



CALIFORNIA
High-Speed Rail Authority

Third Party Estimating

June 2017

EXECUTIVE SUMMARY

The Audit Office of the California High-Speed Rail Authority (Authority) completed an audit of the third party estimating process. The purpose of the audit was to evaluate current estimating practices for third party utility relocation costs with a focus on the process for estimating the provisional sum. The objective of the audit was to determine if the Authority's current process, policies, and procedures for estimating the utility relocation provisional sum are adequate. To accomplish this objective, we interviewed those involved in the estimating process. We also reviewed available written policies, procedures, manuals, and technical memorandum, as well as applicable agreements.

Estimating third party costs and provisional sums are components of the overall process of estimating project costs, specifically, the capital cost estimate. The Authority develops the estimating elements (Work Breakdown Structure cost elements) and the regional consultants provide quantities information for the elements. Quantities are the units of measurements, and unit prices used to describe the particular item of work estimated. Quantities information provides details as to how quantities were developed and calculated, including any limitations.

The technical memorandum titled "Capital Cost Estimating Methodology for 15% Design Methodology" issued by the Program Controls Branch provides guidance for the preparation of reliable and accurate capital cost estimates for the 15% design level. The technical memorandum is intended to provide guidelines for accurately and consistently estimating the costs of capital infrastructures and system for the 15% design level. The technical memorandum also provides a framework for defining the scope and technical basis for the estimate.

Based on our audit, we found the Authority has an adequate cost estimating process in place for estimating third party provisional sums. However, we found areas in which the Authority could improve its estimating process for third party provisional sum cost estimates. Our review found the Program Controls Branch could create more accurate estimates with better quantity information. Also, the Program Controls Branch is not routinely validating or refining the provisional sum estimate process as new and better information (e.g., most current information, including actual costs) is available as the project progresses.

The report contains the following recommendations:

- The Authority should determine the benefits of and responsibility for obtaining more detailed quantity information.
- The Program Controls Branch should routinely validate/refine the provisional sum estimating process.

BACKGROUND

Estimating third party utility relocation costs and provisional sums are components of the overall process of estimating project costs, specifically, the capital cost estimate. The California High-Speed Rail Authority (Authority) directs the regional consultants to conduct the preliminary engineering and project-specific environmental work. The Authority develops the estimating elements (Work Breakdown Structure cost elements) and the regional consultants provide quantities information for the elements. Quantities are the units of measurements and the unit prices used to describe the particular item of work involved. Quantities information provides details as to how quantities were developed and calculated, including any limitations. The regional consultants are responsible for developing design concepts at a sufficient level of detail to develop accurate cost estimates. The regional consultants gather and provide information in determining a preferred alignment by the Authority and for the Board's approval. During the preliminary engineering phase, the regional consultants identify utilities to be relocated (also referred to as conflicts), generate a conflicts map, and provide the quantities information to the Program Controls Branch for verification and determination of unit prices using estimating software and the Authority's Work Breakdown Structure.

On December 24, 2013, the Program Controls Branch issued a technical memorandum titled "Capital Cost Estimating Methodology for 15% Design Level" describing the capital cost estimating methodology that provides guidance for the preparation of reliable and accurate capital cost estimates for the 15% design level. The Capital Cost Estimating Methodology is intended to provide guidelines for accurately and consistently estimating the costs of capital infrastructures and system for the 15% design level. The methodology also provides a framework for defining the scope and technical basis for the estimate. The guidance offers standards and procedures for the location, assessments, protection and placement of underground and overhead utilities located within and in proximity of the Authority's right of way.

The provisional sums are frequently included in major infrastructure projects to provide an allocation for items of work that must be performed but cannot be quantified in advance. The Authority has utilized limited provisional sums in the construction packages, e.g., to pay for utility relocations. The audit reviewed the estimating process for the third party provisional sum estimates used for the construction packages.

During the course of our audit, the Program Controls Branch issued the *Cost Management Procedure*, on March 29, 2017, documenting the organization, strategies, and processes to be implemented for cost management and defining roles and responsibilities of personnel involved in cost management, including estimating capital costs. However, we did not assess the adequacy and effectiveness of the process given its recent implementation.

SCOPE AND METHODOLOGY

The scope of the audit covered the capital cost estimating process with the focus on the provisional sum estimating process related to utility relocations. The objective of the audit was to determine if the Authority's current process, policies, and procedures for estimating the utility relocation provisional sum are adequate. We interviewed Authority and Rail Delivery Partner and Project Construction Management consultant staff. We reviewed policies and procedures relating to the estimating process. We also reviewed the contracts for

the Rail Delivery Partner, the Project Construction Management for three construction package, seven Regional Consultants, and the design-build contracts for Construction Package 1. Our audit was conducted in accordance with the International Standards for the Professional Practice of Internal Auditing issued by the Institute of Internal Auditors.

The audit took place in the Sacramento and the Central Valley Regional offices. On June 8, 2017, the results of the review were discussed with management. A response from the Program Delivery Office was requested and is attached.

RESULTS AND RECOMMENDATIONS

Based on our audit, we found the Authority has a third party utility provisional sum cost estimating process in place. However, we found areas in which the Authority could improve its estimating process.

Finding 1:

The Program Controls Branch could create more accurate estimates with better information.

The regional consultant contracts require quantities to be developed in the format prescribed by the Authority. The technical memorandum related to cost estimates does not have sufficient guidance to meet the Program Controls Branch's expectations of detailed quantities information from the Regional Consultants.

Recommendation:

The Authority should determine the benefits of and responsibility for obtaining more detailed quantity information.

Finding 2:

The Program Controls Branch is not routinely validating or refining the provisional sum estimating process as new and better information (e.g., most current information, including actual costs) is available as the project progresses.

A component of internal control is monitoring which, in the context of cost estimating, would include periodically examining the information used to develop the provisional sum estimate to determine if additional information should be used to create a more accurate estimate. The Program Controls Branch is not required to routinely validate or refine the capital cost estimate, including the provisional sum cost estimate. The current cost estimating technical memorandum and plan do not have any procedures that state the Program Controls Branch should validate estimates as the design and project progresses.

Recommendation:

The Program Controls Branch should routinely validate/refine the provisional sum estimating process.



Memorandum

DATE: July 7, 2017

TO: Ms. Paula Rivera, Chief Auditor

FROM: Scott Jarvis, Chief Engineer *SP*
Roy Hill, Program Director *R Hill*

CC: Jon Tapping, Interim Chief Operating Officer

SUBJECT: Program Delivery Response to Draft Audit Report 16-02, Third Party Estimating

The Authority's Program Delivery Office is in receipt of the draft report of the Authority's Third Party Estimating. The Authority's Audit Office found that the audit objective was met and that the Program Delivery Office's current process, policies, and procedures for estimating the utility relocation provisional sums are adequate. Although the process is adequate, the Program Delivery Office's long-term objective is to end the practice of providing provisional sums for utility relocation by relocating significant utilities prior to construction or by improving project scope definition that allows contractors to include the cost of this work in their bids.

In regards to the recommendations provided with this audit, the Program Delivery Office concurs with the recommendations and provides the following responses:

Recommendation 1: *The Authority should determine the benefits of and responsibility for obtaining more detailed quantity information.*

Response to Recommendation 1: The Project Delivery Office recognizes the importance of obtaining detailed quantity information and improving the process for third party estimates. Accurate quantities and the resultant cost estimates are essential in assuring the successful completion of a project on-time and within the budget allotted.

The Project Delivery Office will review the guidance provided to Regional Consultants regarding detailed quantity information and its use in developing accurate estimates and will revise as appropriate.

Recommendation 2: *The Program Controls Branch should routinely validate/refine the provisional sum estimating process.*

Response to Recommendation 2: The Project Delivery Office acknowledges that provisional sum estimates had not been continuously verified or refined. Therefore, the Project Delivery Office has implemented a process that routinely assesses the budget and costs of the program. The Cost Management Procedure (PROC-PRCM-03), approved on March 30, 2017, provides the procedural guidance to monitor and track costs on a monthly basis. The Program Delivery Office will review this

guidance and its use to determine if additional information needs to be added specifically related to provisional sums.

Furthermore, the Authority will be implementing a utility management approach that will standardize the Authority's estimating practice for utility relocations. This approach will enable routine verification or refinement to estimates from project initiation to closeout by using current market prices and will allow the Project Controls Branch to update estimates to current costs.

In addition to the responses to the recommendations, as stated above, the Program Delivery Office intends to eliminate the practice of providing provisional sums for utility relocation. With the support of a utility management approach (referenced above) there will be greater development of project scope related to utility relocations. This will allow the Authority to: identify and relocate significant utilities prior to the construction of a project; or provide the scope of work needed to relocate utilities in request for proposals that allow contractors to include the cost in their bids.

If you have any further questions, please contact Scott Jarvis, Chief Engineer, at (916) 403-2690 or Scott.Jarvis@hsr.ca.gov.