

Audit Report

# Capital Project Delivery Process

September 2017



Public Works did not consistently follow processes designed to contain costs and ensure the quality of capital projects. Examples of affected processes include the change order approval process and the quality management process. In addition, the City's process for assessing contractor performance on capital projects discourages constructive feedback and lacks nuance, which may affect the outcome of future procurement and thus the quality of future capital projects. Although Public Works has improved its overall communication with departments, departmental staff are still dissatisfied with the rate and quality of project updates.

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Cover: Butterfly Bridge, Office of the City Auditor.

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## Objective

The objective of this audit was to determine whether the City is effective and efficient at coordinating and delivering capital projects that meet identified needs.

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## Background

The Public Works Department has three major functions:

- Designing, managing, and inspecting large capital projects;
- Promoting safe transport for bicyclists, pedestrians, and school children; and
- Maintaining the City's network of trails, roadways, and bridges.

This report focuses on three of the nineteen divisions of Public Works: the Project Management Division, Quality Management Division, and the Construction Services Division.

Project Management Division	Quality Management Division	Construction Services Division
<ul style="list-style-type: none"><li>• Manages capital projects through entire lifecycle</li><li>• Central point of contact and project coordinator</li></ul>	<ul style="list-style-type: none"><li>• Reviews designs before bidding to reduce avoidable issues during construction</li></ul>	<ul style="list-style-type: none"><li>• Inspects contractor activities during construction</li></ul>

The Project Management Division provides project management services for capital projects across the City.<sup>1</sup> The division manages both horizontal projects, such as roads and sewer lines, and vertical projects, such as the New Central Library or Water Treatment Plant 4. The division assigns each project a single project manager, who works with key stakeholders to estimate costs, develop designs, solicit bids, and complete construction. Most projects are sponsored by a specific City department – such as Parks and Recreation or Austin Water – and the sponsor department assigns an employee to work closely with the Public Works project manager.

The Quality Management Division performs internal reviews of project designs before they go out to bid. The staff reviews designs to eliminate

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<sup>1</sup> Not all capital projects are managed by Public Works. Some departments have begun managing smaller projects (typically with budgets under \$500,000) on their own. However, all capital projects are expected to go through Public Works' quality management process.

avoidable problems or obstacles that may occur during the construction phase. Staff reviewers send comments back to project managers if anything is unclear or needs to be fixed.

Construction inspectors assigned by the Construction Services Division monitor the day-to-day construction progress on most projects. The inspectors also oversee specialized third-party inspectors. The inspectors' job is to make sure work on City projects is consistent with the relevant contracts. For example, inspectors can stop work on a project if the work is unsafe or completed in a way that does not match the agreed-upon design. Inspectors document their daily inspections to ensure project stakeholders are up to date.

Part of our report encompasses the work of the Capital Contracting Office, which is located in the City's Financial Services Department. The Capital Contracting Office oversees all procurement for capital projects and has final approval of change orders, which occur when the scope, timing, or quantity of a contract changes. The Capital Contracting Office also manages the vendor evaluation process for consultants and contractors working on capital projects. The Office uses the evaluations in some procurement processes, depending on the type of contract.

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# What We Found

## Summary

Public Works did not consistently follow processes designed to contain costs and ensure the quality of capital projects. Examples of affected processes include the change order approval process and the quality management process. In addition, the City's process for assessing contractor performance on capital projects discourages constructive feedback and lacks nuance, which may affect the outcome of future procurement and thus the quality of future capital projects. Although Public Works has improved its overall communication with departments, departmental staff are still dissatisfied with the rate and quality of project updates.

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## Finding 1

Public Works did not consistently follow processes designed to contain costs and ensure the quality of capital projects.

We found that Public Works did not consistently follow processes designed to contain costs and ensure the quality of capital projects.

- Public Works did not reliably follow its quality management process, and has bypassed it in the past, which may negatively affect project cost and quality.
- Public Works did not follow all parts of its change order policy, which may result in unnecessary costs and avoidable project work.
- The City's initial project cost estimations were often far below actual costs, which affects the reliability of budget and spending information for capital projects.
- Public Works did not always assign construction inspectors to each project under construction or ensure inspectors are documenting all required information, which may reduce City oversight of its capital projects.

**Public Works did not reliably follow its quality management process, and has bypassed it in the past, which may negatively affect project cost and quality.**

The purpose of the Public Works quality management process is to find design errors and missing information to reduce unexpected project cost increases during construction. For example, if a project's designs are missing key structural supports and those designs are sent out to bid, then the City's contract with the construction vendor may not include the structural supports. The City would likely have to amend the contract to pay the construction vendor for the supports, and because this payment was not included in the original project budget, the overall cost could increase.<sup>2</sup> A similar cost increase could occur if the project's designs included the structural supports without specifying their material or strength. Again, because the details are not in the designs, and therefore

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<sup>2</sup> Project costs can go up and down over the life of the project. Project costs may go up due to unanticipated work, but a vendor may also return money to the City for materials not used.

not in the contract, the project cost may go up to cover the price of the chosen material.

Public Works' quality management policy calls for the Quality Management Division to review a project's Quality Control Plan, which includes items like the construction manual, construction cost estimates, and verification that the consultant will follow the City's Code of Ordinances. Departmental policy also requires the Quality Management Division to review the project designs at the 30%, 60%, and 90% stages of completion, although the exact schedule may vary. If the assigned reviewer finds errors or missing details, the reviewer returns the designs to the project manager with comments. The project manager must then return the designs for a second review after working with the vendor to address the comments. The review process continues until the Quality Management Division is satisfied that all comments are fully addressed.

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The Quality Management Division has been pressured to complete modified or expedited reviews for high profile or time-sensitive projects.

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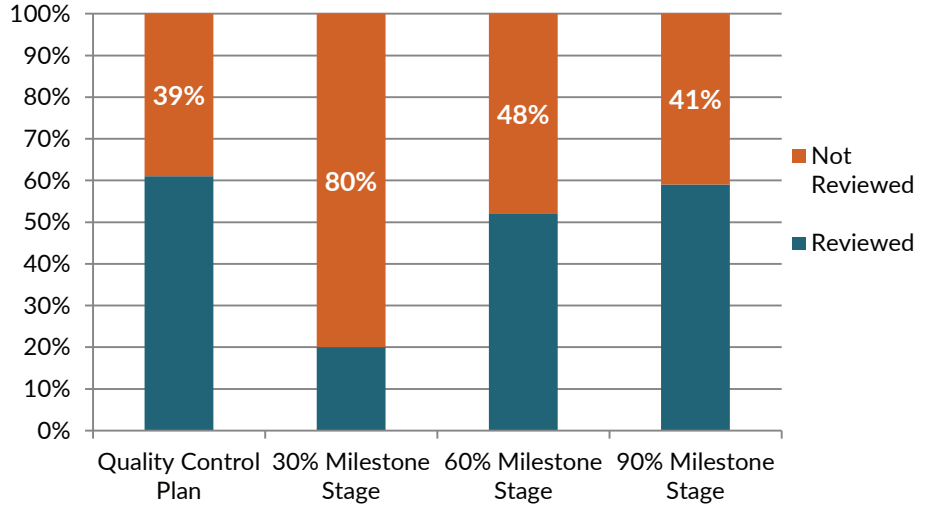
However, internal and external pressures appear to affect the integrity of the quality management process. For example, Public Works employees stated that management authorized staff to overlook comments from the Quality Management Division on the designs for the New Central Library. As a result, staff submitted the designs for bid and construction without subjecting them to the full quality management process. Staff also reported that, in some cases, external pressure regarding high profile or time-sensitive projects resulted in modified or expedited quality reviews. One project manager said they successfully appealed to City executives to bypass the quality management process when it caused burdensome delays.

Testing confirmed that Public Works has not reliably followed the quality management process. Of the 48 projects we tested, 18 (38%) were not in the Quality Management Division's records, which means the department did not review the Quality Control Plans or designs for those projects. Projects not in the Division's records included a pedestrian bridge, as well as the repair of the Turner Roberts Recreation Center, which was required because the original Center had structural failures.

Of the projects we tested that were in the Quality Management Division's records, 11 out of 28 (39%) did not have their Quality Control Plan reviewed by the Division. We also found that the Division did not perform routine milestone reviews, as shown in Exhibit #1.

According to a Quality Management Division staff member, the review process is more efficient if they have a chance to perform the review at all three milestone stages. Early reviews provide a chance to identify problems before they become significant to the design. Earlier reviews also allow the reviewer to become more familiar with the project, which may speed up later reviews. Some final designs are very complex and can be hundreds of pages long.

## Exhibit 1: Milestone Reviews Are Not Always Performed



Source: Office of the City Auditor analysis of Quality Management Division records, May 2017

Management indicated that as of January 2016, the department enforced stricter compliance with quality management policies. We conducted an additional review that focused on more recent projects, and found that all eligible projects received a 90% stage review by the Quality Management Division. However, only 4 out of 12 projects (33%) received a review at the 30% stage of design. The same proportion of projects did not receive a review of their Quality Control Plan, and we also noticed issues with missing projects - 3 out of 19 eligible projects, or 16%, were not found in the Division's records.

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Costs may increase when projects bypass the quality management process due to avoidable change orders and claims.

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If Public Works bypasses its quality management process, the City may pay for the decision in avoidable project cost increases. Many of the change estimates<sup>3</sup> (and accompanying cost increases) we reviewed for the New Central Library stemmed from missing, unclear, or conflicting items in the New Central Library designs that a quality review may have caught. For example, as illustrated in Exhibit 2, the designs did not address building power in some areas, which resulted in a change estimate of \$14,557. The designs also did not include elevator guide rail posts, which created a change estimate of \$18,115. We noted many similar examples in our review of the New Central Library project files.

<sup>3</sup> A change estimate is the contractor's estimated cost to complete the required work. The "change" refers to the needed changes to the contract (in the form of an eventual change order) before the contractor can be paid for the work.

## Exhibit 2: Bypassing the Quality Management Process Leads to Avoidable Cost Increases

In the document below, the contractor explains that the designs for the New Central Library did not include power to certain areas. The contractor estimates that the cost to create the power supply and run the necessary conduit will be \$14,557. After initially arguing that the designs did specify the required power, the City (and designer) ultimately confirm that the designs were deficient, and agree to pay the additional costs.

[REDACTED]

Design Team Comments 03/08/2016

The specifications indicate in the Summary of Section 08 33 43 Section 1.1 A and further delineates in Part 1 Item 1.2, J - that the scope of work is to provide the smoke containment system and the related work of electrical power and connection to the building power supply and the operating control system.

March 7, 2016

[REDACTED]

Project Manager  
Public Works Department  
Project Management Division  
505 Barton Springs Road, Suite 900  
Austin, Texas 78704

We recommend rejecting this CE as it is a requirement in the specifications and as such should have been included in the sub contractors scope of work.

The City accepts the recommendation of the Joint Venture and rejects this CE. [REDACTED] 03.28.16

Subject: CE 0795 - RFI 1273 - Electrical for Smoke Curtains  
New Central Library - CIP ID 7235.001  
Serial Letter 0731

[REDACTED]

Please find the attached proposal including an itemized breakdown of the costs associated with the issuance of RFI 1273 which revised the electrical drawings to show power to the smoke curtains that was previously not shown. The smoke curtain power was added on Levels P1, 1, 2, and 3. Pricing includes all electrical work to route from the smoke curtains to Panel 1LLS (Mechanical Room 141).

After review of this proposal pricing by [REDACTED] and our affected subcontractors, we find these revisions to result in a total cost of \$14,557.

Please review the attached information and issue a Change Order for the above quoted amount.

This proposal is based solely on the usual cost elements such as labor, material, and normal markups and does not include any amount for changes in the sequence of work, delays, disruptions, rescheduling, acceleration, and/or impact costs. The amount of costs associated with the Payment and Performance Bond and Builder's Risk policy related to this proposal is \$285.

Should you have any questions or comments, please feel free to contact the undersigned at 512.834.9848.

Sincerely, [REDACTED] Response 03.28.16

[REDACTED]

There was no Building Power Supply available for these smoke curtains. This CE to create the building power supply and bring power to the control panel to allow for the connection. Circuits need to be identified and the power needs to be engineered by the engineer of record. The lack of coordination on the design team should not be pushed off onto the contractor. You can not expect a smoke curtain contractor to route electrical throughout the building to connect to the emergency electrical panel on the first floor. Please understand this work will stop walls and ceilings from being closed up and will start impacting the schedule.

Design Team Comments 3/29/2016

[REDACTED]

Electrical has confirmed that their documents did not provide building power at these locations so takes no exception to the CE. Electrical has reviewed the back up for pricing and states that the CE is fair and reasonable.

[REDACTED]

The City accepts the recommendation of the Joint Venture team and will accept the costs of this CE. [REDACTED] 04.04.16

Source: Public Works' New Central Library project documentation, reviewed June 2017

Stakeholders view the quality management process as a significant source of project delays, which is the primary reason why management does not always enforce the policy. Project managers cited the quality management process as a major cause of delays, which can increase project costs by adding additional work time and days to the contract. Sponsor departments and the public may also be dissatisfied with delayed projects. Public Works management agreed the existing review process is too long. However, department staff also asserted that the Quality Management Division does not have sufficient resources to meet departmental

expectations, and the division is struggling to handle its current workload and deadlines.

Our testing indicates that, on average, the Quality Management Division returned comments within 15 days, which is within its internal targets. However, designs may go through several commenting cycles before the designs are cleared, which may increase the total review time to well beyond 15 days.

**Public Works did not follow all parts of its change order policy, which may result in unnecessary costs and avoidable project work.**

During construction of a capital project, it is not unusual for unforeseen conditions to require changes to the agreed-upon work. For example, a flash flood might delay work beyond the number of days agreed to in the contract. Conditions might also require changes in the quantity of materials or in the project scope. These changes result in work that differs from what was agreed to in the contract. A change order amends the contract to account for these changes and authorizes the contractor to proceed.<sup>4</sup>

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A change order amends a contract to account for changes in the previously agreed-upon work.

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Public Works' policy requires multiple layers of City staff to review and approve change orders before the relevant work goes forward. At a minimum, the project manager, sponsor department, and the Capital Contracting Office (via the Change Control Committee) must approve change orders. The policy aims to reduce the risk of unplanned scope increases or unfavorable pricing by adding oversight to changes in work. If a project manager gives verbal approval for such changes, including the estimated cost, state law obligates the City to pay for the work at the agreed-upon cost, even with no written approvals for the work.<sup>5</sup>

Public Works did not consistently follow its change order process on any of the nine projects that we reviewed.<sup>6</sup> On every project reviewed, we found evidence that the project manager allowed the contractor to complete at least some work before management approved the relevant change order. This practice violates Public Works' written policy and its written commitment to City Council (see Exhibit 3). In addition, in 6 of the 9 projects we tested (67%), approved change order forms were missing key signatures, such as those of the sponsor department or assigned construction inspector. We also received testimony from project managers, sponsor departments, and the Capital Contracting Office that the change order process is routinely circumvented.

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We found evidence that at least some component of the change order process was violated on every project that we reviewed.

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Public Works oversaw projects where contractors completed work that cost thousands of dollars before management approved the relevant change order. On the Waller Creek Tunnel project, management approved

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<sup>4</sup> Change orders can also reduce the amount of money the City owes a contractor – for example, if work is completed ahead of schedule, or uses less material than originally estimated.

<sup>5</sup> Texas state law (Sec. 271.152) waives the City's sovereign immunity if it enters into a contract, for the purposes of adjudicating a claim for breach of contract. This means a contractor can sue the City if it believes the City is in breach of contract.

<sup>6</sup> Due to the consistency of results in our testing, we did not extend the size of the sample.



a \$66,500 change order as a “mutually agreed upon lump sum for the completed-to-date work on the erosion control wall.” Because the work was completed before it was approved, the change order process was not followed. This change order was signed by management five months after management asserted to Council that they would follow Public Works’ change order process. See Exhibit 3.

### Exhibit 3: Public Works Agreed to \$66,500 in Work Before Change Order Was Approved

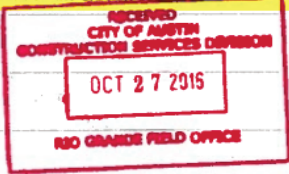
Request for Council Action

The City's Change Control Committee will review the all proposed Change Orders when they are finalized prior to issuance of a notice to proceed. The Change Control Committee was established to comply with Council Resolution No. 20120126-048, which required the establishment of consistent criteria and process to evaluate contractual changes for all contracts administered by the Capital Contracting Office. The Change Control Committee is comprised of management-level subject matter experts.

Change Order #17

CITY OF AUSTIN				CONSTRUCTION CHANGE ORDER FORM			
PROJECT NAME:	WCT - Main Tunnel & 4th St. Creek Side Inlet			PAGE:	Page 1 of 1		
CIP ID NO.:	6521.005			DATE:	October 11, 2016		
CONTRACTOR:	[REDACTED]			CHANGE ORDER NO.:	17		
MANAGING DEPT.:	City of Austin - Public Works			VENDOR NO.:	[REDACTED]		
PROJ MGR.:	[REDACTED]			CT NO.:	[REDACTED]		
INSPECTOR:	[REDACTED]			PREPARED BY:	[REDACTED]		

ITEM NO.	C.O. CATEGORY	FDU (Funding Source)	Description (Unit Price Bid Line #, Author, Reason & RFP #)	QTY. UNIT	ADDED DAYS	AMOUNT	
CO 17-1	CC	4972 6307 3900	Mutually agreed upon lump sum for the completed-to-date work on the erosion control wall.	1 LS	0	\$66,500.00	
							
					SUBTOTAL THIS PAGE	0	\$66,500.00
					SUBTOTAL OTHER PAGES	0	\$0.00
					COMBINED TOTAL	0	\$66,500.00

In consideration of the Change Order agreed to herein as complete equitable adjustments and full and final payment for the Contractor's additional work, the Contractor hereby releases the Owner from any and all liability under this contract for further equitable adjustments, including additional time for performance, attributable to such facts or circumstances giving rise to the proposal for adjustment.

Source: Request for Council Action, filed as back up for Item 3 on the Council's 5/12/2016 meeting agenda. The cited change order is from Public Works' project files for the Waller Creek Tunnel project

### Exhibit 4: Project Managers Do Not Always Agree to Lowest or Fair Cost When Approving Changes in Work

ITEM NO.	C.O. ATEGOR	FDU (Funding Source)	DESCRIPTION AND UNITS (Change Order Log #)	AMOUNT	ADDED DAYS
9	DD	[REDACTED]	Provide all labor and material for the revision of the structural steel at the reading porches per Field Order No. 13 and RFI No. 0748 which included the addition of channels around the reading porch structure, the substitution of HSS for channels, and the substitution of WT sections for W sections at the columns around the reading porch. (SL 0369R - CE No. 0296R) Please note that the City of Austin and [REDACTED], a Joint Venture do not believe that the pricing for the modifications were provided with fairness, but have agreed that it is better for the project to move forward and accept the costs. Author: [REDACTED]	\$ 82,653.00	0

Source: Public Works' New Central Library project documentation, reviewed June 2017

Project managers testified that the existing change order policy is burdensome and would lead to extensive project delays if enforced as written. At times, project managers agreed to a higher price to avoid taking

the time to negotiate a lower price that would cost the City more in delays (see Exhibit 4).

While project delays may lead to increased project costs, the City is completely reliant on the project manager’s judgment if the change order approval process is not followed. If the project managers agree to work that is later determined to be unnecessary or overpriced, the City must still pay for the work or risk a lawsuit, as described above. This risk is compounded by the lack of supervision over project managers. Unless a project manager brings an item to a supervisor’s attention, their day-to-day work is not reviewed. Thus, Public Works does not provide oversight to prevent a project manager from approving work without a change order.

**The City’s initial project cost estimations were often far below actual costs, which affects the reliability of budget and spending information for capital projects.**

The City often did not prepare accurate project cost estimates or collect reliable data to do so. If projects are approved with inaccurate cost estimates, the City may have to provide more funding after the project has begun. Doing so may affect departmental budgets and available bond funding for subsequent projects.

Initial cost estimates were not available for 3 of the 48 (6%) projects we tested. Of the remaining projects, 13 (29%) exceeded the initial cost estimate by 50% or more. Examples include the City Hall New Council Offices and Chamber Renovations (467%), the Austin Bicycle Commuting Project (155%), the Bluffington Lift Station Upgrades (292%), and the Shoal Creek Storm Drain Improvements (700%). See Exhibit 5.

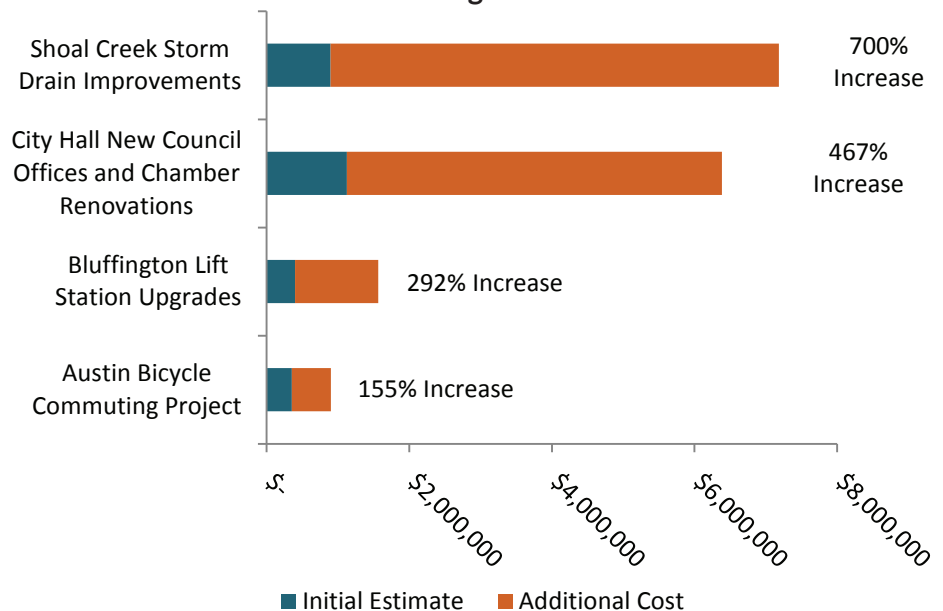
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Nearly 29% of reviewed projects exceeded their initial cost by 50% or more. The highest discrepancy we found was 700%.

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The scale of cost overruns conflicts with Public Works’ policy, which states that project costs should not exceed their estimates by certain amounts,

**Exhibit 5: Final Costs Often Exceed Initial Cost Estimates by Large Margins**



Source: Office of the City Auditor analysis of eCAPRIS data, April 2017

depending on the stage of design. The earliest estimate should be within 50% of the final project cost. The estimate at the conclusion of the design stage, when a project is ready for bid and construction, should be within 5% of the final cost.

Project cost estimation is a complex but necessary task. The City uses cost estimates in developing the capital budget, and changes in estimates may mean the City cannot afford other projects. Projects may miss their estimates because of unforeseen obstacles that increase their cost, such as severe weather, soil issues, or other circumstances outside the City's control. This is why project budgets include contingency funds. However, contingency funds are meant to address small variances rather than the large increases that we observed.

Project costs may increase for a variety of reasons, including unforeseen events, scope changes, design changes, or failure to follow quality management processes.

Scope increases and design changes are another common source of project cost increases and delays. These changes often come from stakeholders other than Public Works. For example, on the City Hall New Council Offices and Chamber Renovations Project, we found a change order that included approximately \$28,000 for a custom pecan wood table. The documentation accompanying the change order explained, "The [previous] City Manager requested the custom built pecan wood table. This item was previously deleted from the contract due to cost cutting measures." See Exhibit 6. While this dollar amount is small in the context of the final project budget for the City Hall renovations project (approximately \$6.4 million), repeated scope and design changes like the above example may result in project budgets that exceed initial cost estimates by a large margin.

Exhibit 6: Request for Custom Pecan Wood Table

CITY OF AUSTIN				CONSTRUCTION CHANGE ORDER FORM		
PROJECT NAME:	10-1 - City Hall Council Chambers			DATE:	Page 2 of 3 January 16, 2015	
CIP ID NO.:	10025.015			CHANGE ORDER NO.:	1	
CONTRACTOR:	[REDACTED]			VENDOR NO.:	[REDACTED]	
MANAGING DEPT.:	Public Works			CT NO.:	[REDACTED]	
PROJ MGR:	[REDACTED]					
INSPECTOR:	[REDACTED]					

ITEM NO.	C.O. CATEGORY	FDU (Funding Source)	Description (Unit Price Bid Line #, Author, Reason & RFP #)	ADDED DAYS	AMOUNT
1	UR	8560 7507 1010	extend conduit	0	\$542.52
2	UR	8560 7507 1010	bullet resistant panels	0	\$3,591.75
3	DO	8560 7507 1010	ceiling tile remove & replace	0	\$569.85
4		8560 7507 1010	drywall - Fur down hangers (this was a \$0.00 on original CO I sent)	0	\$0.00
5	UR	8560 7507 1010	exec. sess. table	20 days	\$27,882.56

CO Log No.	Description/Justification
1	After removing the ceiling in the Executive Sessions conference room, several conduits were found coming from the AV Closet and stubbing out close to the south wall. These conduits would not be accessible once renovations were complete, therefore it was requested that the conduits be extended to an accessible location.
2	A portion of the dais to the far west side was determined to be a safety risk. Therefore City Hall Security requested bullet resistant panels be installed.
3	A note was missing from the construction documents to remove and replace ceiling tiles as needed. This work was required to complete the renovations.
4	Item was deleted.
5	The City Manager requested the custom built Pecan wood table. This item was previously deleted from the contract due to cost cutting measures.

Source: Public Works' records for the City Hall New Council Offices and Chamber Renovations Project, reviewed June 2017

Management stated that on some occasions, scope and design changes help to avoid future costs, or to minimize disruption to the public. For example, management stated that on the Shoal Creek Storm Drain project

cited in Exhibit 5<sup>7</sup>, the expansion of scope allowed the project to upgrade water lines, wastewater lines, and street pavement surfaces, in addition to some emergency repairs related to a weather event.

Public Works has a “Lessons Learned” policy that requires project managers to document project issues in a central location. This is an effort to avoid similar mistakes on projects in the future, which may help to contain project costs. However, management does not enforce the policy and has not documented issues in a central location.

Testing also indicated that Public Works did not monitor cost estimate data entered into eCAPRIS (the project management system of record). Besides the three projects missing initial cost estimates, two projects we tested had initial cost estimates exceeding \$1 billion. These data entry errors were not identified and corrected, even though the projects continued for multiple years. Their final costs were in the millions rather than billions. This suggests that Public Works is not comparing estimates to final costs, or the discrepancy would have been noticed.

We could not determine whether the City routinely delivers projects on time because the quality of the eCAPRIS project schedule data was often poor. Out of 48 projects tested, we could not find sufficient data in 15 (31%) to compare the initial estimated delivery date to the final delivery date. Of the 33 projects where dates were available for comparison, 11 (33%) missed the initial delivery date by a year or more.

**Public Works did not always assign construction inspectors to each project under construction or ensure inspectors are documenting all required information, which may reduce City oversight of its capital projects.**

The City’s construction inspectors are meant to be a safeguard to confirm that contractors are working safely and in line with the contract terms. Accordingly, construction inspectors play an important role in ensuring that the City receives a quality result from its contractors.

Public Works’ policy requires construction inspectors to submit daily progress reports for their assigned projects. These reports contain a number of required fields, including information about the weather, work completed that day, and the contractors who were on site. If construction pauses, policy requires inspectors to document the pause in a Reports Suspended sheet. Supervisors must review and initial all progress reports.

The Construction Services Division may not be conducting sufficient monitoring to ensure that work on City capital projects is done safely and in line with contract specifications. Out of the 105 projects in construction at the time of our tests, 23 (22%) did not have an assigned inspector, which appears to violate Public Works’ policies. We selected a sample of 12 projects with assigned inspectors and found that in 9 out of 12 sets of project logs (75%), required fields such as pay items, staff on site, weather,

<sup>7</sup> Note - there are multiple Shoal Creek storm drain improvement projects. The project referenced here is the Ridgelea improvement project.

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Our testing discovered inspection logs that were incomplete or duplicated, and determined that some logs were missing entirely. We also found that almost a quarter of projects did not have an assigned inspector, although management asserted that these projects were inspected through alternate means.

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and equipment were left blank. We also found missing logs, including a month long gap in logs, without any written explanation.

Management asserted that, of the 23 identified projects without an assigned Construction Services Division inspector, 17 were or are being inspected by alternate sources, such as the Street and Bridge division, the Texas Department of Transportation, or departments themselves. Of the remaining 6 projects, 3 have since been assigned a Construction Services inspector, and 3 are small neighborhood projects that do not require an inspection.

If a City construction inspector is not on-site or not observing and documenting project work, the risk that a contractor may build the project in a way that is inefficient or structurally unsound increases. For example, structural failures at the Turner Roberts Recreation Center, which did not have a construction inspector onsite during construction, resulted in millions of dollars in extra costs to the City. If a construction inspector fails to document key information, the City may have difficulty defending claims it makes regarding the contractor's performance.

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## Finding 2

The City's process for assessing contractor performance on capital projects discourages constructive feedback and lacks nuance, which may affect the outcome of future procurement and thus the quality of future capital projects.

Evaluating and documenting vendor performance is another important process for ensuring capital project quality. However, our test of all evaluations conducted by project managers in the past five years found they appear unrealistically positive. 765 out of 778 (98%) evaluations of professional services contractors and 72 out of 77 evaluations (93%) of construction contractors received perfect scores.

The City evaluates contractor performance on capital projects and uses the information when selecting vendors for certain contract types.<sup>8</sup> The Capital Contracting Office requires project managers to evaluate the performance of contractors on every capital project. Evaluations for certain types of contractors, such as architects and engineering firms, are required after each phase of a project.

Based on testimony from project managers, the scarcity of negative scores is not a reflection of vendor quality, but rather limitations of the evaluation process, as shown in Exhibit 7.

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Contractor performance evaluations appear to be unrealistic. We found that 98% of design consultant evaluations and 93% of construction contractor evaluations received perfect scores.

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<sup>8</sup> Texas state law prevents the use of vendor evaluations in traditional design-bid-build contracts, as it requires the City to select the lowest responsible bid. See Sec. 2269.101.

## Exhibit 7: Limitations of the Evaluation Process

Limitation	Impact
<b>The vendor evaluation forms are complex and lack nuance, which results in high scores.</b>	The evaluation form requires project managers to choose a binary score (1 or 0) for categories containing multiple sub-sections. For example, in the category “Quality of Work Performed,” there are three subsections with evaluation criteria – although the maximum score is 1. If a contractor performed well on some criteria in the category, and less well on others, the project manager can still only choose a score of 1 or 0. Project managers testified that they are more likely to choose a score of 1 to reflect that the contractor did perform well in some areas.
<b>Sub-contractors are not evaluated</b>	Project managers reported they do not want to punish good prime contractors for having poorly performing sub-contractors.
<b>Negative evaluations require more documentation and encounter pushback from contractors and City staff</b>	Many project managers stated it is difficult to write a negative evaluation due to the required amount of back-up documentation. In addition, project managers reported they are less likely to write negative evaluations due to anticipated pushback from City staff and contractors.
<b>Legal disputes</b>	One project manager testified that they were unable to write a negative evaluation for a problematic vendor because the contractor in question was still in the midst of a legal dispute with the City.
<b>Potential contractors without prior experience with the City may be at a disadvantage, because so many contractors have been awarded perfect scores.</b>	New contractors are assigned the average evaluation score in their service category for the purposes of procurement. The average score is necessarily lower than the perfect scores most existing contractors maintain. Management explained that in the past, new contractors had been assigned the top score in their service category. However, some viewed this practice as awarding an unearned advantage to new contractors.

Source: OCA analysis of vendor evaluation practices, May 2017

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Negative evaluations may be rare due to barriers in the evaluation process, as well as prior legal agreements the City has with certain contractors.

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Negative evaluations may also be rare due to legal agreements the City has with contractors. These agreements typically arise when the City is dissatisfied with some aspect of contractor performance and negotiates a formal resolution. Auditors reviewed two settlement agreements that contained language limiting the City’s ability to document issues with those contractors’ performance. In one agreement, the City explicitly promised to issue a positive reference if asked. See Exhibit 8. In such cases, the City cannot document a vendor’s past negative performance or consider it when awarding future contracts without violating the terms of the settlement.

If contractor evaluations do not reflect a useful or accurate summary of performance, future procurements may suffer in quality. Contractors

who performed poorly but received positive evaluations may be awarded additional contracts because the City does not have the ability to accurately review their past performance.

**Exhibit 8: Certain Legal Settlements May Prevent Negative Evaluations**

20. The Parties agree that they will not make any disparaging comments about each other in connection with this dispute. In making this Agreement, the parties acknowledge that they are voluntarily waiving their free-speech rights under the United States and Texas Constitutions, but are doing so only after careful consideration and in consultation with their attorneys. Upon request, the City will provide [REDACTED] with a written recommendation letter, and to the extent possible, positive references for future projects.

Source: Settlement between the City of Austin and a vendor. Obtained by the Office of the City Auditor in June 2017

The City is missing vendor evaluations for important projects, such as the New Central Library or Turner Roberts Recreation Center repair.

The Capital Contracting Office’s management did not appear to monitor compliance with the evaluation policy, and they were unable to provide important evaluations. For example, the Office did not have evaluations on file for the New Central Library’s design consultant. Policy requires that at least two evaluations for this project should have been completed at the time of our review. There were also no evaluations available for the contractor on the Turner Roberts Recreation Center, or for the related repair of that facility. Our tests also found one duplicate evaluation in the database and one score that was associated with the wrong contractor.

The Capital Contracting Office updated its vendor evaluation process in July 2017. Changes include adding new criteria and expanding the scoring range from a maximum of one point to a maximum of three points. The new guidelines also state vendors cannot receive a perfect score simply for meeting contract requirements. However, peer cities offer additional considerations that Austin does not use at this time. See Exhibit 9 for details.

**Exhibit 9: Peer City Practices in Vendor Evaluations**

Considerations	City
Different evaluation forms are used for projects of varying complexity (e.g., buildings versus road work)	San Antonio
Evaluations allow a wide range of scoring responses	Houston, Fort Worth, and San Antonio
Evaluations include holistic categories addressing issues such as overall coordination, effectiveness, and timeliness	Houston, Fort Worth, and San Antonio

Source: Office of the City Auditor’s analysis of vendor evaluation practices in peer cities, June 2017

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## Finding 3

Although Public Works recently improved their communication with sponsor departments, departmental staff are still dissatisfied with the rate and quality of project updates.

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Over 60% of surveyed departments reported dissatisfaction with the quality and frequency of project updates.

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Multiple project managers reported keeping two sets of accounts because the City's project management system did not meet their needs.

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Capital projects typically involve many stakeholders besides Public Works. One key party is the sponsor department – the city department paying for the project. For example, the Parks and Recreation Department was the sponsor for the Boardwalk at Lady Bird Lake. Project managers must coordinate with these stakeholders to ensure they are up to date on projects and involved in key decisions.

The City's project management system, eCAPRIS, is a major tool that Public Works uses for coordinating with sponsor departments. Public Works' policy requires project managers to maintain and update key information in eCAPRIS on a monthly basis. Project managers must update information such as encumbered project funds, project schedules, budget estimates, and status updates. However, only 17 of 48 projects (35%) we tested included monthly updates in the past six months of project activity. In addition, a survey of sponsor departments revealed 7 out of 11 departments (64%) are dissatisfied with the quality and frequency of eCAPRIS updates. Some departments also expressed dissatisfaction with the frequency of budget updates (27%) and spending plan updates (36%).

Public Works employees and sponsor departments alike cited eCAPRIS as a major hindrance for project management and coordination. Both parties see eCAPRIS as an accounting tool, rather than one suited to project management. Due to frustration with eCAPRIS, multiple project managers reported that they develop and use separate systems for day to day project management (in the form of Excel spreadsheets). They copy information to eCAPRIS when required, leading to duplicate work and possible delays in relaying information to sponsor departments. One sponsor department cited a particular concern with the lack of budget and spending plan updates, noting that the delays caused the department's own capital planning process to be inaccurate. There is also a risk that information is copied to eCAPRIS incorrectly. Finally, other reviewers may not understand the project manager's shadow system, making it difficult to monitor the quality of that project manager's work.

As in Finding 1 and 2, insufficient monitoring appears to have contributed to the lack of consistent eCAPRIS updates. Project managers reported a reactive approach by management, in which supervisors did not review eCAPRIS for any issues unless a problem came to their attention. Supervisors stated that there is a monthly report to see if project managers make their monthly updates, but that it is not a problem for project managers to miss an update. Additionally, one supervisor stated that they might not know if an important detail was left out of eCAPRIS, due to general lack of familiarity with the projects.

Public Works recently initiated quarterly roundtable meetings with sponsor department executives, as well as meetings with each department to review their project portfolios. Sponsor departments reported they appreciate these meetings and the opportunity to provide feedback on project managers, vendor performance, and more. However, the lack of more routine project updates appears to be a source of persistent frustration.



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## Recommendations and Management Response

The following recommendations suggest changes to the processes designed to contain costs and ensure the quality of capital projects. To bring autonomy and oversight into better balance, the Public Works Director should:

- 1 | **Review, update as necessary, and enforce the Quality Management Division's quality management process to focus on risk-based reviews. The Director should also ensure the Division has sufficient resources allocated to meet departmental needs and expectations.**

**Management Response:** Partially Agree

**Proposed Implementation Plan:** PWD is conducting a lean review of our entire capital project delivery operation and recognizes the current QMD process is cumbersome and inefficient. PWD is working to revamp our QMD process by shifting the focus to a Total Quality Management (TQM) approach. This approach will involve the entire capital delivery team in sharing quality assurance responsibility. The revamped TQM process will also incorporate a risk based approach to ensure the appropriate level of quality review is conducted by the most qualified individual(s) at the optimal stage(s) of project completion. The restructuring to TQM will take approximately 6 months and will include training as well as communications and outreach to department stakeholders.

However, until changes are made to the process as described above, we will continue to use the existing protocol mandating QMD reviews. So, while PWD understands the audit found that some QMD reviews were being by-passed, corrective actions taken in January 2016 have resulted in 100% compliance with the 90% design review.

**Proposed Implementation Date:** March 2018

- 2 | **Work in conjunction with the Capital Contracting Office to review, update as necessary, and enforce a risk-based change order process that is realistic for project needs and protects the City from unnecessary costs.**

**Management Response:** Agree

**Proposed Implementation Plan:** A citywide team has been created with the charge to streamline all associated existing change order processes and implement improvements. The team will focus on a risk based approach that is realistic for project needs. The team has their first meeting on September 18, 2017 and is expected to complete its work in November 2017. All improvements will be communicated/implemented in December 2017.

**Proposed Implementation Date:** December 2017

3

Review, update as necessary, and enforce the Department's project cost estimation process and work with stakeholders to develop a more accurate process.

**Management Response:** Agree

**Proposed Implementation Plan:** In an effort to improve cost estimates, PWD revised the Budget Estimate Form and made improvements at the beginning of FY17. The existing budget form was modified to create two forms, one for vertical (architectural) projects and one for horizontal (civil) projects using standard approved methodologies described under AACE International Recommended Practice No. 18R-97, "Cost Estimate Classification System - As Applied in Engineering, Procurement, and Construction for the Process Industries." Training was provided to Project Managers and Sponsor Departments in FY 2017. Additional Cost Estimation trainings will be provided on an ongoing basis as part of the Project Management Academy for all stakeholders involved in CIP projects. In addition, Public Work's Project Management Procedures Manual is being updated to address the documentation of baseline schedules and budgets. The capital project delivery team is equipped to support client departments with project development including preliminary cost estimating and vetting of costs and schedule estimates. As part of our Capital Delivery lean review we anticipate standing up a project controls office to provide dedicated project cost estimating and scheduling in FY 2019.

**Proposed Implementation Date:** October 2018

4

Review, update as necessary, and enforce the documentation requirements for construction inspectors and ensure inspectors are assigned to every project under construction, whether these inspectors are from Public Works, other city departments, or hired from a third party.

**Management Response:** Agree

**Proposed Implementation Plan:** We agree with the findings related to the record keeping. A training session has been held with the Construction Services Division (CSD) staff to reinforce the importance of the Daily Progress Report (DPR). In addition, improvements to the DPR application will be phased in over the next few months in response to the audit findings. We will designate some required fields and create necessary check boxes in the DPR to be filled out in order for the report to be submitted. In addition, we will require some fields in the DPR to be mandatory unless supervisory personnel select a setting stating that these fields are not appropriate for the project in question.

We agree that all city projects under construction should have assigned inspectors, either from CSD, sponsor departments, or third party providers.

**Proposed Implementation Date:** March 2018

5

Work with the Capital Contracting Office and the Law Department to reduce barriers to incorporating constructive feedback in the vendor evaluation process. The vendor evaluation process should include a section for documenting subcontractor performance.

**Management Response:** Agree

**Proposed Implementation Plan:** The Capital Contracting Office in collaboration with Public Works, Law, and other department stakeholders completed a review and enhancements of the Consultant and Contractor Performance Evaluation Program. This effort consisted of soliciting feedback from internal stakeholders, the City's Construction Advisory Committee, and contractors and consultants. This effort resulted in a more user friendly evaluation form/process and changes to the evaluation criteria, points awarded, and revised rating definitions. The revised program was implemented on July 3, 2017 and addressed many of the concerns identified in the Auditor's findings. The new program was made available to the Auditor's Office.

**Proposed Implementation Date:** completed, July 2017

6

Work with stakeholders to develop an effective project management tool, or improve existing tools, to increase project manager efficiency and opportunities for coordination with departments.

**Management Response:** Agree

**Proposed Implementation Plan:** PWD is currently conducting a Lean Review that will identify opportunities to improve project delivery effectiveness both in terms of schedule and budget, and quality and coordination. As part of this review much of the data, including feedback from stakeholder departments, has been collected and is being incorporated into defining the "as is" condition of our capital delivery performance. This exercise will produce a new Capital Delivery business model that optimizes our People, Plans, and Processes that will in turn identify needed management tool(s). Any enhancements, augmentation, or replacements to those tools can then be assessed based on the improved capital delivery model. PWD is also working with the recently created Mobility Bond Project Systems Intelligence Office in order to improve existing systems or augment them to provide more immediate transparency and reporting of capital project status.

**Proposed Implementation Date:** June 2018

# Management Response



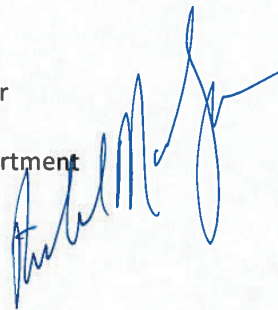
## MEMORANDUM

**TO:** Corrie Stokes, City Auditor, Office of the City Auditor

**FROM:** Richard Mendoza, P.E., Director, Public Works Department

**DATE:** September 25, 2017

**SUBJECT:** Action Plan – Capital Project Delivery Audit



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In accordance with the Capital Project Delivery Audit, attached is the action plan with six recommendations. The following three pages outline management's response to recommendations, proposed strategy for implementation, the status of strategies and proposed implementation dates.

Regarding Recommendation #1, PWD disagrees that quality assurance (QA) reviews would have altered the outcome of one of the large projects identified. This project was very complex in nature and implemented using an alternative delivery method, construction manager at risk, not conducive to our current QMD work process.

Regarding Recommendation #3, PWD would like to note that initial cost estimates are often input with varying levels of information at the time of creation.

Regarding Recommendation #5, PWD and the Capital Contracting Office would like to note that we do not believe that a vendor evaluation process should include subcontractor performance. There is no contract between the Owner and a subcontractor and thus no contractual requirements to evaluate a subcontractor. The Owner holds the Prime Contractor accountable for all work regardless if the subcontractor performed the work.

Should you have additional questions, please feel free to contact Jorge Morales, Assistant Director for Engineering and Project Delivery, at (512) 974-7298.

Thank you.

## Recommendations and Management Response

1. Review, update as necessary, and enforce the Quality Management Division's quality management process to focus on risk-based reviews. The Director should also ensure that the Division has sufficient resources allocated to meet departmental needs and expectations.

**Management Response:** Partially Agree

**Proposed Implementation Plan:** PWD is conducting a lean review of our entire capital project delivery operation and recognizes the current QMD process is cumbersome and inefficient. PWD is working to revamp our QMD process by shifting the focus to a Total Quality Management (TQM) approach. This approach will involve the entire capital delivery team in sharing quality assurance responsibility. The revamped TQM process will also incorporate a risk based approach to ensure the appropriate level of quality review is conducted by the most qualified individual(s) at the optimal stage(s) of project completion. The restructuring to TQM will take approximately 6 months and will include training as well as communications and outreach to department stakeholders.

However, until changes are made to the process as described above, we will continue to use the existing protocol mandating QMD reviews. So, while PWD understands the audit found that some QMD reviews were being by-passed, corrective actions taken in January 2016 have resulted in 100% compliance with the 90% design review.

**Proposed Implementation Date:** March 2018

2. Work in conjunction with the Capital Contracting Office to review, update as necessary, and enforce a risk-based change order process that is realistic for project needs and protects the City from unnecessary costs.

**Management Response:** Agree

**Proposed Implementation Plan:** A citywide team has been created with the charge to streamline all associated existing change order processes and implement improvements. The team will focus on a risk based approach that is realistic for project needs. The team had their first meeting on September 18, 2017 and is expected to complete its work in November 2017. All improvements will be communicated/implemented in December 2017.

**Proposed Implementation Date:** December 2017

3. Review, update as necessary, and enforce the Department's project cost estimation process and work with stakeholders to develop a more accurate process.

**Management Response:** Agree

**Proposed Implementation Plan:** In an effort to improve cost estimates, PWD revised the Budget Estimate Form and made improvements at the beginning of FY17. The existing budget form was modified to create two forms, one for vertical (architectural) projects and one for horizontal (civil) projects using standard approved methodologies described under AACE International

## Recommendations and Management Response

Recommended Practice No. 18R-97, "Cost Estimate Classification System – As Applied in Engineering, Procurement, and Construction for the Process Industries." Training was provided to Project Managers and Sponsor Departments in FY 2017. Additional Cost Estimation trainings will be provided on an ongoing basis as part of the Project Management Academy for all stakeholders involved in CIP projects. In addition, Public Work's Project Management Procedures Manual is being updated to address the documentation of baseline schedules and budgets. The capital project delivery team is equipped to support client departments with project development including preliminary cost estimating and vetting of costs and schedule estimates. As part of our Capital Delivery lean review we anticipate standing up a project controls office to provide dedicated project cost estimating and scheduling in FY 2019.

**Proposed Implementation Date:** October 2018

4. Review, update as necessary, and enforce the documentation requirements for construction inspectors and ensure inspectors are assigned to every project under construction, whether these inspectors are from Public Works, other city departments, or hired from a third party.

**Management Response:** Agree

**Proposed Implementation Plan:** We agree with the findings related to the record keeping. A training session has been held with the Construction Services Division (CSD) staff to reinforce the importance of the Daily Progress Report (DPR). In addition, improvements to the DPR application will be phased in over the next few months in response to the audit findings. We will designate some required fields and create necessary check boxes in the DPR to be filled out in order for the report to be submitted. In addition, we will require some fields in the DPR to be mandatory unless supervisory personnel select a setting stating that these fields are not appropriate for the project in question.

We agree that all city projects under construction should have assigned inspectors, either from CSD, sponsor departments, or third party providers.

**Proposed Implementation Date:** March 2018

5. Work with the Capital Contracting Office and the Law Department to reduce barriers to incorporating constructive feedback in the vendor evaluation process. The vendor evaluation process should include a section for documenting subcontractor performance.

**Management Response:** Agree

**Proposed Implementation Plan:** The Capital Contracting Office in collaboration with Public Works, Law, and other department stakeholders completed a review and enhancements of the Consultant and Contractor Performance Evaluation Program. This effort consisted of soliciting feedback from internal stakeholders, the City's Construction Advisory Committee, and contractors and consultants.

# Management Response

## Recommendations and Management Response

This effort resulted in a more user friendly evaluation form/process and changes to the evaluation criteria, points awarded, and revised rating definitions. The revised program was implemented on July 3, 2017 and addressed many of the concerns identified in the Auditor's findings. The new program was made available to the Auditor's Office.

**Proposed Implementation Date:** completed; July 2017

6. Work with stakeholders to develop an effective project management tool, or improve existing tools, to increase project manager efficiency and opportunities for coordination with departments.

**Management Response:** Agree

**Proposed Implementation Plan:** PWD is currently conducting a Lean Review that will identify opportunities to improve project delivery effectiveness both in terms of schedule and budget, and quality and coordination. As part of this review much of the data, including feedback from stakeholder departments, has been collected and is being incorporated into defining the "as is" condition of our capital delivery performance. This exercise will produce a new Capital Delivery business model that optimizes our People, Plans, and Processes that will in turn identify needed management tool(s). Any enhancements, augmentation, or replacements to those tools can then be assessed based on the improved capital delivery model. PWD is also working with the recently created Mobility Bond Project Systems Intelligence Office in order to improve existing systems or augment them to provide more immediate transparency and reporting of capital project status.

**Proposed Implementation Date:** June 2018

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## Scope

The audit scope included capital improvement projects active between October 1, 2015 through December 31, 2016. This includes projects in post-construction or the warranty phase during the scope period.

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## Methodology

To complete this audit, we performed the following steps:

- interviewed Public Works staff and management;
- reviewed Public Works' policies and procedures;
- evaluated internal controls related to the capital project delivery process;
- evaluated the risk of fraud, waste, and abuse with regard to the capital project delivery process;
- surveyed and interviewed staff of sponsor departments, including Austin Water, Aviation, and Parks and Recreation;
- evaluated a sample of projects for compliance with the City's quality management process;
- evaluated a sample of projects for compliance with the City's change order process;
- analyzed the frequency and content of construction inspection logs for a sample of projects;
- obtained and analyzed the City's database of vendor evaluations;
- reviewed a sample of vendor evaluations for content and compliance with the evaluation process;
- researched peer city processes for capital project vendor evaluation;
- reviewed the terms of recently resolved claims between the City and capital project contractors; and
- analyzed a sample of projects in eCAPRIS, the City's project management system, to evaluate project coordination as well as project costs and timeliness.

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## Audit Standards

We conducted this performance audit in accordance with Generally Accepted Government Auditing Standards. 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.



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The Office of the City Auditor was created by the Austin City Charter as an independent office reporting to City Council to help establish accountability and improve City services. We conduct performance audits to review aspects of a City service or program and provide recommendations for improvement.

#### **Audit Team**

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