



Inspector General

DATE: May 02, 2024

TO: The Honorable Bryan Steil
Chairman
Committee on House Administration
U.S. House of Representatives
Longworth House Office Building, Room 1309
Washington, DC 20515

SUBJECT: White Paper on the Research of the Architect of the Capitol's (AOC's) Management of Deferred Maintenance and Capital Renewals Report No. OIG-AUD-2024-04)

Dear Chairman Steil:

The attached white paper presents the results of our research project on the AOC's management of deferred maintenance and capital renewals. Our research projects, including this white paper, serve as a tool to gather information for future projects and determine whether a particular area warrants an audit or in-depth review.

Our objective was to gather information on AOC's strategies for managing deferred maintenance and capital renewals. Specifically, we collected information and data on how the AOC manages, monitors, and tracks deferred maintenance and capital renewals, and the strategies used to reduce the backlog.

We concluded that the AOC's management of deferred maintenance and capital renewals within its Enterprise Asset Management (EAM) program is progressing. The AOC's EAM program received International Organization for Standardization 55001 certification on the John Adams Building's asset management system in December 2023. Based on our review, the (Office of Inspector General (OIG) determined that an in-depth review or audit is not warranted at this time. The OIG will reassess once the EAM program is fully implemented.

It is important to note that our review was not an audit. However, the work adheres to the professional standards of independence, due professional care, and quality assurance, and followed procedures to ensure accuracy of the information presented as prescribed by the Quality Standards for Federal Offices of Inspector General.¹

¹ Council of the Inspectors General on Integrity and Efficiency, Quality Standards for Federal Offices of Inspector General, issued August 2012.

I have provided a similar letter to Ranking Member Joseph D. Morelle. If you have any questions, please contact Nikki Robinson, Senior Auditor at 202.437.5324 or Nikki.Robinson@aoc.gov.

Sincerely,



Christopher P. Failla, CIG, CFE
Inspector General

Attachment

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ARCHITECT OF THE CAPITOL'S MANAGEMENT OF DEFERRED MAINTENANCE AND CAPITAL RENEWALS

According to the Architect of the Capitol's (AOC's) Fiscal Year (FY) 2023 Performance and Accountability Report (PAR), the deferred maintenance and capital renewal backlog is \$2.6 billion, a \$521 million increase over the FY 2022 amount. As one of the AOC's priorities, the Office of Chief Engineer (OCE) established an Enterprise Asset Management (EAM) program to address the backlog challenges and proactively identify future project requirements. The EAM program will provide important data and insight to make informed decisions about operating, maintaining and renewing buildings, infrastructure, and other assets.

Background

The AOC is responsible for maintaining the historic buildings and structures on the Capitol campus. These historic buildings and structures make up the AOC's asset portfolio. Specifically, the agency's asset portfolio consists of administration buildings, office buildings, warehouses, workshops, physical plants, underground garages, utility tunnels, an emergency operations center, archival facilities, gymnasiums, subway systems, commercial kitchens/cafeterias, squares, courtyards, gardens, memorials, parking lots and data centers. The AOC's asset portfolio is aging and requires significant attention, which has resulted in a \$2.6 billion deferred maintenance and capital renewal backlog, making this issue one of the top risks facing the AOC and a significant management challenge.

The backlog total is comprised of all AOC deferred maintenance and five future years of capital renewal work elements. The AOC defines deferred maintenance as maintenance, repair or replacement work on existing facilities, infrastructures and/or equipment that was not performed or has been delayed to a future period and has caused, or is likely to cause, full or partial failure. Related, capital renewals are defined as the overhaul, reconstruction or replacement of constituent parts or materials which are nearing the end of their useful lives or are damaged or deteriorated to the point where they are difficult to maintain.

In response to the agency's risks and challenges related to the backlog, the OCE has consolidated services with the jurisdictions to deliver planning, design, construction, and maintain infrastructure. The OCE is responsible for managing the energy and sustainability program, providing project-funded in-house construction services via the Construction Division, supporting critical Capitol campus systems, and overseeing the EAM program and



building automation systems. The OCE also conducts master planning, building performance audits, retro-commissioning, and facility condition assessments (FCA).

The focus of our research was to gather information on AOC’s strategies for managing deferred maintenance and capital renewal work. As previously noted, the EAM program was established to address the backlog challenges and proactively identify future project requirements.

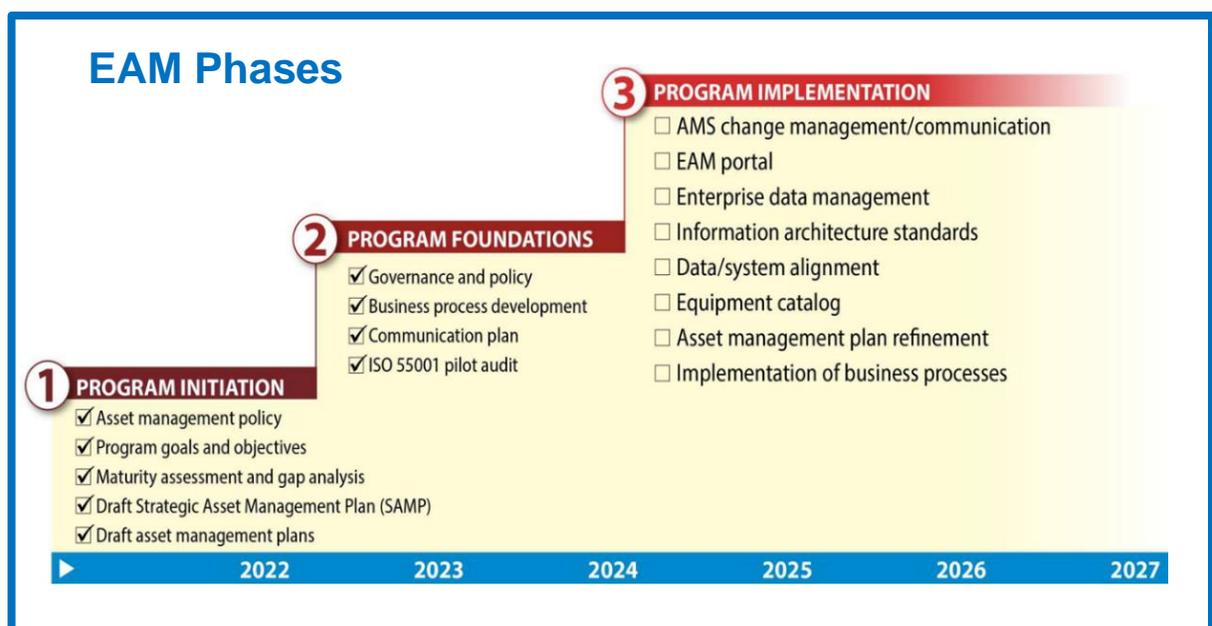
Enterprise Asset Management (EAM) Program

The FY 2023 PAR communicated that the AOC’s strategic objective is to focus on the implementation of a centralized EAM strategy. The AOC describes EAM as one of six strategic objectives created to 1) demonstrate responsible management of the nation’s capital buildings and associated public funding; 2) promote accountability and trust; 3) drive consistency of processes across the agency and 4) address the maintenance backlog.

During interviews conducted for this research, the OCE explained the EAM program was designed to make connections across the agency where functional silos exist to create functionality, improve financial operations, and manage risk across the AOC’s divisions and jurisdictions. The OCE further clarified that the EAM program was specifically established to help synchronize policies, procedures, and/or practices regarding facility maintenance, repairs, and capital project capitalizations.

To achieve these objectives, the AOC established a strategy to implement the EAM program in three phases, see Figure 1.

Figure 1: AOC's EAM Phases





EAM Phase 1: Program Initiation

Program initiation is an approach to assess the AOC's current asset condition to better understand how to make the most of an EAM system. The AOC issued the EAM Guidance Memorandum to establish the purpose of the EAM program for the agency, support the development of the AOC's Strategic Asset Management Plan (SAMP), and identify the foundation of asset management objectives. According to the memorandum, "the AOC will be better equipped to capitalize and optimize life cycle costs; establish sustainable and reliable service levels; and establish a total cost of ownership for assets."

To align with existing industry best practices, the AOC's EAM effort incorporated asset management principles by implementing the National Academies' Strategies to Renew Federal Facilities² recommendations on asset management and adopted the International Organization for Standardization (ISO) 55000 standards. The ISO guidance establishes standards for effectively managing the lifecycle of an agency's assets, with specific Asset Management System (AMS) requirements outlined in ISO 55001.³ These principles and standards assisted the AOC with formulating a SAMP, the key document in the agency's AMS.

The OCE describes the SAMP as a document that translates Agency strategy into an asset management approach. The purpose of the SAMP is to:

- Describe the organization and its context.
- Identify stakeholders and their asset management needs.
- Outline the current state of asset management at the AOC and detail AOC's proposed improvements.
- Describe the role of the AMS in achieving AOC's organizational objectives.
- Document the AOC's asset management objectives and outline plans to meet them.
- Set the minimum standards with respect to asset management plans.

As detailed in the PAR, the AOC conducted an internal review of the growing costs of deferred maintenance and capital renewal from a budget perspective. The observations and strategic recommendations on addressing the backlog reduction led to budget requests that aligned with deferred maintenance and capital renewal priorities. The AOC awarded a contract for consultants to identify data-driven needs, process-driven operational improvements, and standardized project planning requirements to best reduce the backlog. The AOC also plans to reduce the backlog by:

² A new National Academies' report, Strategies to Renew Federal Facilities, acts as a "how-to" guide to fix federal policy so federal agencies can effectively and efficiently manage their facility assets.

<https://nap.nationalacademies.org/catalog/26806/strategies-to-renew-federal-facilities/>.

³ ISO 55001, 2014 (e) Asset management — Management systems — Requirements. This International Standard specifies the requirements for the establishment, implementation, maintenance and improvement of a management system for asset management, referred to as an "asset management system."



- Identifying all deferred maintenance and capital renewal needs.
- Prioritizing preventive maintenance projects over modernization and new construction.
- Tracking the overall reduction of the deferred maintenance and capital renewal backlog by jurisdiction with Facilities Management, Grounds Management and Minor Construction funding.
- Revising the definition of minor construction to focus on the backlog reduction.

EAM Phase 2: Program Foundations

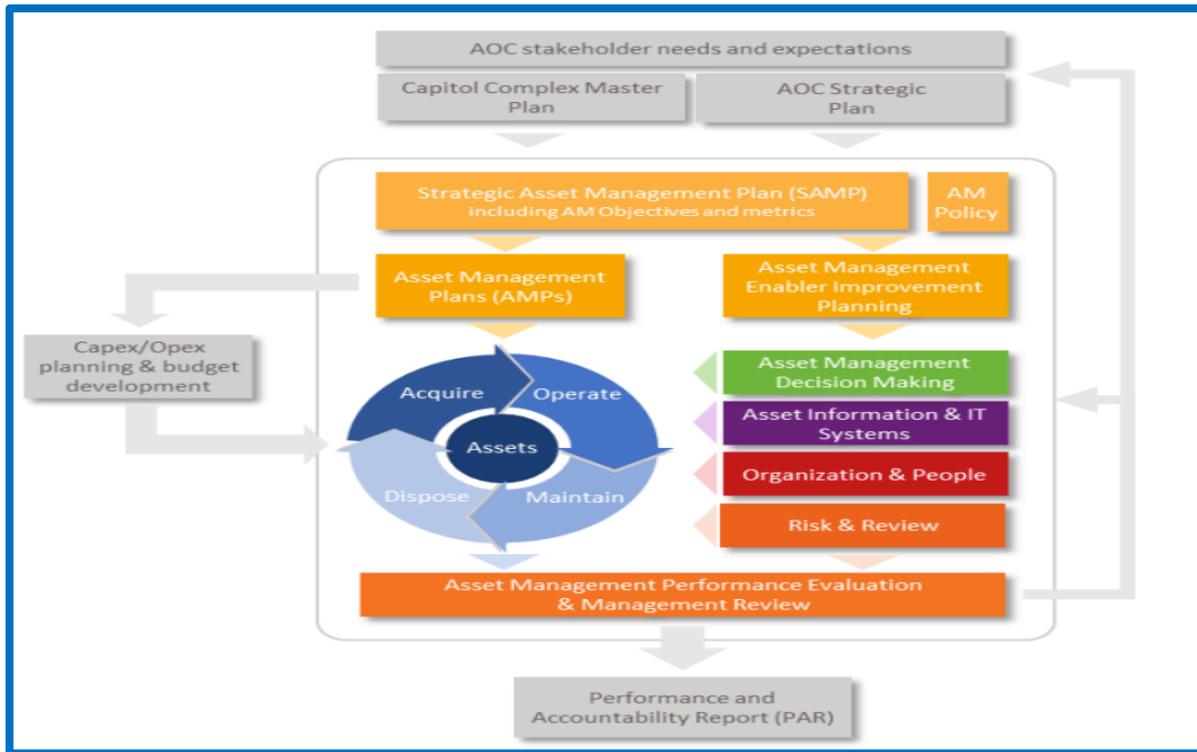
Program Foundations is an approach to develop and document foundational requirements and elements such as FCAs, Computerized Maintenance Management System (CMMS), and the Pilot Audit. To begin documenting requirements, the AOC established a charter, updated existing roles and responsibilities, utilized the current CMMS to manage data and created a pilot AMS.

The OCE explained that AOC Order 28-15 *Enterprise Asset Management Steering Committee Charter (2023)* was created to provide an EAM program governance structure that establishes the authority, scope, composition, function and responsibilities of the Enterprise Asset Management Steering Committee and Enterprise Asset Management Working Group. AOC Order 250-2 *Assignment of Authorities and Responsibilities in the AOC (2022)*, which designates senior staff and office/jurisdiction authorities and responsibilities within the agency, was also revised to reflect the agency's reorganization.

In our interview, the OCE disclosed that WebTMA, in place for over 10 years, is the current CMMS used to monitor, track, and manage all maintenance and repair data. According to the OCE, WebTMA is mostly used to manage preventive and corrective maintenance work orders and inspections; however, the system is not well suited for capital planning.

Lastly, the OCE established a pilot AMS on the John Adams Building, part of the Library Buildings and Grounds jurisdiction, see Figure 2. The pilot AMS was developed and designed to be a cross-functional framework that connects processes and teams across the agency to align common objectives and outcomes.

Figure 2: John Adams Building's AMS Plan



The AMS for the John Adams Building was audited by an independent certified auditor to ensure compliance with ISO 55000 standards. The ISO audit consisted of all foundational and supporting business processes and documentation for the current scope of the asset management system. The OCE explained the audit was conducted in two stages:

Stage 1 – The first stage consisted of a walkthrough of the AMS, and the review of AOC’s data and documentation to determine if gaps were identified against the ISO standards. At the conclusion of Stage 1, a report was issued to communicate any nonconformities or areas of concerns with the ISO clauses and requirements, and the auditor’s recommendation for the AOC to proceed to Stage 2 of the audit.

Stage 2 – For Stage 2, the auditor interviewed individuals across the AOC to include: AOC leadership, human capital management staff, jurisdiction assistant superintendents, shop supervisors, overseers of the WebTMA database, the planning team and those responsible for the asset lifecycle. In addition, the auditor reviewed processes, records, and day-to-day operations to compare with the ISO compliance requirements. At the conclusion of Stage 2, the auditor issued to the AOC a written report with recommendations and a certification. The AOC is the first federal agency to be ISO 55001 certified. According to OCE, the current plan is to expand the pilot AMS across the agency, and to attain ISO certification for the entire Capitol campus.



As mentioned previously, the Program Foundations phase served to develop foundational requirements and documents to include FCAs. Within the OCE, the Facilities Planning Branch's goal is to conduct FCAs on each AOC facility within a five-year cycle to assess asset conditions, track maintenance and repairs, and identify any other possible issues and findings using the AOC's capital planning process.

Capital Planning Process

Facility Condition Assessments

FCAs are contracted assessments performed over a five-year cycle to assess the condition of all AOC facilities. During the FCA's five-year cycle, the contractors create a report on the facility by collecting information related to any problems, issues, and long-term planning to develop a potential project budget.

As explained by the OCE, deferred maintenance and capital renewal are two key sources that contribute to the AOC backlog. The AOC backlog is all the deferred maintenance of a facility that has been identified, plus a five-year look ahead of the capital renewal work elements. The OCE prioritizes FCA work elements by using a multifactor prioritization algorithm that identifies the risk of the work to the facility.

At the completion of the assessments, work element data is entered into WebTMA and organized to update and report on findings. WebTMA is the actual interface used to manage FCA findings. The final FCA work elements reports are then sorted into four element types:

- Deferred Maintenance - maintenance repair or replacement work on existing assets that are past due causing failure or partial failure.
- Capital Renewal - replacement work, prior to failure to correct unacceptable conditions caused by aging building assets.
- Capital Improvements - expansion, extension, alteration, conversion, or replacement of an asset.
- Capital Construction - new building or asset where none previously existed.

Annual Audits

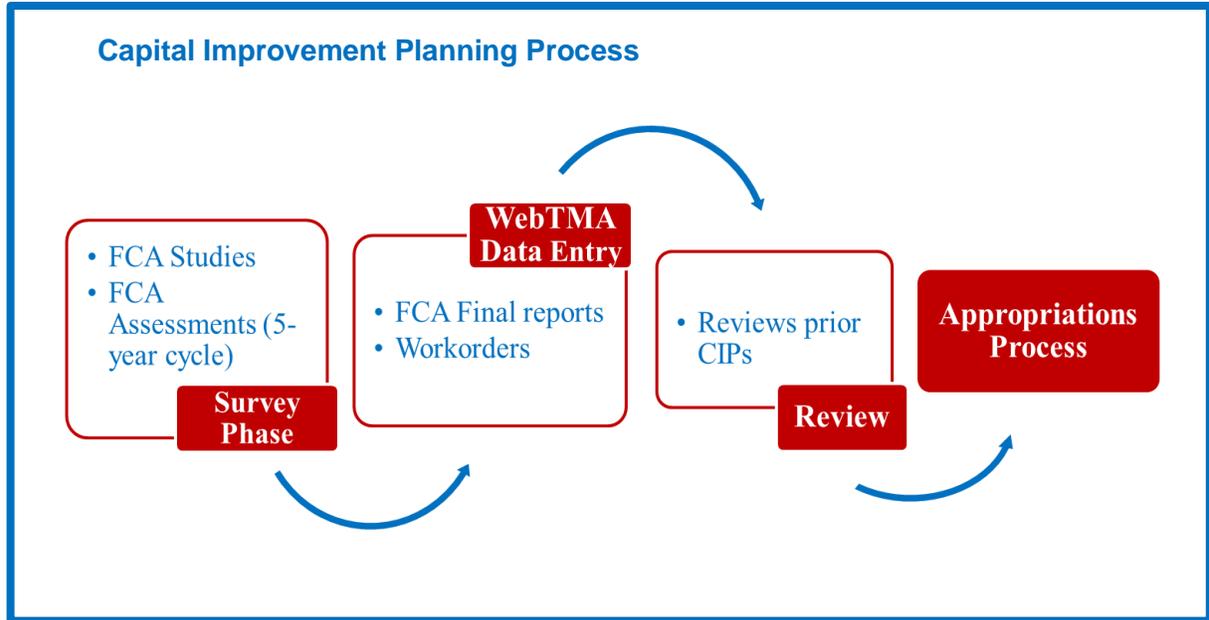
The OCE performs annual audits by September 30th using the initial FCA data in WebTMA. The annual audits are performed to ensure the accuracy of the facilities information and update work elements. These audits also assist OCE in reporting an accurate backlog number and provide an opportunity to update maintenance and repair data.

After the audits are conducted and FCAs are updated, the OCE begins the Capital Improvement Plan (CIP) process. In this process, OCE planners review current FCA data and the prior year CIP to prepare for the annual CIP process as well as formulate a five- to



10-year strategy to address the deferred maintenance and capital renewal backlog, see Figure 3.

Figure 3: Capital Improvement Planning Process



EAM Phase 3: Program Implementation

Program Implementation is the approach to execute best practices and robust standards on how to expand the EAM program and ISO certification across the agency. This phase is in its infancy; however, some goals have been achieved. According to the PAR, significant progress was made to meet the following four performance goals:

- Finalize requirements development for EAM software tools through software pilot process.
- Jurisdictions within the scope of the asset management system will publish their asset management plans.
- Obtain ISO certification for one eligible AOC system.
- Develop a cost baseline (FY 2022 costs) to measure cost savings of EAM program.

Conclusion

The OIG concluded that the AOC's management of deferred maintenance and capital renewal within its EAM program is progressing. The AOC has completed two phases (program initiation and program foundations) of the three-phase approach to implement the EAM program to include obtaining ISO certification for the John Adams Building. These efforts exemplify great strides towards achieving an effective EAM program. The AOC plans to continue its progress towards full implementation and the expansion of the pilot AMS to



encompass the entire Capitol campus for ISO certification. Based on our review of the backlog data, policies and procedures, industry best practice guidance, and staff interviews to understand the EAM program and capital improvement process, the OIG determined that an in-depth review or audit is not warranted at this time. The OIG will reassess once the EAM program is fully implemented.