

Memorandum



To:
SERGIO ACEVES, Deputy Division Chief Pavement Program
MICHAEL B. JOHNSON, P.E. State Asset Management Engineer

Date:
December 6, 2019

File:
P3010-0649

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Subject: AUDIT REPORT ON SB1 PERFORMANCE OUTCOMES FOR PAVEMENT

Attached is the Independent Office of Audits and Investigations' final audit report on the Senate Bill 1 – Performance Outcomes for Pavement. Your response has been included as part of the final report. This report is intended for your information and for Department Management.

Please provide our office with status reports on the implementation of your audit finding dispositions 60-, 180-, and 360-days subsequent to the transmittal date of this memorandum.

Senate Bill 1 requires the Inspector General to report at least annually, or upon request, to the Governor, the Legislature, and the California Transportation Commission with a summary of audit findings and recommendations. The summary along with this report and the status reports will be posted on the Independent Office of Audits and Investigations' Internet Web site.

We thank you and your staff for their assistance provided during this audit. If you have any questions or need additional information, please contact Kevin Yee, Chief, Finance and Operations Office, at (916) 323-7929, or me at (916) 323-7863.

Attachment

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BACKGROUND

Pavement is California's largest infrastructure managed by Caltrans in the State Highway System. To meet SB 1 performance goals, Asset Management works closely with the Pavement Program and District Asset Managers.

In March 2018, Asset Management presented to the California Transportation Commission a baseline of 50,346 lane miles to measure progress toward achieving the SB 1 performance targets for pavement by 2027. Caltrans categorizes pavement into three separate pavement classes to track, monitor, and assess pavement condition. To assess the pavement condition, the Pavement Program contracts with a consultant to provide an Automated Pavement Condition Survey on the highway system annually. The pavement condition data is uploaded and stored in the pavement management system managed by the Pavement Program. To monitor the progress of achieving SB 1 targets, Caltrans developed the Ten-Year Project Book to track projects. The audit determined that Caltrans has:

- Established a baseline to measure progress in achieving the pavement condition performance outcomes.
- Implemented processes and systems to track, assess, monitor and report on pavement conditions and progress toward achieving the SB 1 performance targets.

KEY FINDINGS

The audit identified six findings related to the pavement program:

- Inefficient Practice by A District in Tracking Estimated Project Costs.
- Final Project Cost Estimates Increased by 48 Percent from the Initial Project Cost Estimate.
- Lack of Process to Compare Estimated Project Costs/Targets with Actual Project Costs/Achievements.
- The Data Quality Management Plan Was Not Fully Implemented.
- The Pavement Condition Ranking for Continuously Reinforced Concrete Pavement May Not Be Accurate.
- Insufficient Policies and Procedures.

KEY RECOMMENDATIONS

We recommend the following:

- Asset Management should develop processes that address District concerns and implement controls to mitigate the risk of inaccurate estimates of project costs to occur. In addition, develop procedures to capture all factors during the initial cost estimates to avoid underestimating costs, and to continue its efforts in the process of developing the new, fully integrated "Transportation Asset Management System" that will capture completed project construction costs and performance achievements with the ability of comparing to the estimated project costs and performance targets.
- The Pavement Program should comply with Title 23 Code of Federal Regulations Section 490.319 (c) and update Caltrans Hybrid MAP-21 methodology to include all requirements in 23 CFR Section 490.313 to ensure compliance with federal regulations and accuracy of Survey data.
- Asset Management and Pavement Program should develop and/or update current policies and procedures to assist Program Managers and districts to track, assess, monitor and report on pavement improvements.

California Department of Transportation Senate Bill 1 – Performance Outcomes for Pavement



AUDIT REPORT

DECEMBER 2019

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P3010-0649

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- 1. Audit Response from Director’s Office of Asset Management**
- 2. Audit Response from Division of Maintenance - Pavement Program**

Summary, Objective, Scope, Methodology, Background, and Conclusion

SUMMARY

The Independent Office of Audits and Investigations (IOAI) completed an audit of the California Department of Transportation's (Caltrans) baseline performance outcomes for pavement as required in Senate Bill 1 (SB 1), "The Road Repair and Accountability Act" performance outcomes for pavement. The purpose of this audit is to determine if Caltrans has adequately established a baseline for pavement condition and benchmarks for achieving pavement performance targets. These targets specify that Caltrans must meet a performance outcome of not less than 98 percent of pavement in good or fair condition on the state highway system.

The audit is a follow-up to IOAI's "Baseline for Senate Bill 1 Performance Outcomes" issued in April 2018. The prior audit included a review of Caltrans' five core assets.

The audit determined that Caltrans established a baseline to measure progress in achieving the performance outcomes for pavement conditions. Additionally, Caltrans established annual benchmarks (future condition projections) for the three classes of pavement to measure progress toward achieving the SB 1 performance targets by 2027. Furthermore, Caltrans has implemented processes and systems to track, assess, monitor, and report on pavement condition and progress toward achieving the performance targets.

The audit also identified the following improvements to assist Caltrans in meeting SB 1 performance outcomes in pavement:

- Inefficient Practice by A District in Tracking Estimated Project Costs
- Final Project Cost Estimates Increased by 48 Percent from the Initial Project Cost Estimate
- Lack of Process to Compare Estimated Project Costs/Targets with Actual Project Costs/Achievements
- The Data Quality Management Plan Was Not Fully Implemented
- The Pavement Condition Ranking for Continuously Reinforced Concrete Pavement May Not Be Accurate
- Insufficient Policies and Procedures

OBJECTIVES

The objectives of the audit were to:

- Determine if Caltrans has established a baseline to measure pavement improvements within 10 years.
- Determine whether policies, procedures, and metrics exist to adequately track, assess, monitor, and report on pavement improvements.

The audit covered the period of January 1, 2018, through September 6, 2019. We conducted our audit from January 2, 2019, through September 6, 2019. Changes after these dates were not tested, and accordingly, our conclusions do not pertain to changes arising after September 6, 2019.

SCOPE, AND METHODOLOGY

The scope of the audit was limited to the core asset of pavement and included a review of policies and procedures; interviews of Caltrans' staff from the Office of Asset Management (Asset Management), Division of Maintenance- Pavement Program (Pavement Program), Districts 2 and 7, and other applicable divisions; and tests on selected processes used to track, monitor, assess, and report on pavement condition or pavement projects

The audit methodology included:

- A review of policies and procedures to determine if they are current and adequate.
- Interviews of personnel in Asset Management, Pavement Program and other applicable divisions to gain an understanding of the processes and systems used to track, assess, monitor and report on pavement condition and pavement projects.
- Field visits of two districts to perform interviews of personnel and gain an understanding of their role in meeting pavement performance targets.
- Tests on selected processes implemented by Asset Management and Pavement Program to track, monitor, assess, or report on pavement condition or pavement projects

The audit did not include accuracy testing of the 2016 pavement condition data as IOAI does not possess the expertise to perform such an analysis. Accordingly, we do not express a conclusion as to the accuracy of the 2016 pavement condition.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

BACKGROUND

SB 1 established performance targets for Caltrans' State Highway Operation and Protection Program (SHOPP) primary asset classes (pavement, bridges, culverts, and traffic management system elements). Pavement is California's largest infrastructure managed by Caltrans in the State Highway System. To meet SB 1 performance goals, Asset Management works closely with the Pavement Program and District Asset Managers.

In March 2018, Asset Management presented to the California Transportation Commission a baseline of 50,346 lane miles to measure progress toward achieving the SB 1 performance targets for pavement by 2027. Caltrans categorizes pavement into three separate pavement classes to track, monitor, and assess pavement condition.

The three pavement classes are as follows:

- Class I: Contains route segments classified as Interstate highways and other principal arterials with high traffic volume.
- Class II: Contains route segments classified as non-interstate with moderate volume.
- Class III: All other routes not included in Class I and II with low traffic volume.

The following illustration represent statewide pavement condition in each of the classes

2016 Pavement Condition Baseline

Pavement Class	Inventory	Good	Fair	Poor
Class I (Lane Mile)	27,208	57.60%	40.90%	1.50%
Class II (Lane Mile)	16,403	38.60%	60.10%	1.40%
Class III (Lane Mile)	6,735	35.80%	62.50%	1.70%
Total	50,346	48.50%	50.00%	1.50%

Source: Caltrans Pavement Program

To assess the pavement condition, the Pavement Program contracts with a consultant to provide an Automated Pavement Condition Survey (Survey) on the highway system annually. The pavement condition data is uploaded and stored in the pavement management system (PaveM) managed by the Pavement Program. PaveM is a software that analyzes the pavement condition data to project future repairs that provide the best value for the least amount of money by making decisions based on a project optimization tool that uses pavement condition, pavement type, climate, and project history to propose the right repair treatment at the right time. The collection of the Survey data on an annual basis is critical for Caltrans to monitor the pavement condition, project future pavement condition, establish benchmarks and performance targets, and report on performance outcomes. As such, this information must be timely, accurate, and reliable.

Caltrans pavement projects are identified and performed as either a SHOPP or highway maintenance project. SHOPP pavement projects are complex capital construction projects. Since 2017, SHOPP projects are reported in the State Highway System Management Plan (SHSMP). Pavement performance is captured in the Asset Management Tool (formally known as the SHOPP Tool) maintained by Asset Management to track information for each project in the SHOPP Ten-Year Project Plan.

To monitor the progress of achieving SB 1 targets, Caltrans developed the Ten-Year Project Book (Project Book) to track SHOPP projects between 2017 and 2027. Quarterly certifications are performed by each district which includes a review of the district's portfolio of projects to ensure that performance objectives are within fiscal constraints. The quarterly certifications are approved and signed by the District Directors, Caltrans' Asset Management and Chief Deputy Director.

Highway maintenance projects are smaller and are usually completed within a two-year cycle. These projects include preventive and corrective pavement maintenance strategies. Unlike SHOPP projects, highway maintenance projects are tracked and monitored through Contract for Delivery agreements between the Division of Maintenance and the Districts and tracked through the Project Resource and Schedule Management system when project construction begins.

CONCLUSION

The audit determined that Caltrans established a baseline to measure progress in achieving the performance outcomes for pavement conditions. Additionally, Caltrans established annual benchmarks (future condition projections) for the three classes of pavement to measure progress toward achieving the SB 1 performance targets by 2027. Furthermore, Caltrans has implemented processes and systems to track, assess, monitor and report on pavement condition and progress toward achieving the performance targets.

The audit also identified the following areas where improvements could be made to assist Caltrans in meeting SB1 performance outcomes in pavement:

- Inefficient Practice by A District in Tracking Estimated Project Costs
- Final Project Cost Estimates Increased by 48 Percent from the Initial Project Cost Estimate
- Lack of Process to Compare Estimated Project Costs/Targets with Actual Project Costs/Achievements
- The Data Quality Management Plan Was Not Fully Implemented
- The Pavement Condition Ranking for Continuously Reinforced Concrete Pavement May Not Be Accurate
- Insufficient Policies and Procedures

This report is intended as information for Caltrans Management. The report is a matter for public record and will be placed on the IOAI's website, which can be viewed at <https://ig.dot.ca.gov>.

VIEWS OF RESPONSIBLE OFFICIALS

We requested and received written responses to our findings from Caltrans Office of Asset Management and Division of Maintenance – Pavement Program. These officials concurred with our findings. Please see Attachments 1 through 2 for their responses.

Findings and Recommendations

FINDING 1 — Inefficient Practice by a District in Tracking Estimated Project Costs

In April of 2019, Caltrans' District 2 informed us that they maintain a separate set of records to track what they calculated to be the most accurate projection of estimated project costs included in their SHOPP Ten-Year Project Book (Project Book). This tracking was done because the district does not agree that the allocation of funds provided to meet their performance targets set by Caltrans Director's Office of Asset Management (Asset Management) is sufficient. District staff stated that it is necessary for them to compress (artificially reduce) the project costs in their Quarterly Certifications of the SHOPP Project Book in order to achieve their performance targets. District 2's actions of maintaining a separate set of records and certifying artificially reduced project costs is an inappropriate and inefficient practice. This practice results in the SHOPP Project Book having inaccurate information even if only one District is reporting understated estimated project costs. Additionally, Asset Management's forecasting of the yearly benchmarks and performance targets could be overstated if accurate information is not maintained which may result in Caltrans not achieving the set targets.

To determine if other districts also maintained a separate set of records, we interviewed a second Caltrans District (District 7). District 7 staff stated they did not maintain a separate set of records and in fact stated that they had enough budgeted funds to achieve and even exceed the performance targets set by Asset Management.

Government Code Section 13402 makes state agencies responsible for the establishment and maintenance of a system or systems of internal accounting; administrative control; and effective, independent, and objective ongoing monitoring of their agencies through documenting and communicating system requirements to employees. In addition, Government Code Section 13403 defines Monitoring systems and processes are vital to:

- Providing timely notice and opportunity for correction of emerging weaknesses with established internal controls.
- Facilitating public resources and other decisions by ensuring availability of accurate and reliable information.

Caltrans' District 2 believes that they cannot meet the performance targets set by Asset Management with the budgeted funds allocated to them. Additionally, they stated that they had informed Caltrans management of their concerns regarding the second set of records. We verified with Asset Management that they were aware of the District's second set of records and they believed that the issue would resolve itself once the final Project Initiation Documents (PIDs) were approved, and the district reduced the scope of their projects.

As the audit only included interviews of these two districts, we do not know if maintaining a separate set of records was isolated to only one District.

RECOMMENDATION

We recommend the Office of Asset Management perform the following:

- Work with the Districts to determine whether this is an isolated incident or whether there are other Districts maintaining a second set of records to track project costs.
- Quantify and correct any inaccurate project cost information identified in reviews of the Districts.
- Develop processes that address District concerns and implement controls to mitigate the risk of inaccurate estimates of project costs to occur.

ASSET MANAGEMENT'S RESPONSE

The Office of Asset Management concurs with the finding and recommendations. Please see Attachment 1 for details of the response and action plan.

FINDING 2 — Final Project Cost Estimates Increased by 48 Percent from the Initial Project Cost Estimate

In fiscal year 2018/19, the final project cost estimates for pavement projects increased an average of 48 percent from the initial project cost estimates. Project Initiation Documents (PID) must be developed and approved by Caltrans before any project can be programmed in the Asset Management Tool (Management Tool) and later constructed on the State Highway System. The PIDs include estimated project costs and estimated performance goals and are reviewed from initiation through finalization by District Project Managers and signed by Deputy District Directors. Without accurate and complete information in the Management Tool, the probability of delaying the district's certification process is high. In addition, when final PID costs exceed anticipated costs, there is a risk of performance goals not being met and projects not being programmed. Furthermore, when costs increase by 48 percent from what was stated as the initial estimate, it brings into question the accuracy of the original estimate.

Government Code Section 13402 makes state agencies responsible for the establishment and maintenance of a system or systems of internal control, and effective and objective ongoing monitoring of the internal controls within their state agencies. This responsibility includes documenting the system, communicating system requirements to employees, and ensuring that the system is functioning as prescribed and is modified, as appropriate, for changes in conditions.

The 48 percent average variance was investigated by Caltrans' Division of Transportation Planning (DOTP) which determined the reason for the increase was that many initial cost estimates (pre-PIDs) did not include all cost factors such as: escalation, right of way, capital, or support costs for the projects.

Once this issue was identified, the DOTP and Asset Management determined that a standardized process to capture all pre-PID components is essential to having accurate information. Asset Management and DOTP have initiated work on developing a new estimating process called "Conceptual Cost Estimate."

RECOMMENDATION

We recommend the Office of Asset Management:

- Continue its efforts with the DOTP in developing new procedures and guidelines to capture all factors during the initial cost estimates to avoid underestimating costs.
- Develop methodologies for preparing more accurate cost estimates to ensure proper funding is available to complete projects.
- Provide training to all staff involved in the newly developed “Conceptual Cost Estimate” process.

ASSET MANAGEMENT'S RESPONSE

Office of Asset Management concurs with the finding and recommendations. Please see Attachment 1 for details of the response and action plan.

FINDING 3 — Lack of Process to Compare Estimated Project Costs/Targets with Actual Project Costs/Achievements

Asset Management lacks a process to compare programmed project costs and performance goals to the final project construction costs and performance achievements. The Management Tool tracks the estimated project costs and performance goals of programmed projects. However, the Management Tool does not include a clear process for tracking the final project costs and performance goals achieved once construction is completed. As a result, Caltrans cannot determine at the project level whether they are actually meeting the projected performance goals and at what cost on pavement projects. A reconciliation process to assess any variance between the programmed (estimated) project costs and performance goals and the actual final project construction costs and performance achievements is an essential management tool. Additionally, the lack of such information limits Caltrans' ability to perform accurate trend analysis and forecasting for future budget cycles.

Government Code Section 13401 states that all levels of management must provide active, ongoing oversight and monitoring processes for the prevention and early detection of fraud and errors in program administration and must routinely monitor, evaluate, and improve internal controls when necessary. Internal administrative controls comprise the methods and procedures that address operational efficiency and adherence to management policies and include “...an established system of practices to be followed in performance of duties and functions in each of the state agencies.”

Based on conversations with the Asset Management, the Management Tool is not capable of reconciling programmed project costs and performance goals with final project construction costs and performance achievements. Asset Management acknowledged that their process is not as rigorous as they would like. They are currently developing a process to validate completed project costs to include close out information in the Management Tool.

RECOMMENDATION

We recommend the Office of Asset Management:

- Continue its efforts in the process of developing the new, fully integrated “Transportation Asset Management System” that will capture completed project construction costs and performance achievements with the ability of comparing to the estimated project costs and performance targets.
- Develop a process that will provide the ability to conduct trend analysis and better forecasting using actual data for accurate estimates.

ASSET MANAGEMENT'S RESPONSE

The Office of Asset Management concurs with the finding and recommendations. Please see Attachment 1 for details of the response and action plan.

FINDING 4 — The Data Quality Management Plan was not Fully Implemented

On February 1, 2018, Caltrans Division of Maintenance, Pavement Program (Pavement Program) executed a consultant agreement to perform an Automated Pavement Condition Survey (Survey) on the State Highway System. On May 3, 2018, Federal Highway Administration (FHWA) approved Caltrans' Pavement Condition Survey Data Quality Management Plan (Plan). The Plan includes requirements for performing quality control and quality assurance over the Survey data collections. The Pavement Program did not fully implement the Plan once it was approved by FHWA, in relation to quality assurance and therefore is only partially compliant with federal regulations. Specifically, we found the following issues.

Quality Control

Caltrans' agreement with the consultant did not include requirements to comply with the quality control procedures outlined in the Plan, as the Plan was not yet finalized or approved at the time of contract execution. The Pavement Program only included select quality control procedures in the consultant agreement and stated that Caltrans would not be able to require the consultant to enforce quality control processes required in the Plan for the 2018 and 2019 Survey data collections. We determined that the delay in implementing the quality control portion of the Plan is reasonable given the consultant agreement was executed prior to the Plan approval date.

Quality Assurance

According to the Plan, the Pavement Program was fully responsible for performing the quality assurance processes over the Survey data since May 3, 2018. We reviewed the Pavement Programs' quality assurance processes performed for the 2018 Survey condition data and determined that the required quality assurance processes stated in the Plan were not fully implemented (See table below). The Pavement Program provided documents to support two out of five applicable quality assurance processes (Process 1.1 and 1.4). We cannot express a conclusion on two out of the three remaining processes as we were unable to determine whether the alternative/additional processes performed provided the same level of assurance as the processes approved in the Plan (Process 1.2 and 1.3). For the last quality assurance process, Caltrans did not fully follow the Plan (Process 2). The reliability of the pavement condition data collected by the Survey may be lower than expected as a result of the Plan not being fully implemented.

Quality Assurance Process in Plan	Process Implemented
1. Field Verification	-
1.1 IRI Verification	Yes
1.2 Linear Reference Verification	Cannot express a conclusion on adequacy.
1.3 “Major Rehab” Distress Conditions Field Review	Cannot express a conclusion on adequacy.
1.4 Element Level Field Review	Yes
2. Office Review (image quality review)	No. Caltrans did not report all required information and performed only 1% detailed image review.

Title 23 Code of Federal Regulations Section 490.319 (c) states, “Each State DOT shall develop and utilize a Data Quality Management Program, approved by FHWA... Once FHWA approves a State DOT’s Data Quality Management Program, the State DOT shall use that Program to collect and report data...”

The Pavement Program was not aware of the Data Quality Management Program implementation requirements.

RECOMMENDATION

We recommend the Pavement Program comply with Title 23 Code of Federal Regulations Section 490.319 (c) and:

- Revise the Plan to document quality assurance processes performed that are not included and obtain approval from FHWA prior to the 2019 Survey data collection.
- Implement all quality assurance processes stated in the Plan for the 2019 Survey data collection.
- Ensure all quality control and quality assurance requirements in the Plan be included in future Survey contracts and data collection

DIVISION OF MAINTENANCE’S RESPONSE

The Division of Maintenance–Pavement Program concurs with the finding and recommendations. Please see Attachment 2 for details of the response and action plan.

FINDING 5 — The Pavement Condition Ranking for Continuously Reinforced Concrete Pavement may not be Accurate

The Moving Ahead for Progress in the 21st Century Act (MAP-21) has requirements for how to rate pavement condition for different types of pavement sections, including Continuously Reinforced Concrete Pavement (CRCP). Caltrans has developed its own Hybrid MAP-21 methodology for rating pavement condition which are based on MAP-21 requirements. The Caltrans Hybrid MAP-21 requirements are considered to be more reflective of the overall pavement condition than the MAP-21 requirements because it measures the entire highway for all lane miles in both directions rather than only measuring the outside lane in the ascending direction for a highway.

Our audit found that Caltrans Hybrid MAP-21 did not rate the CRCP, and therefore the pavement condition rating methodology for CRCP is not in full compliance with MAP-21 requirements. Further, because the Caltrans Hybrid MAP-21 methodology did not have a way to evaluate the CRCP, Caltrans defaulted this rating to “good” pavement condition for the 2016 Survey. However, the CRCP condition may not all be “good” and Caltrans Survey data may not be accurate which could ultimately affect the Pavement Management System (PaveM) forecasting, project selections, and performance goals. The CRCP represents approximately 1 percent of the reported condition of pavement lane miles.

23 CFR Section 490.313 (d) states, “The Overall condition for CRCP sections shall be determined based on two ratings of IRI and Cracking Percent...” Section 490.313 (e) states, “State DOTs shall not be subject to paragraphs (c) and (d) of this section for Pavements on the until after the data collection cycle ending December 31, 2018...During this transition period, the Overall condition for all pavement types will be based on IRI rating, as described in paragraph (b)(1) of this section, or on PSR as described in paragraphs (c)(4) or (d)(4) of this section.”

Caltrans believes CRCP are generally new and in good condition throughout the state and did not fully understand the rating requirements detailed in MAP-21 specific to CRCP.

RECOMMENDATION

We recommend the Pavement Program update Caltrans Hybrid MAP-21 to include all requirements in 23 CFR Section 490.313 to ensure compliance with federal regulations and accuracy of Survey data.

DIVISION OF MAINTENANCE’S RESPONSE

The Division of Maintenance–Pavement Program concurs with the finding and recommendation. Please see Attachment 2 for details of the response and action plan.

FINDING 6 — Insufficient Policies and Procedures

Our audit identified a lack of sufficient policies and procedures in Asset Management and the Pavement Program to track, assess, monitor, and report on pavement improvements. As an example, Asset Management did not have complete Directives related to Statewide Transportation Asset Management or procedures and guidelines related to analytics, strategies, scenarios and modeling. The Pavement Program had not finalized all PaveM Memos contained in their procedural binder related to the Pavement Management System.

Asset Management and Pavement Program are responsible for effectively monitoring and reporting pavement improvements in accordance with SB 1. District offices rely heavily on their guidance and implementation of new processes as they have the responsibility of updating, developing, and implementing policies and procedures statewide so that programs and divisions can perform their role consistently. Although some policies and processes exist for staff to perform the day-to-day work at both offices, without a complete set of written policies and procedures to monitor pavement improvements, Caltrans may not manage and report pavement improvements at the most efficient level. Additionally, processes may not be performed consistently, accurately and timely due to the lack of documented policies and procedures.

Government Code Section 13402 makes state agencies responsible for the establishment and maintenance of a system or systems of internal control and effective and objective ongoing monitoring of the internal controls within their state agencies through documenting and communicating system requirements to employees.

The California Transportation Commission – SB 1 Accountability and Transparency Guidelines state in part, “At a minimum, the Department is responsible for establishing and implementing operating procedures and controls that are consistent with Commission policies, guidelines as well as state and federal regulations. The Department will ensure policy and procedural documentation is maintained and updated in an accurate and timely manner. The Department will also ensure that the established policies and procedures are followed. Furthermore, the Commission expects agreements and contracts between the Department and recipient agencies to reflect the project scope, project cost, and project schedules on all projects which were programmed and allocated by the Commission”.

Asset Management has not fully developed written policies and procedures to provide guidance to statewide staff regarding asset management processes and SB 1 requirements. Recently, Asset Management incorporated a “Policy, Guidance and Procedures Framework” on their internal portal intending to assist District Asset Managers and Program Managers with up-to-date information, however, this framework is still a work in progress.

The Pavement Program did not complete or finalize all policy memos related to PaveM to assist staff with the new procedures and system that have been implemented to track, assess, and monitor pavement improvement.

RECOMMENDATION

We recommend Asset Management and the Pavement Program:

- Develop and/or update current policies and procedures to assist Program Managers and districts to track, assess, monitor and report on pavement improvements.
- Continue with the development of new policies, procedures, and guidelines to assist statewide staff in performing their duties consistently.

ASSET MANAGEMENT AND DIVISION OF MAINTENANCE’S RESPONSE

The Office of Asset Management and the Division of Maintenance–Pavement Program concur with the finding and recommendations. Please see Attachments 1 and 2 for details of the responses and action plan.

ATTACHMENT 1

AUDIT RESPONSE FROM THE OFFICE OF ASSET MANAGEMENT

Memorandum

To:
RHONDA L. CRAFT
Inspector General
Independent Office of Audits' and Investigations

Date: November 14, 2019

From:
MICHAEL B. JOHNSON, P.E. State Asset Management Engineer
SERGIO ACEVES, Deputy Division Chief Pavement Program

Subject: SB 1 Performance Outcome For Pavement

Thank you for the opportunity to provide a response to the revised draft audit report on Senate Bill 1 (SB 1) Performance Outcome for Pavement, dated October 31, 2019.

The purpose of the audit was to determine if Caltrans has adequately established a baseline for pavement condition and benchmarks for achieving pavement performance targets as required by SB 1. We are pleased that the auditors found that Caltrans established a baseline to measure progress in achieving the performance outcomes for pavement conditions. The auditors also found that Caltrans has implemented processes and systems to track, assess, monitor, and report on pavement condition and progress toward achieving the performance targets established in SB 1.

The draft audit report identified areas of improvement and offered recommendations to assist Caltrans in meeting SB 1 performance outcomes in pavement. Attached are corrective action plans from the Director's Office, Asset Management and the Pavement Program outlining how the recommendations will be implemented.

If you have questions or need additional information, please contact Michael B. Johnson at (916) 653-2572 or Sergio Aceves at (916) 274-6055.

Attachments

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Independent Office of Audits and Investigations - Response to Draft Report

Audit Response from Director's Office of Asset Management

Audit Name: SB1 Performance Outcome for Pavement

Auditee: Director's Office of Asset Management

Audit Number: P3010-0649

Audit Report Finding #1

Inefficient Practice by a District in Tracking Estimated Project Costs

IOAI Audit Recommendation

We recommend the Office of Asset Management to work with the Districts to determine whether this is an isolated incident or whether there are other Districts maintaining a second set of records to track project costs.

Auditee Response to Draft Report

The Director's Office of Asset Management is currently developing business processes, tools, and policies to ensure that District project portfolio costs are consistent with proposed performance to be delivered. Specifically Asset Management will:

1. Develop a policy requiring conceptual cost estimates to substantiate costs for all projects in the 10-year Plan period.
2. Develop a report/dashboard that indicates inconsistencies between cost and performance in District project portfolios based on earned value project management principles.
3. Develop a policy to clarify the roles and responsibilities of the District Director, the State Asset Management Engineer, and the Chief Deputy Director in the certification of the quarterly SHOPP Ten Year Project Book.

Estimated Completion Date

11/2020

Staff Responsible

HQ Asset Management - Lead

Districts, HQ Planning - Support

IOAI Audit Recommendation

Quantify and correct any inaccurate project cost information identified in reviews of the Districts.

Auditee Response to Draft Report

This was completed on June 30, 2019 with the completion of the candidate Project Initiation Documents for the 2020 SHOPP.

Estimated Completion Date

6/30/2019

Staff Responsible

District Directors

HQ Planning

IOAI Audit Recommendation

Develop processes that address District concerns and implement controls to mitigate the risk of inaccurate estimates of project costs to occur.

Auditee Response to Draft Report

This was completed on June 30, 2019 with the completion of the candidate Project Initiation Documents for the 2020 SHOPP.

Estimated Completion Date

11/2020

Staff Responsible

HQ asset Management - Lead

Districts, HQ Planning - Support

Audit Report Finding #2**Final Project Cost Estimates Increased by 48 Percent From The Initial Project Cost Estimate****IOAI Audit Recommendation**

Continue its efforts with the Division of Transportation Planning developing new procedures and guidelines to capture all factors during the initial cost estimates to avoid underestimating costs.

Auditee Response to Draft Report

The Director's Office of Asset Management has been working with the Division of Transportation Planning to implement the Conceptual Cost Estimate (CCE) worksheet as a standard tool to uniformly estimate future project costs. The CCE is a sub-set of calculations from a more expansive cost estimating tool currently in use at Caltrans.

The CCE is currently required prior to initiation of PIDs in years 6 and 7. Expanding the requirement to years 8, 9, and 10 will insure that project costs are captured consistently and considers all relevant project cost factors. Asset Management has drafted a policy document to require CCEs for years 8, 9, and 10.

Estimated Completion Date

7/2020

Staff Responsible

HQ Planning - PID Workplan years

HQ Asset Management - Project Book

IOAI Audit Recommendation

Develop methodologies for preparing more accurate cost estimates to ensure proper funding is available to complete projects.

Auditee Response to Draft Report

A consistent cost estimate worksheet is now required for all projects entering the formal Project Initiation Document workplan.

Estimated Completion Date

Completed 7/1/2019

Staff Responsible

HQ Planning - PID Workplan years

IOAI Audit Recommendation

Provide training to all staff involved in the newly developed “Conceptual Cost Estimate” process.

Auditee Response to Draft Report

Training for the PID Work Plan cost estimate worksheet has been completed.

Estimated Completion Date

Completed Summer 2019

Staff Responsible

HQ Planning

HQ Project Management

Audit Report Finding #3**Lack of Process to Compare Estimated Project Costs/Targets with Actual Project Costs/Achievements****IOAI Audit Recommendation**

Continue its efforts in the process of developing the new, fully integrated “Transportation Asset Management System” that will capture completed project construction costs and performance achievements with the ability of comparing to the estimated project costs and performance targets.

Auditee Response to Draft Report

The Director’s Office of Asset Management is coordinating with the Division of Construction to develop requirements and procedures to capture post-construction project-level performance. This capability is planned to be implemented in an enterprise Transportation Asset Management Software (TAMS) under development. In the near term, Asset management is exploring the feasibility of expanding the existing Asset Management Tool to support this.

Estimated Completion Date

12/2022

Staff Responsible

HQ Asset Management - Lead

Districts HQ Project Delivery and Construction

IOAI Audit Recommendation

Develop a process that will provide the ability to conduct trend analysis and better forecasting using actual data for accurate estimates.

Auditee Response to Draft Report

Caltrans is currently pursuing an enterprise Transportation Asset Management Software (TAMS) that will address this finding.

Estimated Completion Date

12/2022

Staff Responsible

HQ Asset Management - Lead

Districts, HQ Project Delivery and Construction

Audit Report Finding #6**Insufficient Policies and Procedures****IOAI Audit Recommendation**

Develop and/or update current policies and procedures to assist Program Managers and districts to track, assess, monitor and report on pavement improvements.

Auditee Response to Draft Report

The need for additional policies/guidance is recognized. A web based policy/guideline framework for Asset Management has been developed and policies will be developed over time. Data dashboards have already been put into place that allow anyone to compare the performance for any quarterly published Project Books. This dashboard allows the change in performance to be easily tracked over time.

Estimated Completion Date

Ongoing

Staff Responsible

HQ Asset Management

IOAI Audit Recommendation

Continue with the development of new policies, procedures, and guidelines to assist statewide staff in performing their duties consistently.

Auditee Response to Draft Report

The need for additional policies is recognized, A web based policy framework for Asset Management has been developed and policies will be developed over time.

Estimated Completion Date

Ongoing

Staff Responsible

HQ Asset Management

ATTACHMENT 2

AUDIT RESPONSE FROM DIVISION OF MAINTENANCE - PAVEMENT PROGRAM

Independent Office of Audits and Investigations - Response to Draft Report

Audit Response from Division of Maintenance - Pavement Program

Audit Name: SB1 Performance Outcome for Pavement

Auditee: Division of Maintenance - Pavement Program

Audit Number: P3010-0649

Audit Report Finding #4

The Data Quality Management Plan was not Fully Implemented

IOAI Audit Recommendation

We recommend the Pavement Program comply with Title 23 Code of Federal Regulations Section 490.319 (c) and:

Auditee Response to Draft Report

Agreed. We have had preliminary meetings with FHWA about updating the DQMP in accordance with 23 CFR 490.319.

Estimated Completion Date

7/2020

Staff Responsible

Khanh Vu

IOAI Audit Recommendation

Revise the Data Quality Management Plan to document quality assurance processes performed that are not included and obtain approval from FHWA prior to the 2019 Survey data collection.

Auditee Response to Draft Report

Since the 2019 APCS is already complete, we will consider implementing for future collection cycles.

Estimated Completion Date

7/2020

Staff Responsible

Khanh Vu

IOAI Audit Recommendation

Implement all quality assurance processes stated in the Data Quality Management Plan for the 2019 Survey data collection.

Auditee Response to Draft Report

Since the 2019 APCS is already complete, we will consider implementing for future collection cycles.

Estimated Completion Date

7/2020

Staff Responsible

Haiping Zhou

IOAI Audit Recommendation

Ensure all quality control and quality assurance requirements in the Data Quality Management Plan be included in future Survey contracts and data collections.

Auditee Response to Draft Report

The upcoming APCS contract will cover 3 collection cycles and include: applicable portions of the current DQMP; potential updated DQMP elements as identified.

Estimated Completion Date

1/2020

Staff Responsible

Haiping Zhou

Audit Report Finding #5

The Pavement Condition Ranking for Continuously Reinforced Concrete Pavement may not be Accurate

IOAI Audit Recommendation

Update Caltrans Hybrid MAP-21 to include all requirements in 23 CFR Section 490.313 to ensure compliance with federal regulations and accuracy of Survey data.

Auditee Response to Draft Report

The Pavement Program has established a methodology to rate CRCP condition according to the definition in 23 CFR Section 490.313. This methodology will be used for future analysis and reporting.

Estimated Completion Date

4/2020

Staff Responsible

Khanh Vu

Audit Report Finding #6

Insufficient Policies and Procedures

IOAI Audit Recommendation

Develop and/or update current policies and procedures to assist Program Managers and districts to track, assess, monitor and report on pavement improvements.

Auditee Response to Draft Report

The Pavement Program will work with Asset Management to update any current policies and procedures that pertain to reporting pavement improvement data in the Asset Management Tool.

Estimated Completion Date

4/2020

Staff Responsible

Bobby Dosanjh

IOAI Audit Recommendation

Continue with the development of new policies, procedures, and guidelines to assist statewide staff in performing their duties consistently.

Auditee Response to Draft Report

The Pavement Program will inventory existing PaveM memos and guidelines that have been drafted to propose changes or approved to document existing practices. Proposed updates will be prioritized according to implementation needs. A revised documentation process that better supports ongoing innovation and proposed changes will be considered for development.

Estimated Completion Date

12/2020

Staff Responsible

Imad Basheer