

DEPARTMENT OF TRANSPORTATION

OFFICE OF THE DIRECTOR
P.O. BOX 942873, MS-49
SACRAMENTO, CA 94273-0001
PHONE (916) 654-6130
FAX (916) 653-5776
TTY 711
www.dot.ca.gov



Making Conservation
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Tab 27
Ref. # 4.15
Attachment B

February 14, 2020

Mr. Mitchell Weiss
Executive Director
California Transportation Commission
1120 N Street, MS 52
Sacramento, CA 95814

Dear Executive Director Weiss:

The California Department of Transportation (Caltrans) appreciates the opportunity to provide a response to questions posed by California Transportation Commission (Commission) staff regarding the Independent Office of Audits and Investigations' report on the "Senate Bill 1 – Performance Outcome for Pavement" (Pavement Audit). In addition to the presentation provided by Caltrans Chief Deputy Jim Davis at the January 29th Commission meeting, this letter serves as a point-by-point response to each question posed in the Commission's January 2020 Book Item, Reference 4.7 (Book Item).

Caltrans takes audit findings very seriously; each finding is addressed as appropriate and audit recommendations and further adjustments to our processes are implemented where needed. This is the intended purpose of a robust audit program, and a necessary ingredient to successful process improvement.

With regards to the Pavement Audit, the stated purpose of the audit was to determine whether Caltrans had adequately established baselines and benchmarks to measure progress in achieving performance for pavement. The audit was clear – Caltrans met these expectations. Specifically, the audit states the following:

"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 some areas for improvement to assist Caltrans in its management of Senate Bill 1 (SB1) programs. Caltrans appreciates the feedback and has agreed with the findings overall.

It is valuable to acknowledge that Caltrans is implementing a first-in-the-nation, data performance-driven Asset Management process. But, as Caltrans pioneers the implementation of this innovative process we will inevitably find opportunities for improvement, and we should.

In response to these advances in how we do business through Asset Management, Caltrans implemented a Kaizen improvement process – a form of Lean Six-Sigma - to lay out a path to success.

The outcome of the Kaizen was a transformative change that significantly reworks the roles and responsibilities of Caltrans Headquarters and the individual Caltrans Districts. This change aligns accountability, responsibility and authority with the District Director, which allows for decision making that is informed by local knowledge and priorities, while still focusing on meeting performance targets.

Districts are now provided a program budget and target performance for each primary asset class: bridges, pavement, culverts and TMS elements. Instead of Headquarters programs identifying projects that were programmed by core asset classes in silos, we have moved to a system where the Districts are responsible for determining the best project mix for their area. This allows for, and encourages, the integration of multiple assets, leveraging partnerships, and finding economies of scale.

Answers to Commission Questions

The following responses to Commission questions are organized in the same manner as the Commission's original Book Item. As much as possible redundancy has been avoided, and the responses to each question must be considered in the context of the whole.

Finding 1

Senate Bill 1 significantly increased the funding for fix-it-first projects. But, as outlined in the State Highway System Management Plan, there is only about half the dollars available to meet all the currently identified needs. As a result, Districts must make tradeoffs between overall scope and strategy to achieve performance targets.

This pavement audit took place in the middle of implementing this new statewide asset management plan and pavement rating system. And, as just discussed, this was the first year the Districts have been responsible for balancing the portfolio budget allocation with the performance targets that they are expected to meet within their regions.

During the project planning process, various alternative solutions are evaluated to determine the best projects to program. These alternative solutions range in scope, cost, and portfolio makeup. Evaluating project alternatives is the express purpose of the planning process. Controls were in place, and remain in place, that require each project to complete the planning process and certify project level cost estimates prior to the project being considered for programming in the State Highway Operation and Protection Program (SHOPP).

How many other Districts maintain two sets of records?

It must be made clear that there is just one official and certified project list and estimate for each District, as detailed in the Ten-Year Project Book. The Ten-Year Project Book is maintained by the Department and posted on-line for public review. Other lists of alternative approaches are part of the planning process. Nevertheless, following the release of the audit, each District was individually asked about this practice and each confirmed that they maintain just one approved ledger of project costs.

What was the total difference between the second set of District records as compared to the budget provided to the District to meet their performance targets?

The District in question had a set of projects and alternatives that they would like to do compared to what they could afford to do. The State Highway System Management Plan has documented a funding availability of approximately 50% of the known transportation system need. The project costs associated with what the District would have liked to do and what they could afford to do

varied over time as the portfolio evolved and was \$800 million dollars at its highest point.

Has the District resolved their funding shortfall? How was that accomplished?

Yes. The District produced 2020 SHOPP project candidates that achieved the defined performance within the fiscal targets that were provided. The District was able to accomplish this by identifying higher-performance projects from their portfolio and selecting more cost-effective strategies for others.

How are performance objectives impacted when scope is reduced?

The Asset Management process in place requires the Districts to achieve performance targets for a fiscally constrained budget. Depending on the nature of the scope being reduced relative to the defined targets, this impact could range from zero to moderate impact in later years of the 10-year period. Caltrans monitors performance annually and adjusts as needed to account for the dynamic nature of forecasting performance 10 years into the future.

When scope was reduced from projects, what elements were eliminated from the projects to stay within budget?

The strategies used to conform to fiscal constraints included removing or delaying entire projects and incorporating lower-cost treatment strategies for others. Projects that were eliminated from the portfolio include a proposed truck-climbing lane that would add less to the performance of the four asset classes than others in the portfolio. Lesser cost pavement strategies may include overlays in lieu of full depth rehabilitation or replacement.

In the 2017 State Highway System Management Plan, how was escalation incorporated in the unit costs of performance objectives?

The 2017 SHSMP included projects that were in various stages of project development. The first five years are projects that were already programmed by the CTC and included formal cost estimates and full escalation. Years six and seven of the 10-year period are in the formal planning process, and have escalation built into their estimates. However, at the time the 2017 SHSMP was developed, projects did not exist for years 8-10. The raw needs were utilized to develop targets for these years without knowing how the needs would be packaged and what the timing for the projects might be.

Without specific projects and timing information available, a rigorous escalation calculation was not possible. Instead, the unit costs included in the 2017 SHSMP represented a range of treatments that were cost-weighted based on the projected frequency of the treatments. These unit costs were reflective of prior silo-based project practices that did not reflect the efficiencies associated with the newly implemented multi-asset programming approach.

Additionally, each District was provided 10% of their overall budget that was not tied to specific performance outcomes to cover a variety of project cost items not explicitly measured at the time. This approach was necessary in 2017, which was the start-up year for asset management implementation.

Do other Districts have the same concern about not having a large enough budget to meet their performance targets?

The available funding is approximately half of what is needed to address the numerous currently identified needs. Accordingly, Caltrans must prioritize the work commensurate with available funding and the codified asset management targets. This means that some of the things we would like to do cannot be done at this time. All Districts have the need for additional project scope if funding was not constrained. Nevertheless, by focusing on the prioritized asset classes, and by realizing efficiencies through multi-asset strategies, all Districts were all able to meet the defined performance objectives for the budget provided.

Finding 2

Caltrans is tasked with the development of a 10-year plan. Like many planning documents, prior to the implementation of Asset Management, the 10-year plan did not include specific projects outside of the 4-year SHOPP horizon. To facilitate our asset management of the SHOPP, specific projects for the 10-year plan were required to be defined for the first time in 2017. These projects are at various stages of development that range from fully planned and in design, to conceptual projects where minimal planning has been undertaken. The audit report is focusing on the project cost differences as these projects move from the very early concept stage to completed planning in a Project Initiation Document (PID).

If the final costs identified in the Project Initiation Document increase an average of 48 percent, how are Districts reconciling these significant increases within their approved budgets?

In cases where the final PID estimated costs are in excess of the fiscally constrained SHOPP, some projects must remain in queue for future programming opportunities. State regulations permit a queue of projects with completed planning to allow California to take advantage of funding opportunities such as the America Reinvestment and Recovery Act of 2009. Federal transportation programs such as ARRA typically place very short timeframes to utilize available funding. Having a prudent queue of projects with completed planning positions California to capitalize on these opportunities.

What impact do discrepancies in initial and final project cost estimates have on the Department's 2027 performance projections and the fiscal year 2018-19 Performance Benchmark Report?

The change in estimated cost from pre-planning to completed PID does not impact the performance projections in the 2018-19 Benchmark Report. This may seem counter-intuitive, but the key concept is that the Benchmark Report is based on the projects that have already completed PIDs. Projects that had completed planning by June of 2019 were required to achieve the performance objectives within the constrained SHOPP funding targets for the core asset included in the Performance Benchmark Report.

What is being done to correct the issue of undervalued initial project cost estimates?

There is no doubt that better consistency between pre-planning estimates and final PID estimates is useful and desirable. To that end, Caltrans has implemented a pre-planning cost estimating template to achieve better consistency in our pre-planning cost estimates for projects in years 6-10 of the 10-year plan. The improved process and standardization of estimates will help to improve uniformity, but it is not possible to completely eliminate variances between estimates.

Pre-planning estimates are based on statewide cost norms, and cost estimates are still subject to project-specific factors that cannot be known until the planning process is undertaken. There will always be some gap between pre-planning estimates and final programmed values. This is consistent with the

planning process, which allows Caltrans to fully scope a project, including stakeholder input and environmental discovery.

Finding 3

When the Department calculates future condition projections, how are discrepancies in project outputs between the programming of a project and at project closeout accounted for?

Caltrans is tracking project-level outputs at three points in time currently: pre-planning, post-planning and post-programming up to award. The audit raised some concern with the potential that project-level outputs could be changed during construction after the contract has been awarded to a contractor. Caltrans' experience is that once projects are awarded to a contractor, the scope of work as measured by our performance metrics does not often significantly deviate.

Nonetheless, it is in fact possible that scope is added or removed during construction. Accordingly, Caltrans is implementing a process that will capture project-level outputs at the completion of construction to capture changes during construction. This process will be piloted in February 2020 with statewide implementation fully implemented for all projects in construction by the end of the year.

What was the data and methodology utilized to prepare the pavement and other information presented to the Commission in the fiscal year 2018-19 Performance Benchmark Report? How does this data and methodology address the concerns raised by the auditors?

The Performance Benchmark Reports look at a snapshot of data (at the end of the fiscal year) to determine the current condition of the core assets. The data is used to forecast deterioration, quantify the performance in the project portfolio and determine the net increase or decrease in each fiscal year of the analysis period.

The Performance Benchmark Report includes confidence bands generated by Monte Carlo simulation to reflect the uncertainty associated with the variables

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included in the analysis including the probability that the pipelined performance will be realized and the timing of the performance gain.

Caltrans does not believe that field construction modifications to the awarded project scope will be significant for the benchmark metrics. For example, it is unlikely that a bridge would be field modified to be a different size than as awarded in the contract plans. Any minor scope differences will self-correct as field inspections capture any deviations in outputs that were realized in construction. The resulting new empirical data would be reflected in inventory and condition data used in subsequent Performance Benchmark Reports.

Conclusion

Caltrans has reviewed the Pavement Audit findings with the Inspector General and we are implementing changes in our business processes to address the findings in the audit. Caltrans' Asset Management is truly ground-breaking, and practices to improve the effectiveness of the SHOPP are maturing. Though Caltrans has made significant progress in our asset management implementation, opportunities for improvement exist. The process improvements identified by the Inspector General are consistent with our goal of continual improvement.

Sincerely,



TOKS OMISHAKIN
Director

Enclosure