

**Performance Audit 21-07:
Public Works Facilities Maintenance**

December 2021

City Auditor

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OFFICE OF INTERNAL AUDIT

Stan Sewell, City Auditor

December 16, 2021

To: Mayor Tim Kelly
City Council Members

Subject: Public Works Facilities Maintenance Audit (#21-07)

Dear Mayor Kelly and City Council Members:

The attached report contains the results of our audit of Public Works Facilities Maintenance. Overall we found there is adherence to the current policy, but opportunities exist for improvement. In order to address the noted areas for improvement, we recommended actions to update policies, perform condition assessments, determine proper staffing level and budget level. We also recommended enhancements to the close out process, optimization of preventive maintenance and monitoring of energy consumption.

We thank the management and staff of the Facilities Management Division of Public Works for their cooperation and assistance during this audit.

Sincerely,

Stan Sewell, CPA, CGFM, CFE
City Auditor

Attachment

cc: Audit Committee Members
Brent Goldberg, Chief Financial Officer
Joda Thongnopia, Chief of Staff
Ryan Ewalt, Chief Operating Officer
Bill Payne, Interim Administrator of Public Works
Donald Stone, Interim Deputy Administrator of Public Works
Dennis Malone, Assistant City Engineer
Charlotte Hicks, Director of Facilities
Jim Arnette, Tennessee Local Government Audit

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AUDIT PURPOSE

This audit was conducted in accordance with the Office of Internal Audit's 2021 Audit Agenda. The objectives of this audit were to determine if:

- The policy and procedures for facilities maintenance provide adequate internal control to safeguard assets and ensure compliance with laws and regulations; and,
- The policy and procedures for facilities maintenance are being adhered to.

BACKGROUND

The Facilities Management Division of Public Works provides facility management, building maintenance and custodial services primarily for the City's downtown campus as well as the Community Centers. Other buildings such as the Champions Club Tennis Center, Family Justice Center, Fleet Services, Outdoor Chattanooga, Summit Softball Complex and Warner Park are also maintained by Facilities Management.

One of the most important and challenging activities in managing facilities is maintaining them. Maintenance is the work necessary to maintain the original, anticipated useful life of a fixed asset such as property and equipment.¹ Maintenance normally includes inspection, assessment, lubrication, adjustments, parts replacement, repairs, painting, etc. Maintenance is typically classified as preventive (planned), reactive (unplanned) or deferred (postponed).

The focus of this audit is on the City's facilities maintenance process performed by the Facilities Maintenance Division of Public Works. As such, the scope of the audit does not cover areas such as custodial services, safety and security. Additionally, the facilities maintenance for Police, Fire, Parks, Libraries, Tivoli Theatre and Memorial Auditorium are handled separately and are not included as part of this audit.

¹ Rosario and Sekula, The Facility Manager's Field Guide, page 60.

Financial Information

	Exhibit 1: Expenditures (\$1,000's)				
	Actual 2018	Actual 2019	Actual 2020	Actual 2021	Budget 2022
Facilities Management	290	203	256	349	798
Building Maintenance	1,854	1,914	2,464	1,996	2,108
Total	2,144	2,117	2,720	2,345	2,906

Source: Budget Ordinances

FINDINGS AND RECOMMENDATIONS

Update policies and procedures.

The *City of Chattanooga Internal Control Manual* and the Tennessee Comptroller of the Treasury’s *Internal Control and Compliance Manual* both indicate policies should be periodically reviewed and updated as necessary. Policy and procedures review and revision are an important part of effective management.

The *Department of Public Works Policy: Facilities Management: DPW17* was last updated effective July 21, 2020. A notation on the policy indicates the next review date should have been July 1, 2021. The July 2020 policy is still currently being used.

After reviewing the City’s current policy and comparing it to other entities policies and procedures, we noted the following sections that should be considered for inclusion:

- Service Level Agreements
- Maintenance Standards
- Record Retention Requirements

Service Level Agreements describe measurements against which the service or product provider will be evaluated. These measurements should also include target goals.² Organizations such as R.S Means estimate facilities maintenance standards such as man-hours, including average, minimum and maximum.³

² Rosario and Sekula, “The Facility Manager’s Field Guide”, page 295.

³ Liska, “Means Facilities Maintenance Standards”, pages 547-551.

Stakeholders in the maintenance industry establish standards to reduce safety risks, increase asset reliability, and enhance efficiency in operations. As organizational maintenance needs and data mediums change, teams must continually adapt their approaches. Such flexibility enables maintenance departments to determine which standards are most applicable to their unique needs.⁴ Industry institutions such as the International Organization for Standardization (ISO) publish official maintenance standards as recommended best practices.

Record retention is vitally important to track facilities maintenance history to make future decisions using the documentation on file. Without consistent recordkeeping, maintenance may be needlessly repeated, forgotten or occur at irregular intervals. Carefully kept records indicate when it is time for an inspection, what repairs have been made and what needs to be done.⁵

Recommendation 1:

We recommend Facilities Management review and update the *Department of Public Works Policy: Facilities Management: DPW17*. Consideration should be given to including sections on service level agreements, maintenance standards and record retention specific to facilities maintenance.

Auditee Response: *We concur with the audit finding and recommendation.*

Accurate information on City facilities is needed.

Section 17.4, Condition Assessment, of the *Department of Public Works – Facilities Management Policy*, states that a general inspection of each building will be conducted on an annual basis. Items needing repair will be documented and entered into the work order management system. The American Public Works Association (APWA) encourages condition assessment surveys of all structures, facilities and assets, the results of which would be used in planning needed maintenance and construction programs.⁶

⁴ <https://www.getmaintainx.com/learning-center/maintenance-standards-definition/>, “What Are Maintenance Standards”.

⁵ <https://gesrepair.com/record-keeping/> “Why Your Company Should Make Record-Keeping a Top Maintenance Priority”.

⁶ *Quality Management of Public Facilities and Assets*, Guidance Position Statement, American Public Works Association, February 1, 2015.

A facility condition assessment has not been performed in several years. The last facility condition assessment was performed during 2014-2015 and was only for Youth & Family Development buildings. Additionally, Facilities Maintenance does not have an accurate list of the buildings they are responsible for maintaining, as well as their square footage and replacement value. Along with operating cost data, this information can be used to benchmark the resources needed for facilities maintenance.

Benchmarking is a process that involves the input of operating costs data into a system in order to compare performance with a peer group.⁷ Cost per gross square foot can be compared to other local governments. Also, another way to evaluate repair and maintenance costs is to calculate it as a percentage of aggregate current replacement value of those facilities.⁸ The results again can be compared to other local government benchmarks.

This data can also be used to determine the appropriate staffing levels for maintenance. Since labor costs generally comprise the largest component of the maintenance budget, usually between 75 and 85 percent, facility managers are often asked to justify their maintenance staffing levels.⁹ Gross square feet per worker can be compared to other local government benchmarks.

We did not find this lack of information necessarily effected Facility Management's ability to perform repairs and maintenance; however, it does hinder the ability to take a comprehensive approach to facilities maintenance, including a fully functional preventive maintenance program.

Recommendation 2:

We recommend Facilities Management plan and perform regular condition assessments for facilities to ensure they are being maintained properly.

⁷ <https://www.fmlink.com/articles/justifying-operating-budget/>, FM Benchmarking, "Justifying Your Operating Budget".

⁸ <https://www.nap.edu/read/9226/chapter/3>

⁹ <https://www.fmlink.com/articles/benchmarking-maintenance-staffing/>, FM Benchmarking, "Benchmarking Maintenance Staffing".

***Auditee Response:** We concur with the audit finding and recommendation.*

Recommendation 3:

We recommend Facilities Management determine the proper staffing level and maintenance budget based on the building's square footage and replacement level.

***Auditee Response:** We concur with the audit finding and recommendation.*

Asset Management System could be more effectively used.

According to facility management employees, even though they have had an asset management system (Cityworks) for several years, during the audit period, they only used a service request management system (Accela) to track repair and maintenance requests. They indicated the asset management system (Cityworks) was not being properly set up as the primary hindrance to using the system. They resumed using Cityworks during July 2021, after the audit commenced.

Without using an asset management system, it is difficult to know whether you use your resources effectively and efficiently. Additionally, it is challenging to make strategic decisions, without having a record of past and present performance.

Recommendation 4:

We recommend Facilities Management continue the implementation and use of its asset management system (Cityworks).

***Auditee Response:** We concur with the audit finding and recommendation.*

Enhancements are needed in the management system close-out process.

According to section 17.7a. of the *Facilities Management Policy: Repair and Maintenance Quality*, "The Division Manager of Facilities or designee shall conduct regular, random inspection of repairs completed in each facility to ensure they have been performed to the proper standard."

A sample of 49 of 809 total requests were examined in the service request management system (Accela). All 49 of the selected requests were recorded as "COMPLETED" in the system. The employee making the request was contacted and if needed, documentation for the

selection was examined. Of the 49 requests sampled, 39 (80%) were completed satisfactorily, 7 (14%) were not completed satisfactorily and 3 (6%) were actually never completed.

Closing out service requests prematurely or closing out unsatisfactory jobs impacts Facility Management's ability to analyze data and make informed decisions. Additionally, satisfactorily completed maintenance results in savings over time as assets last longer and cause fewer interruptions in operations.

Recommendation 5:

We recommend Facilities Management should review and enhance their close out process to ensure unsatisfactory and incomplete service requests are not closed out. The resumption of Cityworks (asset management system) should help correct the close out issue (See Recommendation 4).

***Auditee Response:** We concur with the audit finding and recommendation.*

The preventive maintenance program should be optimized.

According to the Association of Physical Plant Administrators (APPA), preventive maintenance (PM) should be between 65 to 85% of total maintenance. Based on interviews with facility management employees, PM is approximately 5 to 25% of total maintenance. Sufficient data was not available or provided to determine the actual PM percentage of work requests.

Facilities Management performs little preventive maintenance, instead focusing considerably more on corrective repairs. Lack of sufficient preventive maintenance usually results in operational problems and costs more in overtime pay, or even having to contract outside workers to make repairs and restore services. Proper preventive maintenance should result in significant long-term savings.

Recommendation 6:

We recommend Facilities Management optimize its PM program and set realistic goals to measure progress. The resumption of Cityworks (asset management system) should help correct the preventive maintenance issue (See Recommendation 4).

***Auditee Response:** We concur with the audit finding and recommendation.*

Monitoring is key to reducing energy consumption.

According to section 17.12.a. of the *Facilities Management Policy: Energy Consumption Reports*, “Energy consumption reports are prepared by the Director of Sustainability for each facility to assess energy consumption trends and determine the effectiveness of implemented energy-saving measures. Reports are reviewed with the Division Manager of Facilities and Facility Operations Manager monthly.”

Facilities Management did not advise the Director of Sustainability that the policy was completed and in effect. As a result, the Director of Sustainability was not sure the facilities management policy had been formalized, and did not prepare the monthly energy consumption reports.

Because the monthly energy consumption reports were not prepared, Facility Management did not analyze energy consumption trends and was unable to make informed decisions about implementing energy-savings measures.

Recommendation 7:

We recommend Facilities Management monitor energy consumption in order to develop and implement energy conservation programs.

Auditee Response: *We concur with the audit finding and recommendation.*

APPENDIX A: SCOPE, METHODOLOGY AND STANDARDS

Based on the work performed during the preliminary survey and the assessment of risk, the audit covers the Public Works facilities maintenance operations from July 1, 2020 to June 30, 2021. When appropriate, the scope was expanded to meet the audit objectives. Original records as well as copies were used as evidence and verified through physical examination.

To accomplish our audit objectives, we reviewed policies and procedures, interviewed staff, analyzed the service request management system (Accela) data, documented and evaluated the internal control process, and sampled service request management system entries for compliance with established procedures. We compared departmental policies and procedures to operations.

The sample size and selection were statistically generated using a desired confidence level of 90 percent, expected error rate of 5 percent, and a desired precision of 5 percent. Statistical sampling was structured in order to infer the conclusions of test work performed on a sample to the population from which it was drawn and to obtain estimates of sampling error involved. When appropriate, judgmental sampling was used to improve the overall efficiency of the audit.

We conducted this performance audit from July 2021 to November 2021 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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