



## Board Report

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**Agenda Number:** 22.

### CONSTRUCTION COMMITTEE OCTOBER 19, 2023

**SUBJECT: REVIEW OF METRO CONSTRUCTION PROJECTS QUANTITATIVE DATA**

**ACTION: RECEIVE AND FILE**

#### **RECOMMENDATION**

RECEIVE AND FILE Office of the Inspector General Review of Metro Construction Projects Quantitative Data.

#### **ISSUE**

The OIG has completed its Review of Metro Construction Projects Quantitative Data. This is a companion report to the 2023 OIG Construction Best Practices Report (Follow Up to the 2016 OIG Construction Best Practices Report).

#### **BACKGROUND**

The Board queried the Office of Inspector General (OIG) whether, given all the checks and balances and systems and processes that appear to be in place, has the OIG seen any measurable results related to the number and amount of change orders showing, is Metro moving in the right direction. The OIG is responding to the Board's request by reviewing cost/budget escalation across 29 construction contracts, schedule compliance / extensions, and Metro's safety incident experiences at construction project locations.

#### **DISCUSSION**

In the 2023 OIG Construction Best Practices Report found Metro to be in compliance with most of the recommended best practices over areas such as readiness, procurement, and management of construction projects. In this review analyzed quantitative data pertaining to three areas - Cost/Life of Project budgets, schedules, and safety management to evaluate the impact of the enhanced best practices. The cost/budget information includes Life of Project ("LOP") budgets escalation history and change order activity since 2013 across 29 construction contracts allowing for quantitative review.

LOP Budget - We reviewed data on the initial and revised LOP budgets presented to Metro's Board for authorization to commence and continue projects. We found the data suggests that to lessen LOP budgets revisions, Metro should strive for fixed and stable project definitions; enhance its estimating basis and analysis across the project life cycle; accept conservative risk analyses and encourage early and comprehensive site investigation to avoid subsurface conflicts and/or unanticipated extra work.

1. Of the 17 projects reviewed, 4 had no revision to the original Board approved LOP budget, 4 had 1 revision, and 9 had 2-3 revisions. Some of these projects are still open so additional increases to the LOP budget may occur in the future.
2. Substantial LOP budget increases are typically due to the addition of new work. However, in the case of PLE-3 the base contract work was procured separately (stations separate from tunnels). End-of-project claims for delay-related and change impact costs also contributes to exceeding LOP budgets (which was the case for Crenshaw/LAX).
3. Comparing the allocation of hard costs to soft costs across projects from the original LOP budget to the revised LOP budget shows that the allocation changes from hard costs being 75% of the LOP budget in the beginning but moving to 67% of the budget later. The reasons for this shift are different for each project.

Change Orders - We reviewed data on change order activity across the 29 construction contracts to identify “challenge” areas and trends. For all construction projects, large or small, transit or non-transit, the number and value of change orders can reveal both challenges and opportunities to be addressed by planners and implementers of design and construction projects.

1. The 29 construction contracts reviewed had a total of 2,261 change orders. These change orders resulted in an average 13% increase to the original value of the contracts. However, over half the construction contracts we reviewed are still open and may have pending or future claims that may result in additional change orders to the contract.
2. The three most common reasons for change orders (based on total value) is: 1) extra work at \$520m, 2) owner design changes at \$228m, and 3) differing site conditions at \$157m.
3. Design - build (DB) method projects experience a higher level of cost increase due to change order activity (whether open or closed) than design - bid - build (dbb) method projects (DB 14% vs dbb 10%).
4. Change orders over \$500,000 constitute 90% of change order costs yet equate to only 14% of overall 2,261 change orders. The average change order value in this category is over \$3 million. Nine of the 29 construction contracts are responsible for 53% of the total change order value over \$500,000.
5. Change Order basis coding broadly describes the reason for a contractor receiving an equitable adjustment to the contract but fails to provide internal visibility to the “true” cause of the change. Enhancements are needed for this data to be utilized for lessons learned purposes. In place of vague descriptors from the contractor’s point of view, the Change Order basis coding should inform management of the nature of the additional work and whether the cost was avoidable versus unavoidable, to improve Metro’s control and decision-making tools over budget, timing, pre-construction investigation, and the delivery method strategy.
6. Projects started in the last several years may not produce measurable data for some years in the future. The Metro Program Management Group (PMG) presented April 2023 the 18 Strategic initiatives for enhancements to construction management best practices. Some initiatives include: a revised LOP budget process, comprehensively applied risk management oversight, reviewing project soft costs, and continued efforts by the Early Intervention Team. As these initiatives are implemented, measurable data should become available for PMG to

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compare with this baseline report.

Schedule - For purposes of this report we used the award date as the start date for each project we reviewed. The OIG used this data to determine schedule variances across the 7 projects.

1. Schedule variance exceeded 40% on 3 of the 7 projects; 2 projects experienced variances between 17% and 22%; and for the remaining 2 projects the schedules showed 0% change. For open projects, there is no assurance the current variances will not change.
2. Correlating schedule variances to LOP variances (looking only at the 7 sample projects), the OIG identified that for Crenshaw/LAX, Regional Connector and PLE-1 cost and delay variance had some correlation which could change based on future change orders. For Patsaouras Plaza, the LOP variance greatly exceeded the delay percentage which may be due to the conservative initial LOP budget and/or the high costs incurred for delay (the project was placed on hold for archeological investigation for about a year). For the Willowbrook Rosa Parks project, schedule variance did not result in a correspondingly high LOP budget variance which may relate to the delay being non-compensable.

The limited nature of reason coding for the schedule changes affected the OIG's ability to engage in complex analysis of a costs to schedule nexus. The OIG recommends enhanced reasons coding for change orders awarding time extensions whether compensable or not.

Construction Safety - The OIG selected data from four (4) projects to review and found:

1. Contractors universally cooperate in preparing certain required submittals including the Safety Plan for the project and providing pro forma monthly reports on general statistics about work hours, injuries, restricted employees, other matters. Contractors make excuses for not fully participating in safety investigations, root cause analysis and corrective action reports for "liability reasons."
2. Contractors may vary in how proactively they implement a best practices safety culture on the worksite. The Regional Connector sets a high standard for the contractor self-correcting safety non-compliances and working collaboratively with Metro's Safety Team. The OIG observes that this project's Incident Log contained the highest amount of administrative enforcement/engagement entries that demonstrates consequences for safety issues were imposed and reduced serious injuries.
3. Metro's success in overseeing contractor safety compliance depends on Metro hiring contractors with a robust safety culture. That is typically demonstrated by low "experience modification rates" less than 1.0. A rate under 1.0 shows a contractor is lower risk with less insurance claim history; above 1.0 demonstrates a risky contractor not focused on a safety culture and has multiple insurance claims (work site accidents) history.
4. The success of Metro's safety management program clearly depends on identification of a contractor's willingness to be collaborative and engaged concerning work site safety, throughout the project implementation. Post-award Metro would benefit from receiving from the contractor its documentation required by Cal/OSHA and by increasing periodic training on safety requirements from the Safety Manual that are connected to its contract with Metro.

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**Ending Comments** - Although the outcome of implementing best practices could not definitively be quantified or measured to cost/budget, schedule, and safety at this time, by comparing similarly situated pre-2016 projects to post 2016 projects, (year references the OIG 2016 Construction Best Practices proposed 109 recommendations) the controls Metro has recently put in place are perceived anecdotally if not quantitatively to have an overall positive impact on the lifecycle of Metro's construction projects. Staff has stated that the Metro construction culture is continuing to improve, such as by the enhanced readiness reviews being performed. Thus, Metro should continue to identify and implement best practices. In this regard, the data presented in this report should be used as an initial baseline for PMG to conduct subsequent studies, identify trends in cost/budget, schedule, and safety, and to improve their management of construction projects.

### **FINANCIAL IMPACT**

This report itself has no financial impact on the Agency. The OIG is reporting data provided by PMG and others on Life of Project Budgets and Change Orders, schedule information, and safety statistics and presenting the information to the Board in chart and tables.

### **EQUITY PLATFORM**

There are no equity-related issues around geography or populations for any low-income equity-based communities related to this report. The report only discusses historical data and proposals for continued enhancement to construction related program management and administration.

### **IMPLEMENTATION OF STRATEGIC PLAN GOALS**

This 2023 OIG Construction Best Practices Study supports Metro's Strategic Plan Goal #5: Provide responsive, accountable, and trustworthy governance within the Metro organization and CEO goals to exercise fiscal discipline to ensure financial stability. The OIG mission includes reviewing expenditures for fraud, waste, and abuse in Metro programs, operations, and resources. The goal this Review of Construction Projects Quantitative Data is to present to the Board cost/budget challenge areas, schedule conformance, and construction safety history and identify areas for improvement.

### **NEXT STEPS**

This Review of Metro Construction Projects Quantitative Data report includes 13 recommendations to further enhance Metro's construction management best practices. Metro management responses are included as an attachment as (Attachment B). Additionally, concurrently, the OIG submits a report titled, OIG Report: 2023 OIG Construction Best Practices Report [Follow Up to the 2016 OIG Capital Projects Construction Best Practices Study]. That report describes strengths and vulnerabilities with best practice recommendations (Legistar 2023-0178). The two reports suggest management consider further enhancements to the program management and administration which they will inform us of their implement over time.

### **ATTACHMENTS**


Attachment A - Report

Attachment B - Recommendations and Responses

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Prepared by: Prepared by: Suzanna Sterling, Construction Specialist Investigator (213) 244-7368

Reviewed by: Karen Gorman, Inspector General (213) 922-2975



Karen Gorman  
Inspector General