

The image shows a large, multi-story atrium with a curved brick wall and a prominent circular skylight at the top. The skylight is illuminated, casting a bright glow. Below it, there are several levels of balconies with glass railings. The overall design is modern and architectural.

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Summary

The audit of the McCord Hall construction contract was included on the Arizona State University (ASU) FY 2015 annual audit plan approved by the Arizona Board of Regents (ABOR) Audit Committee and university senior leadership. University construction projects have been identified as strategic, high-risk areas since charges to the project may not comply with the negotiated contract, resulting in overcharges, cost overruns, and process inefficiencies.

Construction administration and project monitoring for ASU is provided by the Capital Programs Management Group (CPMG). University Audit (Audit) previously completed audits of construction contracts administered by CPMG in:

- FY2014 - Audit Report Number 14-03 Sun Devil Fitness Complex Polytechnic Campus Construction Contract issued in November 2013.
- FY2013 - Audit Report Number 13-04 Interdisciplinary Science and Technology Building 4 (ISTB4) Construction issued in January 2013.
- FY2008 - Audit Report Number 09-04 Hassayampa Academic Village Contract Administration issued in April 2008.

Background: McCord Hall was constructed to help the W. P. Carey School of Business (school) achieve one of its chief objectives of nurturing a robust graduate community culture that encompasses all of the W.P. Carey Graduate Programs, reflecting the growth and prominence of the school. McCord Hall is home to Executive Education programs and several Master's programs within the school. The building also accommodates MBA Administration and Career Management services for graduate students. Although focused on graduate studies, McCord Hall also is home to the undergraduate Leaders Academy, a community designed for the school's top undergraduate students.

McCord Hall was added to the school's two existing structures, which were renovated during the construction of McCord Hall. Together, they ease overcrowding for the 10,000-plus students who attend the school. The facility consists of two four-level sustainable structures linked by long-span skyways. McCord Hall is approximately 129,000 gross square feet, and earned a LEED gold certification. Modern architecture with a dramatic facade of corduroy exterior brick pattern, sloping walls, and an intimate courtyard define this state-of-the-art building. The project won two awards from the American Concrete Institute Arizona, for Best Overall Project and Exposing the Best in Concrete. Most recently, the project was acknowledged by the Arizona Masonry Guild with a Craftsmanship Award and Honor Award, and at the regional ENR (Engineering News-Record) Southwest Awards as the Best Education Project in 2014.

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The project was completed using the Construction Manager at Risk (CM@Risk) project delivery method. The CM@Risk provides technical assistance to the designer during the design phase, including constructability reviews, cost estimates, and product specifics to aid in cleaner designs, and provides a fixed price for the contract, called a Guaranteed Maximum Price, for construction. The majority of construction at ASU uses this method now. The CM@Risk selected for this project was DPR Construction (DPR). To select the CM@Risk, a qualified selection committee (committee) was initiated for the request for qualifications, and a licensed contractor was placed on the committee. Packages that were received were ranked by the committee. The committee short listed three firms after weighing the criteria included in the request for qualifications. All of the firms were qualified to perform the required services for the construction of McCord Hall. The ASU Project Manager served on the committee; as individuals from the firms were interviewed, the proposals were assessed and ultimately DPR was selected. The process was in compliance with Arizona Board of Regents policy and the contract requirements during the selection process. The contract with DPR (contract) included pre-construction design-phase services as well as construction-phase management, including coordinating all subcontracted work. Two contracts were used with the CM@Risk during this project, the "University Standard Form Agreement Between Owner and CM@Risk on the Basis of a Guaranteed Maximum Price" dated April 19, 2010, for the design phase of the project, and the "University Standard Form Agreement Between Owner and CM@Risk on the Basis of a Guaranteed Maximum Price" dated October 31, 2011, for the construction phase of the project. Audit has made recommendations in previous construction audits for construction projects that used these contract editions. Because the construction phase of McCord Hall was 60% complete at the time these recommendations were made, the recommendations were not implemented for the McCord Hall construction project.

ASU constructed the facility on the Tempe campus for a final Guaranteed Maximum Price (GMP) of \$41.0 million. The initial scope of work was subject to a ceiling price of \$38.4 million as originally fixed in the contract. However, changes in the scope of the construction project encountered during the Construction Phase necessitated additional work, modified work or deleted work, all of which added \$2.6 million of additional costs documented in Change Orders to the original GMP, resulting in the final total GMP of \$41.0 million (see the table on page 4). Funding for the project, including funding the Change Orders, was provided through the sale of ASU System Revenue Bonds and gifts.

ABOR granted Project Implementation Approval for the project in December 2010. The Capital Committee reviewed the project and ABOR Project Approval was subsequently granted in September 2011 for \$57.1 million.

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The Total Project Budget Amount was \$57.1 million (see the table on page 4), which included GMP construction contract costs of \$41.4 million; as well as architectural services, furniture and equipment, telecommunications equipment and installation, CPMG project management expenses, state risk management insurance expenses, and other required costs, totaling an additional \$15.7 million.

The CM@Risk performed Design Phase Services during the Pre-Construction Phase of the project to determine constructability of the facility, including review of the architectural design and drawings, value management and engineering, preliminary schedule formulation, subcontractor scope clarification, and development of a Guaranteed Maximum Price. The responsibilities of the CM@Risk during the Construction Phase of the project included overseeing construction for conformance to drawings and specifications, reviewing and certifying amounts due to subcontractors, managing Change Orders, building inspections, and following Project Closeout procedures.

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Description of the McCord Hall Contract Phases	Expenditures
Initial Pre-Construction Phase Fee	\$329,180
Increase in Pre-Construction Phase Fee via <i>Change Order 1</i>	<u>1,323</u>
Final Pre-Construction Phase Fee	<u>\$330,503</u>
Initial Construction Phase GMP	\$38,400,000
Net Change Orders #1 through #10, as of June 24, 2013	<u>2,619,432</u>
Final Construction Phase GMP	<u>\$41,019,432</u>
Total Pre-Construction Phase Fee and GMP as of June 24, 2014	<u>\$41,349,935</u>
Architect/Engineer, Surveys and Tests	\$5,447,513
Furniture Fixtures Equipment, Telecommunications Equipment	7,860,058
Project Management Expenses and Fees, State Risk Insurance	502,736
Renovation, Special Equipment, Site Development	178,058
Anticipated Costs for additional Project Management Expenses and Fees, and State Risk Insurance	1,159,834
Uncommitted Budget	51,866
Decrease in Budget Funding	<u>500,000</u>
Total Other Required Project Costs	<u>\$15,700,065</u>
Total Budget Amount as of September 30, 2014	<u>\$57,050,000</u>

The contract was signed on November 3, 2011, and called for substantial completion of the facility by June 18, 2013. CPMG indicated satisfaction with the quality of the work and that the CM@Risk completed work during the required timeframe.

Audit Objectives: To determine that financial transactions relating to construction activity for the McCord Hall construction project complied with the terms of the contract, including whether or not:

- Contractor billings were adequately supported by actual costs plus overhead, profit, and fees as specified by the construction contract;

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- Controls over the process were adequate and in accordance with contract provisions;
- Change Orders were priced according to the contract terms and were properly approved;
- The CM@Risk provided the contracted scope of work; and
- Insurance coverage during construction was in compliance with the terms of the contract.

Scope: Our audit included a review of the design phase and all construction-phase expenses paid to the CM@Risk from the start of the contract in 2010 through the end of construction in June 2013, including Change Orders #1 through #10 processed through June 2013, and four additional post-construction phase Change Orders #1 to #4 processed from July 2013 through April 2014. CPMG did not expect any additional Change Orders to be processed after April 2014.

We relied on CPMG's expertise for the construction technical aspects, and, therefore, our scope of work did not include any on-site inspections to assess construction methods, materials or compliance with design specifications.

Methodology: Our audit objectives were accomplished through:

- Preparing a control schedule of the initial GMP, Change Orders, and payment applications to ensure payments to the CM@Risk did not exceed the approved GMP;
- Selecting a sample of two out of twenty-five payment applications, one from early in the project and one from the middle of the project, and comparing the information in the payment applications to the detail the subcontractors had submitted to the CM@Risk supporting the amounts approved in the payment applications;
- Reviewing ASU payments to vendors other than CM@Risk to ensure the expenses were allowable costs and not included in the existing CM@Risk contracted scope of work;
- Reviewing the payments paid by CM@Risk to subcontractors and vendors for the actual cost of the work performed, including preparing a control schedule for all subcontractors under subcontract agreements, to ensure that the CM@Risk billed ASU for allowable costs;
- Discussing the project with representatives from CPMG including the Executive Director, Assistant Director, Project Manager Senior, and with representatives from University Business Services (UBS), including the Manager of Purchasing and Office Specialist Senior;
- Verifying all required insurance coverage and bonds were maintained during the project;
- Recalculating the overhead, general conditions and fees charged by the CM@Risk and the subcontractors on all Owner/ASU Change Orders, ensuring the fees were in accordance with the Change Order pricing provisions in the contract;

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- Preparing a control schedule to facilitate a pricing review of Change Orders (all Owner/ASU Change Orders with costs totaling \$2,619,432 for the Construction Phase and with costs totaling \$68,127 for the Post-Construction Phase were reviewed), including: recalculating the bonds, insurance, and taxes charged; reviewing the supporting documentation to ensure the Change Order amounts agreed to subcontractor quotes; and checking that the changes were reasonable and properly approved;
- Reviewing Owner/Design Contingency and Contractor Contingency Logs for approvals, supporting documentation and backcharges;
- Ensuring the selection of the Architect was performed in compliance with ABOR and ASU policies under the “Design Professional Agreement (CM@Risk/Operating Manual/Multiple Projects Form)” dated February 26, 2010;
- Ensuring the cost estimating and bidding process was performed in compliance with contract provisions under the “University Standard Form Agreement Between Owner and CM@Risk on the Basis of a Guaranteed Maximum Price” dated October 31, 2011;
- Reviewing subcontracts and bid documents for the seven largest subcontractors to ensure the contract terms were consistent and in compliance with the contract; and
- Reviewing for proper application of the Transaction Privilege Tax (TPT).

Conclusion: Based on our audit work, contractor billings were adequately supported by actual costs plus overhead, profit, and fees as specified by the construction contract. The financial transactions relating to construction activity, by both CPMG and the CM@Risk, complied with the terms of the contract. Documentation for payment applications, Owner Change Orders, and payments by CPMG was in order and complete. Regarding Construction General Conditions and cost verification, there are opportunities to improve the process of determining the cost of the Construction General Conditions and further strengthen processes for cost control.

Controls over the design and construction process were adequate and in accordance with contract provisions, with the project being completed within budget and the CM@Risk providing the contracted scope of work. Similar to findings in prior construction audits, the architectural fees paid by ASU exceeded the calculated fee from the *Arizona Board of Regent’s Construction Cost Control and Professional Fee Guidelines*. University Audit recommends compiling a historical cost database of architectural services that can be used to compare against future additional architectural services to help determine fees that are fair and reasonable to the University per *ABOR Policy Number 3-804B.5 Professional Services and Construction Services Procurement*. Determining architectural fees that are fair and reasonable to the University was also recommended in the Sun Devil Fitness Complex Polytechnic Campus Construction Contract Audit issued in November 2013, and in the

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Interdisciplinary Science and Technology Building 4 (ISTB4) Construction Audit issued in January 2013. Per ABOR Policy Number 7-102 *Overview of the Capital Development Process and Phases*, article E.1 says that the *Regent's Construction Cost Control and Professional Fee Guidelines* or other industry cost guidelines or internal historical data ("Guidelines") are to be considered when estimating architectural fees to ensure the reasonableness of architectural cost estimates. CPMG is working with the ABOR System Office to review *ABOR Policy Number 7-102* for potential revisions.

The CM@Risk self-performed a portion of the construction work on McCord Hall. When the CM@Risk self-performs the work, the CM@Risk is functioning as a subcontractor. To verify the reasonability of the cost of self-performed work, Best Practices dictate receiving at least three competitive bids for all the work performed. Alternatively, self-performed work could be competitively priced with a separate pricing and scoping document explicitly defining scope, labor rates, materials, and pricing method. While three bids were received for a portion of the materials supplied by the CM@Risk for the self-performed work, since the bids did not include labor costs, and since the self-performed work was not competitively priced with a separate pricing and scoping document, there was no independent assurance on the reasonability of the costs.

In regards to cost verification and similar to findings in prior construction audits, Audit noted that CPMG did not receive supporting documentation from the CM@Risk sufficient to complete a detailed review of the amounts paid by the CM@Risk to the subcontractors and vendors. CPMG also did not receive supporting documentation, including documentation for Construction Contingency Change Orders, sufficient to perform an in-depth review of the costs billed to ASU by the CM@Risk to determine whether ASU was only being billed for allowable costs, but the costs billed were within the contracted total GMP. Because the university relies on the contracted total GMP to serve as the cost control for construction projects, it is important that every aspect of the contract cost negotiation process be researched, negotiated, and documented properly. In addition, reconciling the CM@Risk payment applications to documentation supporting costs of construction as these progress payments are paid facilitates the performance of the contract final close-out process. Any savings due the university, arising from the difference between the GMP and the cost of construction as required in Section 7.1.2 of the construction contract, can be identified in a timely manner throughout the construction process.

With this in mind, Audit sought to independently verify insurance costs which had been separately enumerated in the contract. Audit requested copies of insurance certificates for insurance payments as proof of actual existence of insurance and bond coverage. The CM@Risk did not provide insurance certificates for Subguard Insurance. In previous audits, Audit sought advice from the ASU General Counsel staff, which after reviewing the Tri-

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University construction contract, determined that the CM@Risk was not required to provide Audit with the original supporting documentation of the CM@Risk's actual insurance costs (paid invoices or cancelled checks) under the terms of the current Tri-University standard construction contract template. The Tri-university construction contract requires the CM@Risk provide the University with certificates of insurance evidencing coverage. Audit recommends that ASU Management continue to work with the Tri-University Construction Contract Committee to review the insurance provisions of the standard construction contract to seek to reduce potential risk to the Universities.

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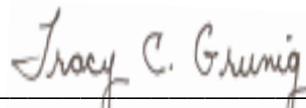
The control standards we considered during this audit and the status of the related control environment are provided in the following table.

General Control Standard (The bulleted items are internal control objectives that apply to the general control standards, and will differ for each audit.)	Control Environment	Finding No.	Page No.
Reliability and Integrity of Financial and Operational Information			
<ul style="list-style-type: none"> Contractor billings were adequately supported by actual costs incurred by the CM@Risk, plus fee, tax, and bonds and insurance charges as specified by the contract. 	Reasonable to Strong Controls in Place	NA	NA
<ul style="list-style-type: none"> Cost estimating, independent cost verification, bidding, and pricing of architectural fees were in accordance with policies and contract provisions. 	Opportunity for Improvement	1,2,3	10,11,13
Effectiveness and Efficiency of Operations	Not Applicable	NA	NA
Safeguarding of Assets			
<ul style="list-style-type: none"> The CM@Risk provided the contracted scope of work. 	Reasonable to Strong Controls in Place	NA	NA
Compliance with Laws and Regulations			
<ul style="list-style-type: none"> Owner Change Orders were priced according to the contract terms and were properly approved. 	Reasonable to Strong Controls in Place	NA	NA
<ul style="list-style-type: none"> Insurance coverage during construction was in compliance with the terms of the contract. 	Reasonable to Strong Controls in Place	NA	NA

We appreciate the assistance of CPMG, UBS and DPR representatives during the audit.



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Audit Results, Recommendations, and Responses

1. Construction General Conditions Should Be Further Verified for Reasonability

Condition: University Audit noted that Billing Rates charged by the CM@Risk exceeded the Billing Rates allowed under the contract. Billing Rates for labor costs (Billing Rates) within Construction General Conditions need to be verified by ASU with the market to ensure the Billing Rates are not excessive and are competitively market priced. Also, for labor costs and site support costs within Construction General Conditions, supporting detail for these costs should be included in all payment applications by the CM@Risk to allow for verification that amounts paid to the CM@Risk for these costs are correct.

Criteria: The CM@Risk Tri-University Agreement (Agreement) requires that costs for Construction General Conditions be paid by ASU to the CM@Risk for allowable costs only, and for actual costs or negotiated amounts determined to be fair and reasonable to the University. Labor costs within Construction General Conditions can be based on actual costs or independently competitively priced with a separate pricing and scoping document explicitly defining scope (including tiers of CMAR superintendents, engineers, etc.), Billing Rates, and pricing method. ASU can decompose and benchmark underlying costs before agreeing to the lump sum terms. In each payment application, the CM@Risk should include supporting detail including invoices for site support costs.

Cause: A process had not been identified to determine the propriety of labor costs and site support costs within Construction General Conditions. Regarding this process, in the Sun Devil Fitness Complex Polytechnic Campus Construction Contract audit issued in November 2013, CPMG stated that the Tri-University Construction Task Force would review these issues on Construction General Conditions and provide all three universities guidance for resolution and ratification.

Effect: Following the cost control processes required by contract provisions could help prevent potential overcharges and cost overruns, prevent unallowable costs and mark-ups on Construction General Conditions, and help to ensure that the University pays a fair and reasonable amount for its new facilities.

Recommendation: Billing Rates and site support costs need to be based on actual cost or verified with the market by ASU to ensure they are not excessive. Supporting detail for labor costs and site support costs should be included in all payment applications by the CM@Risk to allow for verification that amounts paid to the CM@Risk for these costs are stated and disbursed properly.

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Management Response: Concur. Requesting employee payroll information (particularly for senior project personnel) has been met with resistance from the Contractor community in the past as it potentially jeopardizes their employee retention leverage with competitor Contractors. A preferred approach would be to establish an ABOR accredited regional market rate for the construction industry at 3 AZ University locations which would be updated annually and include average hourly rates for GC general condition employees, i.e. project manager, asst. project manager, project superintendent, sight safety manager, which could be used to ensure billing rates are not excessive. Perhaps the ASU School of Construction could assist in the development and management of database of average personnel (overhead) market rates for the construction industry.

2. Supporting Documentation was not provided Substantiating Subcontractor Bidding Costs and cost of self-performed work.

Condition: The construction phase GMP of \$41 million included \$31.3 million paid to subcontractors and for self-performed work, of which \$19.2 million was bid appropriately, with the lowest bid selected from at least three bids for these trades. While the CM@Risk received three bids for the material portion of the self-performed work, documentation reflecting the lowest responsive and responsible subcontractor bids from at least three bids and documentation for independent price reviews for self-performed work for the remaining amount of \$12.1 million paid to subcontractors and for self-performed work, for the purpose of verifying additional cost savings for ASU, was not provided.

For work self-performed by the CM@Risk (self-performed work), the University was to select one or more independent qualified persons to review the CM@Risk Price Submission to ASU. The reviewer was to report to the University and to the CM@Risk whether the reviewer found the Price Submission to be reasonable and appropriate for the Construction Work to be performed.

Criteria: The contract requires the use of independent cost verification control procedures during the various design phases of the building, including obtaining at least three bids for each subcontracted trade, and price reviews for self-performed work to prevent overcharges and cost overruns. Sections 2.2.4.7 and 2.2.4.8 of the General Conditions to the contract state, "If the CM@Risk becomes aware prior to any bid date that less than three (3) pre-qualified subcontractors plan to bid any portion of any Bid Package, the CM@Risk shall promptly notify the Owner," and "A proposal to accept other than a low lump sum bid shall be justified in writing by the CM@Risk with sufficient detail to satisfy Owner, and be subject to prior written approval by Owner."

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When the CM@Risk self-performs the work, the CM@Risk is functioning as a subcontractor. To verify the reasonability of the cost of self-performed work, Best Practices dictate receiving competitive bids for the work. Alternatively, self-performed work could be competitively priced with a separate pricing and scoping document explicitly defining scope, labor rates, materials, and pricing method.

Cause: CPMG stated that independent cost verification control procedures were followed, but because CPMG could not find written documentation verifying the completion of financial control processes and procedures, CPMG does not know if the procedures were fully documented.

Effect: Following the cost control processes required by ABOR Policies and contract provisions can help prevent substantial amounts of overcharges and cost overruns, and demonstrate that the University pays a fair and reasonable amount for its new facilities. ABOR Policy Number 3-804 B.5 *Professional Services and Construction Services Procurement* requires that negotiations for construction services are to include consideration of compensation to be fair and reasonable to the University.

Recommendation: To ensure compliance with ABOR Policies and contract requirements for independent cost verification and subcontractor bidding, CPMG should complete all cost control procedures and maintain written documentation verifying that these procedures have been completed.

Management Response: Concur, however, do not necessarily agree with \$12.1M figure reported as undocumented sub-Contractor/self-performed work requiring documentation of minimum of 3 qualified bids (see chart below)

There is approximately \$2.6M included in the \$12.1M figure which is associated with a pre-selected vendor for design assist (W&W Design Assist) Although this work was not competed, it was pre-approved in accordance with contract requirements and should not be included in the \$12.1M figure. There is a line item for construction contingency in the amount of ~ \$1.6M which should also not be included as “subcontractor bidding” requirement, as it is not specifically assigned to a designated work item or associated with a specific subcontractor. This allocation augments existing sub-contractors and would not be competed, validated but not competed. CPMG is responsible for ensuring proper documentation and auditability of project execution is in full compliance with contract requirements. CPMG will implement a standardized project filing format which all CPMG PMs will adhere to. Project file template will include specific location for filing of all required bid documentation.

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McCord Audit Bid Delta

W&W Design Assist Sub	\$2,610,789	Pre-selected for design assist, competition not feasible
DPR Self-perform	3,741,346	\$1,174,862 of material bids were competed, labor not
Construction Contingency	1,611,667	Competition not required, only validation
Bids not per Contract	3,177,071	CPMG could not provide auditable documentation
Pay App Misc. Items	1,026,093	Items in this category include electric and utility bills, small purchases, time sensitive procurements that are not reasonable to compete.

Audit Not Bid Total \$12,166,966

3. Final independent corroborating cost estimate was not provided by the CM@Risk.

Condition: Per ABOR Policy Number: 7-109 *Project Approval*, to ensure that the University paid a fair and reasonable amount for the new facility, upon completion of construction documents an independent corroborating cost estimate was to be completed by an outside cost estimating consultant and compared against the final CM@Risk Construction Cost Estimate for the purpose of verifying that the amount charged to the University by the CM@Risk under the contract was not excessive.

Criteria: The contract requires the use of independent cost verification control procedures during the various design phases of the building, including outside corroborating cost estimates. Section 2.2.3.4 of the General Conditions to the contract says, "The CM@Risk shall prepare an estimate of Construction Cost as soon as major Project requirements have been identified, and update the estimate for each submittal of the Design Submission Documents specified in 1.2.12 of the General Conditions." Cost estimates were required by the CM@Risk at the Programming, Schematic Design, Design Development, and Construction Documents phases, and to be independently prepared from cost estimates at the same phases prepared by the Design Professional. The cost estimates of the CM@Risk were to be compared to the estimates of the Design Professional. Audit could verify that only

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two of the eight required estimates were completed. ABOR Policy Number 3-804 B.5 *Professional Services and Construction Services Procurement* requires that negotiations for construction services are to include consideration of compensation to be fair and reasonable to the University.

Cause: The required Construction Cost Estimates were not provided by the CM@Risk and Design Professional at all design phases of the building.

Effect: Completion of cost estimates, as required by ABOR Policy, can help prevent substantial amounts of overcharges and cost overruns, and demonstrate that the University pays a fair and reasonable amount for its new facilities.

Recommendation: To ensure compliance with ABOR Policies, the CM@Risk and Design Professional should complete construction cost estimates.

Management Response: Performing a total of 8 cost estimates during the programming through construction phase is expensive and does not always provide measurable value added. Cost estimates associated with future contract requirements should be based on a project specific basis, i.e. for large, complex projects – ASU should require up to 8 cost estimates, for smaller, less complex projects – reduce the number of cost estimates accordingly, not less than 2 (1 from CMAR and 1 independent from DP).

CPMG shall ensure that all cost estimates are performed and documented in accordance with contract requirements. Leadership within CPMG shall perform internal quality assurance checks throughout life of a project to ensure contract requirements and administrative policies are in compliance.

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