



OFFICE OF INSPECTOR GENERAL

Audit Report

2014-AE-B-007

Opportunities Exist for the Board to  
Improve Recordkeeping, Cost Estimation,  
and Cost Management Processes for the  
Martin Building Construction and  
Renovation Project

March 31, 2014

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM  
CONSUMER FINANCIAL PROTECTION BUREAU

## Report Contributors

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## Abbreviations

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A/E	architecture and engineering
Board	Board of Governors of the Federal Reserve System
CBA	Committee on Board Affairs
CSI	Construction Specifications Institute
FAR	<i>Federal Acquisition Regulation</i>
GAO	U.S. Government Accountability Office
GSA	U.S. General Services Administration
GSA P-120	U.S. General Services Administration's P-120 Project Estimating Requirements for the Public Buildings Service
KCCT	Karn Charuhas Chapman & Twohey
Martin Building project	Martin Building construction and renovation project
URS	URS Corporation
VC/CC	visitors' center and conference center

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## **Executive Summary:**

# **Opportunities Exist for the Board to Improve Recordkeeping, Cost Estimation, and Cost Management Processes for the Martin Building Construction and Renovation Project**

2014-AE-B-007

March 31, 2014

### **Purpose**

The Martin Building construction and renovation project (Martin Building project) requires significant investment, and it has been identified by the Board of Governors of the Federal Reserve System (Board) as a strategic theme in the Board's strategic framework. As such, our objectives for this audit were to assess how the cost estimates for the project were determined and how these costs will be managed within the Board's strategic framework.

### **Background**

The Martin Building project comprises construction of a visitors' center, construction of a conference center, and renovation of the Martin Building. The concept for the project began shortly after the events of September 11, 2001. Since the original concept was developed, the Martin Building project has gone through a lengthy design phase, primarily due to significant scope changes. These scope changes also resulted in the preparation of multiple estimates that were eventually consolidated into a single conceptual construction cost estimate of \$179.9 million, which is one component of an overall estimated project cost of \$280.4 million.

### **Findings**

Our audit focused on the Martin Building project's conceptual construction cost estimate that was available during our fieldwork. Conceptual cost estimates are typically used during initial planning and should be updated as scope and costs are clarified. Consistent with this practice, the Board's architecture and engineering (A/E) firm and construction administrator submitted updated estimates based on detailed project requirements in December 2013. These estimates were within the expected range of the conceptual cost estimate developed by the Martin Building project team.

Our audit identified opportunities for the Board to improve its recordkeeping, cost estimation, and cost management processes for the Martin Building project. Specifically, we found that the project team did not adequately maintain documentation supporting its conceptual construction cost estimate for the Martin Building project, and support was not available for several line items. We also found that the conceptual construction cost estimate contained errors and inconsistencies. In addition, the Board has not yet established a contractual stated cost limitation with the A/E firm and has not required the firm to submit cost-saving items to aid in cost management.

Actions that the Board has taken since 2011 to improve management of the Martin Building project include arranging for the preparation of an independent construction cost estimate; hiring additional personnel, including a senior project manager, with construction experience; dedicating a procurement staff member to the project; and acquiring a records management system.

### **Recommendations**

We are making six recommendations to improve the Board's cost-estimation process and cost-management practices. We recommend that appropriate individuals maintain records in support of the construction cost estimates for the Martin Building project. We also recommend that the Board's construction cost estimate contain all design requirements, be free of errors and inconsistencies, and be in the same format as contractor estimates. Finally, we recommend that the stated cost limitation be established as quickly as practicable and that the A/E firm be required to submit cost-saving items on an ongoing basis throughout the design process. In its response to a draft of our report, the Board concurred with our recommendations and noted that it is taking actions to implement them.

Access the full report: <http://www.federalreserve.gov/oig/files/Board-Martin-Building-Construction-Renovation-Mar2014.pdf>

For more information, contact the OIG at 202-973-5000 or visit <http://www.federalreserve.gov/oig>.

## Summary of Recommendations, OIG Report No. 2014-AE-B-007

Rec. no.	Report page no.	Recommendation	Responsible office
1	9	Designate responsible individuals to maintain records in support of the construction cost estimates for the Martin Building project, including any records needed to ensure compliance with the Board's <i>Records Policy and Procedures Manual</i> .	Management Division
2	14	Upon receipt of future estimates from the construction administrator and Karn Charuhas Chapman & Twohey, evaluate these estimates to ensure that <ol style="list-style-type: none"> <li>a. all program requirements are included.</li> <li>b. redundant costs are not included.</li> <li>c. escalation is calculated to an appropriate point using an agreed-upon index.</li> <li>d. contingencies, mark-ups, and escalations are applied in conformance with industry standards using agreed-upon percentages.</li> <li>e. estimates are in Construction Specifications Institute format as required by the contract.</li> </ol>	Management Division
3	14	Develop and implement written policies and procedures on developing construction cost estimates that will require any future building projects undertaken by the Board to comply with industry procedures and standards for developing cost estimates.	Management Division
4	18	Direct the Martin Building project team to establish a stated cost limitation with Karn Charuhas Chapman & Twohey as quickly as practicable.	Management Division
5	18	Once the stated cost limitation has been established, advise the Committee on Board Affairs, the Executive Oversight Group, and senior management as appropriate if future estimates exceed this limit.	Management Division
6	18	Direct the Martin Building project team to require Karn Charuhas Chapman & Twohey to submit a list of cost-saving items with the remainder of its design submissions.	Management Division



OFFICE OF INSPECTOR GENERAL  
BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM  
CONSUMER FINANCIAL PROTECTION BUREAU

March 31, 2014

**MEMORANDUM**

**TO:** Michell Clark  
Director of the Management Division  
Board of Governors of the Federal Reserve System

**FROM:** Melissa Heist *Melissa Heist*  
Associate Inspector General for Audits and Evaluations

**SUBJECT:** OIG Report No. 2014-AE-B-007: *Opportunities Exist for the Board to Improve Recordkeeping, Cost Estimation, and Cost Management Processes for the Martin Building Construction and Renovation Project*

The Office of Inspector General has completed its final report on the subject audit. We conducted this audit to assess how the cost estimates for the Martin Building construction and renovation project were determined and how these costs will be managed within the strategic framework of the Board of Governors of the Federal Reserve System.

We provided you with a copy of our draft report for review and comment. In your response, you stated that you concurred with our recommendations and are in the process of implementing and making changes. We have included your response as appendix D in our report.

We appreciate the cooperation that we received from Management Division and Division of Financial Management staff during our audit. Please contact me if you would like to discuss this report or any related issues.

cc: Donald Hammond  
William Mitchell  
David Capp  
Marie Savoy

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# Introduction

## Objectives

The Martin Building construction and renovation project (Martin Building project) requires significant investment, and it has been identified by the Board of Governors of the Federal Reserve System (Board) as a theme in the Board's strategic framework, which is presented in its *Annual Performance Report 2012*.<sup>1</sup> In addition, the Martin Building project has been identified as "a key enabler" of the other five themes identified in the strategic framework. As such, our objectives for this audit were to assess how the cost estimates for the Martin Building project were determined and how these costs will be managed within the Board's strategic framework. Details on our scope and methodology are presented in appendix A.

## Background

### *Martin Building Project*

The Martin Building project is currently one of the Board's largest strategic initiatives and comprises three interrelated construction and renovation efforts: (1) construction of a visitors' center, (2) construction of a conference center, and (3) renovation of the Martin Building. The Board's objectives for the project are to create a safe and secure work environment that updates the physical infrastructure and reduces utilities consumption and expenses. The project was conceived shortly after the events of September 11, 2001, as a way to address the need for heightened security at the Board.

As we detailed in an earlier report,<sup>2</sup> since the original concept was developed, the Martin Building project has gone through a lengthy design phase, primarily due to significant scope changes.<sup>3</sup> The initial architecture and engineering (A/E) contracting effort in 2005 was for the construction of a visitors' center. The solicitation for this effort was amended in 2006 to also include the construction of a conference center. The 2006 amendment was followed in 2007 by the determination of Management Division officials that the construction of the visitors' center and the conference center should take place concurrently with needed renovations to the

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1. The Board's performance report is available at <http://www.federalreserve.gov/publications/gpra/files/2012-gpra-performance-report.pdf>. A list of the Board's strategic themes is available in appendix B.
  2. Office of Inspector General, *Audit Observations on the Board's Planning and Contracting Process for the Martin Building Construction, Renovation, and Relocation of Staff*, OIG Report No. 2013-AA-B-007, March 29, 2013, [http://www.federalreserve.gov/oig/files/FRB\\_Martin\\_Building\\_Planning\\_Contracting\\_Mar2013.pdf](http://www.federalreserve.gov/oig/files/FRB_Martin_Building_Planning_Contracting_Mar2013.pdf).
  3. Please see appendix C for a timeline that illustrates project and cost-estimate history relevant to this report.



Martin Building. In 2008, the then chair of the Committee on Board Affairs (CBA)<sup>4</sup> approved a memorandum to include the Martin Building renovations in the existing A/E contract. After negotiations with the current A/E firm, the Board’s Procurement section modified the contract in 2011 to include the design of these renovations.

After the 2011 A/E contract modification, the Board needed to decide whether the Martin Building renovation should be phased (floor-by-floor) or nonphased construction; nonphased construction would require the Board to vacate the entire building. Ultimately, the decision was made to renovate the Martin Building using a nonphased approach.

Current staff involved with this project informed us that the scope changes, renovation approach, and other decisions described above were significantly complicated by the change in the Board’s organizational structure and leadership,<sup>5</sup> the impact of the financial crisis on the Board, and significant staff growth during this period. In addition, these scope changes and approval decisions resulted in the preparation of several conceptual construction estimates for different aspects of this project. These conceptual estimates were eventually consolidated into a single conceptual construction cost estimate of \$179.9 million, which is one component of an overall estimated project cost of \$280.4 million (table 1).

**Table 1: Breakdown of Martin Building Project Conceptual Cost Estimate<sup>a</sup>**

Item	Cost estimate (in \$ millions)
Design	15.4
Construction and postdesign	179.9
Furniture, equipment, and all other	8.5
Leased space <sup>b</sup>	76.7
<b>Total</b>	<b>280.4<sup>c</sup></b>

Source: Martin Building project team, *Martin Building Modernization Project Overview*, presentation to the CBA, September 2012.

<sup>a</sup>Includes the Martin Building renovation and construction of a visitors’ center and a conference center.

<sup>b</sup>Leased space is needed to accommodate displaced staff during the Martin Building renovation.

<sup>c</sup>Costs are rounded and may not add to the total shown.

The Martin Building project team presented the overall conceptual construction cost estimate in table 1 to the CBA in September 2012. The project was approved as a strategic plan project, and the capital portions of the project are currently included as a multiyear capital project in the Board’s *2013 Budget as Approved by the Board of Governors*.

4. The CBA, which consists of three Board Governors, is responsible for providing oversight of the Board’s planning and budgetary process; coordinating the work of the oversight committees as they plan and budget for their particular areas of oversight; presenting a plan and budget to the Board for discussion and decision; monitoring budget formulation and planning execution over the budget cycle; providing planning guidance as appropriate; and providing oversight of the Chief Operating Officer, the Management Division, the Division of Financial Management, and the Division of Information Technology.
5. During this period, the organizational structure of the Board was modified and the Division of Financial Management and the Office of the Chief Operating Officer were created. In addition, there was turnover in the senior management in the Management Division, as well as a new CBA chair and a new Chief Operating Officer.

## ***Martin Building Project Team***

The Martin Building project is currently facilitated by an executive team and a core team. The Martin Building executive team, which acts as the management authority of the Martin Building project, consists of the Chief Operating Officer, the Director and Deputy Director of the Management Division, and the Senior Associate Director for Facility Services. The core team, which acts in a supporting role to the Martin Building project, consists of facilities, procurement, space planning, and budget and administration staff located in the Management Division and in the Division of Financial Management. These two teams have experienced significant turnover in personnel during the extended period that this project has been ongoing. Throughout this report, these teams will collectively be referred to as the Martin Building project team or the project team.

## ***Construction Cost Estimates***

### **Purpose of Construction Cost Estimates**

A construction cost estimate plays an important role in the milestone or investment decisions that are typically made during a project. A construction cost estimate consists of all costs that a prudent and experienced contractor would incur during the construction of a project and should be based on a listing of known facts, construction tasks, and supplemental judgments. Without a reliable cost estimate, an agency is at risk for cost overruns, missed deadlines, and performance shortfalls. Once finalized, the cost estimate is typically used by the contracting officer to determine whether a construction contractor's proposed price is fair and reasonable and reflects an understanding of the project requirements.

In addition, the estimate is used to manage costs through tracking of the budget and comparison of cost growth and cost modification from design through procurement and construction to project completion. Effective management of a cost estimate involves

1. continually updating the estimate with actual data as the data become available
2. revising the estimate to reflect changes
3. analyzing the differences between estimates and actual costs

### **Conceptual Cost Estimates**

Conceptual construction cost estimates are arrived at during the initial planning process of a construction project, and according to the project team, the actual final costs of the project can vary as much as  $\pm 25$  percent from this conceptual estimate. Factors contributing to this variance include changes in the cost of material and labor; further, at this stage, management's knowledge of the requirements is limited and the potential for change (and cost growth) is greatest. The amount of this variance was confirmed by personnel from another government agency familiar with cost estimation process in the federal government, as well as industry standards.

The U.S. Government Accountability Office's (GAO) *GAO Cost Estimating and Assessment Guide* states that a rough order of magnitude estimate is developed when a quick estimate is needed and few details are available. This estimate is based on historical ratio information and

is typically developed to support what-if analyses. Because this estimate is developed from limited data and in a short time, GAO notes that it should never be considered a budget-quality cost estimate.

Estimates should be updated periodically as the program matures and as schedules and requirements change. As management becomes aware of actual costs, the cost estimate tends to become more certain. Industry standards note that by the design development stages of the project, the price variance associated with the initial estimate should decrease in relation to the final actual costs. Therefore, it is important to continually update estimates with actual costs so that management has the best information available for making informed decisions.

### **Martin Building Project Cost-Estimate History**

In 2004, the Board contracted with URS Corporation (URS)<sup>6</sup> to complete a renovation study and submit conceptual construction cost estimates as a necessary first step toward an overall renovation program. URS's conceptual construction cost estimates detailed two possible approaches, with options, for the renovation of the Martin Building. The renovation approaches were phased construction and nonphased construction. The URS provided estimates for the different approaches as well as options for the renovation of the Martin Building, which varied significantly in scope. These estimates ranged from \$47.5 million to \$102.7 million.

In response to its 2005 solicitation, offer, and award for an A/E contract, the Board contracted with Karn Charuhas Chapman & Twohey (KCCT) in 2006 to be the A/E firm for the construction of the visitors' center and conference center (VC/CC). In 2007, KCCT submitted conceptual construction cost estimates for the VC/CC to the Board. These estimates included a base option estimated at \$43.6 million and three other options that ranged from \$35.9 million to \$38.4 million.

In 2010, KCCT submitted an updated conceptual construction cost estimate for the VC/CC of \$47.0 million.<sup>7</sup> This estimate was for the base option provided in 2007.

In 2011, the Board executed a contract modification with KCCT to combine the renovation of the Martin Building and the construction of the VC/CC into a single project. The Martin Building project team then used escalated<sup>8</sup> information from the 2004 URS study, KCCT's 2007 and 2010 conceptual estimates, as well as information from prior construction projects the Board had undertaken, to develop a \$179.9 million conceptual construction cost estimate for the construction of the VC/CC and the renovation of the Martin Building. The project team presented this conceptual construction cost estimate to the CBA, and we focused our assessment on this estimate.

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6. URS Corporation is an integrated engineering, construction, and technical services organization that offers a range of services, including planning, design, and engineering.
  7. For additional detail on the Martin Building project schedule and milestones, see our March 29, 2013, report at [http://www.federalreserve.gov/oig/files/FRB\\_Martin\\_Building\\_Planning\\_Contracting\\_Mar2013.pdf](http://www.federalreserve.gov/oig/files/FRB_Martin_Building_Planning_Contracting_Mar2013.pdf).
  8. Escalation is the anticipated increase in a project's cost due to inflation from the time the estimate is prepared to a designated future point in time.

In 2012, Martin Building cost estimates provided by the Management Division were compared to bank renovation costs on an overall cost-per-square-foot basis by the Board's Division of Reserve Bank Operations and Payment Systems (RBOPS). Also in 2012, the Board published an estimate of \$188.3 million in its *Annual Performance Report 2012*. This estimate included the \$179.9 million construction estimate discussed above, as well as furniture, equipment, and all other items (table 1).

The Board's current contract with KCCT requires KCCT to submit successive estimates as information becomes available throughout the design process. Specifically, the contract calls for the submission of an estimate when the program review and verification report<sup>9</sup> is submitted, as well as updates to this submission at the completion of various design percentages. In December 2013, we were informed that the program review and verification report had been submitted. Further, both KCCT and the project's construction administrator<sup>10</sup> submitted updated estimates in December 2013 after our fieldwork had been completed. These estimates were within the expected range of the conceptual cost estimates.

## ***Laws, Regulations, and Guidance***

Although the Board is not required to follow the laws, regulations, and guidance listed below, they are considered to embody industry best practices for construction estimation processes.

### **Federal Government Requirements**

- **The Public Buildings Act of 1959**—Includes requirements for the construction, alteration, and acquisition of public buildings of the federal government and is codified under Title 40 of the *U.S. Code*.
- **Federal Acquisition Regulation (FAR) Part 36, Construction and Architect Engineer Contracts**—Prescribes policies and procedures specific to contracting for construction and A/E services, including establishing contractually specified dollar limits. The Board has voluntarily committed to follow the spirit of the FAR.

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9. A program review and verification report presents the A/E firm's design recommendations for the project and the historical reports, studies, drawings, and other pertinent data supporting these recommendations.

10. The Board contracted with Hill International in 2013 to function as the Board's construction administrator. The construction administrator provides the Board with comprehensive construction management services in connection with the design, estimating, scheduling, permitting, procurement, construction, commissioning, and certification of the project.

## Agency-Specific Guidance

- **GAO Cost Estimating and Assessment Guide**—Based on best practices, establishes a consistent methodology that can be used across the federal government for developing, managing, and evaluating capital program cost estimates.
- **U.S. General Services Administration’s (GSA’s) P-120 Project Estimating Requirements for the Public Buildings Service (GSA P-120)**<sup>11</sup>—Presents the technical and administrative requirements for routine cost-estimating and cost-management tasks involved in the construction project planning and execution stages and defines cost-estimating practices and standards for professional services.

## Industry Standards

- **Construction Specifications Institute (CSI) Format**<sup>12</sup>—The format required for contractor submissions in the Board’s A/E contract.
- **Escalation Guidance**—Guidance for calculating escalation is available from a variety of sources, including RSMMeans<sup>13</sup> and the U.S. Department of Labor’s price indexes.

## Board Guidance

In addition to the laws, regulations, and guidance for developing construction estimates noted above, the Board has established policies and procedures for recordkeeping. The Board’s *Records Policy and Procedures Manual* includes records classification definitions and records storage and retention requirements.

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11. GSA provides workplaces for federal employees and oversees the preservation of historic federal properties. Public Building Services, which is part of GSA, acquires space on behalf of the federal government through new construction and leasing and acts as a caretaker for federal properties across the country.
  12. CSI develops specification best practices and promulgates standards and formats, including those used for cost estimates.
  13. RSMMeans maintains databases of cost data on construction materials, equipment, and labor for a variety of building types. The Martin Building project team used RSMMeans information in parts of its construction cost estimate calculations.

# Finding 1: The Martin Building Project Team Did Not Properly Maintain Supporting Documentation for Its Conceptual Construction Cost Estimate

The Martin Building project team did not maintain supporting documentation for its conceptual construction cost estimate, which appears to violate the Board's *Records Policy and Procedures Manual*. Further, this lack of documentation is not in accordance with the *GAO Cost Estimating and Assessment Guide* and GSA P-120, which are considered industry best practices. Documentation needed to be assembled in response to this audit and support was not available for several line items of the conceptual construction cost estimate. The project team informed us that this documentation had not been maintained in an official folder because of the length of time the project has been ongoing, as well as turnover within the project team over the years. As a result, our efforts to validate the accuracy and completeness of certain line items in the conceptual construction cost estimate were hampered, and documentation was not readily available for the project team to ensure effective cost management and future estimating practices and to fully support the estimate presented to the CBA in September 2012.

## Documentation Was Not Readily Available

The project team did not have supporting documentation for the Board's \$179.9 million conceptual construction cost estimate readily available for our review and had to assemble it over a period of four weeks. The Board's *Records Policy and Procedure Manual* states that records must be filed in a way that makes them easily retrievable and available to staff members who need to use the information to conduct Board business.<sup>14</sup> The Board also has established policies and procedures for recordkeeping that include records classification definitions and records storage and retention requirements. The *GAO Cost Estimating and Assessment Guide* states that well-documented cost estimates are considered a best practice for several reasons, for example, because they facilitate cost estimate validation and analysis of changes in program costs. In addition, GSA P-120 states that the maintenance of an official file provides a standardized historical database and library for cost estimates that can be used for cost management and future cost-estimating practices.

Members of the project team stated that they had not maintained an official centralized folder containing historical cost documentation associated with the estimates but had begun

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14. The manual states that records consist of all "documentary materials, regardless of physical form or characteristics, made or received by the Board . . . in connection with the transaction of Board business and preserved or appropriate for preservation by the Board or its legitimate successor as evidence of the Board's organization, functions, policies, decisions, procedures, operations or other activities or because of the informational value of data in them."

Further, the manual states that "National Archives and Records Administration regulations include drafts as records if they were circulated or made available to employees other than the creator for official purposes such as approval, comment, action, recommendation, follow-up, or communication with Board staff about Board business; and they contain unique substantive information, such as annotations or comments, that is not incorporated into or addressed in a final document and that adds to a proper understanding of the agency's formulation and execution of basic policies, decisions, actions, or responsibilities."



gathering this information around the time we initiated our audit. The project team also indicated that the information was not readily available because the project has spanned 11 years, with significant scope changes that resulted in the preparation of multiple estimates. In addition, the considerable turnover in the project team during this time frame contributed to recordkeeping issues. The lack of supporting documentation hampered our efforts to validate the accuracy and completeness of certain line items in the construction cost estimate. Further, the project team's cost management and future cost-estimating practices may be impaired if supporting documentation is not readily available.

Documentation in support of a decision that resulted in a significant difference in the conceptual cost estimate was not maintained. The project team lowered the Martin Building renovation component of the construction cost estimate by \$32.2 million (30 percent) to reflect the lower cost of nonphased construction. We noted that the 2004 estimate URS supplied to the Board specifically for the Martin Building renovation was reduced by only 24 percent to reflect this same change in renovation approach. A reduction of 24 percent would equate to a reduction of \$25.8 million in the estimate, or \$6.4 million less than the project team's reduction. A note on one line of the conceptual construction cost estimate indicated that a former project team member surveyed several A/E firms regarding the relative costs of a phased and a nonphased approach. This note stated that based on this research, a nonphased approach would reduce construction costs by 30 percent. The only documentation provided in support of this decision was a 2010 e-mail from KCCT stating that the cost estimate could be reduced by 20 to 30 percent. Other documentation, including records of feedback from the other firms, major assumptions made, specific percentages discussed, or other rationale supporting the choice of a 30 percent reduction over the 24 percent used in the URS study, was not provided to us.

We identified certain line items in the conceptual estimate that did not include supporting documentation. As an example, the conceptual construction cost estimate indicated that \$8.0 million for wall systems was based primarily on RSMeans data and similar past projects at the Board. However, supporting documentation for this line item was limited to a range of RSMeans unit pricing data. Other information for this calculation, such as the square footage per office and the specific unit price, as well as contemporaneous documentation to support the pricing data, was not provided. In addition, "similar past projects at the Board" were not identified and documentation, including the projects' actual cost information, was not provided. In another example, line items totaling \$3.0 million for remodeling the mechanical shop and renovations to the fitness center, credit union, and health unit had supporting documentation consisting of notes stating that costs were based on similar projects; however, the actual projects were not identified, and the related cost information and calculation documentation were not provided.

The support for these line items was not maintained in accordance with the Board's *Records Policy and Procedure Manual* and was inconsistent with the best practices outlined in the *GAO Cost Estimating and Assessment Guide*. In addition, GSA P-120 requires maintenance of documentation to establish a standardized historical database and library for cost estimates that can be used for cost management and future cost estimating practices. GSA P-120 also indicates that the estimate should completely and accurately represent design features and quantities. We were informed that the lack of supporting documentation was due to the length of time the project has been ongoing and the turnover within the project team.



The Board also has established policies and procedures for recordkeeping that include records classification definitions and records storage and retention requirements. The lack of supporting documentation hampered our efforts to validate the accuracy and completeness of these aspects of the construction cost estimate. Further, the project team does not have information readily available for cost management and future cost-estimating practices, and documentation is not available to fully support the conceptual estimate presented to the CBA in September 2012.

## Management Actions Taken

The Board has submitted a purchase request for software that provides collaboration, project management, and information management applications specifically for the architect, engineering, design, and construction business sector. The project team expects this software will be fully implemented in 2014. In addition, the project team informed us that the assistant project manager is currently maintaining files initiated by the former project manager to fulfill contracting officer technical representative and project recordkeeping responsibilities.

## Conclusion

An official file provides a historical database and library for cost estimates that can be used for cost management and future cost-estimating efforts. In addition, it provides information that supports decisions made by the project team—information that may be needed by auditors or others. The lack of documentation retained by past members of the project team resulted in the need for the current project team to assemble the documentation that supported the estimate that was presented to the CBA in September 2012; it also impeded our assessment of the cost estimate and may hinder the current project team's ability to support project decisions.

## Recommendation

We recommend that the Director of the Management Division

1. Designate responsible individuals to maintain records in support of the construction cost estimates for the Martin Building project, including any records needed to ensure compliance with the Board's *Records Policy and Procedures Manual*.

## Management's Response

In its response, management stated the following:

The Management Division concurs with the finding and has resolved issues related to the centralized filing system for the project. Baseline cost estimates include citations cataloging resources used to prepare the estimates, and all resource documents are captured and are available in the new project file management system. This product was purchased, installed, and in use prior to the issuance of this report.

Prior to the initiation of the audit, leadership within the Management Division had established a working group consisting of Facilities and Budget and Administration staff whose task was to review and consolidate, as necessary, a historical file of all of the factors and decision-making that had led to the pre-programming conceptual cost estimate. It was known that this type of file was essential for enabling the project team to reflect back on cost elements and values as new information became available. The responsibility to maintain supporting documentation is assigned to the Chief Project Manager who is a seasoned senior registered architect with considerable experience in managing large and complex construction projects.

Management's full response is included as appendix D.

## **OIG Comment**

We believe that the actions described by the Management Division are responsive to our recommendation. The project team provided documentation of a purchase request for the project file management system during our audit, and we included this information in our report. We plan to follow up on the installation and usage of this system to ensure that the recommendation is fully addressed.

# Finding 2: The Martin Building Project Conceptual Construction Cost Estimate Contained Errors and Inconsistencies

The \$179.9 million Martin Building project conceptual construction cost estimate that was presented to the CBA in 2012 contained errors and inconsistencies. Further, elements of this estimate were not in conformance with industry standards, such as GSA P-120. The current project team informed us that these errors and inconsistencies occurred because (1) the members of the project team who prepared the estimate lacked experience in preparing construction estimates and did not follow industry best practices; (2) the Board does not have policies or procedures specific to the development of construction cost estimates; (3) the project underwent multiple scope changes, during which time there was significant turnover of project team membership and management; and (4) the estimate was prepared under significant time constraints and when the project was in flux. As a result, the estimate for the project that was incorporated into the Board's budget and was approved as part of the Board's strategic planning process contained errors and was not formatted to facilitate effective cost management for this project.

## Estimate Included Redundant Design Costs

The Martin Building \$179.9 million conceptual construction cost estimate included a separate, and redundant, \$5.3 million line item for estimated design costs for the VC/CC. As shown in table 1 on page 2, the project team estimated \$15.4 million for design services for the entire Martin Building project, and this amount is accounted for separately from the \$179.9 million. Industry best practices, embodied in GSA P-120, state that the estimator must check all cost-estimate calculations for accuracy and completeness, including assessing whether estimates completely and accurately represent design features and quantities. The project team informed us that this \$5.3 million line item was included in case the CBA approved the VC/CC construction separately from the Martin Building renovation. However, when the CBA approved the VC/CC construction as a part of the overall Martin Building project, this line item was not deleted from the VC/CC estimate, resulting in a \$5.3 million error. The project team could not explain why this amount was not deleted from the estimate.

## Estimate Escalated to the Incorrect Point in Time

The Martin Building project team's 2011 conceptual construction cost estimate of \$179.9 million included escalation of earlier estimates to 2014, which was the planned beginning point of construction when this estimate was prepared and thus the incorrect point in time. GSA P-120, as well as the 2004 URS study and the 2007 and 2010 estimates submitted to the Board by KCCT, indicate that escalation should be calculated to the midpoint of construction, not the start. In addition, by the time the project team presented this estimate to the CBA in September 2012, the planned beginning of construction had been delayed to 2015, pushing the construction midpoint to 2016. Therefore, an additional two years of escalation should have been included in the estimate. The current project team members informed us that those responsible for the incorrect escalation lacked construction estimation

experience. Had the project team applied 3 percent<sup>15</sup> annual escalation to the known midpoint of construction, which was 2016, the \$179.9 million estimate presented to the CBA in September 2012 would have been higher by as much as \$13.8 million.

## **Estimate Included Contingencies, Mark-Ups, and Escalations to Line Items as Well as to the Subtotal**

The Martin Building project team applied contingencies, mark-ups, and escalations to several line items as well as to the subtotal for the estimated construction cost. GSA P-120 indicates that contingencies, mark-ups, and escalations are not applied to specific line items, but are applied only to the subtotal for the estimated construction cost. The URS study and the KCCT estimates follow this industry standard. The project team told us that the team members who applied the contingencies, mark-ups, and escalations to individual line items lacked construction estimation experience. By embedding contingencies, mark-ups, and escalations in specific line items and then applying an overall contingency, the project team hindered its ability to reconcile changes in the underlying costs of the individual line items and manage these costs throughout the various stages of the project.

## **Estimate Format Differed From the Contractor's Estimate Format**

The Martin Building conceptual construction cost estimate was not developed in CSI format<sup>16</sup> and did not include quantities or unit prices for each line item; however, the current contract between the Board and the A/E firm requires KCCT to prepare preliminary estimates of construction costs in accordance with CSI and to include quantities and unit prices for each line item. GSA P-120 emphasizes the importance of using consistent construction estimate formats. In addition, the current project team management stated that it is important for the Board to develop its cost estimate in the same format as the contractor. The Board did not develop its estimate in CSI format because the Board does not have policies or procedures in place that address developing construction cost estimates. In addition, the current project team management stated that the project team at the time did its best to prepare the estimate for the CBA, but the members lacked experience in developing construction estimates. An estimate that is not in CSI format or is not consistent with the contractor's format hinders the Board's ability to

- achieve a uniform cost-control framework throughout the various stages of project development
- manage costs through tracking of the budget
- compare cost growth and cost modification through design, procurement, and construction to project completion
- define a proper level of detail to set expectations for the estimating effort

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15. The project team informed us that it used the historical average increase in the Construction Producer Price Index of 3 percent to escalate the construction cost estimate in the 2004 URS study to the beginning of construction in 2014.

16. CSI format is commonly known as UniFormat. UniFormat is a method of arranging construction information based on functional elements, or parts of a facility characterized by their functions, without regard to the material and methods used to accomplish them.

- use its estimate as a checklist to ensure complete coverage of project scope
- establish a standardized historical database or library

## Management Actions Taken

Since 2011, the Board has hired personnel with construction experience and has dedicated a member of its procurement staff to the project. In addition, the project team now meets on a biweekly basis with the A/E firm, the commissioning agent,<sup>17</sup> and the construction administrator to discuss the project's progress, upcoming developments, the project's schedule, and pending contract items. KCCT is contractually obligated to submit updated construction cost estimates to the Martin Building project team at various design submission points. The Board's construction administrator is also required to submit construction cost estimates through the design process.

Subsequent to our fieldwork, KCCT and the construction administrator submitted updated estimates in December 2013, and these estimates were within the anticipated range of the overall conceptual cost estimate. These estimates include requirements developed during programming, are in CSI format, and contain contingencies, mark-ups, and escalations. In addition, the Board has hired a senior project manager with significant construction experience who is dedicated to this project.

## Conclusion

The Martin Building project team developed its \$179.9 million conceptual construction cost estimate with selected information from earlier contractor studies and estimates, supplemented by information from previous Board projects. This conceptual cost estimate contained errors and inconsistencies and was not developed in a standard format. As such, we had concerns about the integrity of the conceptual cost estimate and its utility as a cost management tool and as a basis for budgetary decisions. While a conceptual cost estimate can vary by as much as  $\pm 25$  percent to account for changes in material and labor costs, we believe this variance is not intended to compensate for the types of errors we found in the estimate.

The updated cost estimates the project team received from the A/E firm and construction administrator in December 2013, subsequent to completion of our fieldwork, include needed information and are in a format to use as a tool to facilitate complete coverage of project scope and cost management.

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17. The Board contracted with Jacobs International in 2011 to function as the Board's commissioning agent. The commissioning agent is responsible for performing a peer review of the design documents on the Board's behalf.

## Recommendations

We recommend that the Director of the Management Division

2. Upon receipt of future estimates from the construction administrator and KCCT, evaluate these estimates to ensure that
  - a. all program requirements are included.
  - b. redundant costs are not included.
  - c. escalation is calculated to an appropriate point using an agreed-upon index.
  - d. contingencies, mark-ups, and escalations are applied in conformance with industry standards using agreed-upon percentages.
  - e. estimates are in CSI format as required by the contract.
3. Develop and implement written policies and procedures on developing construction cost estimates that will require any future building projects undertaken by the Board to comply with industry procedures and standards for developing cost estimates.

## Management's Response

In its response, management stated the following:

The Management Division continues to believe that this audit was premature to take place during the pre-programming phase of this project.

The pre-programming, conceptual cost estimate did result in a proposed budget figure provided through the CBA for insertion into the Board's strategic plan. Prior to CBA submission, the conceptual estimate was compared to bank renovation costs on an overall cost-per-square-foot basis by the Board's Division of Reserve Bank Operations and Payment Systems. This analysis served as a high-level verification that the conceptual estimate for the project was appropriate. In addition, most of the conceptual estimate relied on underlying documents prepared by professionals, such as URS and KCCT, who likely did follow customary conceptual cost estimating practices based on specific design submissions. Furthermore, any errors and inconsistencies were completely resolved when the Board received two professional, independently prepared, baseline construction cost estimates in December 2013. It is noteworthy that these two estimates are within 3.5% of the construction budget. The major variations between the two estimates and between the estimates and budget are attributed to the values of the design and construction contingencies.

The Management Division was in compliance with recommendation 2 prior to the issuance of this report. The baseline cost estimates are organized and presented in a manner supportive of recommendation 2, sub-items a through e. Specifically, in response to each sub-item:

- a. Prior to the receipt of the recently completed baseline cost estimates, it was impossible to ensure that all programming elements were included since the program document had not yet been substantially completed.

Again, this is one reason why a conceptual cost estimate at this phase of a project is  $\pm 25\%$ .

- b. All redundant costs were eliminated in the recently completed baseline cost estimates.
- c. Escalation in the recently completed baseline cost estimates is calculated at the proper value to the scheduled mid-point of construction, as the schedule currently exists.
- d. The recently completed baseline cost estimates do provide for contingencies, mark-ups, and escalations in conformance with industry standards and the professional opinions of the two professional estimating teams involved.
- e. The recently completed baseline cost estimates were completed in the CSI format. All future construction estimates will be also completed in this same format.

In reference to recommendation 3, the Management Division will require that all large and/or complex construction projects undertaken comply with industry procedures and standards. Smaller projects may not necessarily require a full-scale and detailed cost estimate.

Management's full response is included as appendix D.

## OIG Comment

We agree that the professionally prepared estimates submitted by the A/E firm and construction administrator to the project team in December 2013, after we had completed our fieldwork, address all of the elements included in recommendation 2. However, our recommendation is forward looking and also requires the evaluation of all future estimates that the construction administrator and A/E firm submit for this project. We plan follow up activities to ensure that the recommendation is fully addressed.

As noted in our report, we found sizable errors in the \$179.9 million conceptual cost estimate that was used as a basis for a proposed budget figure for insertion into the Board's strategic plan. These errors in the conceptual cost estimate included \$5.3 million in redundant design costs and as much as \$13.8 million in miscalculated escalation costs. As such, our report highlighted concerns about the integrity of the conceptual cost estimate and its utility as a cost management tool and as a basis for budgetary decisions. In addition, it should be noted that the comparison prepared by RBOPS in April 2012 was based on 2008 dollars and did not consider the estimated costs of escalation or note inclusion of any design costs, areas where we noted large errors.

The actions described by the Management Division in response to recommendation 3 appear responsive to our recommendations. Subsequent communication with a Management Division official confirmed that the Management Division concurs with this recommendation and plans to develop and implement written policies and procedures. The OIG intends to follow up on the development and implementation of the policies and procedures to ensure that the recommendation is fully addressed.



## Finding 3: Opportunities Exist to Improve Cost-Management Controls

The Board has not yet established a contractually binding stated cost limitation with the A/E firm, which would serve as a ceiling on the construction estimate that results from the A/E firm's design. In addition, the contract does not require KCCT to submit cost-saving items with its interim design submissions, which is an industry best practice. Although the Board is not required to follow the federal requirements of the Public Building Act and the FAR, or the guidance in GSA P-120 related to establishing stated cost limitations at the outset of a construction project, doing so is considered an industry best practice and is an important method for managing project costs. The Board has developed a budget for the Martin Building project, and the project team informed us that this budget is the effective ceiling for the project costs. Further, the project team informed us that it has identified project cost savings and selected options to achieve them, and we noted that the contract has provisions relating to the A/E firm's obligations in cost management. However, until a stated cost limitation is established, the Board cannot be assured that KCCT will design the project within the Board's budget, and without a stipulation that KCCT submit cost-saving items, the Board may miss opportunities to keep the project within budget.

### **Stated Cost Limitation to Be Established After the 30 Percent Design Submission**

The Martin Building project budgeted amount has not been contractually established as the stated cost limitation or communicated to KCCT as such. GSA P-120 notes that the Public Building Act of 1959, as amended, requires that the scope and budget for any major capital construction project be authorized before design services can begin. Further, GSA P-120 states that unless otherwise specified in design contract documents, the A/E firm must design the project so that construction costs will not exceed the funding limitation. The FAR states that the government may require the A/E firm to design the project so that construction costs will not exceed a contractually specified dollar limit. The stated cost limitation serves as a cost control because once established, the cost estimate associated with an A/E firm's design is not permitted to exceed this limitation.

The project team informed us that the stated cost limitation has not been contractually established due to changes in the scope of the project that were not resolved until 2011 and because final programming with building requirements for this project had not been completed until December 2013. As a result, the current contract between the Board and KCCT for design services does not require the Board to establish a stated cost limitation, as the FAR indicates may be done, until after the Board approves the 30 percent design submission.<sup>18</sup> If,

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18. The Board's A/E contract with KCCT mandates a series of interim design submissions at designated points. KCCT submitted an updated construction cost estimate with its program and verification report in December 2013. KCCT is next required to update this estimate in the 30 percent design submission, which is also required to include interior design documents.

after the stated cost limitation has been established, the construction cost estimate related to a periodic design submission exceeds the Board's stated cost limitation, the current contract with the A/E firm provides the Board with several options, including

- having the A/E firm make appropriate recommendations
- increasing the stated cost limitation
- terminating the project

As of November 20, 2013, KCCT was scheduled to submit the 30 percent design submission in the first quarter of 2014, which is the trigger to establish the stated cost limitation. At that point, the firm will have worked approximately seven years without a contractually binding stated cost limitation. The project team informed us that the budgeted amount in the Board's 2013 budget as approved by the Board of Governors is the effective ceiling for the project costs. However, until the Board establishes the stated cost limitation required by the A/E contract, there is no contractual ceiling for the estimated cost of the A/E firm's design or provision for the Board to exercise the options discussed above.

## **Cost-Saving Items Are Not Required**

We noted that KCCT is not contractually required to submit a list of cost-saving items with its interim design submissions. KCCT would only be required to submit such a list or revise the design documents if the Board requested it as a means to address any cost estimates that exceed the as-yet-to-be-determined stated cost limitation. Industry best practices, as embodied in GSA P-120, require the A/E firm to submit a list of cost-saving items throughout the design process to reduce the project's cost to at least 10 percent below budget. This practice serves as a cost control, helping to ensure that the design is developing within the stated cost limitation. A member of the project team stated that design changes associated with cost-saving items should occur earlier in the process, because design changes that occur later in the process could result in change orders<sup>19</sup> that would increase design cost.

The Board's contract with KCCT does contain several provisions related to cost control and value engineering. For example, KCCT is required to make reasonable efforts to maintain cost controls throughout the development of design documents so that the work depicted in the final approved construction documents for the Martin Building project can be constructed and installed within the Board's final approved stated cost limitation. In addition, if at any time any estimate of the construction cost by the construction administrator exceeds the Board's stated cost limitation, the A/E firm is required to make appropriate recommendations to the Board as to potential adjustments in the Board's program, including the project's size, quality, or stated cost limitation.

The project team also informed us that it has made efforts to reduce project cost. For example, the team has decided not to pursue Leadership in Energy and Environmental Design, or LEED, certification and will use drywall instead of a demountable wall system. However, by not requiring the A/E firm to submit a list of cost-saving items throughout the design process, the Board may miss opportunities to select alternatives that could help it to manage costs effectively and to keep the project within budget.

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19. Change orders are used to initiate changes to the contract.

## Conclusion

Cost management is essential because the Martin Building project requires significant investment and has been identified as “a key enabler” of the Board’s strategic framework. Further, the Board’s *Annual Performance Report 2012* states that budgetary discipline is necessary to manage the unavoidable expense growth required by the strategic framework; enhanced cost-management strategies can help offset the expense growth of the strategic initiatives. While the Board has identified cost savings and has cost controls incorporated into its contract with the A/E firm, we identified two opportunities for the Board to enhance its methods for managing costs associated with the Martin Building project. Establishing a stated cost limitation as soon as practicable and requiring KCCT to submit a list of cost-saving items will enhance the Board’s ability to effectively manage this large investment.

## Recommendations

We recommend that the Director of the Management Division

4. Direct the Martin Building project team to establish a stated cost limitation with KCCT as quickly as practicable.
5. Once the stated cost limitation has been established, advise the CBA, the Executive Oversight Group,<sup>20</sup> and senior management as appropriate if future estimates exceed this limit.
6. Direct the Martin Building project team to require KCCT to submit a list of cost-saving items with the remainder of its design submissions.

## Management’s Response

In its response, management stated the following:

The Management Division concurs with the recommendations. However, in reference to recommendation 4, independent of an OIG audit, the Management Division would have elected to issue a stated cost limitation at the start of the 30% construction document (CD) activity, rather than defer issuance to the specified contract date of after completion of the 30% CD submission. These actions are particularly prudent considering that the baseline cost estimates are within a close tolerance of the budget and the programming documents will soon be completed. The report notes that this action should be taken “as quickly as practical.” Management agrees with this, and intends to issue such guidance accordingly.

In reference to recommendation 5, the Management Division will brief the CBA, the Executive Oversight Group, and senior management at the time of the 30%,

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20. The Executive Oversight Group was established to be a strategic advisor to the Martin Building Renovation project sponsor, who is the chair of the Martin Building executive team.

60%, and 95% design phase cost estimates. These briefings were in the project plan, independent of OIG audit recommendations.

In reference to recommendation 6, KCCT is contractually obligated to provide a continuum of value engineering, cost estimating, analysis, and re-design, as necessary, to achieve compliance with the stated cost limitation. These responsibilities are inherent in the contract with KCCT, and have always been anticipated, though a specific deliverable – as in “submit a list of cost-savings items with the remainder of ... design submissions” – may not have been cited.

The project team’s guidance to KCCT had already included initial value engineering areas for consideration and initial thoughts on additive and deductive alternatives for KCCT to consider incorporating in the work, as a best practice. Cost management meetings to discuss value engineering opportunities and incorporation of additive and deductive alternate strategies are anticipated at the start of the 30% CD activity and at the start of each subsequent phase, following the review future cost estimates. Those meetings can result in lists of cost savings strategies considered and resultant disposition.

Management’s full response is included as appendix D.

## **OIG Comment**

Regarding recommendation 6, because KCCT is not contractually required to submit a list of cost-saving items with its interim design submissions, our concern was that the Board may miss opportunities to select alternatives that could help it to manage costs effectively on an ongoing basis and keep the project within budget. Subsequent communication with a Management Division official confirmed that KCCT will be required to submit cost-saving items with the remainder of its design submissions.

In our opinion, the actions described by the Management Division appear to be responsive to our recommendations. We plan to conduct follow up activities to ensure that the recommendation is fully addressed.

# Appendix A

## Scope and Methodology

To accomplish our objectives, we reviewed the KCCT contract and associated modifications, as well as relevant documentation regarding how construction cost estimates are developed, including the estimates that URS and KCCT submitted to the Board. In addition, we reviewed documentation from the RSMMeans Historical Cost Indexes, the Bureau of Labor Statistics Producer Price Index, and CSI.

We reviewed the Public Buildings Act of 1959, FAR Part 36, the Board's *Records Policy and Procedure Manual*, *GAO Cost Estimating and Assessment Guide*, and GSA P-120. We also reviewed relevant reports from GAO and the GSA OIG, as well as our prior report on the Martin Building.

We interviewed personnel from the Board's Management Division, specifically officials from the Martin Building project team. We also interviewed personnel in another government agency familiar with the cost estimation process in the federal government.

The scope of our audit included the Martin Building project team's \$179.9 million construction cost estimate, which the project team presented to the CBA on September 18, 2012. We assessed whether selected aspects of the \$179.9 million estimate were accurate, and we assessed whether the supporting documentation substantiated the cost estimate by recalculating selected aspects using the project team's methods and figures. We assessed the Board's calculation of contingencies, escalations, and mark-ups, as well as the Board's calculation associated with its selection of the nonphased approach. We also reviewed the Board's contract and applicable modifications for cost-control mechanisms. We conducted our initial fieldwork from April 2013 to August 2013, and we conducted follow-on fieldwork from November 2013 to January 2014 based on additional information submitted by the project team.

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.

# Appendix B

## The Board's Strategic Themes

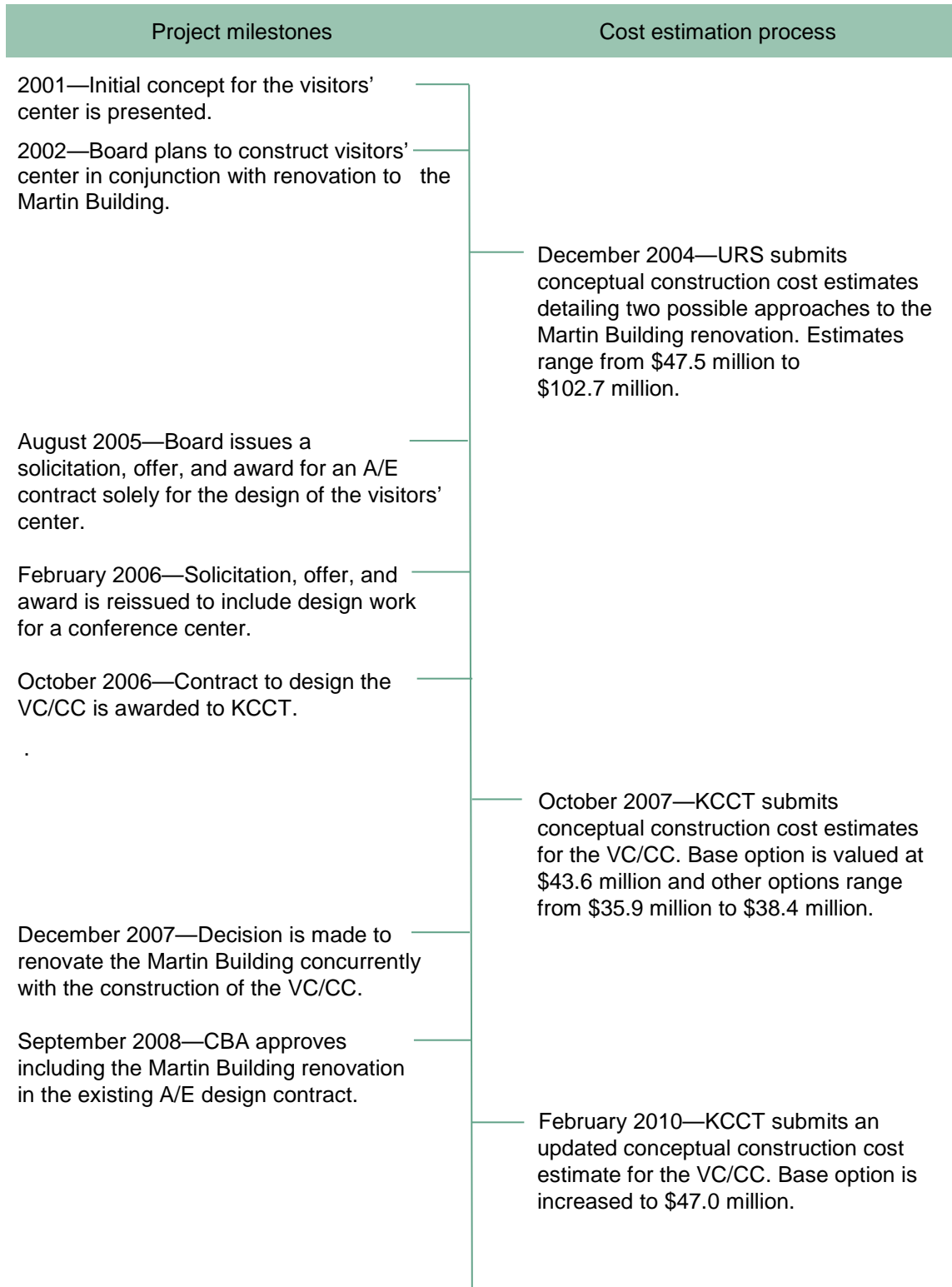
The Board's *Annual Performance Report 2012* identifies six strategic themes that focus on the actions necessary to meet mandates of the Dodd-Frank Wall Street Reform and Consumer Protection Act, to address the challenge of ensuring financial stability, to close cross-disciplinary knowledge gaps, to develop appropriate policy, and to continue addressing the recovery of the fragile global economy.

The following six themes will guide investment and action over the Board's 2012–2015 planning period:

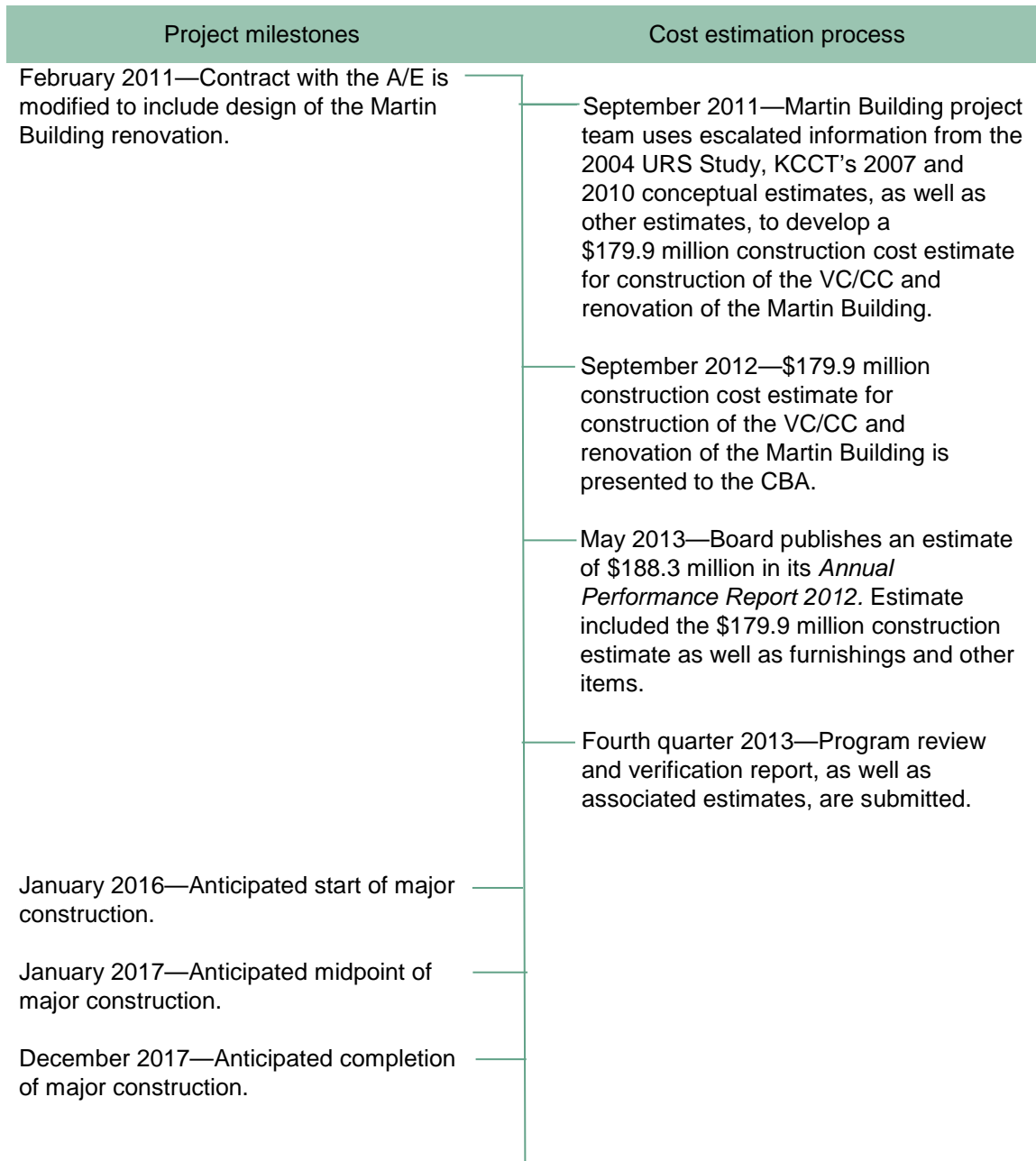
1. Supervision, Regulation, and Financial Stability—Continue building a robust interdisciplinary infrastructure for regulation, supervision, and monitoring risks to financial stability.
2. Data Governance—Redesign data governance and management processes to enhance the Board's data environment.
3. Facilities Infrastructure—Establish a modern, safe work environment that emphasizes the need to maintain data quality and integrity and the importance of enhanced collaboration within the organization and with the public.
4. Maximizing the Value of Human Capital—Create a work environment built on market-oriented compensation and support for professional and personal achievement that allows the Board to attract and retain top talent while reinforcing collegiality.
5. Management Processes—Strengthen management processes to enable effective implementation of strategic themes, increase operating efficiencies, and reduce administrative burden.
6. Cost Reduction and Budgetary Growth—Establish a cost-reduction approach and a budgetary-growth target that maintains an effective and efficient use of financial resources.

# Appendix C

## Martin Building Project Timeline







# Appendix D

## Management's Response



BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM  
MANAGEMENT DIVISION

DATE: March 19, 2014  
TO: Melissa Heist, Associate Inspector General for Audits and Evaluations  
FROM: Michell Clark, Director, Management Division *MCC*  
SUBJECT: Management's Response to OIG review of the Martin Building Cost Estimate

**Finding 1:** The Martin Building Project Team Did Not Properly Maintain Supporting Documentation for Its Conceptual Construction Cost Estimate

**Management's Response:** The Management Division concurs with the finding and has resolved issues related to the centralized filing system for the project. Baseline cost estimates include citations cataloguing resources used to prepare the estimates, and all resource documents are captured and are available in the new project file management system. This file management software was purchased, installed, and in use prior to the issuance of this report.

Prior to the initiation of the audit, leadership within the Management Division had established a working group consisting of Facilities and Budget and Administration staff whose task was to review and consolidate, as necessary, a historical file of all of the factors and decision-making that had led to the pre-programming conceptual cost estimate. It was known that this type of file was essential for enabling the project team to reflect back on cost elements and values as new information became available. The responsibility to maintain supporting documentation is assigned to the Chief Project Manager who is a seasoned senior registered architect with considerable experience in managing large and complex construction projects.

The OIG notes that it took four weeks for the project team to consolidate and provide requested estimate documentation. The Management Division believes the lag time was reasonable considering the volume of information requested; the lack of clear instructions on the level of detail required; the need to review all materials prior to providing them to the OIG to ensure they were responsive to the request; and the amount of time spent duplicating, packaging, scanning, and uploading all materials while concurrently maintaining the ongoing operations of the organization and managing other large projects.

In summary, the Management Division concurs with the finding and has resolved the cited deficiencies.

**Finding 2:** The Martin Building Project Conceptual Construction Cost Estimate Contained Errors and Inconsistencies

**Management's Response:** The Management Division continues to believe that this audit was premature to take place during the pre-programming phase of this project.

The pre-programming, conceptual cost estimate did result in a proposed budget figure provided through the CBA for insertion into the Board's strategic plan. Prior to CBA submission, the conceptual estimate was compared to bank renovation costs on an overall cost-per-square-foot basis by the Board's Division of Reserve Bank Operations and Payment Systems. This analysis served as a high-level verification that the conceptual estimate for the project was appropriate. In addition, most of the conceptual estimate relied on underlying documents prepared by professionals, such as URS and KCCT, who likely did follow customary conceptual cost estimating practices based on specific design submissions. Furthermore, any errors and inconsistencies were completely resolved when the Board received two professional, independently prepared, baseline construction cost estimates in December 2013. It is noteworthy that these two estimates are within 3.5% of the construction budget. The major variations between the two estimates and between the estimates and budget are attributed to the values of the design and construction contingencies.

The Management Division was in compliance with recommendation 2 prior to the issuance of this report. The baseline cost estimates are organized and presented in a manner supportive of recommendation 2, sub-items a through e. Specifically, in response to each sub-item:

- a. Prior to the receipt of the recently completed baseline cost estimates, it was impossible to ensure that all programming elements were included since the program document had not yet been substantially completed. Again, this is one reason why a conceptual cost estimate at this phase of a project is  $\pm 25\%$ .
- b. All redundant costs were eliminated in the recently completed baseline cost estimates.
- c. Escalation in the recently completed baseline cost estimates is calculated at the proper value to the scheduled mid-point of construction, as the schedule currently exists.
- d. The recently completed baseline cost estimates do provide for contingencies, mark-ups, and escalations in conformance with industry standards and the professional opinions of the two professional estimating teams involved.
- e. The recently completed baseline cost estimates were completed in the CSI format. All future construction estimates will be also completed in this same format.

In reference to recommendation 3, the Management Division will require that all large and/or complex construction projects undertaken comply with industry procedures and standards. Smaller projects may not necessarily require a full-scale and detailed cost estimate.

**Finding 3: Opportunities Exist to Improve Cost-Management Controls**

**Management's Response:** The Management Division concurs with the recommendations. However, in reference to recommendation 4, independent of an OIG audit, the Management Division would have elected to issue a stated cost limitation at the start of the 30% construction document (CD) activity, rather than defer issuance to the specified contract date after completion of the 30% CD submission. These actions are particularly prudent considering that the baseline cost estimates are within a close tolerance of the budget and the programming

documents will soon be completed. The report notes that this action should be taken “as quickly as practical.” Management agrees with this, and intends to issue such guidance accordingly.

In reference to recommendation 5, the Management Division will brief the CBA, the Executive Oversight Group, and senior management at the time of the 30%, 60%, and 95% design phase cost estimates. These briefings were in the project plan, independent of OIG audit recommendations.

In reference to recommendation 6, KCCT is contractually obligated to provide a continuum of value engineering, cost estimating, analysis, and re-design, as necessary, to achieve compliance with the stated cost limitation. These responsibilities are inherent in the contract with KCCT, and have always been anticipated, though a specific deliverable – as in “submit a list of cost-savings items with the remainder of ... design submissions” – may not have been cited.

The project team’s guidance to KCCT had already included initial value engineering areas for consideration and initial thoughts on additive and deductive alternatives for KCCT to consider incorporating in the work, as a best practice. Cost management meetings to discuss value engineering opportunities and incorporation of additive and deductive alternate strategies are anticipated at the start of the 30% CD activity and at the start of each subsequent phase, following the review future cost estimates. Those meetings can result in lists of cost savings strategies considered and resultant disposition.

c. Don Hammond





## OFFICE OF INSPECTOR GENERAL

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM  
CONSUMER FINANCIAL PROTECTION BUREAU

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