

UC MERCED AUDIT AND ADVISORY SERVICES

April 16, 2015

To: Michael Reese – Vice Chancellor for Business and Administrative Services
Subject: Audit of Science and Engineering 2 Building construction project
Ref: Report No. M14A005: Science and Engineering 2 Building Construction Project

Internal Audit has completed an audit of the Science and Engineering 2 Building construction project. This audit was originally part of the FY 2013 – 2014 audit plan but was pushed back to the FY 2014 – 2015 plan based upon the timing of the building's occupancy.

We appreciate the help we received from the Design and Construction staff during this review.



Todd Kucker
Internal Audit Director

Attachment

cc: SVP Vacca
Chancellor Leland
Associate Chancellor Putney
Assistant Vice Chancellor and Campus Architect Lollini
Director Mitchel

**UNIVERSITY OF CALIFORNIA, MERCED
AUDIT AND ADVISORY SERVICES**

Science and Engineering 2 Building Construction Project
Report No. M14A005

April 16, 2015

Work performed by:
Todd Kucker, Internal Audit Director

Management Summary

Internal Audit has completed an audit of the Science and Engineering 2 Building construction project. The primary purpose of the audit was to ensure that the construction project was properly awarded and effectively managed.

During the audit, we reviewed the bidding process and extensively reviewed change order documentation. The change orders we reviewed accounted for 42% of the \$4,769,556 worth of change order costs incurred on the project (through December 2, 2014).

Overall, we concluded that processes related to awarding work complied with UC policies and that Design and Construction staff effectively managed the construction project.

During the audit, we noted that there were difficulties with one trade contractor. Based upon our review of the change orders from this contractor, we made recommendations for improvement in the following areas:

- Increase scrutiny over contractor payments when errors are identified
- Compare the costs of utilizing change orders with other potential options

The issues and management corrective actions are further explained in the following report.

Objectives and Scope

Internal Audit has completed an audit of the Science and Engineering 2 Building construction project, which was part of the 2014 – 2015 audit plan. The primary purpose of the audit was to ensure that the construction project was properly awarded and effectively managed. The audit objectives were:

- To confirm the construction project bids were in compliance with institutional policies
- To verify that the construction project was in compliance with applicable contract terms and conditions

The scope of the audit included all phases of the Science and Engineering 2 Building project. The original approved budget for the state-funded project was \$88,819,000. Construction of the building began during 2012 and the building was occupied in August 2014.

To accomplish the audit objectives, the following steps were performed:

- **Bidding:** Review of construction project bid solicitation documents, bid submittals, bid tabulations, and bid award/rejection letters to ensure compliance with institutional policies.
- **Contract Compliance:** Review of construction payment applications including summaries and detailed support (labor, equipment, materials, expenses, suppliers, etc.) to ensure compliance with applicable terms and conditions of related construction contracts including exhibits, appendices, and rate sheets.

- Change Orders: Review of construction change order logs, detailed support, and approvals to ensure compliance with both institutional policies and contract requirements.
- State Funding Requirements: Review of reporting requirements and use of funds.

Background

At UC Merced, Design and Construction manages the campus' major capital projects. The following is their mission: "Design and Construction is a multidisciplinary team of architects and construction professionals within the division of Business and Administrative Services responsible for the design and development of UC Merced's buildings and infrastructure. From UC Merced's earliest days, the department works to build modern, sustainable facilities in a work environment dedicated to excellence and innovation."

The Science and Engineering 2 Building is a 102,000 square foot facility which supports instruction and research activities for the Schools of Engineering and Natural Sciences. Adjacent to the Science and Engineering 1 building, it houses research laboratories, wet class laboratories, an open class laboratory, and academic and research offices.

The project was procured using the Construction Manager/Multiple Prime delivery method. After a construction management firm was selected, bidding was completed to select contractors for thirty-five separate trade packages. Design and Construction staff and the Construction Manager supervised the work of the many contractors. The building was designed in hopes of achieving LEED Platinum.

The majority of funding for the construction project was provided by the State of California. \$3,845,000 of the funding for furniture, fixtures, and equipment in the building was paid by Proposition 1D funds. There are special reporting and audit requirements related to Proposition 1D funds.

Conclusion

Based upon the audit, other than the issues noted with one of the trade contractors, we concluded that the Science and Engineering 2 Building project has been effectively managed by Design and Construction. We identified the following areas for improvement:

- Increase scrutiny over contractor payments when errors are identified
- Compare the costs of utilizing change orders with other potential options

Observations and Management Corrective Actions

1. Increase scrutiny over contractor payments when errors are identified

To test change orders, we selected fifty-one change orders totaling \$2,000,363, which accounted for 42% of the \$4,769,556 worth of change orders incurred on the project (through December 2,

2014). During the review of change orders, we noted duplicate payments and other issues with a particular contractor so we ended up testing 100% of this contractor's change orders.

To promote the local economy, UC Merced strives to look for opportunities to hire local contractors. The local contractor awarded the general conditions trade work appeared to have difficulties managing the many requirements related to working on a large UC construction project. During the review of this contractor's change orders, we noted numerous errors and unexplained increases in costs that always increased the costs paid by the University. The following examples all relate to this contractor.

- One change order was set up to be paid based upon time and materials. The contractor was paid based upon their cost estimates at the beginning of the change order work. There was not a reconciliation to compare amounts paid with the actual time and material costs incurred. Based upon the detailed hours provided by the contractor, it appears that the labor costs incurred were \$16,917 less than the original amount paid to them. As actual costs were not reconciled, the excess charges for the change order work was not paid back to the University.
- The contractor incorrectly classified subcontractor labor as consumables on the UC change order documents. They then charged the University sales tax on this labor where no sales tax was charged to them. During the project, these errors resulted in \$2,363 of additional amounts paid to the contractor.
- The contractor charged the University for \$3,221 worth of benefit costs which were already built into the contractor's labor rates. This resulted in duplicate payments for these benefit costs.
- We noted \$6,190 worth of duplicate charges for rental costs and purchases. The contractor charged rental costs and purchases during one month and then charged the University for these same costs again during another month. Design and Construction employees and the Construction Manager identified and disallowed many thousands of dollars' worth of instances where this occurred. These particular duplicate charges were missed during their reviews.
- One instance was noted where the contractor documented their daily labor related to change order work but then charged the University twice for one of the days. This resulted in an overcharge of \$722.
- One instance was noted where a subcontractor charged 15% overhead and profit on their change order work. When the contractor charged these subcontractor costs to the University, they incorrectly completed the change order documentation and charged the University for another 15% profit. This resulted in an overcharge of \$2,627.
- For monthly labor costs on change orders, the subcontractor began adding an unexplained 9% charge. These additional charges resulted in overcharges of \$6,934.

In total, we noted errors resulting in additional charges of \$38,434 on the \$494,778 worth of change orders with this contractor (7.7% error rate).

During the construction project, the University received notices which further revealed difficulties with this contractor:

- A Stop Payment Notice was received from one of their subcontractors that had not been paid.
- A Stop Notice was received from one of their former employees as the employee claimed that he had not been paid.
- The University received notice to withhold amounts from the contractor's payments because of a civil wage and penalty assessment from the Department of Industrial Relations for the failure to pay prevailing wages.

We recommend that when errors and duplicate payments are noted, additional review of all documentation received from the contractor should be scrutinized. It seemed that the documentation requirements related to a large UC project were too difficult for this contractor to manage. The contractor had completed a smaller project at UC Merced and used this experience to state that their superintendent had sufficient experience to manage a much larger amount of work.

Management Corrective Action

General Conditions is one of the more difficult aspects of a contract to scope, due to the length of the project and the many logistical decisions throughout the process that require changes to this type of scope.

In the future, Design and Construction will not be using multiple prime construction projects. This will greatly reduce the number of change orders to be reviewed. Design and Construction staff will also, therefore, review all change orders for compliance. It is agreed, the size of project was too large for the General Conditions contractor, which will not be an issue on future projects given the change in contracting method.

2. Compare the costs of utilizing change orders with other potential options

When the contract with the general conditions contractor was put together, a \$316,000 allowance was included to cover equipment rental costs and other costs associated with this trade. Expected costs, such as fencing, general and carpentry labor, and final cleaning were included in the regular contract, but this allowance was set up for unpredictable costs.

Early in the construction project, the remaining balance of this allowance was reversed and the contractor was told to submit documentation for these monthly equipment rental, miscellaneous purchases, and other costs on change orders. During the remainder of the project, the contractor submitted monthly change orders to document these allowance related costs. As change orders were utilized, the contractor was able to add 15% profit to these costs which they would not have

earned if part of the original contract. Over the life of the agreement, 15% added to the monthly costs resulted in \$41,110 extra paid to the contractor.

We recommend considering the costs and benefits when utilizing change orders. When there are less expensive ways to complete the work, written justification for utilizing change orders should be completed and approved.

Management Corrective Action

In the future, Design and Construction will not be using multiple prime construction projects. This will greatly reduce the number of change orders. Unfortunately, there were challenges unknown at the time of contracting with the Prime Trade Contractor that manifested during the course of construction and could not have been forecast. Estimating the full extent of the needs of a General Conditions contractor is difficult to project past the initial bid documents, as the overall construction strategy is an evolving process in coordinating the various Prime Trade Contractors. Future General Conditions needs will be addressed under the contract of a General Contractor or Construction Manager at Risk, reducing the direct exposure to the University.