transportation revenues have increased significantly. Between Fiscal Years 1996 and 1999, the Department's primary source of revenues for highway construction and maintenance--the State Highway Fund (the Fund)--increased by almost 58 percent from more than \$623 million to about \$984 million. At the same time, Fund expenditures increased by about 55 percent from approximately \$588 million to more than \$911 million.

Some of the revenue sources that have been directed to the Department in the past few years include the diversion of ten percent of state sales and use taxes to the Highway Users Tax Fund (HUTF), specifically for transportation purposes. Also, in Fiscal Year 1999, \$100 million in capital construction monies were appropriated from the Capital Construction Fund for state highway reconstruction, repair, maintenance, and capacity expansion projects. These funds are to be expended over a three-year period. Finally, in November 1999, Colorado voters approved a ballot proposal allowing the State to borrow money for transportation projects. According to the Legislative Council, Referendum A or the TRANs (Transportation Revenue Anticipation Notes) proposal allows the Department of Transportation to borrow up to \$1.7 billion by selling revenue anticipation notes.

Cash Balances Should Be Monitored

The need to effectively manage cash flow and ensure that dollars are spent wisely has never been greater. Concerns about the ability of the State to meet long-term transportation needs have grown, as have expectations that transportation improvements will result from the sizable increases in funding. At the end of Fiscal Year 1999, the operating cash balance in the State Highway Fund was

For further information on this report, contact the Office of the State Auditor at (303) 866-2051.

SUMMARY

2 Department of Transportation Cash and Project Management Performance Audit - February 2000

approximately \$336.2 million. This was about a 426 percent increase from the \$63.9 million balance at the close of Fiscal Year 1996. We believe the Department's cash balance is higher than necessary. In addition, current cash balances exist by default rather than as the result of sound financial management.

By maintaining an operating cash balance that is greater than necessary to meet short-term funding needs, the Department is not maximizing its performance potential. That is, excess available cash could be used to fund additional projects or to accelerate the completion on ongoing projects. To determine an appropriate cash balance the Department needs to thoroughly assess cash inflows and outflows. To improve its cash management practices to reduce excessive balances, **we are recommending that the Department evaluate its cash inflows and outflows, determine an appropriate range of cash on hand, and continually review its cash position and modify project commitments as appropriate.**

Performance Measurement and Project Management Are Linked to Cash Flow

Systems that provide comprehensive, timely, and accurate information about construction projects are necessary not only to ensure that projects are successfully completed, but also to manage cash flow. Data on the status of project milestones, including preconstruction planning stages and actual construction starts and stops, are directly tied to the timing of expenditures. This information, in turn, is necessary to effectively manage cash inflows and outflows, thereby maximizing the use of available dollars. In addition, performance measures provide needed assurances about the outcomes of efforts, including whether the Department is producing more or getting better results with the additional revenues it is receiving and expending.

The Department's performance measurement and project management systems are limited. The Department is in the process of developing a performance measurement system. In addition, the Department is currently piloting systems for improving project management for both the preconstruction and construction phases of its highway projects. Until these systems are fully operational, the Department will not have easily accessible information to track individual milestones, the start and stop dates of various preconstruction phases, and other measures of workload and accountability.

We believe that the Department should prioritize the implementation of the systems and procedures needed to enhance performance measurement and project management. **We recommend that the Department develop and implement a comprehensive performance measurement system, including the completion of program goals and performance measures, the establishment of baseline data, and methods to hold managers, regions, and the Department accountable. The Department should also implement systems for managing project preconstruction and construction, including providing accountability for project milestones and individual and regional performance. The Department should commit to an implementation date and report on accomplishment to the General Assembly and the Transportation Commission.**

The Department has agreed to our recommendations. A summary of responses can be found in the Recommendation Locator.

RECOMMENDATION LOCATOR

Rec. No.	Page No.	Recommendation Summary	Agency Addressed	Agency Response	Implementation Date
1	16	Improve cash management practices by evaluating cash inflows and outflows, determining an appropriate range of cash on hand, and continually reviewing cash position and modifying project commitments as appropriate.	Department of Transportation	Agree	December 2000
2	20	Develop and implement a comprehensive performance measurement system. This should include a) completion of program goals and measures, b) establishment of baseline data, c) implementation of methods to hold managers, regions, and the Department accountable, d) commitment to specific dates for implementation.	Department of Transportation	Agree	Fiscal Year 2003
3	27	Prioritize the implementation of systems for managing project preconstruction and construction, including providing accountability for project milestones and individual and regional performance. Commit to an implementation date and report on this process to the General Assembly and the Transportation Commission.	Department of Transportation	Agree	Ongoing

Overview

The State Highway Fund

Between Fiscal Years 1996 and 1999 the Colorado Department of Transportation's (CDOT) primary source of revenues for highway construction and maintenance—the State Highway Fund (the Fund)—increased by almost 58 percent from more than \$623 million to about \$984 million. At the same time, Fund expenditures increased by about 55 percent from approximately \$588 million to more than \$911 million. The State Highway Fund's (the Fund) revenues derive from the Highway Users Tax Fund (HUTF), federal appropriations, and other sources such as state gaming monies. The HUTF is the single largest portion of the State Highway Fund, representing more than 55 percent of total Fund revenues in both Fiscal Years 1998 and 1999. The HUTF revenues come from a variety of sources including excise taxes on motor fuel, annual driver and motor vehicle registration fees, and passenger-mile taxes on vehicles.

In recent years the General Assembly has passed legislation that directs additional revenues to the HUTF, specifically for transportation purposes. Prior to the close of the 1999 Legislative Session, the Legislative Council estimated that these additional HUTF revenues for transportation would total almost \$2.3 billion through Fiscal Year 2008. Recent legislative initiatives related to transportation funding include:

- **Senate Bill 97-01**—Authorized the diversion of 10 percent of state sales and use tax revenues to the HUTF for transportation purposes through Fiscal Year 2002. The additional revenues are to be used for the 28 Statewide Strategic (“7th Pot”) Projects, which are described later in this section.
- **House Bill 98-1202**—Extended the provisions of SB 97-01 from Fiscal Year 2002 through Fiscal Year 2008. In Fiscal Year 1998, revenues from this source were about \$154.6 million. In addition, the legislation authorized a one-time, \$100-million appropriation from the Capital Construction Fund to the Department for state highway reconstruction, repair, maintenance, and capacity expansion projects. The \$100 million in capital construction monies were appropriated in Fiscal Year 1999 and can be expended over a period of three years.
- **House Bill 99-1206**—Made permanent the provisions of the two previous bills earmarking 10 percent of state sales and use taxes to the HUTF for use on the 28 Statewide Strategic projects.

Additional Transportation Funding

In addition to these sources of funding, in November 1999, Colorado voters approved a ballot proposal allowing the State to borrow money for transportation projects. Referendum A, or the TRANs (Transportation Revenue Anticipation Notes) proposal, was referred to the voters by the General Assembly because the State Constitution requires voter approval for the State to borrow money. According to the Legislative Council,

Referendum A allows the Colorado Department of Transportation to borrow up to \$1.7 billion by selling revenue anticipation notes. The \$1.7 billion may be borrowed in increments over a period of years. Annual principal and interest payments cannot exceed 50 percent of the payment of federal transportation funds to Colorado in the year prior to the issuance of the notes. In addition, the total interest and principal payments cannot exceed \$2.3 billion. The borrowed moneys will be repaid from a combination of federal and state transportation moneys.

Also, according to the Department's Fiscal Year 2001 Strategic Plan and Budget Request presented to the Joint Budget Committee in November 1999, there will likely be several bills introduced during the 2000 Legislative Session to provide additional funds for transportation projects statewide. One measure would establish a dedicated transfer of funds from the General Fund to the HUTF over the next several years. According to the Department's Budget Request, "the bill would direct a transfer of \$15 million to the HUTF beginning next year with the amount increasing incrementally each year by \$15 million. The transfer is capped at \$200 million and would be divided 60/40 between the State and the counties and cities." Another measure would transfer capital construction funds to CDOT. According to the Department, the Governor's Office is supporting a \$50-million capital construction fund transfer. Also, in October 1999, the Department submitted a list of projects totaling \$142.8 million to the Capital Development Committee.

The 28 Statewide Strategic Projects

One principal focus of the Department's resources, including recent additional revenues, is the 28 Statewide Strategic ("7th Pot") projects. The Department has determined that these 28 projects are critical priorities in addressing the State's long-term transportation infrastructure. The projects are sometimes referred to as the 7th Pot projects because they are to be funded separately from the six existing "pots" of revenue established for the six transportation regions.

Referendum A requires that the borrowed funds be used for any of 24 of the 28 Statewide Strategic Projects selected by the Colorado Transportation Commission. According to the Department, 4 of the original 28 projects are already complete or are near completion. Therefore, they will not be affected by TRANs funds. The remaining 24 projects include road and interchange reconstruction, construction of new lanes, safety improvements, and mass transit facilities. Referendum A will not finance the completion of all 24 projects because total costs are estimated to be more than \$4.5 billion. The table on the following page provides a brief description of the remaining 24 strategic projects.

Project Location/Description	County	Estimated Project Cost*	Estimated Completion Date **
1. 25/State Highway 50/State Highway 47 Interchange Reconstruction	Pueblo	\$ 69,669,000	2002
2. 25, S. Academy-Briargate Reconstruction, Safety, ITS, & Widening	El Paso	342,291,000	2007
3. 25/US Highway 36/State Highway 270 Capacity Access-Widening	Adams	146,448,000	2005
4. 225/Parker Road Interchange Reconstruction	Arapahoe	85,389,000	2006
5. 76/120th Avenue Interchange Reconstruction	Adams	45,509,000	2006
6. I-25/I-70 (Mousetrap) Interchange & Corridor Reconstruction	Denver	97,469,000	2003
7. I-70, Tower Road to Kansas State Line Concrete Reconstruction	Arapahoe/Elbert/ Lincoln/Kit Carson	121,652,000	2004
8. I-25, State Highway 7 to State Highway 66 Reconstruction & Widening (from 4 to 6 lanes)	Weld	81,490,000	2005
9. US Highway 50, Grand Junction to Delta Major Widening (from 2 to 4 lanes)	Mesa/Delta	72,199,000	2007
10. US Highway 285, Goddard Ranch Ct. to Foxton Road Major Widening (from 2 to 4 lanes)	Jefferson	63,137,000	2004
11. US Highway 287, Kiowa county to Oklahoma State Line (Regions 1 and 2) Concrete Reconstruction	Lincoln/Kiowa/Baca/ Cheyenne/Prowers	67,733,000 116,684,000	Region 1- 2007 Region 2- 2010
12. US Highway 160, Wolf Creek Pass Reconstruction	Mineral	68,359,000	2007
13. US Highway 40, Berthoud Pass Reconstruction	Clear Creek	74,838,000	2007
14. State Highway 550, Durango to New Mexico State Line Major Widening (from 2 to 4 lanes)	La Plata	48,819,000	2006
15. State Hwy 160, Jct. State Hwy 3 East to Florida River Major Widening (from 2 to 4 lanes)	La Plata	60,069,000	2005
16. US Highway 287, Loveland to Broomfield Reconstruction & Widening (from 2 to 4 lanes)	Boulder/Larimer	92,378,000	2005
17. Powers Boulevard, Colorado Springs New 4 to 6 Lane Facility	El Paso	220,000,000	2012
18. State Highway 82, Glenwood Springs to Aspen Reconstruction & Widening (from 2 to 4 lanes)	Eagle/Garfield/Pitkin	185,998,000	2004
19. Southeast Corridor (I-25, Broadway-Lincoln Ave.) Congestion Improvement	Denver/Arapahoe/Douglas	593,644,000	2008
20 & East Corridor (Downtown Denver to DIA) and West Corridor	Denver/Adams and Denver/Jefferson	148,000,000	Future
21. (US Highway 6, I-25 to I-70) Congestion Improvement	Denver/Jefferson/ Clear Creek/Summit/Eagle	1,100,000,000	Future
22. I-70 West Corridor (I-70, DIA to Eagle County Airport) Congestion Improvement	Denver/Jefferson/ Clear Creek/Summit/Eagle	1,100,000,000	Future
23. Denver to Colorado Springs (I-25) Congestion Improvement	Denver/Arapahoe/Douglas El Paso	153,000,000 212,000,000	2007 2018
24. North I-25 Corridor (Denver to Fort Collins) Congestion Improvement	Denver/Adams/Boulder/ Weld/Larimer	302,685,000	2022
TOTAL PROJECTS		\$ 4,569,460,000	

Source: Colorado Department of Transportation documents.

* According to Department staff, costs are inflated from 2000 to the completion date.

**According to Department staff, this is the estimated construction completion date.

Audit Scope

The scope of this audit was limited to an analysis of the Department's cash and project management practices. The audit is an extension of prior financial audits in which outside contract auditors raised concerns about the size of the Department's operating cash balances. Project management is closely linked to the issue of cash management because monitoring and oversight of construction projects could provide the Department with information needed to improve financial management.

Cash and Project Management

Chapter 1

Cash Balances Have Been Growing

The Department is maintaining higher cash balances than are necessary. In addition, current cash balances exist by default rather than as the result of sound financial management. At the end of Fiscal Year 1999 the operating cash balance in the State Highway Fund was approximately \$336.2 million. This was about a 426 percent increase from the \$63.9 million balance at the close of Fiscal Year 1996. During this three-year period, the Department's revenues and expenditures also increased. However, as the following table shows, the rate of growth in the Department's year-end cash balances far outpaced the growth in both revenues and expenditures.

STATE HIGHWAY FUND Revenues, Expenditures, and Cash Balances State Fiscal Years 1996-1999 (In Millions of Dollars)								
	1996	1997	Percent Change	1998	Percent Change	1999	Percent Change	Total Percent Change
Revenues	\$623.5	\$652.3	4.63	\$891.4	36.64	\$983.9	10.4	57.8
Expenditures	\$587.5	\$603.9	2.80	\$762.3	26.2	\$911.8	19.6	55.2
Operating Cash Balance	\$ 63.9	\$147.6	130.9	\$269.4	82.50	\$336.2	24.8	426.1
Source: Office of the State Auditor's analysis of Department of Transportation Colorado Financial Reporting System (COFRS) Reports for Fiscal Years 1996-1999.								

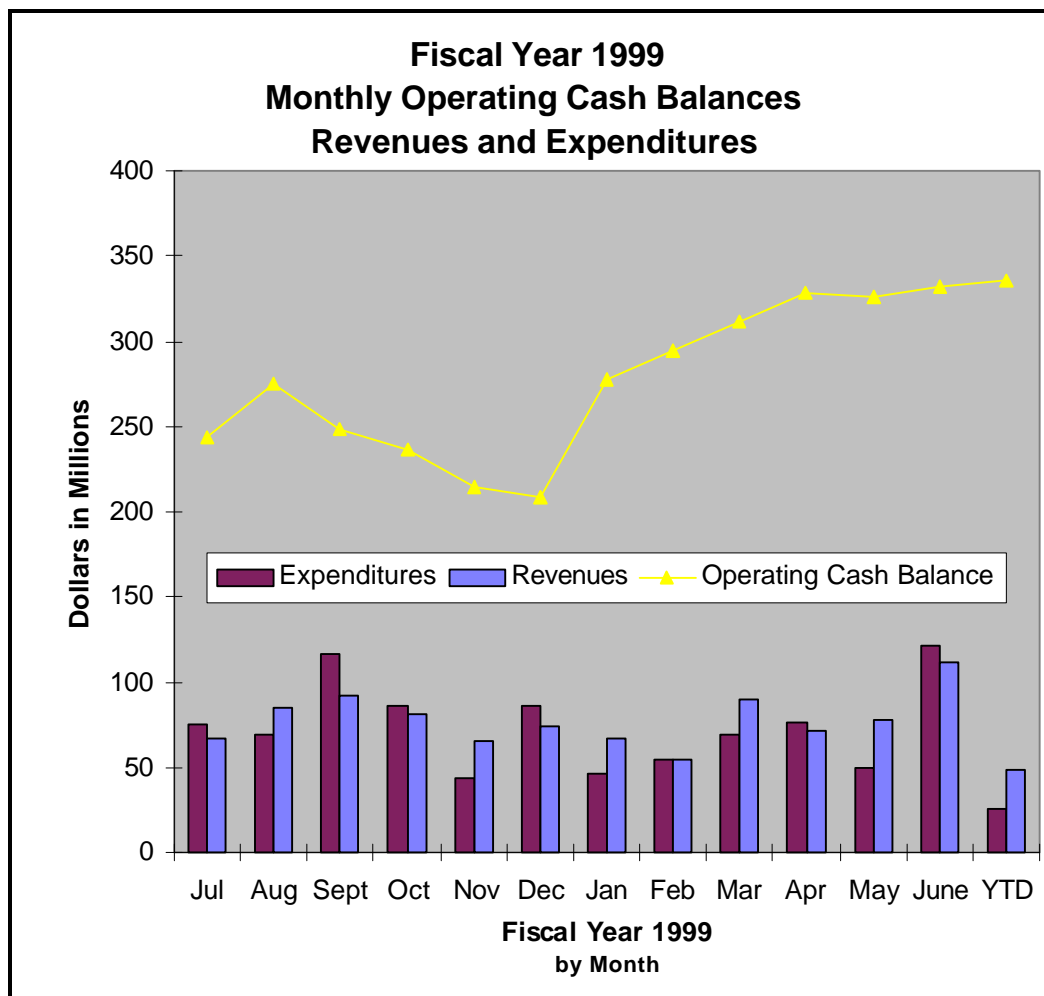
According to Department staff, the operating cash balance is earmarked for specific projects. However, not all of the cash balance is immediately needed. This is because projects may take several years or more to complete. The total cost of a project is encumbered or earmarked in the year in which the construction contract is awarded. Funds are paid out as services are provided over the life of the contract. According to Department staff, construction projects typically are expected to take an average of about three years to complete. This means that the total cost of a multiyear project will be encumbered or set aside in the first year of the contract. However, it may be one, two, or three or more years before the bulk of the encumbered funds are actually

needed. Until that time, these funds are not used. The Department does not routinely determine how much of total annual encumbrances will become due in any given year. Consequently, the Department does not know how much of future years' encumbrances could be made available for current uses.

An Appropriate Cash Balance Should Be Determined

It is important that an appropriate cash balance be determined. The rationale for this is twofold. First, there must be sufficient operating cash to meet short-term needs. Second, and just as important, operating cash balances should not become so great as to diminish the opportunity for increased productivity. To date, the Department has not identified an appropriate cash balance for its operations. Department finance staff believe that maintaining a cash balance of about \$100 million is reasonable because of cash flow issues resulting from the cyclical nature of construction projects and the timing of revenues and expenditures.

The Department did not arrive at the \$100 million figure based on any analysis. Rather, staff view it as a reasonable amount based on their knowledge of short-term cash needs. However, in Fiscal Year 1998, for example, the Department's cash balance was well above \$100 million during every month of that year. In fact, the cash balance only fell below \$150 million once—during the month of August. This trend continued in Fiscal Year 1999. As the following exhibit shows, the cash balance in Fiscal Year 1999 was even greater than in 1998. The balance never dropped below \$200 million; and, in June of 1999, it reached over \$330 million. This is more than three times the amount Department staff have cited as a reasonable balance to maintain to meet short-term expenditure needs.



The State Highway Fund cash balances more than meet current monthly spending demands. As shown in the exhibit above, during Fiscal Year 1999, expenditures exceeded \$100 million in only two months—September of 1998 and June of 1999. In the preceding year—Fiscal Year 1998—monthly expenditures averaged \$63.5 million, significantly less than \$100 million. In Fiscal Year 1999, State Highway Fund expenditures were about \$76 million per month, ranging from a low of \$44 million in November 1998 to a high of about \$121 million in June 1999.

Rapid Revenue Growth and Timing Are Cited As Reasons for the Increase in the Cash Balance

Department staff are aware of the growth in the operating cash balance. According to staff, the current large cash balance has occurred for several reasons. One reason is the rapid growth in revenues over the past three years. As the Department has received increased revenues, it has also increased its levels of spending. However,

until Fiscal Year 1999, expenditure increases had not kept pace with increases in revenues. Department staff told us that one reason for the disparity between revenues and expenditures is that although additional projects have been added to the Department's workload, these projects are in the early stages. Consequently, the point at which project expenditures reach their highest levels—during construction—has not yet occurred.

Staff also point to the timing of projects and of revenue and expenditure cycles as another reason expenditures have not kept pace with revenues. For the most part, highway construction occurs during the late spring months through November. Payment for work performed during these months usually lags behind by several months. The peak expenditure months typically begin around August-September and continue through December-January. Staff stated that because revenue inflows are relatively stable, cash builds up in the winter and early spring to be expended later in the year. Therefore, cash flow problems could result if sufficient cash were not available when payment was due. However, as we have already described, the Department had more than sufficient cash balances to meet expenditures during each month in Fiscal Years 1998 and 1999.

The Department Has Initiated Efforts To Accelerate the Pace of Projects and Expenditures

To keep pace with the increased revenues and to address the cash balance issue, the Department has initiated a number of efforts that change the way business is conducted. Efforts are under way to accelerate existing design, budget, and construction processes. Some of the measures the Department has undertaken are:

- **Contracting out more design work**—Specifically, the Department's expenditures for design consultants increased from \$13.4 million in 1996 to approximately \$99 million in Fiscal Year 1999—an increase of almost 640 percent. This is an indication that more projects are on the drawing board than in the past.
- **Getting projects to start earlier in the year**—This effort is very closely linked to the seasonal nature of construction. The earlier in the fiscal year the Department can get contracts out for bid, the sooner construction can get under way. This means that more work can potentially be undertaken and completed during any given year. For example, in Fiscal Year 1999 the Department had awarded about \$200 million in construction contracts by November 1998. In the preceding fiscal year the value of the contracts awarded by the Department did not reach \$200 million until about February

1999—three months later in the year. Consequently, contractors had less time to get projects under way before the end of the construction season.

- **Design-Build**—During the 1999 Legislative Session, the General Assembly passed legislation authorizing the Department to deviate from the traditional method of designing and building highway projects. In the traditional design-bid-build method, the Department uses the services of an engineering consulting firm (or in-house staff) to design a project. After the design phase is complete, the Department solicits bids for construction. A contract is awarded, and the project is then built by an outside contractor. Design-bid-build involves two independent but sequential contracts. One contract is for engineering and design services (unless the project is designed in-house) and the other is for construction. By contrast, the design-build method means the procurement of both design and construction services will be contained in a single contract with a single design-build firm or a combination of firms capable of providing the necessary services. Consequently, construction can begin sooner, even before the design is 100 percent complete.
- **Task Order Contracts**—The Department is limited in the amount of revenues it can expend each year. Encumbrances are included in this spending authority limit and total project funding is encumbered at one time. For large projects of several years' duration this means that significant amounts of funds cannot be used, even though the work associated with them will not be done until sometime in the future. In Fiscal Year 1998, for example, the Department reached its spending authority in May, before the close of the Fiscal Year. The size of the encumbrances contributed to this situation. In Fiscal Year 1999 the Department did not exceed its spending authority. According to staff, part of the reason for this was the use of task order contracting for two large projects. Task order contracting breaks up the total project contract into smaller pieces. In this way, encumbrances are more closely aligned with the timing of expenditures. At present, the Department intends to limit the use of task orders to large projects of \$25 million or more.

Improvements in Cash Management Are Needed

The above initiatives will present significant challenges and opportunities from the financial management perspective. In our review, we found that the Department's ability to integrate project management information with financial information is limited. The Department does not manage its expected cash inflows and outflows and its cash balances. Consequently, idle cash balances exist.

By maintaining an operating cash balance that is greater than necessary to meet short-term funding needs, the Department is not maximizing its performance potential. That is, excess available cash could be used to fund additional projects or to accelerate the completion of ongoing projects. In its 1998 Annual Report, the Department stated that every \$100 million applied to the Strategic 28 Projects would reduce the time to complete these projects by one year. It is also important to note that the bulk of the cash balance in the State Highway Fund derives from the Highway Users Tax Fund (HUTF). This can best be explained because of the way in which funds are disbursed. Federal dollars, which also contribute to the State Highway Fund, are received on a reimbursable basis. The Department must first pay the bill and is then reimbursed. By contrast, once HUTF dollars are appropriated and received, they are available for expenditure at any time.

To determine an appropriate cash balance, the Department needs to thoroughly assess cash inflows and outflows. The Department recognizes that work needs to be done in this area and staff note that the issues surrounding cash management are complicated. To assist with its cash management efforts, the Department has hired a financial advisor to develop and monitor systems for reconciling cash flow related to Referendum A funds and projects. This type of cash flow management should be extended to all projects and funding sources.

In most cases the timing of revenues and expenditures should be fairly predictable for the Department. For example, surface treatment and maintenance projects are financed through the State Highway Fund. For Fiscal Year 2000, surface treatment expenditures are expected to be at least \$100 million. Expenditures for maintenance are estimated to be more than \$124 million. The Department needs to plan for predictable expenditures. For multiyear construction projects, the Department needs to do a better job of determining when obligations will be due. Revenue and expenditure forecasts should be used to identify a cash balance target range. This range should reflect the amount of on-hand cash needed to meet short-term expenditure needs. Periodically, possibly quarterly or at least semi-annually, the Department should review its cash balance target range and modify it as needed depending on revenue or expenditure changes.

Recommendation No. 1:

The Department of Transportation should improve its cash management practices to reduce excessive balances by:

- a. Evaluating its cash inflows and outflows.

- b. Determining an appropriate range of cash on hand.
- c. Continually reviewing its cash position and modifying project commitments as appropriate.

Department of Transportation Response:

Agree. The Department is reviewing the cash balance issue and has been for some time. It is a difficult issue to tackle because of the other factors that impact the cash balance. These include:

- TABOR, which requires the Department to have the funds budgeted to execute a multi-year contract;
- The economies of scale that are prevalent as a result of the Department's contracting for fewer projects which are more costly and of longer duration than contracting for more projects but which are of a less costly and shorter (in duration) nature;
- Spending authority considerations;
- The timing of Transportation Revenue Anticipation Notes;
- The need to obligate federal funds before obligating state funds.

In addition, there are Transportation Commission and management policies that benefit one aspect of the program but may not be the best choice for cash balance purposes.

At this time, the Department has not yet determined an appropriate level of cash on hand. What was considered appropriate last year prior to TRANS is probably not appropriate now. As was mentioned in the audit report, the Department has hired a financial advisor to assist the Department with TRANS. One of the financial advisor's responsibilities will be to assist the Department in determining the best cash flow for that program.

In addition, the Department's Office of Financial Management and Budget has, in its Fiscal Year 2000 work plan, a step to determine the appropriate level of cash on hand, based on the factors listed above. After that determination is made, recommendations will have to be made to the executive management team and the Transportation Commission to implement steps to stabilize the cash on hand.

Performance Measurement and Project Management Are Linked to Cash Flow

The need to effectively manage cash flow and ensure that dollars are spent wisely has never been greater. As previously discussed, transportation funding has increased significantly in recent years. Moreover, the future infusion of an estimated \$1.7 billion resulting from Referendum A only heightens the need for improved cash management. Concerns about the ability of the State to meet long-term transportation needs have grown, as have expectations that transportation improvements will result from the sizable increases in funding.

Both increased funding and the accompanying expectations for results necessitate greater accountability. In prior audits we have made recommendations to the Department to improve project management, establish performance measures for activities, and hold managers accountable. Systems that provide comprehensive, timely, and accurate information about construction projects are necessary not only to ensure that projects are successfully completed but also to manage cash flow. Data on the status of project milestones, including preconstruction planning stages and actual construction starts and stops, are directly tied to the timing of expenditures. This information, in turn, is necessary to effectively manage cash inflows and outflows, thereby maximizing the use of available dollars. In addition, performance measures provide needed assurances about the outcomes of efforts, including whether the Department is producing more or getting better results with the additional revenues it is receiving and expending.

Performance Measures Are Currently Being Developed

The Department has made progress in developing a performance measurement system. The Transportation Investment Strategy (the Strategy) categorizes departmentwide performance into five major areas. These are:

- **System Quality**—This category refers to programs and activities that maintain the functional and aesthetic nature of the existing infrastructure. Specific programs that fall under this category include pavement, bridges, rest areas, traffic operations, and rail preservation corridors.
- **Safety**—These are services and programs that reduce fatalities, injuries, and property damage for all users of the system. The two areas of focus are improving driver behavior and roadway safety.

- **Mobility**—This refers to the movement of people, goods, and information. Programs in this area include highway construction, alternative modes, and intelligent transportation systems which address the level or quality of movement, accessibility to transportation, system reliability and connectivity, and environmental impacts.
- **Program Delivery**—Support functions such as strategic planning, information systems, and property and equipment that enable the delivery of CDOT programs and services will be measured within this category.
- **Strategic Projects**—These are the 28 high-cost, high-priority statewide projects (sometimes referred to as the 7th Pot Projects) that the Department has committed to completing as the result of accelerated funding.

The Transportation Investment Strategy represents a significant step forward for the Department. As part of its Fiscal Year 2001 Budget Request, the Department presented an overview of the Strategy including the goals, objectives, and performance measures identified to date. The Department reports that it has “identified performance measures for about two-thirds of its programs with the remaining to be completed over the next eight months.” Department staff intend to fully implement the Transportation Investment Strategy including its performance measures, goals, and objectives on both a regional and statewide basis by Fiscal Year 2003.

Completing the Implementation of a Performance Measurement System Is Essential

Now that it is close to completing the identification of specific measures, the Department needs to operationalize its performance measurement system. This should be done by first establishing benchmarks and developing the baseline data against which it can measure productivity and performance gains. A review of current performance measures indicates that further refinement may be needed in this area. For example, in its Fiscal Year 2001 Budget Request, the Department states that its goals for the 28 Statewide Strategic projects are to accelerate completion of the projects and to increase investment in the program. Performance in this area is to be measured by monthly encumbrances. Although developing controls and securing commitments as reflected by encumbrances are important, there are other measures that should be considered. The Department needs to identify and report on productivity and outcomes. One outcome measure or goal the Department has adopted is to improve the quality of the total highway system surface condition to 60 percent good or fair. Other measures could include the number and size of projects being started and completed as gauged by the number of contracts being let, the miles of roadway being resurfaced, the volume of increased capacity, the timing of project

starts and completions, reductions in drive time, and improvements in roadway safety. According to its Fiscal Year 2000 Budget, one of the Department's goals is to "provide effective internal and external communication for the exchange of information, to strengthen consensus on transportation policy issues, and to demonstrate accountability." To accomplish this, the Department needs to complete the identification of goals, objectives, and performance measures for each of its program areas.

Recommendation No. 2:

The Department of Transportation should develop and implement a comprehensive performance measurement system. This should include:

- a. Completion of program goals and performance measures.
- b. Establishment of baseline data.
- c. Implementation of methods to hold managers, regions, and the Department accountable.
- d. Commitment to specific dates for implementation of measures and periodic reports to the Transportation Commission and appropriate legislative committees on the accomplishment of performance measure goals and objectives.

Department of Transportation Response:

Agree. The Department has been working for the last two years to development a comprehensive performance measurement system for the allocation of resources and accountability. The Department held 32 hours of workshops this past summer with the Transportation Commission to finalize measures for our Strategic Projects Program (7th Pot) and Statewide Programs. These programs constitute approximately \$717 million of our \$934 million budget. These new measures have been incorporated into our Fiscal Year 2001 budget. Each year the Department will report whether the objectives outlined for the programs were met and what changes are recommended for the next period. We have committed to specific dates for implementation, which were outlined in our public hearings with the Transportation Commission. Fiscal Year 2001 will be our first year of implementation for the portion of the program outlined above. For the Fiscal Year 2002 budget,

performance measures for the remaining investment program areas will be defined and the performance objectives for the programs already defined will be refined. By the Fiscal Year 2003 budget, it is the Department's intent to be able to allocate all of our resources and track performance by the (5) major investment categories.

Project Management Systems Are Needed

In addition to performance measurement, the Department needs to enhance its project management and oversight capability. During our audit we requested a variety of data from Department staff about the volume and quality of the Department's construction projects. Specifically, we were interested in obtaining data on project timing, budgets, and modifications. Also, we wanted to analyze summary data on contractors and projects as well as aggregate statistics on all projects. In some cases the Department was immediately able to provide us with the information requested. For example, the Department can readily provide information on the number of projects under contract and the total dollar value of construction contracts.

In other cases, because the Department does not routinely compile certain data, retrieval and compilation is time-consuming and labor-intensive. For example, we asked the Department whether projects were coming in over/under budget and how many projects were started, continued, and completed during Fiscal Year 1998. We considered this to be basic project management information. The Department is capable of, but does not routinely produce and evaluate, such information, however. The Department provided the data we requested but only after staff compiled and prepared information specifically for us. Finally, there were data the Department could not provide. For example, the Department does not know how frequently project milestones are met or missed. According to the Department, "a tracking system to track each of the project milestones has only recently been developed. It is currently being tested...until this program is fully implemented we do not have a mechanism in place to track the individual milestones of each project." Without these kinds of data being readily accessible and routinely analyzed, the Department will not be able to effectively and comprehensively monitor its activities, measure progress, determine where improvements are needed, and provide information for decision making.

Lack of Management Systems Is a Continuing Problem

Throughout the life of a project, individual project managers throughout the State are expected to monitor the status of their assignments. Therefore, the details about particular projects should be available. However, the Department does not have in

place the necessary systems for easily accessing this information. Routinely compiling, analyzing, and using this type of information is essential for comprehensive, systemwide decision making. We have noted the lack of basic project management information in three prior audits. The Department agreed to implement recommendations related to project monitoring, scheduling, and reporting, as well as to improve accountability at both the individual and the departmental levels. In addition, in 1996 we recommended that the Department develop a reporting mechanism that “integrates, reconciles, and tracks ongoing budgetary and planning changes with long-term budgetary and programming goals.” The Department agreed to the recommendation and stated that implementation would occur by July of 1997. In our current audit we found that the Department has not implemented this recommendation and therefore cannot reconcile its budgets with expenditures in total or on a project-by-project basis.

The Department needs to adopt methods that promote accountability for the efficiency, effectiveness, and outcomes of its operations. In addition, methods of holding managers and the regions accountable for their activities need to be implemented. By doing this, the Department will be better able to identify particular individuals, activities, and regions in which productivity has increased or improvements are needed. Finally, we believe accountability is incomplete without a component for establishing accountability to the General Assembly and to the public. Decision makers and citizens need evidence that improvements are being made and that dollars are being spent wisely. One way in which greater public accountability could be accomplished would be to include performance measures in the Department’s annual budget requests and reports to the Joint Budget Committee and other legislative committees such as the House Transportation and Energy Committee, Senate Transportation Committee, and interim transportation committees.

The Department Needs a System To Monitor Preconstruction

Although the majority of time on most highway projects is spent in the design or preconstruction phase, the Department does not have a database for monitoring the design or preconstruction phase. Department staff estimate that project planning, budgeting, and design may each take an average of from 3 to 24 months to complete. In the case of project planning, staff told us that the process could extend to 30 months. In addition, environmental, utilities, railroads, and right-of-way planning and design must occur before preconstruction is complete. We reviewed ten project contracts and found that time frames estimated by staff are reasonable. Almost 70 percent of total project time was spent in preconstruction.

Because of the lengthy time spent in preconstruction, we believe the Department should do a better job of monitoring activities, holding staff accountable for deadlines, and identifying delays and bottlenecks. However, without a database or system for collecting and compiling preconstruction information from all of the regions, the Department is limited in its ability to manage this phase of projects.

Since at least the early 1980s the Department has been developing, testing, and piloting, but never fully implementing and using, various preconstruction project scheduling and tracking systems. For example, one system—PRISM/CA Superproject—involved training about 100 project engineers. However, the system was operational only for about two years. Its use was discontinued in 1995. As described in the following exhibit, nothing has been developed to replace it.

Preconstruction Scheduling

Preconstruction scheduling systems are those that identify a project's critical path, the duration of tasks, and points at which project schedules conflict.

PCEMS—(1982 through the late 1980s). This system held project milestones or the latest revised dates for key project steps. It tracked about 230 activities per projects using a centralized mainframe. It did not hold budget information. The system became obsolete when responsibility for project management shifted to the regional project engineers and they could not access the central database. According to staff, PCEMS was also a burden to operate.

PSTS—(1992). A replacement system to PCEMS that never got off the ground because the vendor was unable to deliver a useable product.

PRISM/CA Superproject—(1993 through 1995). Another replacement system for PCEMS that was discontinued because it was too complex to use. According to staff, there were also problems with identifying and training the appropriate users and a lack of buy-in by the regions.

Preconstruction Accountability and Tracking

Differ from scheduling systems in that they identify key dates and budget activities.

PITS—(dates unknown). The Project Information System was a central, headquarters-managed database of milestones and the latest revised dates for key project steps (versus the original or baseline dates). It also contained the latest revised project budgets. It was a precursor to PIMS (see below) and was implemented after PCEMS was no longer operational.

PIMS—(1992 through 1994). The Project Work and Budget Flow Analysis System was a centralized database system that replaced PITS. However, not all of the system's components were implemented because Information System (IS) resources were redirected to the next tracking system--ProMIS. The project work and budget flow aspects of PIMS are partially included in ProMIS but are not operational.

ProMIS—(1994 to present). ProMIS is a statewide integrated windows based budget and obligation system that provides key information about dates (except ad dates) but is not capable of comparing actual to planned dates and budgets.

ProDATES—(9/98 to present). An accountability and tracking system that replaces the limited tracking system in ProMIS.

According to Department staff, the latest preconstruction monitoring system being piloted (ProDates) will identify the individuals in each region who are responsible for various milestones in the preconstruction process. Preconstruction milestones or “products” include items such as the land survey reports, stabilization plans, traffic plans, and right-of-way clearances. The new system will capture information on the planned and actual completion dates for each milestone and will also record the number of times dates have been changed. According to the Department, the system is being piloted in Region 1 and training is progressing in the other regions. Until this system is fully operational, the Department will not have easily accessible information to track individual milestones, the start and stop dates of various preconstruction phases, and other measures of workload and accountability.

The Construction Phase Is Shorter in Duration but More Costly

In contrast with the preconstruction phase, project construction takes about one-third the time, but accounts for about two-thirds of total project costs. For example, for all projects in Fiscal Year 1998 about 30 percent of costs were incurred in preconstruction and almost 70 percent were incurred in the construction phase. According to the Department, over the past ten years it has had an average annual total workload of about 293 active projects. In 1998 the number of projects was slightly less—272. However, the average annual dollar value of contracts has increased \$2.1 million to \$3.2 million (figures adjusted for inflation.) Currently the Department does not have a system that provides comprehensive, timely, or accurate information regarding the status of all construction projects and contracts at a single point in time or over time. For example, the Department does not maintain information on the status of budgets, calendars, or the reasons for contract modifications.

The Department Is Implementing a Construction Management Software System

In 1995 nineteen states (including Colorado), one Canadian province, and the FHWA joined together in a cost-shared software development project led by the American Association of State Highway and Transportation Officials (AASHTO). Each participant contributed \$515,000 toward the development of SiteManager, a comprehensive construction management system. By pooling their resources, these states were able to purchase, for \$515,000 each, software that had a development price tag of more than \$10 million.

SiteManager covers the complete construction management process from contract award through finalization. According to AASHTO, SiteManager can be used by all

levels of construction personnel from field inspectors, technicians, and project managers to clerks, auditors, lab personnel, contractors, and the FHWA. The Federal Highway Administration also reports that using SiteManager can save state transportation agencies millions of dollars each year through increased efficiency and productivity. According to the FHWA, most states, like Colorado, do not have comprehensive or standard systems for collecting and compiling information on construction contracts. Rather, they rely on a “hodgepodge of stand-alone computer programs and paper forms” for data about contract descriptions, site plans, daily field reports, estimates, materials reports, etc. Consequently, transportation department staff throughout the state “spend lots of time filing documents, looking for information, and entering data that have already been entered somewhere else...” According to AASHTO, SiteManager eliminates repetitive tasks and reduces the volumes of paperwork.

In addition to the \$515,000 the Department has spent on the development of SiteManager, it will pay an annual license fee of about \$150,000. The Department’s staff construction unit has taken the lead on this project. Similar to the preconstruction system (ProDates) currently being tested, the SiteManager project management system is being piloted in one transportation region. Staff told us that they plan to have all six regions using the system (for new projects only) by April 2000. Construction staff told us they are eager to see the system up and running. We support their efforts. However, it is important to note that as with the preconstruction project management system, we are not advocating the implementation of a particular software system. Rather, we urge the Department to take the necessary steps and implement whatever systems are needed to provide readily accessible, reliable, and useful data for construction project management and accountability, including performance measures.

The Completion of Project Management Systems Should Be a Priority

The Department of Transportation should prioritize the implementation of the systems and procedures needed to enhance management of both the preconstruction and construction phases. Staff have indicated that in the past the implementation and use of some systems did not have the necessary buy-in from all levels within the Department. Therefore, adequate review and support systems did not exist, and use of systems was not mandatory. The Department needs to ensure that project management systems are being used by individual project managers or others who are assigned responsibility for entering data. Timeliness and accuracy should be monitored. The systems that are implemented should include mechanisms for tracking milestones, for assigning responsibility and accountability, and for incorporating data into performance measurement and cash management. Finally, the Department should

commit to an implementation date and report on accomplishment of this process to the General Assembly and the Transportation Commission.

Recommendation No. 3:

The Department of Transportation should prioritize the implementation of systems for managing project preconstruction and construction, including providing accountability for project milestones and individual and regional performance. The Department should commit to an implementation date and report on accomplishment of this process to the General Assembly and the Transportation Commission.

Department of Transportation Response:

Agree. As was mentioned in the audit report, several systems have been designed over the last several years to assist the project engineers in monitoring cost, budget, and schedules of their individual projects. The Department feels that these systems are very comprehensive and meet the needs of our project managers. What we have not done is compile this information into a report that brings this information together on a “macro” level for management purposes. That is currently being worked on.

Distribution

Copies of this report have been distributed to:

Legislative Audit Committee (12)

Colorado Department of Transportation (4)

Joint Budget Committee (2)

Department of Personnel
d.b.a. General Support Services
Executive Director (2)
State Controller (2)

Honorable Bill Owens, Governor

Office of State Planning and Budgeting (2)

Depository Center, Colorado State Library (4)

Joint Legislative Library (6)

State Archivist (permanent copy)

National Conference of State Legislatures

Legislative Oversight Committee

Legislative Legal Services

Auraria Library

Colorado State University Library

Copies of the report summary have been distributed to:

Members of the National Legislative Program Evaluation Society

Members of the Colorado General Assembly

National Association of State Auditors, Comptrollers, and Treasurers

Report Control Number 1117