

OFFICE OF INSPECTOR GENERAL

NOVEMBER 02, 2021

Evaluation of the Cannon House Office Building Renewal Project's Construction Inspection Approval Process

Evaluation Report 2020-0001-IE-P

MISSION

The OIG promotes efficiency and effectiveness to deter and prevent fraud, waste and mismanagement in AOC operations and programs. Through value added, transparent and independent audits, evaluations and investigations, we strive to positively affect the AOC and benefit the taxpayer while keeping the AOC and Congress fully informed.

VISION

The OIG is a high-performing team, promoting positive change and striving for continuous improvement in AOC management and operations. We foster an environment that inspires AOC workforce trust and confidence in our work.



Results in Brief

Evaluation of the CHOBr Project's Construction Inspection Approval Process

November 02, 2021

Objective

Our objective for this evaluation was to evaluate the pass and fail rate of associated construction inspections for the Cannon House Office Building Renewal (CHOBr) Project, and examine the impact of associated costs, quality of work and time delays attributed to rework. The Office of Inspector General (OIG) initiated this evaluation based upon ongoing Congressional interest in the CHOBr Project given its magnitude and scope.

Findings

Based on our evaluation, we found that the Architect of the Capitol's (AOC's) quality management program for the CHOBr Project was comprehensive to ensure work performed was satisfactory, and met quality standards and contract requirements. More specifically, we found:

- CHOBr Project time delays attributed to poor workmanship decreased from Phase 1 to Phase 2 of the project. Likewise, quality assurance (QA) staff identified fewer deficiencies from Phase 1 to Phase 2 due to an improved quality management process;
- While QA inspections by the AOC were not delayed due to the COVID-19 pandemic, time delays did occur in Phase 2 construction work to remediate known QA deficiencies; and
- The AOC is taking proactive steps across all of its projects to better ensure life and building safety, quality of services and conformance with industry standards for construction work performed through its established Building Official Program initiative to improve compliance with

model codes and standards. The program would establish a formal permitting process and standardize building codes based on a nationally recognized model of codes and standards, such as the International Building Code.

Recommendations

We recommend that:

• The Office of the Chief Engineer (OCE) continue to utilize its lessons-learned process to monitor and assess its quality management processes through CHOBr phases to ensure they meet mission expectations, and when necessary, adjust those processes. This should include, at a minimum, the use of electronic project management systems to track reportable metrics such as, punch-list items, projected time and time taken to remediate items, and resource shifts.

Management Comments

The AOC provided comments on October 28, 2021, see Appendix B. The AOC concurred with the finding and recommendation and provided management comments. Please see the recommendations table on the next page for the status of the recommendation.



Recommendations Table

Responsible	Recommendation	Recommendation	Recommendations
Entity	Resolved	Unresolved	Closed
AOC Organization OCE	R1		

Note: The following categories are used to describe agency management comments to individual recommendations.

- Unresolved Management has not agreed to implement the recommendation or has not proposed actions that will address the recommendation.
- **Resolved** Management agreed to implement the recommendation or has proposed actions that will address the underlying finding that generated the recommendation.
- **Closed** The OIG verified that the agreed upon corrective actions were implemented.



DATE:	November	02,	2021

TO: J. Brett Blanton Architect of the Capitol

FROM: Christopher P. Failla, CIG Inspector General

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SUBJECT: Evaluation of the Cannon House Office Building Renewal (CHOBr) Project's Construction Inspection Approval Process (Project No. 2020-0001-IE-P)

Please see the attached final report for our evaluation of the CHOBr Project's Construction Inspection Approval Process, which was announced on April 15, 2020. We found that the Architect of the Capitol's (AOC's) quality management program for the CHOBr Project was comprehensive to ensure work performed was satisfactory, and met quality standards and contract requirements. This report includes one recommendation for continued improvement to the AOC's quality management program for the CHOBr Project.

In your response to our official draft report (Appendix B), you concurred with our recommendation. Based on your response, we feel the proposed corrective action addresses our recommendation. However, the status of the recommendation will remain open until final corrective action is taken. We will contact you within 90 days to follow-up on the progress of your proposed management decision.

I appreciate the assistance you and your staff provided throughout the evaluation. Please direct questions to Senior Evaluator Josh Rowell at 202.593.1949, or Joshua.Rowell@aoc.gov or Assistant Inspector General for Inspections and Evaluations Chico Bennett at 202.394.2391, or Chico.Bennett@aoc.gov.

Distribution List:

Antonio Edmonds, Acting Chief of Operations David Wilder, Superintendent House Office Buildings Peter Mueller, Chief Engineer, Office of the Chief Engineer Jason Baltimore, General Counsel Peter Bahm, Chief of Staff Mary Jean Pajak, Deputy Chief of Staff



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Introduction

Objective

The objective of this evaluation was to evaluate the pass and fail rate of associated construction inspections,¹ and examine the impact of associated costs, quality of work and time delays attributed to rework.

Background

The Cannon House Office Building is the oldest Congressional office building outside of the U.S. Capitol Building and has not received a comprehensive systems upgrade since the 1930s. In fact, many of the buildings systems are original, dating back to 1908 or earlier.

To revitalize the building's functionality and safety, including the upgrade of infrastructure systems and repair of exterior stone façade, the Cannon House Office Building Renewal (CHOBr) Project that began in January 2015 (Phase 0) is scheduled to take approximately 10 years (completion by 2024), over the course of five phases (0-4), each phase aligned to fall between congressional move cycles. Phase 0 concluded in December 2016 and included the installation of building utilities, primarily in the basement and moat area of the Cannon House Office Building's courtyard, which enables the project's future work to connect to new systems with minimized shutdowns or disturbances. Phases 1-4 impact a quarter of the building, one side at a time, starting with the west wing in 2017, followed by the north wing, east wing and concluding with the south wing. A completely new fifth floor, previously designated as storage space, will ensue at the end of each successive phase. Phase 1 of the CHOBr Project was substantially complete in November 2018, and the wing was open to members and staffers in January 2019. Phase 2 of the CHOBr Project was completed and the Congressional member move-in occurred unimpeded in January 2021, Phase 3 is ongoing.

The Committee on House Administration has held two hearings for the CHOBr to discuss issues and concerns that have occurred as project work was completed. Much of this concern has had to do with the project's rising estimated costs to complete CHOBr in a timely and quality manner. The AOC originally estimated that the CHOBr would cost \$752.7 million, but due to challenges early on in the project, that estimated cost has now gone up to as much as \$890.2 million (an approximate 18 percent increase). The Architect of the Capitol's (AOC's) Office of Inspector General (OIG) highlighted many of these challenges in its Semi-Annual Reports to Congress on CHOBr and Government Accountability Office (GAO) reports since 2016.

¹ Inspection types may include but are not limited to aesthetic, electrical, structural, plumbing, HVAC and building occupancy inspections.

These challenges generally centered on a lack of proper staffing levels and insufficient communication and coordination with stakeholders regarding change order requests and modifications. The AOC was aware of these challenges since April 2018 and took proactive solution-based steps to rectify known challenges. Following the completion of Phase 1 and moving into Phase 2, the AOC improved its project planning processes, to include clarity on stakeholder input, addressed budget shortfalls and hired additional professional staff to support the quality management efforts. To date, the quality management CHOBr work appears to be much improved from Phase 1, and has the potential to continue, as long as the agency remains proactive in monitoring associated risk, cost and project and schedule challenges.

Review of Internal Controls

We evaluated the AOC's Quality Management program for the CHOBr Project, which included quality control efforts managed by the contractor, Clark Christman, a Joint Venture (CCJV), and quality assurance (QA) requirements managed by the AOC through a contractor, MBP-AECOM (a joint venture), an infrastructure consulting firm.

Criteria

The following criteria were used during this evaluation:

- AOC Specification Section 01 4000, Quality Requirements, March 28, 2016
- AOC Specification Section 01 4340, Mock-ups and Sample Installations, December 22, 2016
- AOC CHOBr Project Management Plan, Version 4.0
- CCJV Quality Control Plan—Phase 2, December 2020
- AOC Contract Number AOC13C2002—CHOBr Construction Management as Constructor
- AOC Contract Number AOC13C1000—CHOBr Construction Management as Agent
- Government Accountability Office reports, particularly GAO-19-712T, titled "Efforts are Ongoing to Update Cannon House Office Building's Renovation Cost and Schedule Estimates"

Finding 1

Timeliness and Volume of Punch-List Deficiencies

We found that post-occupancy time delays attributed to poor workmanship decreased from CHOBr's Phase 1 to Phase 2 with fewer deficiencies identified by QA staff. Additionally, there were post-occupancy time delays noted in construction work to fix known deficiencies in Phase 2.

This occurred because:

- The AOC improved the quality management process between Phase 1 and Phase 2; and
- The onset of the COVID-19 pandemic impacted construction work.

As a result, it is imperative that the AOC continue to monitor, assess and learn from project achievements and failures while using those lessons learned to mitigate the probability for project shortfalls in future CHOBr project work.

Discussion

The AOC CHOBr Project Management Plan, dated March 03, 2020, provides for an overall strategic plan to manage all facets, including **Ouality** Management, and achieve project goals through all five phases of the CHOBr Project. More specifically, AOC Specification Section 01 4000, Quality Requirements for Construction, dated March 28, 2016, outlines the required activities performed under *Quality Control* and *Quality* Assurance services expected to be performed throughout the lifecycle of an AOC construction project.

The Office of the Chief Engineer (OCE) told the OIG that after completion of Phase 1, the AOC

Definitions

QUALITY MANAGEMENT: The process of planning, organizing implementing, monitoring, and documenting a system of management practices that coordinate and direct relevant project resources and activities to achieve quality in an efficient, reliable, and consistent manner.

QUALITY CONTROL: Tests, inspections, procedures, and related actions during and after execution of the work to evaluate that actual products incorporated into the work and completed construction comply with requirements. Services do not include contract enforcement activities performed by architect.

QUALITY ASSURANCE: Activities, actions, and procedures performed before and during execution of the work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

identified some internal QA weaknesses and took positive steps to enhance its quality management program by developing a comprehensive and layered approach to ensure work performed met quality standards and project requirements. According to the contract, the CHOBr quality management program requires a two-pronged approach where the construction contractor, CCJV, provides quality control services and the AOC provides quality assurance services.

The CCJV performs quality control over ongoing and completed CHOBr work, ensuring workmanship and contract requirements as outlined in the Construction Manager as Constructor (CMc) contract are met.² As such, the contractor is required to submit quality documents, such as work plans, to the AOC QA inspectors. In addition to their own inspectors, CCJV is also required, to use third-party inspectors to assist in the quality control function for more technical work completed. Examples of this work may include, but is not limited to: function of plumbing, electrical or HVAC systems; structural engineering features; or elevator mechanics.

² The scope of this contract is design assistance and pre-construction services, as well as additional contract options for a pre-installation phase (Option 0); four option periods of staged construction, each addressing roughly one of the four wings of the building; and a closeout option.

The AOC, per the Construction Manager as Agent (CMa), manages the quality assurance aspect of construction work completed by CCJV. Through the CMa contract,³ the AOC is contracted with joint venture McDonough Bolyard Peck (MBP) and AECOM who provides construction inspectors that are the primary group of inspectors who ensure ongoing and completed work by CCJV meets quality standards and contract requirements. The OCE informed the OIG, though interviews, that each of the staff that performs inspections holds professional certifications in one or more of the following disciplines: general, mechanical, electrical, plumbing and life safety. In general, QA inspections of construction activities are performed weekly and concurrently as other construction activities are being completed. The AOC's QA inspectors review CCJV's documentation and subsequently conduct a visual quality inspection. If inspectors identify deficiencies, they are recorded using a construction management software program, communicated to CCJV and tracked until CCJV corrects the deficiency and AOC QA inspectors certify that the work has met quality standards and requirements. In certain cases, the AOC's Architectural/Engineering contractor Shalom Baranes Associates, a specialty group of inspectors, inspects when more technical issues arise, such as engineering or structural. MBP-AECOM commissions new systems, and the AOC's Fire Marshal, organizationally independent of the CHOBr Project, performs inspections and testing of life safety systems.

Following Phase 1 completion of the CHOBr Project, the AOC held a lessons learned session with various project stakeholders, including but not limited to CCJV and AOC quality management personnel. The purpose of these sessions was to evaluate the success of the project phase, to duplicate its successes and avoid the repetition of negative occurrences for future phases. A few inherent weaknesses that affected the positive intended outcome of its quality management program included:

- an ineffective process to manage stakeholder input and change order requests;
- poor documentation and communication between CCJV and AOC quality inspectors regarding identification and remediation of punch-list items;
- insufficient program management software to track work deficiencies;
- an inefficient scheduling process for quality inspections; and
- an insufficient QA workforce to properly oversee the scope of work and deficiencies found.

In response to the identified weaknesses, AOC CHOBr officials took proactive action by implementing improved processes to address stakeholder engagement by:

³ The scope of this contract provides project management controls over the CMc work standards and requirements.

- coordinating CCJV and AOC relations and scheduling efforts through better and more frequent engagement;
- incorporating a new project management software that better streamlined and tracked QA activities;
- increasing scrutiny of stakeholder requested changes and modifications while enhancing stakeholder communication, both prior to contract awards for phase work and while work was ongoing and ready for inspection;
- requiring approval from the CHOBr Change Management Board for stakeholder requests in excess of \$100,000, or those requests that would adversely affect the CHOBr Project schedule; and
- hiring additional QA inspectors.

The AOC increased its inspection workgroup in Phase 2 to 10 full-time inspectors, compared to the seven inspectors in Phase 1. With the additional positions filled, the AOC also enhanced its construction discipline area by adding architecture, life safety and building envelope inspectors. In addition to the inspection positions, the agency also added a building information modeling manager and scheduler to further support

QA efforts. The addition and realignment of Phase 2 inspectors provided more coverage to inspection work performed. The success of Phase 2 was much greater as a result of the AOC's quality services initiatives gleaned from Phase 1.

The positive impact of the AOC's quality management program is supported by a decrease in resolution times attributed to poor workmanship and fewer identified deficiencies



noted by QA inspectors in Phase 2. For instance, our analysis showed that 61 percent of AOC noted deficiencies took 61 days or more to remediate in Phase 1, while 21 percent of deficiencies took the same amount of time to remediate in Phase 2, representing a substantial 40 percent decrease in time delays attributed to rework (supported by Figure 1). Furthermore and most notable, punch-list items decreased 78 percent, from 6,734 punch-list items recorded in Phase 1, to 1,517 punch-list items in Phase 2.⁴ An improved AOC quality management program from Phase 1 to Phase 2 is further evidenced by the fact that QA inspections were not delayed as a result of the unforeseen and unanticipated COVID-19 pandemic. However, post occupancy time delays for construction work needed to fix known deficiencies in Phase 2 occurred. The delays, although not catastrophic to Phase 2 occupancy and use, occurred due to external factors outside of the AOC's control, such as quarantine of construction workers infected or exposed to COVID-19.

Conclusion

Overall, we found that the AOC's quality management program improved greatly between Phases 1 and 2 following the identification of program weaknesses and remedial actions to better strengthen the program. Appropriate staffing levels of QA inspectors, better engagement between AOC and contractor personnel, more aggressive inspection scheduling efforts and adequate management tools have all contributed to the success of the CHOBr Project and a massive decrease in punch-list items for Phase 2, thereby enabling the AOC to achieve better project efficiency and quality. However, without continuous monitoring of ongoing and completed-phase work, this success would not have been achieved. Two CHOBr phases remain and it is imperative that the AOC continues to learn from project achievements and shortcomings, and use those lessons to adopt best practices and adjust processes to establish a solid framework for the remainder of the project.

Recommendation

Recommendation 1

We recommend that the Office of the Chief Engineer (OCE) continue to utilize its lessons-learned process to monitor and assess its quality management processes through CHOBr phases to ensure they meet mission expectations, and when necessary, adjust those processes. This should include, at a minimum, the use of electronic project management systems to track reportable metrics such as, punch-list items, projected time and time taken to remediate items, and resource shifts.

⁴ Punch-list numbers are representative of total counts taken in January at the completion of Phases 1 and 2 (years 2019 and 2021 respectively).

AOC Comment

Concur. The CHOBr Project team will continue to use its lessons-learned process described in the draft report throughout the remainder of the project as recommended. The team's new project management information system cited in the draft report has the capability to provide appropriate metrics. The project team will track metrics it believes are necessary and appropriate.

OIG Response

We reviewed the management comment and determined it addresses the finding and recommendation.

Observation: Big Rock Initiative—Building Official Program

Since the start of the CHOBr Project, the AOC has continuously identified, monitored and prioritized lessons learned from CHOBr work completed through Phases 0-2. In addition, the AOC's Fire Marshal has independently inspected and tested the building's fire protection and life safety systems both during and after construction work completed in phases. Beginning in October 2020, the AOC established the Building Official initiative to ensure AOC buildings and project portfolio-wide compliance with agency adopted building codes.

Since then, AOC project management staff across jurisdictions and the Office of Safety and Code Compliance (OSCC) discussed the implementation of the AOC's Big Rock initiative for the Building Official Program. The discussion concerned the standardization of codes and processes for independent project review and inspection to ensure consistency for all construction and infrastructure work on legislative buildings, regardless of who does the work. The standardization of codes is based on the International Accreditation Services Criteria for Building Departments/Code Enforcement Agencies (AC251). The OSCC would be the primary entity to establish codes and standards in consultation with the AOC's OCE, OSCC, and Office of the Chief of Operations. While this initiative has not yet been incorporated into CHOBr Project work, the program's aim, once implemented, is to ensure life and building safety, quality of services and conformance with industry standards in AOC building projects.

Once fully implemented, any AOC infrastructure and construction project would be required to have a permit, as outlined and based on International Building Codes. The project manager would obtain a permit for work activities by submitting a request in the AOC's e-Builder electronic management platform, which would be integrated into existing project workflow activities. Once all inspections are complete and all code issues are resolved, the Building Official or designee would

inspect construction activities for code compliance and issue a certificate of completion or certificate of occupancy. According to OSCC, time delays to projects are not anticipated once the initiative is fully implemented, as it would be expected that this function would be built into project schedules at the time of planning. Preliminary work and planning efforts to establish the Building Official Program are active and ongoing, including how the program might be integrated in the CHOBr Project.

Conclusion

Given the magnitude of the AOC's diverse mission requirements and quantity of current and planned building restoration and maintenance efforts across the Capitol campus, we feel that the Building Official Program initiative is relevant and appropriate. The program would not only modernize the agency's building compliance standards and program, but it would also add value to future work performed by the AOC, by being better able to forecast and control cost and scheduling of projects, and ensure quality work and services are performed by agency personnel and contractors.

Appendix A

Scope and Methodology

We announced our evaluation in April 2020. The OIG postponed this evaluation in November 2020 at the request of the AOC, so as not to delay the AOC's Congressional move-in target date. Work was further delayed in January 2021 in an effort to realign OIG resources to address the Capitol's January 6 events. Project work resumed in June 2021 and was completed in September 2021.

This evaluation was conducted in accordance with the Council of the Inspectors General on Integrity and Efficiency's "Quality Standards for Inspection and Evaluation". These standards require that we plan and perform the evaluation to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our evaluation objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our evaluation objectives.

Our objective for this evaluation was to evaluate the pass and fail rate of associated construction inspections, and examine the impact of associated costs, quality of work and time delays attributed to rework. During this review, we did not examine the financial impact on the AOC due to rework as a result of poor workmanship because the bearing of cost for rework required to bring the project up to required standards was the responsibility of the contractor. This was a result of how the contract requirements were written and agreed to between the AOC and CCJV.

The scope of this evaluation covered quality management services provided for Phases 1 and 2 of the CHOBr Project. To address our evaluation objectives we reviewed relevant AOC and CCJV policies and procedures related to quality management requirements of CHOBr work activities. We conducted interviews with appropriate AOC officials and staff, performed site visits⁵ to observe quality management and inspection practices, and reviewed AOC electronic systems that tracked known CHOBr construction work deficiencies from Phase 1 to Phase 2 of the project.

Use of Computer-Processed Data

We reviewed the AOC's QA and inspection data captured on Prolog, a construction project management software platform.

⁵ Observation of quality management inspections occurred in Phases 2 and 3 of the CHOBr Project based on timing of ongoing construction work. Phase 2 site visits covered observation of more aesthetic punch-list items, while Phase 3 site visits covered observation of systems and mechanical system punch-list items.

Prior Coverage

In the past five years, work surrounding the CHOBr Project has included multiple OIG CHOBr Semi-Annual Reports to Congress and other audit work performed by our Audit Division. Several other reports issued by the GAO in the previous five years were also completed examining project cost and schedule estimates as well as the identification of AOC construction projects and AOC contract methods and processes.

Appendix B

Management Comments



Architect of the Capitol U.S. Capitol, Room SB-16 Washington, DC 20515 202.228.1793 www.aoc.gov

United States Government

MEMORANDUM

DATE:	October 28, 2021
TO:	Christopher P. Failla Inspector General
FROM:	J. Brett Blanton Architect of the Capito

SUBJECT: Evaluation of the Cannon House Office Building Renewal (CHOBr) Project's Construction Inspection Approval Process (Project No. 2020-0001-IE-P)

Thank you for the opportunity to review and offer comments on the Office of Inspector General's (OIG) official draft of the subject report.

The Architect of the Capitol (AOC) concurs with the OIG's findings and recommendation. We appreciate the OIG's recognition of the significant improvements that the CHOBr Project team has made and continues to make in its construction quality management program and the benefits of the newly established Building Official program.

OIG Recommendation

We recommend that the Office of the Chief Engineer (OCE) continue to utilize its lessonslearned process to monitor and assess its quality management processes through CHOBr phases to ensure they meet mission expectations, and when necessary, adjust those processes. This should include, at a minimum, the use of electronic project management systems to track reportable metrics such as punch-list items, projected time and time taken to remediate items, and resource shifts.

AOC Response

The CHOBr Project team will continue to use its lessons-learned process described in the draft report throughout the remainder of the project as recommended. The team's new project management information system cited in the draft report has the capability to provide appropriate metrics. The project team will track metrics it believes are necessary and appropriate.

Doc. No. 211005-18-01

Appendix C Notification Letter



Office of Inspector General Fairchild Bldg. 499 S. Capitol St., SW, Suite 518 Washington, D.C. 20515 202.593.1948 www.aoc.gov

United States Government

MEMORANDUM

DATE: April 15, 2020

TO: J. Brett Blanton Architect of the Capitol

FROM: Christopher P. Failla, CIG Inspector General

(fille

SUBJECT: Announcement for Evaluation of the Cannon House Office Building Renewal (CHOBr) Project Construction Inspection Approval Process (2020-0001-IE-P)

This is to notify you that the Architect of the Capitol (AOC) Office of Inspector General is initiating an evaluation of the CHOBr Construction Inspection Approval Process. Our objective for this evaluation is to evaluate the pass and fail rate of associated construction inspections¹, and examine impact of associated costs, quality of work and time delays attributed to rework.

Please provide an Agency point of contact for this evaluation. We will contact the appropriate AOC offices to schedule an entrance conference in the upcoming weeks. If you have any questions, please contact Josh Rowell at Joshua.Rowell@aoc.gov or 202.593.1949.

Distribution List:

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¹ Inspection types may include but are not limited to electrical, structural, plumbing, HVAC and building occupancy inspections.

Acronyms and Abbreviations

AOC	Architect of the Capitol	
CCJV	Clark Christman, a Joint Venture	
CHOBr	Cannon House Office Building Renewal	
СМа	Construction Manager as Agent	
СМс	Construction Manager as Constructor	
COVID-19	Novel Coronavirus	
GAO	Government Accountability Office	
MBP- AECOM	McDonough Bolyard Peck- AECOM	
OCE	Office of the Chief Engineer	
OIG	Office of Inspector General	
OSCC	Office of Safety and Code Compliance	
QA	Quality Assurance	



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