



CITY AUDITOR'S OFFICE

Scottsdale Road Improvements, Phase 1

October 30, 2015

AUDIT REPORT NO. 1509

CITY COUNCIL

Mayor W.J. "Jim" Lane
Suzanne Klapp
Virginia Korte
Kathy Littlefield
Linda Milhaven
Guy Phillips
Vice Mayor David N. Smith



October 30, 2015

Honorable Mayor and Members of the City Council:

Enclosed is the audit report for *Scottsdale Road Improvements, Phase 1*, which was selected for the construction contract audit included on the Council-approved FY 2014/15 Audit Plan.

Our audit found that City staff did not adequately review contractor pay applications and change requests, resulting in overpayments totaling about \$275,000. Oversight of subcontractor selection and final subcontractor costs can be improved to ensure the City realizes the benefit of any buyout savings that occur. Additionally, project management and contract administration can be improved by better documenting cost review and negotiations, changes to scope, inspection measurements, construction delays and the procurement process.

If you need additional information or have any questions, please contact me at (480) 312-7867.

Sincerely,

A handwritten signature in blue ink that reads "Sharron Walker".

Sharron E. Walker, CPA, CFE, CLEA
City Auditor

Audit Team:

Lai Cluff - Senior Auditor
Brad Hubert - Internal Auditor

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AUDIT HIGHLIGHTS

Scottsdale Road Improvements, Phase 1

October 30, 2015

Audit Report No. 1509

WHY WE DID THIS AUDIT

This audit was included on the Council-approved FY 2014/15 Audit Plan as an audit of a Selected Construction Contract to review its procurement, compliance with terms and contract administration.

This contract represents the \$9.5 million construction cost for the project's Phase 1, totaling \$13 million to date.

BACKGROUND

In September 2012, the City contracted with Hunter Contracting Co. for the construction of the Scottsdale Road Improvements project, Phase 1. This project is to improve Scottsdale Road between Thompson Peak Parkway and Pinnacle Peak Road, with the first phase involving the construction of a bridge over Rawhide Wash and relocating utilities, along with water and sewer line improvements.

The Public Works Division, Capital Projects Management (CPM), manages the City's capital projects. CPM used a Construction Manager at Risk (CMAR) contract to build these improvements.

A CMAR contract establishes a Guaranteed Maximum Price (GMP) for the project, consisting of Subcontractor, Construction Fee, Self-performed work, Project Requirements, General Conditions and Owner's Contingency components in addition to the required bonds, insurance and sales taxes. These components are defined in Figure 3.

CPM deemed this project complete in June 2014.

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WHAT WE FOUND

- Inadequate review of pay requests and contract changes resulted in overpayments totaling about \$275,000.**
 - CPM did not adequately track contract costs and changes resulting in overpayment of almost \$68,500.
 - Three change requests for additional work were not supported by work logs or invoices. Overpayments totaled about \$166,700.
 - Calculation errors related to bonds, insurance, and sales tax totaled about \$21,000 and up to \$11,500 in project expenses were not supported by the CMAR's records.
 - Reimbursement was not requested for additional work completed for a telecommunications company, which cost \$7,500.
- Effective oversight of subcontractor selection and subcontracted costs could result in significant project savings.**

Even though subcontractor costs represent about \$4 million of the construction costs, a subcontractor selection plan had not been submitted for review and final subcontractor selections and costs were not reviewed. Additionally, staff did not verify "buyout savings" although we found indications that the CMAR may have realized savings of up to \$163,000 in subcontractor costs.
- Project management and contract administration should be improved.**
 - Cost proposals may not have been reviewed by the CPM estimator and cost negotiations were not documented.
 - Changes were not adequately documented and often submitted after work was performed.
 - City inspectors did not document measurements performed for comparison to invoiced amounts.
 - Construction delays were not formally addressed.
 - The procurement process was not documented sufficiently to demonstrate that required processes were followed.

WHAT WE RECOMMEND

We recommend Public Works Division-CPM:

- Establish procedures for verifying pay requests and change requests.
- Establish procedures for evaluating subcontractor selection plans and monitoring subcontractor costs.
- Ensure more complete documentation of cost proposal reviews and negotiations, changes, inspection measurements, project delays and other issues, and procurement processes.

MANAGEMENT RESPONSE

The Division agreed with the audit recommendations and will be revising department procedures to implement the recommendations by May 2016.

BACKGROUND

In September 2012, the City contracted with Hunter Contracting Co. for the construction of the Scottsdale Road Improvements project, Phase 1. This project was to improve Scottsdale Road between Thompson Peak Parkway and Pinnacle Peak Road, with the first phase primarily constructing a bridge over Rawhide Wash and relocating utilities, along with water and sewer line improvements. (Figure 1 illustrates Phase 1's location and results.) Future phases are expected to widen Scottsdale Road, add bicycle lanes, sidewalks and medians, and make other improvements.

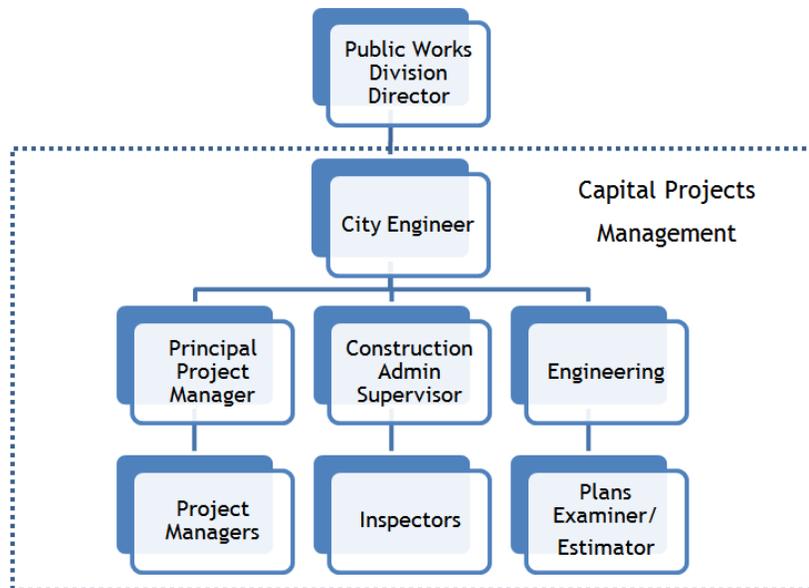
Figure 1. Aerial View of the Project Location



SOURCE: Images from the City's Land Information System (LIS), 2010 Aerials and 2014 Aerials.

The Capital Project Management (CPM) department within the Public Works Division manages the City’s capital projects. A Project Manager is assigned to manage the project and administer contracts associated with the project. As shown in Figure 2, the Project Manager reports to a Principal Project Manager and the City Engineer. A Construction Admin Supervisor monitors construction progress by having an Inspector onsite during construction to inspect progress. As well, an Estimator assists during the design phase of the project.

Figure 2. Organization Chart for Capital Projects Management



SOURCE: Auditor analysis of department hierarchy and responsibilities.

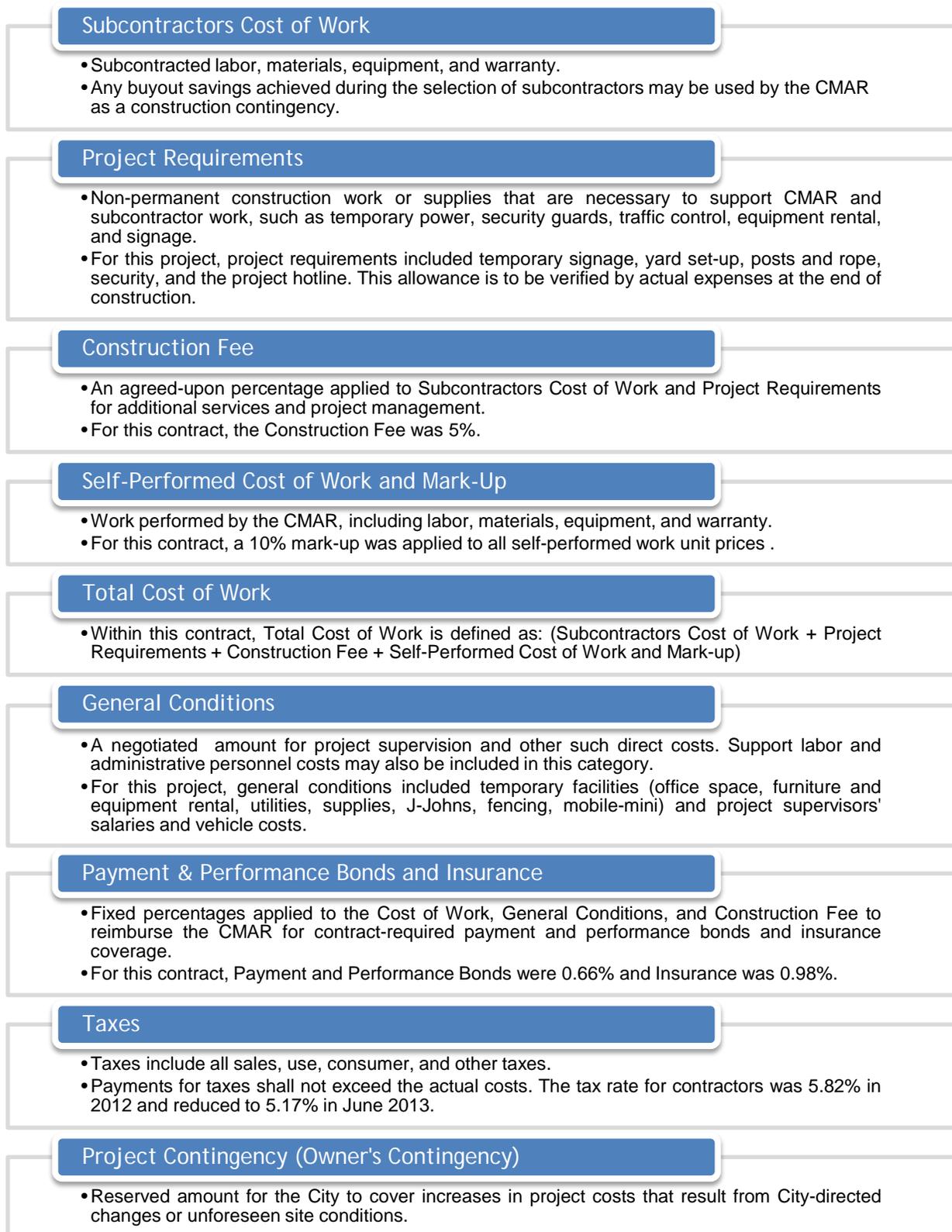
Construction Manager at Risk

For this project, CPM elected to use a Construction Manager at Risk (CMAR) delivery method. With this method, the owner (the City) contracts with an architectural or engineering firm to produce the project designs and separately contracts for construction management services through a Pre-Construction agreement to obtain constructability input during the design phase. During this pre-construction period, the CMAR reviews the design plans, creates a construction plan and project schedule, and produces cost estimates. The CMAR proposes a Guaranteed Maximum Price (GMP), to complete the project. If the proposed GMP is accepted by the owner, a construction contract is awarded and the CMAR assumes the risk of delivering the construction project on-time and within the agreed-upon GMP.

In August 2012, CPM awarded the Pre-Construction contract to Hunter Contracting Company for \$34,000¹. By this time, the engineering designs were more than 95% complete. In September 2012, CPM finalized a construction contract with Hunter with a GMP of \$9,218,295. Figure 3 on page 5, summarizes the GMP components and their key contract terms.

¹ In May 2013, the Pre-Construction contract was modified to include design phase services for construction at Scottsdale Road from Pinnacle Peak Road to Carefree Highway for \$33,951.

Figure 3. GMP Components



SOURCE: Auditor analysis of contract 2012-146-COS

Hunter revised the Schedule of Values soon after the contract was signed to adjust for design and materials changes. These revisions resulted in identified savings of \$264,647, which was deducted from the Cost of Work but left in the total GMP as additional owner's contingency funds.

Throughout the project, Hunter submitted fifteen changes to scope or quantities that resulted in the use of owner's contingency and a change order increasing the GMP. The changes included adding pavement preservation work on Scottsdale Road between Adobe Road and Pinnacle Peak at a cost of \$869,149. As a result, in June 2014, CPM approved a change order to increase the contract price by \$318,789.

Payment Process

The CMAR submits monthly payment requests based on the work completed. Table 1 illustrates a portion of the Schedule of Values and the monthly application for payment format.

Table 1. Example Schedule of Values and Application for Payment

Schedule of Values:

| Item No. | Description | Qty. | Unit of Measure | Unit Cost | Subcontracted Amount | CMAR Self-Performed Amount | Scheduled Value |
|----------|---|-------|-----------------|-----------|----------------------|----------------------------|-----------------|
| 6.1 | Pavement Replacement, Cos Det 2200 | 2,577 | SY | \$140 | \$223,006 | \$139,448 | \$362,455 |
| 6.2 | Pavement Replacement, Temp 3" Trench Paving (On Native / No Slurry) | 689 | SY | \$70 | \$37,194 | \$11,366 | \$48,560 |

Monthly Application for Payment:

| Item No. | Description | This Period QTY | This Period AMT | Materials Stored | Total Completed & Stored To Date | % to Date | Balance to Finish | Retainage |
|----------|---|-----------------|-----------------|------------------|----------------------------------|-----------|-------------------|-----------|
| 6.1 | Pavement Replacement, Cos Det 2200 | 1868 | \$262,734 | | \$262,734 | 72% | \$99,720 | \$26,273 |
| 6.2 | Pavement Replacement, Temp 3" Trench Paving (On Native / No Slurry) | | \$0 | | \$0 | 0% | \$48,560 | \$0 |

SOURCE: Auditor analysis of Schedule of Values and Application for Payments submitted by the CMAR.

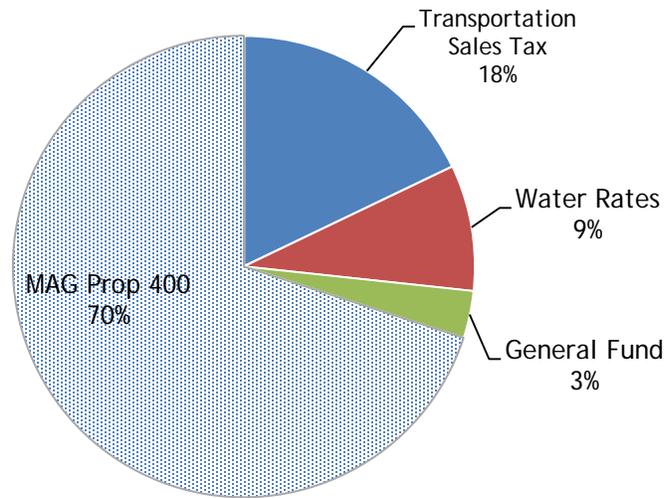
Each unit of work is billed as it is completed and other costs are billed based on the percentage of project completion. The pay requests are initially reviewed by the department's onsite Inspector. The Inspector and CMAR resolve any questions on the quantities completed before the pay request is submitted to the Construction Admin Supervisor and the Project Manager for review and approval.

Project Funding

This construction contract was initially funded by the City's 0.2% Transportation Sales Tax with additional funding from water rates and the general fund. However, as shown in Figure

4, the Maricopa Association of Governments (MAG) reimbursed 70% of the project costs using Proposition 400 funds because the project was in its Arterial Life Cycle Program (ALCP).²

Figure 4. Scottsdale Road Improvements - Phase 1, Funding Sources



SOURCE: Auditor analysis of contract funding.

² Proposition 400, passed in 2004, extends the 0.5% transportation excise tax to 2025 to fund the Regional Transportation Plan for Maricopa County.

OBJECTIVES, SCOPE, AND METHODOLOGY

An audit of a selected construction contract was included on the City Council-approved FY 2014/15 Audit Plan. The audit objective was to review the procurement, compliance with contract terms and contract administration of a construction contract. After reviewing the Capital Improvement Plan budget for the past two fiscal years to identify larger projects that had been completed within the past year, we selected *Scottsdale Road Improvements, Phase 1*, for this audit.

To understand the elements of the selected construction project, we reviewed the following agreements between the City and Hunter Contracting Co.:

- Contract No. 2012-127-COS, Pre-Construction Contract Design Phase Services, *Scottsdale Road Improvements, Phase 1*
- Contract No. 2012-146-COS, CMAR Construction Services, *Scottsdale Road Improvements, Phase 1*

To gain an understanding of existing requirements and standards, we reviewed the following laws, policies and procedures:

- Relevant sections of Arizona Revised Statutes Title 34 (Public Buildings and Improvements) particularly Chapter 6 pertaining to *Architect Services, Assayer Services, Construction Services, Engineering Services, Geologist Services, Landscape Architect Services and Land Surveying Services*.
- City Procurement Code Section P2-180.2(B) *Procurement Delegation to CPM for the Procurement of Architects, Engineers, and Construction Managers* and Section 2-192(B) *Selection Procedures for Professional Services*.
- City Administrative Regulations (AR) including *AR 215 Contract Administration* and *AR 216 Contract Change Orders and Contract Modifications*.
- *CPM Project Management Guide*
- Maricopa Association of Governments *Arterial Life Cycle Program (ALCP) Policies and Procedures*, December 9, 2009.

To gain an understanding of Capital Project Management (CPM) operations, policies and practices, we interviewed the Project Manager and Construction Admin Supervisor. We also interviewed a Principal Traffic Engineer in the City's Transportation Department regarding the ALCP and the reimbursement program.

To determine whether payment requests were appropriately supported, we reviewed all pay applications and supporting documentation, including change orders and uses of owner's contingency. We also reviewed the CMAR's related job cost reports and vendor invoices to verify certain costs billed to the City. To evaluate the accuracy of these reports, we selected a random sample of transactions to verify supporting invoices or other documentation. We also requested and reviewed the CMAR's related subcontracts and subcontract change orders. We reviewed noted discrepancies with the CMAR to ensure completeness of the documents provided to us.

To evaluate contract administration and compliance with various contract terms, we reviewed CPM's project documentation, including change orders/allowance requests, pay

requests and supporting documents, email and written communications, meeting minutes, inspection reports, and close out documents.

Our audit found that contractor pay requests and changes were not adequately reviewed by staff, resulting in overpayment of about \$275,000. Oversight of subcontractor selection and final subcontractor costs can be improved to ensure buyout savings are realized. Additionally, some aspects of project management and contract administration need improvement, such as documenting cost review and negotiations, requiring written approval of changes prior to the work being performed, and documenting changes to scope, inspection measurements, construction delays and procurement processes.

We conducted this audit in accordance with generally accepted government auditing standards as required by Article III, Scottsdale Revised Code §2-117 et seq. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Audit work took place from July to October 2015.

FINDINGS AND ANALYSIS

1. Inadequate review of pay requests and contract changes resulted in overpayments totaling about \$275,000.

Stronger controls over the review of pay requests are needed to ensure appropriate contract payments. Our audit found that contractor pay requests were not checked for calculation errors, project costs were not tracked, and supporting documentation for cost proposals was not closely reviewed, resulting in overpayment to the CMAR.

- A. Capital Project Management (CPM) staff approved several contract changes during the course of the Phase 1 project. By better tracking the approved changes and reviewing costs, CPM could have avoided a \$68,500 overpayment.

For this project, there were 14 work and cost changes approved totaling about \$1 million. The owner's contingency and savings from the original GMP (\$464,647) plus unused allowances and unit quantities (\$312,840) covered most of these costs. CPM approved a \$318,789 change order which increased the contract price to \$9,537,084 as shown in Table 2 on page 12.

However, including quantity adjustments and other project savings, the original work and approved changes totaled only \$9,468,590. Based on email communication in the project file, the CMAR's representative noted the variance and questioned the revised GMP amount, but the CPM project manager still paid the full contract price, resulting in an overpayment of \$68,494.

Owner's Contingency is budgeted into the Guaranteed Maximum Price (GMP) to cover potential cost increases resulting from City-directed changes or unforeseen site conditions.

Construction Manager At Risk (CMAR) is the contractor hired to serve as construction manager and general contractor to oversee project construction.

Guaranteed Maximum Price (GMP) is summarized in Figure 3 on page 5.

(continued on next page)

Table 2. Summary of City's Overpayment for Contract Changes

| CPM-Calculated Contract Price | |
|--|--------------------|
| Guaranteed Maximum Price (GMP) without Owner's Contingency | \$9,018,295 |
| 10/19/2012 Revision | (264,647) |
| Owner's Contingency | 200,000 |
| 10/19/2012 Revision | 264,647 |
| Original GMP Total | \$9,218,295 |
| June 2014 Final Change Order | 318,789 |
| Revised GMP Total Paid | \$9,537,084 |
| Contract GMP and Approved Changes | |
| GMP, Revised 10/19/2012 (without Owner's Contingency) | \$8,753,648 |
| Approved Changes/Additional Work | 1,027,782 |
| Quantity Adjustments and Unused Allowances | (312,840) |
| Total GMP and Approved Changes | \$9,468,590 |
| Overpayment | (\$68,494) |

SOURCE: Auditor analysis of contractor pay requests, change orders, and contract amounts.

- B. Cost proposals for changes need a more detailed review. In 3 of the 14 changes approved by CPM, it appears the City overpaid for the work performed.
1. *Change request to haul off a fuel tank discovered during excavation (\$9,170)* – The CMAR submitted time-and-materials documentation for costs incurred to haul away a buried fuel tank. The billing totaled \$9,170 for a trucking company's charges, landfill charges and additional hours of supervisory labor. However, the trucking company's invoice and trucking ticket documented a \$320 cost for the fuel tank haul-off. The other trucking charges included in this change request were for other work the trucking company was already providing for the project. The unrelated trucking charges totaled \$7,291 and with the added CMAR mark-up, insurance and bonds, and sales tax, the City was overcharged \$8,261.
 2. *Change request to remove concrete encasement to water utilities (\$43,804)* – According to the CMAR construction superintendent's reports at the time, the CMAR's additional work involved jackhammering and removing a concrete slab, which took 2 days of continuous work and approximately 67 labor hours. This noted time frame was consistent with the CPM Inspector's log notes. However, when the City was billed for this work more than a year later, the costs included 7 days of labor and equipment over the course of 1.5 weeks. Using average pay rates during these days (including applicable overtime rates) and the related equipment charges, the City was overcharged approximately \$36,500.

3. *Change request for pavement preservation work at Scottsdale Road between Adobe and Pinnacle Peak (\$869,150)* – This pavement work, which was not included in the original scope of the Phase 1 project, started in March 2014 when all other work had been completed. This work was completed in about 2 weeks by subcontractors under the CMAR’s supervision.

The pavement preservation change order was structured in the same format as the original contract’s GMP, with a 5% construction fee for subcontracted work, 10% mark-up on self-performed work, general conditions costs, and bonds, insurance, and taxes as a percentage of the Cost of Work.

Based on the cost proposal, cost estimates and subcontractor invoiced amounts, it appears the City was overcharged about \$122,000 for this additional work.

- Although the final cost proposal was submitted after all work had been performed, the estimated quantities for the quoted tasks were not adjusted to actual. The CMAR’s subcontractor costs for signs and striping, street sweeping, and traffic loops were much lower than amounts the CMAR billed to the City. The cost proposal also named a different subcontractor than the one actually used for traffic loop installation. Additionally, the cost proposal included 7 days of CMAR activity, but the CMAR’s job cost data only documented 1 day. These quantity and price differences resulted in overcharges of approximately \$32,000.
- The \$120,000 included as general conditions for the pavement preservation work was excessive compared to the original contract amount. The original general conditions charge represented about 6.35% of the original Cost of Work. For this contract change, the general conditions charge represented more than 17% of the Cost of Work. The CMAR did not provide a breakdown of general conditions costs with this cost proposal to substantiate the amount charged. At the original 6.35% rate, this general conditions charge would total about \$42,000, which is \$78,000 less than the amount billed.
- An incorrect higher sales tax rate was billed for this change request, despite the CPM project manager correcting the cost proposal’s rate. Likely because of the late timing of the cost proposal, the tax rate correction was not applied to the CMAR’s related pay request. As a result, the City was overcharged by \$5,372.
- For the overcharges identified for this change request alone, the additional insurance, bonds, and taxes increased the cost by nearly \$6,600.

C. There were several indications that CPM staff did not closely evaluate the CMAR’s pay requests and cost proposals.

1. The project manager did not verify Project Requirement costs as provided in the contract. The contract terms define the project requirements amount as an allowance to be verified by actual expenses at the end of construction.

The CMAR budgeted the project requirements allowance at \$21,367 to cover specific costs, such as project signs, yard set-up, security and a public hotline. However, the CMAR's job cost reports only document \$9,776 as actually spent. Specifically, the CMAR's records show that costs for certain items totaled about \$2,000 less than budgeted. Further, the CMAR's records do not specifically document the yard set-up, T-post and rope costs, which totaled almost \$9,600 of the allowance. The CMAR indicated that these costs were classified with Temporary Facility costs; however, Temporary Facility is part of the General Conditions cost component.

2. In the first four pay requests submitted by the contractor, project requirement costs were billed but not added into the pay request total. The CMAR identified and corrected this calculation error in pay request 5.
3. The Payment and Performance Bond rate (0.66%) and Insurance rate (0.98%) approved for the GMP were applied to the contract price, rather than applied to the Cost of Work and General Conditions as stated in the construction contract. Applying these rates to the contract price resulted in an over-calculation of about \$17,700.
4. Minor errors in calculating sales tax resulted in overpayment of about \$3,000. This amount is the net sales tax overpayment for all amounts billed.

In total, these errors may have resulted in CPM overpaying the CMAR by about \$32,300.

- D. CPM did not request reimbursement for work performed for a telecommunications company.

Based on email documentation found in the project files, it appeared that the project manager intended to request reimbursement for additional work performed at the request of a telecommunications company. The email documentation indicated that the telecommunications company had intended to use its own contractor to be more cost effective, but for the sake of maintaining the project schedule, the project manager approved the CMAR to perform the work using owner's contingency funds. This work totaled \$7,500; however, reimbursement was not requested.

Table 3 on page 15 summarizes the GMP components, revisions and cost issues identified by this audit.

Recommendations:

The Public Works Division Director should:

- A. Establish procedures for tracking contract changes.
- B. Require CPM to more closely review cost proposals for changes, ensuring that proposed amounts are supported by detailed cost estimates, time and materials reports, or invoices.
- C. Establish procedures for verifying contractor calculations in pay requests and cost proposals.
- D. Require CPM to seek reimbursements for costs incurred, where applicable.

Table 3. Summary of GMP Components and Audit Findings

| | 9/11/12 Contract | 10/19/12 Revisions | Errors Identified | Finding |
|----------------------------------|---------------------|-----------------------|----------------------|------------|
| Subcontracted Work | \$ 3,159,133 | \$ 2,951,995 | \$ (95,054) | 2B |
| Construction Fee | 159,025 | 148,668 | (4,753) | 2B |
| Project Requirements | 21,367 | 21,367 | (11,591) | 1C(1) |
| CMAR Self-Performed Work | 4,119,214 | 4,089,580 | | |
| CMAR Self-Performed Mark-up | 411,921 | 408,958 | | |
| Total Cost of Work | \$ 7,870,660 | \$ 7,620,568 | | |
| General Conditions | \$ 499,789 | \$ 499,789 | | |
| Payment & Performance Bond | 61,123 | 61,123 | (7,970) | 1C(3) & 2B |
| Insurance | 90,725 | 90,725 | (11,362) | 1C(3) & 2B |
| Sales Taxes | 495,998 | 481,443 | (8,857) | 1C(4) & 2B |
| Indirect Costs | \$ 1,147,635 | \$ 1,133,080 | | |
| Owner's Contingency | \$ 200,000 | \$ 464,647 | (193,642) | 1B, 1D, 2B |
| Original GMP | \$9,218,295 | \$9,218,295 | | |
| Change Order #1, June 2014 | | \$ 318,789 | (68,494) | 1A |
| Revised GMP, June 2014 | | \$9,537,084 | | |
| Total Errors/Overpayments | | | \$(401,723) | |

Note: GMP components are defined in Figure 3 on page 5.

SOURCE: Auditor analysis of CPM's project files and the CMAR's provided job cost records.

2. Effective oversight of subcontractor selections and subcontracted costs could result in significant project savings.

Including the CMAR's associated construction fee, bonds, insurance, and taxes and related project revisions, subcontracted work represented approximately \$4 million of this contract's cost. Therefore, adequate CPM oversight over this portion of the contract is critical for effective project management and cost control.

- A. Although the project's Request for Qualifications (RFQ) and Pre-Construction Contract both required it, the CMAR's subcontractor selection plan was not submitted. Further, there is little indication that CPM evaluated the subcontractor selection method during its own CMAR selection process.
- One of the RFQ's listed evaluation criteria was the subcontractor selection plan. Although the selected firm's RFQ response stated that a plan would be submitted, there is no documentation that it was. Because CPM did not retain the other RFQ responses, it is not clear whether this criterion was appropriately evaluated for all the firms.
 - The Pre-Construction Contract required the CMAR to submit its subcontractor selection plan to detail which trades would be subcontracted and whether the selections will be based solely on qualifications or a combination of qualifications and competitive bids. Besides the plan not being submitted, the CMAR's subcontractor selection documents show the CMAR did not always recommend the lowest bidder even though all of the bidders had been prequalified.
 - Since the construction contract provides the CMAR a 5% markup on subcontractor costs, there is little incentive for the CMAR to include cost-effectiveness in subcontractor selection. Monitoring this process could help CPM control project costs.
- B. CPM did not verify any "buyout savings" although the audit found indications the CMAR may have realized savings of up to \$163,000.

The construction contract states that *"any buyout savings of the CMAR's GMP at the conclusion of the selection of Subcontractors may be used during construction by the CMAR as a construction contingency."*

Excluding the CMAR's construction fee and including adjusted quantities and contract changes, this contract's subcontracted work totaled \$3.4 million. However, records the CMAR provided to us of its related subcontracts, subcontract change orders, and vendor payments documented about \$3.25 million. So the CMAR may have realized buyout savings that with the added 5% construction fee and related bonds, insurance, and taxes totaled up to \$163,000.

The CMAR records did not specifically tie subcontracted work to the contract's Schedule of Values (an extract from the Schedule of Values is shown in Table 1 on page 6) and some task descriptions were not consistent between the contract and the CMAR's subcontracts. However, in

Buyout Savings

This industry term refers to the CMAR's subcontractor cost savings that occur after the CMAR has been awarded the construction contract and the GMP set. Once the CMAR has further refined a subcontractor's scope of work and negotiated a final pricing agreement, a cost that is lower than the original cost proposal represents buyout savings.

two particular instances where the subcontractors could be matched to specific tasks, the amounts paid to the subcontractors were not consistent with the amounts charged to the City.

- One subcontractor performed 6 of the 14 approved contract changes. Excluding the associated CMAR fees, these added work items were billed to the City at a total of \$58,500 although the CMAR paid the subcontractor \$27,000 for them. According to the CMAR's representatives, this difference occurred because the CMAR purchased materials on behalf of the subcontractor. However, they could not provide invoices to support the additional cost.
- Another subcontract charged the CMAR significantly lower unit prices than listed in the subcontractor bid proposal the CMAR provided to the City. These pricing differences resulted in CPM paying \$37,562 more for the same quantities.

Contract terms require that the City approve the CMAR's final subcontractors but CPM did not obtain a final listing of all selected subcontractors. Reviewing the final subcontracts would allow CPM the opportunity to ensure the subcontractor is qualified and evaluate subcontractor costs and monitor any buyout savings.

Recommendations:

The Public Works Division Director should:

- A. Require CPM to establish written procedures for evaluating subcontractor selection plans and monitoring subcontractor costs.
- B. When contract terms apply, require contractors to submit a list of selected subcontractors and final subcontract costs.

3. Project management and contract administration should be improved.

Several aspects of project management and contract administration need improvement, including documentation of the procurement process, cost review and negotiations, change orders, inspection measurements, and problems that arise during construction.

- A. Project management files do not document that CPM's estimator has reviewed the final proposed GMP nor the change requests and change order cost proposals.

The GMP contract is primarily based on negotiated unit prices for work items. Since the project was not opened for other bids after the design phase, the GMP negotiation is critical for controlling construction costs. According to the project manager, the department estimator reviewed the 45-page GMP submittal and did not have any concerns, thus no documentation was available. Similarly, the project manager stated that there were no disagreements with the GMP submittal, therefore there were no cost negotiations to document.

Both the design engineer and the CPM estimator created cost estimates at the 95% design completion stage. How their cost estimates of \$6 to \$7.2 million compared to the \$9.2 million GMP that was approved is unclear.

- B. Changes were not adequately documented and often submitted after work was performed.

CPM does not have standards or requirements for documenting the use of owner's contingency. Owner's contingency is built into the contract price to cover owner-directed changes or unforeseen site conditions, so uses of these monies should equate to change orders. For this project, the only documentation on file was the CMAR's cost proposal and the project manager's approval signature on the cost proposal. The cost proposals did not state which party requested the additional work, when the work was to be completed, or a specific description of the work.

While the cost proposals for changes did not indicate when the work was to be performed, we reviewed timeframes for the 3 changes where dates were evident in the billed hours and equipment charges. One of these was submitted 1.5 months after the work was performed and the 2 others were submitted 8.5 months and 15 months after the work was performed.

Additionally, the final change order to increase the contract price was not approved by the City Engineer until June 12, 2014, after all work had been completed and less than two weeks before the project closeout. Because this change order was finalized so late in the process, the project manager had already released a large portion of the City's retainage before the project closeout to pay for the cost of these changes. Retainage is intended to be released proportionally at project milestones or upon successful project completion.

- C. CPM does not require its onsite inspectors to document measurements performed during inspections for comparison to billed quantities.

Once CPM approved the contract's Schedule of Values, which is a listing of project work items and their associated unit prices, the CMAR was paid based on the units of work completed. Verifying the completed work quantities is key for ensuring the City is being billed appropriately. Therefore, routine inspections of work progress would typically involve measuring the finished work product and verifying any materials purchased but not yet installed.

According to the CPM Construction Admin Supervisor, the inspectors observe work progress through daily inspections and measure quantities on an ad hoc basis throughout the month but they are not required to document their measurements. As a result, CPM does not have a record of measured quantities to compare to billings. Further, if there is a disagreement regarding items billed on a pay request, the supervisor indicated the inspector or the supervisor will "red line" the item and return the pay request to the contractor for revision. The red lined copies are not retained to ensure the correction was made in the revised pay request.

- D. Construction delays were not formally addressed and project schedules were not revised or Substantial Completion documents issued.

Through the formal Notice to Proceed, the construction contract established an agreed-to timeline beginning on September 17, 2012, and ending on October 15, 2013. While CPM did not ever issue a Certificate of Substantial Completion, the project manager documented the final completion date as June 24, 2014, eight months later than the contracted date.

In October 2013, the CMAR updated CPM that substantial completion for the original project scope was now planned for November 20, 2013. However, according to the CMAR's daily reports, concrete work was performed in December/January and work to patch the bridge deck and retaining walls continued into mid-March. In late March 2014, work commenced for the pavement preservation project.

Even though the project completion date was eight months later than stipulated in the contract, CPM did not require the CMAR to submit a formal project schedule revision. The contract requires the CMAR to submit written notice of any delays and request an increase in contract time. The only delay notice in the project files was the October 2013 email and the last project schedule update was submitted in August 2013. On June 12, 2014, just two weeks before the project was deemed complete, the Pavement Preservation change order was approved and the contract time increased by 258 days. However, the pavement preservation change was not the cause of the 258 day extension as inspection records show it only took about 2 weeks to complete.

The contract terms define a "non-excusable delay" as a delay within the control of the CMAR, its suppliers and subcontractors, or a delay resulting from a risk taken by the CMAR under the terms of the contract. With this type of delay, the CMAR may be responsible for paying to the City, actual or liquidated damages for the delay.³ But for this contract, the CPM project manager did not require the CMAR to document the delay causes and did not evaluate the causes in the project file. Instead, shortly before closing the project, a change order was submitted to extend the contract time.

- E. The contract procurement documentation does not clearly demonstrate that required processes were followed.

The only available documentation of the CMAR selection process was a scoring matrix of the RFQ responses, the winning Statement of Qualifications (SOQ), and rejection letters to the other RFQ respondents. The other respondents' SOQs, the SOQ submittal dates, the evaluation committee members' names and individual evaluations were not retained for this project. According to the department, only the minimum documentation required by state law is retained. While this may meet state minimum requirements, better documentation of the procurement process and related activities helps ensure that the selection has followed the established processes.

Also, although CPM internal policies state that for all CMAR selections interviews must be held with the top three candidates, there is no record that interviews were held. The CPM project manager could not recall whether interviews were held.

³ Contract 2012-146-COS applies liquidated damages as per Section 108.9 of MAG Uniform Standard Specifications (January 2013 Revision). For this size project, Section 108.9 of those standards specifies liquidated damages of \$1,420 per day.

Recommendations:

The Public Works Division Director should:

- A. Establish procedures to ensure that cost proposals are reviewed by a City estimator and reconciled to engineering estimates when applicable and GMP negotiations are documented.
- B. Ensure that project managers and contractors comply with policies requiring an executed change order prior to commencing work. In addition, CPM policies and procedures should require complete documentation for change requests and uses of owner's contingency, such as which party initiated the change, a specific description of the change or added scope of work, and scheduled completion date.
- C. Establish procedures for documenting the inspectors' quantity measurements.
- D. Require documentation of project delays and ensure Certificates of Substantial Completion are issued.
- E. Establish policies and procedures to ensure sufficient documentation is retained to demonstrate that applicable procurement requirements were followed.

MANAGEMENT ACTION PLAN

1. Inadequate review of pay requests and contract changes resulted in overpayments totaling about \$275,000.

Recommendations:

The Public Works Division Director should:

- A. Establish procedures for tracking contract changes.
- B. Require CPM to more closely review cost proposals for changes, ensuring that proposed amounts are supported by detailed cost estimates, time and materials reports, or invoices.
- C. Establish procedures for verifying contractor calculations in pay requests and cost proposals.
- D. Require CPM to seek reimbursements for costs incurred, where applicable.

MANAGEMENT RESPONSE: Agree

PROPOSED RESOLUTION: CPM has made strides in this area over the past year to ensure proper documentation is included with all contract changes. CPM will be updating the current Capital Project Management PM Manual to specifically identify the documentation required for contract changes and for uses of contingencies that are a part of larger contracts. Along with the updating and publication of the new manual, CPM employees will be trained on the process and procedures to be adhered to.

RESPONSIBLE PARTY: Derek Earle, PE, City Engineer

COMPLETED BY: 5/27/2016

2. Effective oversight of subcontractor selections and subcontracted costs could result in significant project savings.

Recommendations:

The Public Works Division Director should:

- A. Require CPM to establish written procedures for evaluating subcontractor selection plans and monitoring subcontractor costs.
- B. When contract terms apply, require contractors to submit a list of selected subcontractors and final subcontract costs.

MANAGEMENT RESPONSE: Agree

PROPOSED RESOLUTION: CPM will be updating the current Capital Project Management PM Manual to specifically identify the documentation required for the subcontracting requirements and reporting requirements of a CMAR contractor. Along with the updating and publication of the new manual, CPM employees will be trained on the process and procedures to be adhered to.

RESPONSIBLE PARTY: Derek Earle, PE, City Engineer

COMPLETED BY: 5/27/2016

3. Project management and contract administration should be improved.

Recommendations:

The Public Works Division Director should:

- A. Establish procedures to ensure that cost proposals are reviewed by a City estimator and reconciled to engineering estimates when applicable and GMP negotiations are documented.
- B. Ensure that project managers and contractors comply with policies requiring an executed change order prior to commencing work. In addition, CPM policies and procedures should require complete documentation for change requests and uses of owner's contingency, such as which party initiated the change, a specific description of the change or added scope of work, and scheduled completion date.
- C. Establish procedures for documenting the inspectors' quantity measurements.
- D. Require documentation of project delays and ensure Certificates of Substantial Completion are issued.
- E. Establish policies and procedures to ensure sufficient documentation is retained to demonstrate that applicable procurement requirements were followed.

MANAGEMENT RESPONSE: Agree

PROPOSED RESOLUTION: CPM will be updating the current Capital Project Management PM Manual to specifically identify the documentation required to be retained in support of the procurement, contract value, and change management. CPM will work with the City Auditor and City Attorney to identify best practices for documents retention types to meet all applicable standards. Along with the updating and publication of the new manual, CPM employees will be trained on the process and procedures to be adhered to.

RESPONSIBLE PARTY: Derek Earle, PE, City Engineer

COMPLETED BY: 5/27/2016

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