Environment & Natural Resources 2
Construction Contract

October 2017 FY17 - #02

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Environment & Natural Resources 2

Summary

Our audit of the Environment & Natural Resources 2 (ENR2) construction contract was included in our approved Fiscal Year (FY) 2017 Audit Plan. The University of Arizona (UA) contracted for construction of ENR2 with a construction phase Guaranteed Maximum Price (GMP) of $49.9 million. This construction project contributed to UA’s commitment to provide opportunities for interdisciplinary and interprofessional collaboration while enhancing the student learning experience.

Construction projects have been identified as strategic, high-risk areas for the universities. Charges to the project may not comply with the negotiated contract, resulting in overcharges and cost overruns. Construction administration and project monitoring for the UA is provided by Planning, Design & Construction (PD&C). Since 2009, we have completed 12 audits of construction contracts administered by PD&C.

Background: The ENR2 building was constructed to further interdisciplinary research in earth, environmental, natural resources, math and related sciences. Included are faculty offices, conferencing, support spaces with related research/instructional dry laboratories, and work space. A large classroom auditorium meets the critical need to teach an increasing number of students. The ENR2 building further establishes the UA as a preeminent institution in basic earth science and environmental programs research, student training, and application of environmental knowledge to problems of regional, national, and global significance.

According to ENR2’s web site, the building was “Designed to look like a slot canyon and echo our sense of space in the Southwest [and] exemplifies the University’s commitment to environmental sustainability, incorporating energy efficient heating and cooling systems, rainwater harvesting and low-flow faucets, and other innovative architectural solutions in a desert landscape.” The five-story structure is shared with the School of Geography and Development, the School of Natural Resources and the Environment, and some divisions of the Department of Mathematics.

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1 PD&C Project Status Report
2 Arizona Board of Regents Meeting Minutes, June 19-20, 2008
PD&C attained a United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Platinum Certification, the highest level, indicating that the building was designed to have lower operating costs, reduce waste, conserve energy and water, and to create healthy and productive work environments.

The contract was awarded to Hensel Phelps Construction Company (HPCC) utilizing the Construction Manager at Risk (CM@Risk) project delivery method. The contract with HPCC included pre-construction design phase services as well as construction phase management, including coordinating all subcontracted work.

The original construction contract for this project was initiated in 2010 utilizing the 2010 version of the Tri-University (Tri-U) Standard Construction Contract with fixed general conditions and general requirements (GC&GR) expenses. When the GMP for the project was accepted in 2013, PD&C requested, and the CM@Risk agreed, to update the contract to the newer 2012 version of the Tri-U contract. The 2012 version stipulated that GC&GR expenses “be paid monthly based on actual cost.”

Per discussion with a member of the Tri-University Capital Group (Group), when GC&GR expenses transitioned from fixed to actual costs, the onus was on the universities to establish a monitoring process to ensure GC&GR expenses were accurate and in accordance with the contract requirements. The Group envisioned a spot check follow by a detailed review, if warranted. The Group member suggested that a certain level of acceptable risk could be established before resources are expended to perform an in-depth pay application review.

At its December 2012 meeting, the Arizona Board of Regents (ABOR) granted Project Approval for the ENR2 project at $75 million. The $75 million project was funded with SPEED Revenue Bonds of $66.5 million, federal grant funds of $1.5 million, and System Revenue Bonds of $7 million.

The Notice to Proceed was issued May 23, 2013, and construction work began immediately. The contract and subsequent amendments called for substantial completion by June 1, 2015. PD&C was satisfied with the quality of the work and issued a Certificate of Substantial Completion on June 1, 2015. The ENR2 project had an initial construction phase GMP of $312,914 plus one amendment and sixteen change orders (CO) totaling $49,587,924, bringing the total construction phase final GMP to $49,900,838. See the chart on the following page for details:

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3 The Group consists of representatives from ABOR and all three universities who meet periodically to discuss standardization of construction contract administration and project management practices.
### GMP Description

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Pre-Construction Phase Fee</td>
<td>$79,531</td>
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<tr>
<td>Amendments 1 and 2 Increases</td>
<td>372,205</td>
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<tr>
<td>Amendment 3 for Reimbursable Equipment</td>
<td>150,901</td>
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<tr>
<td>Change Order 16&lt;sup&gt;4&lt;/sup&gt;</td>
<td>(9,886)</td>
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<tr>
<td><strong>Final Pre-Construction Phase Fee</strong></td>
<td><strong>$592,751</strong></td>
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<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Initial Construction Phase GMP (Amendment 4)</td>
<td>$312,914</td>
</tr>
<tr>
<td>Full Construction Phase GMP (Amendment 5)</td>
<td>47,835,086</td>
</tr>
<tr>
<td>Change Orders 1 through 16</td>
<td>1,752,838</td>
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<tr>
<td><strong>Final Construction Phase GMP</strong></td>
<td><strong>$49,900,838</strong></td>
</tr>
</tbody>
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<table>
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<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Pre-Construction and Construction GMP</td>
<td><strong>$50,493,589</strong></td>
</tr>
</tbody>
</table>

### Audit Objectives:
To determine whether financial transactions relating to construction activity complied with the terms of the contract, including whether:

- contractor billings were adequately supported by actual costs, and overhead, profit, and fees were applied as specified by the construction contract;
- GC&GR expenses were charged to the project in accordance with contract provisions;
- bond and insurance coverage during construction was in compliance with the terms of the contract;
- change orders were priced according to the contract terms and were properly approved;
- the CM@Risk provided the contracted scope of work, to include whether project alternates were accepted via contract incorporation or change order, allowances were adjusted to actual, and contingency funds were managed in accordance with contract requirements; and
- opportunities for process improvements exist.

### Scope:
Our audit of the ENR2 project included all construction phase expenses paid to the CM@Risk from the start of the construction phase contract in May 2013 through the most recent payment application processed in March 2017. This included Change Orders 1 through 16. One final change order (CO 17) is anticipated just prior to final payment to incorporate audit findings and indirect cost reconciliations.

We relied on PD&C’s expertise for the construction technical aspects and, therefore, our scope of work did not include any on-site inspections to assess construction methods,

<sup>4</sup> Change Order 16 applied to pre-construction reimbursables as well as construction phase changes.
materials, or compliance with design specifications. We also did not include any costs associated with the project that were not part of the CM@Risk contract, including architectural fees or PD&C internal costs.

**Methodology:** Our audit objectives were accomplished using the current Arizona University System Standard Construction Audit program which includes:

- reviewing the request for qualifications (RFQ) and CM@Risk selection process to ensure compliance with ABOR policies;
- preparing a control schedule of the initial GMP, internal adjustments, COs, and payment applications to ensure payments to the CM@Risk did not exceed the approved GMP;
- reviewing an initial sample of 6 (18%) of 34 randomly and judgmentally selected construction phase payment applications (excludes pay applications for retention payments) and comparing to supporting documentation;
- expanding the scope due to errors found in the initial sample and reviewing the remaining 28 pay applications to ensure accuracy of GC&GR invoices;
- reconciling payments made to the contractor against a control schedule of contractor applications for payment;
- recalculating the fee, bonds and insurance, and taxes applied against the GMP to verify accuracy of indirect construction costs;
- reconciling the job cost ledger against subcontractor invoices and HPCC pay applications;
- verifying all bond and insurance requirements were maintained during the project;
- examining supporting documentation for 4 (25%) of 16 judgmentally selected sample COs, totaling $616,103, to ensure the CO amounts agreed to subcontractor quotes, changes were reasonable and approved, and indirect costs were accurately calculated;
- reviewing CM@Risk contingency fund expenditures to ensure that all uses of the contingency fund were made in accordance with the contract;
- ensuring the subcontractor bidding process was performed in compliance with contract terms;
- reviewing subcontracts for subcontractors whose final contract amounts were greater than $1 million to ensure the contract terms were consistent and in compliance with the CM@Risk contract;
- examining project close-out documents for completeness; and
- discussing the project with representatives from PD&C, HPCC, UA’s Procurement and Contracting Services, and the Tri-University Capital Group to obtain additional information and clarification.
As of December 2016, the CM@Risk had incurred expenses totaling approximately $1.0 million over the GMP due to supervision, general conditions, general requirements, and subcontractor overruns that were deemed the responsibility of the CM@Risk by PD&C and not warranted as change orders. The CM@Risk absorbed the $1.0 million in cost overruns and was not paid the excess amount. Therefore, our audit focused mainly on controls and effectiveness of processes rather than recouping dollar errors that could be offset with project related expenses incurred during the cost overrun.

Conclusions: Based on our audit work, we found that the financial transactions relating to construction activity generally complied with the terms of the contract. The CM@Risk provided the contracted scope of work, and bond and insurance coverage during construction was in place and maintained, as required. Additionally, COs were priced in accordance with the contract, and contingency funds were effectively managed. However, we noted that controls over pay application reviews need improvement. Although Schedule of Value line items were generally supported, PD&C approved pay applications that contained billing errors and/or non-project related expenses. See pages 7 through 9 for details.

According to the Institute of Internal Auditors International Professional Practices Framework, an organization is expected to establish and maintain effective risk management and control processes. These control processes are expected to ensure, among other things, that:

- the organization’s strategic objectives are achieved;
- financial and operational information is reliable and possesses integrity;
- operations are performed efficiently and achieve established objectives;
- assets are safeguarded; and
- actions and decisions of the organization are in compliance with laws, regulations, and contracts.

Our assessment of these control objectives as they relate to the ENR2 construction contract is on the following page.
<table>
<thead>
<tr>
<th>General Control Objectives</th>
<th>Control Environment</th>
<th>Audit Result No.</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Achievement of the Organization’s Strategic Objectives</strong></td>
<td></td>
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<tr>
<td>• Strategic objectives were met by providing facilities to further the UA’s commitment to research and meet the critical need to teach an increasing number of students.</td>
<td>Reasonable to Strong Controls in Place</td>
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<tr>
<td><strong>Reliability and Integrity of Financial and Operational Information</strong></td>
<td></td>
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<tr>
<td>• Contractor pay applications were adequately supported by actual costs incurred by the CM@Risk.</td>
<td>Reasonable to Strong Controls in Place</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• General conditions and general requirements were charged in accordance with contract provisions.</td>
<td>Opportunity for Improvement</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>• Contingency funds were managed efficiently and effectively.</td>
<td>Reasonable to Strong Controls in Place</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Change orders were priced and approved according to contract requirements.</td>
<td>Reasonable to Strong Controls in Place</td>
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<td></td>
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<tr>
<td><strong>Effectiveness and Efficiency of Operations</strong></td>
<td></td>
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<tr>
<td>• The contract was managed to ensure the CM@Risk complied with all terms of the contract.</td>
<td>Reasonable to Strong Controls in Place</td>
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<tr>
<td><strong>Safeguarding of Assets</strong></td>
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<tr>
<td>• The CM@Risk provided the contracted scope of work.</td>
<td>Reasonable to Strong Controls in Place</td>
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<tr>
<td><strong>Compliance with Laws and Regulations</strong></td>
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<tr>
<td>• The CM@Risk selection process was in accordance with the ABOR procurement code policy.</td>
<td>Reasonable to Strong Controls in Place</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Insurance and bond coverage during construction was in compliance with the terms of the contract.</td>
<td>Reasonable to Strong Controls in Place</td>
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</tbody>
</table>

We appreciate the assistance of both PD&C and HPCC representatives during the audit.

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1. PD&C could improve its process for verification of monthly costs charged to the project.

**Condition:** During our initial sample review, we identified errors throughout the pay applications that included unallowable charges, incorrect billings, and labor hour errors. Therefore, we performed a review of the remaining pay applications to determine whether invoice amounts were supported and accurate.

Because of the issues identified during the audit, PD&C worked with the CM@Risk to reconcile selected vendor invoices and review equipment purchases. PD&C’s review, combined with audit-identified issues, resulted in a $33,502 net overpayment to the CM@Risk and $5,278 in job-owned equipment that wasn’t reflected in the asset log. Issues identified included:

- 18 billing errors totaling $28,093;
- 37 vendor late fees totaling $355;
- 21 duplicate charges for invoices previously paid that totaled $2,576;
- 8 instances of personal employee shipping charges totaling $126;\(^5\)
- 94 differences between labor hour summary schedules and supporting employee timesheets resulting in a $1,344 overbilling;
- an allowance adjustment calculation error of $1,008; and
- 15 job-owned equipment items totaling $5,278 that were not listed on the asset log.

**Criteria:** Paragraph 1.2.6 of the contract’s *General Conditions* states, "Construction General Conditions means all on-site Project-specific job costs of CM@Risk not itemized elsewhere in the Contract Documents...." A good business practice is to review monthly pay applications in sufficient detail to ensure charges benefit the project, thus ensuring effective fiscal management of the overall project.

Paragraph 7.12.8 of the contract’s *General Conditions* states, “The CM@Risk shall be required to maintain a detailed equipment inventory of all job-owned equipment (either purchased and charged to job cost or job-owned through aggregate rentals) and such inventory shall be submitted either electronically or hard copy (at Owner's election) to

\(^5\) The CM@Risk’s employees were permitted to use company accounts, such as postage and delivery, for personal purchases. These type charges were to be reconciled and credited in future pay applications. However, this did not always occur.
Owner each month. For each piece of equipment, such inventory should contain at a minimum (1) original purchase price or acquisition cost (2) acquisition date (3) approved fair market value at the time the piece of equipment was first used on the job and (4) final disposition.”

**Cause:** According to PD&C, reviews are performed as thoroughly as possible and in concert with other project management responsibilities. PD&C believes they do not have the resources to perform a detailed review of each pay application that is on par with the level of detail afforded with an audit review.

**Effect:** Based on the number of errors noted during the audit, the University is at risk for paying for products and/or services not received or that does not benefit the project. In addition, the University may not receive assets, or credit for assets, to which it is entitled.

**Recommendation:** We recommend additional procedures be developed and implemented for pay application reviews. Although PD&C took measures to verify pay applications, additional actions could be performed to ensure the accuracy and appropriateness of expenditures. The following are examples of procedures PD&C could implement to ensure expenses are adequately supported, accurate, allowable, and project related:

- Review invoices to determine if late fees are included in the total amount.
- Ensure invoices are for the correct job site as the CM@Risk may use the same vendor for several construction projects.
- For recurring expenses (e.g., UPS, Waste Management, Culligan Water, etc.), consider comparing the current month’s invoice to the previous month to reduce the potential for duplicate payments.
- Review invoice description of costs to ensure services and/or products are required and project related.
- Review bill/accounting code(s) specific to equipment and tools to identify recent purchases and compare to the asset log each month to ensure it is updated.
- Perform a cost-benefit analysis to determine and establish an acceptable level of risk for pay application errors and periodically monitor to ensure the acceptable level is not exceeded.

**Management Response:** Target Implementation Date: May 31, 2018.

The Environment & Natural Resources 2 (ENR2) project is among the University of Arizona’s most successful projects. Not only is the architecture drawing high praise by the occupants and by many others nationwide, but the project was built on time and
within the allocated budget without litigation or major claims. The construction work was completed within the UA’s desired GMP amount despite the contractor having to absorb a significant amount of unreimbursed construction costs so as to not exceed the guaranteed maximum price.

We believe that the billing preparation and review processes employed on this project were consistent with the intent of the new Tri-U CM@R contract at that time (2013-2014) as well as the Tri-U administrative direction referenced in the fourth paragraph on page 2 of the auditor’s report. What was envisioned by the Tri-U group and ABOR staff was that detailed CMR payment application would be spot checked monthly before expending significant resources to perform in-depth and costly pay applications reviews. The CMR’s payment applications on the ENR2 project were consistently found to be in overall conformance with the established and agreed to GMP and certainly without any indication of gross negligence or misrepresentation.

While several errors were found in some of the CMR billings, they represent a very small fraction of the overall cost of the project and are easily overshadowed by other additional and unreimbursed construction costs that had to be absorbed by the CMR to maintain the GMP. The errors will be addressed as part of the reconciliation process.

We acknowledge that the preparation and review of pay applications is an important aspect of the new Tri-U contract and we are continuously learning and improving those processes while also attending to the many other critical project management responsibilities required to deliver successful projects.

We will review the outcome and recommendations of this audit with all of our Project Managers so they can be informed and better prepared with the review of construction phase billings in the future. This review will occur during one of our Construction Phase Group meetings currently anticipated to occur prior to the end of May 2018.