

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA  
OFFICE OF ETHICS, COMPLIANCE AND AUDIT SERVICES



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John A Lohse  
INTERIM SENIOR VICE PRESIDENT  
CHIEF COMPLIANCE AND AUDIT OFFICER

January 24, 2017

**ASSOCIATE VICE PRESIDENT KIM**

**RE: Final Report Project No. P16A005: Systemwide Construction Audit**

Attached is a copy of the final report for: Project No. P16A005 Systemwide Construction Audit. With the issuance of this final report, please destroy any previous draft versions. We very much appreciate the assistance provided to us by you and members of your staff during our review. If you should have any questions please feel free to contact me at 510-987-9646 (email: [matthew.hicks@ucop.edu](mailto:matthew.hicks@ucop.edu)).

A handwritten signature in black ink, appearing to read "Matt Hicks".

Matt Hicks  
Systemwide Deputy Audit Officer

Attachment

cc: Interim Senior Vice President Lohse  
Executive Vice President Brostrom  
Chief of Staff Werdick  
Manager Cataldo  
Director Hornbeck  
Director Santa Cruz

UNIVERSITY OF CALIFORNIA  
ETHICS, COMPLIANCE AND AUDIT SERVICES  
OFFICE OF THE PRESIDENT  
SYSTEMWIDE AUDIT

Systemwide Construction Audit  
P16A005  
July 2016

Prepared by:  
Systemwide Audit Manager Cataldo

Reviewed by:  
Systemwide Deputy Audit Officer Hicks

## **I. SUMMARY**

In accordance with the annual University of California (University) audit plan, the University conducted a systemwide review of construction. This review was performed at all University of California campuses and the Lawrence Berkeley National Laboratory using a standard systemwide audit program. Each location's Internal Audit Department has issued a report covering its local observations and associated planned management corrective actions. This summary report provides an overview of the systemwide findings and communicates any issues that should be addressed from a systemwide perspective.

The most prevalent issue identified at the various locations during this review related to the execution of change orders as they were not always sufficiently documented to support that the cost was reasonable and represent a legitimate expense.

## **II. PURPOSE AND SCOPE**

The primary purpose of this review was to assess the adequacy of internal controls and construction management processes on select major capital projects in the following areas:

- Bidding and award process
- University Controlled Insurance Program (UCIP)
- Change order execution
- Funding restrictions and requirements

The scope of the review included major construction projects currently in progress or in progress during fiscal years 2012-13, 2013-14 and 2014-15.

As part of our scope, we also collected and reviewed construction data for projects with an initial budget over \$5 million that have been substantially completed within the last three fiscal years in an effort to identify any correlations between contract type or bid selection process and total amount of change orders or construction delays.

## **III. OBJECTIVES**

The primary audit objectives were to:

- Confirm that construction project bids and awards were in compliance with UC Facilities Manual requirements;
- Ensure that for projects over \$25 million the contractor and subcontractors were enrolled and covered under the UC Insurance Program according to program underwriting requirements;
- Verify that the construction projects, including change orders, were in compliance with applicable contract terms and conditions;
- Review compliance with restrictions and requirements related to funding; and,
- Collect and review select campus project data to determine if there are any trends in contracting methods, amount of change orders and construction delays.

#### **IV. BACKGROUND**

The University operates an extensive design, construction, and renovation program, and makes substantial investment in capital projects. Major construction projects at the University of California are subject to policies and procedures set forth in the UC Facilities Manual (FM). The FM is organized into six volumes, each focused on a different aspect of facilities management and operation, including construction contracting, construction documents, bidding and construction administration.

Capital Programs at UCOP is responsible for managing the review and approval process for the University's capital program, and provides systemwide leadership and campus support in a number of areas including capital budget strategy, policy and recommendations to the Regents and the State of California; capital project design and delivery strategies, policy, contract development and training; design professional selections; building/safety code and regulatory issues. Each year Capital Programs produces an "Annual Report on Major Capital Projects Implementation" (Major Cap Report) that provides an overview of campus programs and the status of major projects, including budget and schedule changes. The campuses and Capital Programs work together in an effort to ensure the capital projects are completed timely and in the most cost-effective manner.

UCOP Capital Planning partners with campuses in the development of capital projects through the *Ten Year Capital Financial Plan* and the *Annual Budget for State Capital Improvements*. The unit coordinates with Office of General Counsel (OGC), Capital Markets Finance and the Secretary of the Regents office on funding, compliance and other issues to ensure success of capital proposals. Capital Planning collaborates with campuses on proposed policy and process revisions; provides information required by State agencies; and responds to project-specific queries.

The Regents have established a controlled insurance program for large construction projects. Projects with a projected construction value of \$25 million and over are to be insured under the University Controlled Insurance Program (UCIP). The UCIP is a single insurance program that insures the University, enrolled contractors, subcontractors and other designated parties for work performed at project sites. Participation in the UCIP is mandatory (but not automatic) for all eligible parties, unless operations are specifically excluded.

The University of California utilizes the following contracting models as part of the capital program.

- **Conventional (design-bid-build)** - This mode (also referred to as lump-sum) requires complete and detailed plans and specifications that enable a contractor to carry them out. The University's Long Form, Brief Form, and Mini Form construction documents support this mode.

- **Design-and-build (design-build or turnkey)** - The University contracts with a single party that designs and builds the project. This mode includes performance specifications covering quality of materials, equipment and workmanship; and includes a maximum acceptance cost.
- **Construction Manager** - The University contracts with a firm that provides management services during design and bidding phases and assumes responsibility for the construction work. The Construction Management (also referred to CM @ Risk) commits to deliver the project within a guaranteed maximum price.
- **Cost-plus-fee** - The contractor is reimbursed for the actual cost of labor and materials, plus a fee for overhead and profit.

The following location construction projects were judgmentally selected by Internal Audit at each location and reviewed as part of this audit:

LOCATION	PROJECT
UC Berkeley	Lower Sproul Redevelopment Project
UC Davis	Primate Center Cage Washing Facility
UC Irvine	Mesa Court Expansion
UC Los Angeles	Connie Frank Kidney Transplant Center – contractor bidding MRI Radiotherapy Renovation – change orders
UC Merced	Classroom and Office Building 2
UC Riverside	Environmental Health & Safety (EH&S) Expansion Building Project
UC Santa Barbara	Davidson Library Addition and Renewal
UC Santa Cruz	Coastal Biology
UC San Diego	Jacobs Medical Center
UC San Francisco	Mission Hall
LBNL	Old Town Demolition Project Phase 1

## V. CONCLUSION

### A. Themes from Campus and Laboratory Audits

The following issues represent a consolidated summary of the issues noted by local Internal Audit departments as part of this systemwide audit. For each issue noted, the local Internal Audit department worked with management to identify an appropriate management corrective action and will follow up with management to ensure the corrective action is resolved appropriately.

i.) Bid and Award Process

In general, we noted that bid and award processes were conducted in accordance with applicable University of California and campus policies and guidelines. Minor deviations from established policies and procedures were noted at certain locations with respect to adequate bidding documentation, but were not indicative of a systemwide issue.

ii.) Participation in the UCIP

There were no significant issues noted in this area.

iii.) Change Orders

A number of campuses identified issues with change orders indicating that a more robust review of change order documentation is necessary to ensure the costs are legitimate and accurate. The following change order issues were noted at multiple locations:

- Inadequate Supporting Documentation

When it is determined that a change order is needed in a construction project, the FM requires that the related cost must first be determined using a cost proposal with detailed backup. We noted instances in which cost proposals for the change order did not include detailed support for the charges. This was evidenced by the lack of labor and material cost breakdowns. Examples included:

- Lump sum labor charges that were not broken out by job category
- Labor rates not disclosed
- Lump sum material charges (with no supporting documentation or per unit cost)

Inadequate documentation increases the risk that unallowable costs will not be detected upon review, and it is not possible to determine if they are reasonably priced and represent a legitimate change in the project delivery.

- No justification for not bidding change orders over \$100,000

According to the FM, if a cost of a change order exceeds \$100,000, or if the proposed changes in design are not incidental to the scope of work, “the work may not be performed by a change order unless it can be convincingly demonstrated that no advantage would be gained by conducting an advertised bid for the work.” Further, there should be documented rationale to support the decision not to competitively bid the work.

A number of locations identified change orders over \$100,000 that lacked the documentation to justify why competitive bidding was not utilized. The documentation should include the rationale for the change order and the primary factors to proceed with a change order rather than competitively bidding the work.

- Questionable costs and errors

As part of the analysis of the change orders and available supporting documentation, several locations identified calculation errors within the supporting documentation or costs that did not appear to be explicitly allowed. Examples of questionable costs included extended overhead amounts, parking and crew transportation expenses, and equipment rental rates accounted for at a lump sum amount that exceeded the allowable hourly rental rate.

A thorough and detailed review of the change order supporting documentation is paramount to ensuring that the expenses submitted are accurate, and in accordance with the construction contract.

iv.) Funding Restrictions and Requirements

Restrictions and requirements are usually placed on specific sources of funding, (e.g. within grant agreements), provided to the campus for construction projects. Although the campus capital program departments responsible for construction projects (e.g. Design and Construction Services) play a major role in the construction process, coordination with other department stakeholders is necessary.

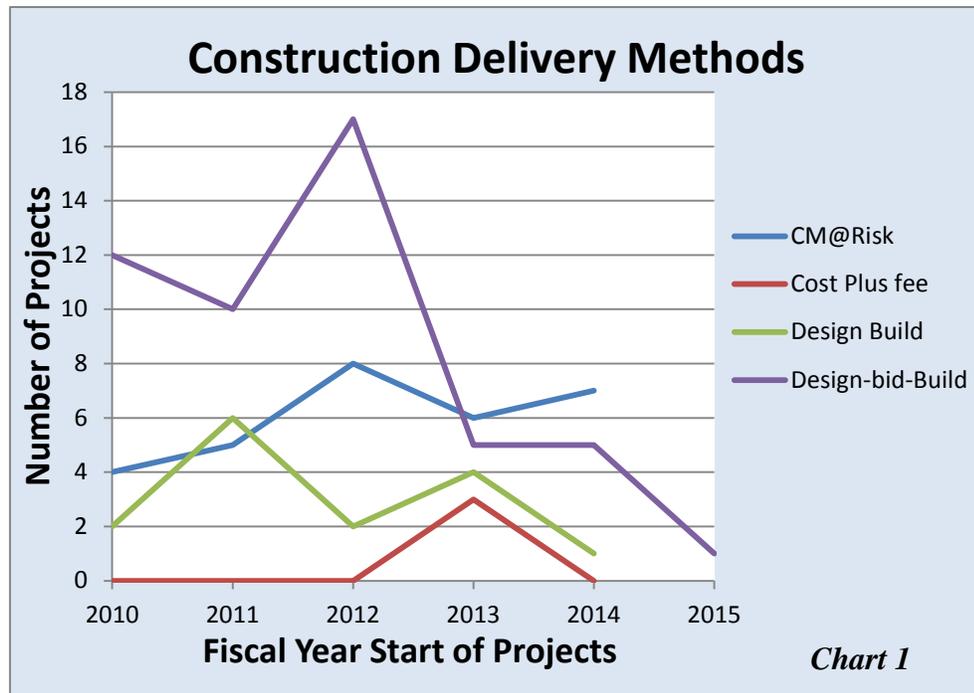
While the locations did not observe any instances of non-compliance with funding requirements and restrictions, several campuses identified the need for a more defined process to ensure that funding restrictions and requirements are communicated better between the various stakeholders and responsibilities for monitoring compliance are clarified.

B. Data Analysis Results

The following section addresses our analysis of the construction data collected by the local Internal Audit departments in an effort to identify any significant trends. Our goal of collecting and reviewing location construction data was to determine if there are any correlations between the contract type or bid selection process and the total dollar amount of change orders or construction delays.

Campuses and medical centers select certain delivery methods/contracting modes depending on the particular circumstances of the local construction climate and individual projects. As part of our review, each UC location's Internal Audit Department collected data for projects with construction costs of \$5 million or greater that have been substantially completed in the last three fiscal years. An analysis of this contracting data indicated that it was difficult to identify direct correlations between the type of contracting method and the total change orders or construction delays. Large change order totals and construction delays occurred on projects regardless of contracting method, and are typically the result of additional scope, unforeseen conditions, or unexpected events.

We did note, however, that over time the types of contracting methods has shifted in that the utilization of the construction manager at risk (CM@Risk) method has increased in recent years (see Chart 1). With this method, during the preconstruction phase of the project the construction manager (CM) acts as a consultant that provides professional design development and construction expertise. The CM procures the subcontractor specialties in stages as appropriate to balance project risk. At phase two of the project the CM contractually becomes a General Contractor with a lump-sum price commitment with the associated risks similar to a design-bid-build contract.



The CM@Risk method has become increasingly more popular as it encourages a more collaborative project team and allows the University more flexibility in dividing risk attributes more optimally between the University and the general contractor. CM@Risk is used more widely for complex projects with greater project risk unknowns. Additionally, the University has for the last five years been exercising a new statutory privilege to apply a best value analysis to procuring any of these project delivery methods. Best Value (BV) allows campuses to objectively consider five specific contractor traits including experience and management competency by using a dollar per quality point bid analysis. BV is a powerful tool and is best leveraged when procuring the CM@Risk general contractor.