

**DEPARTMENT OF PUBLIC WORKS
FACILITY MANAGEMENT DIVISION
AUDIT 14-02
MAY 21, 2014**



CITY OF TAMPA

Bob Buckhorn, Mayor

Internal Audit Department

Christine Glover, Internal Audit Director

May 21, 2014

Honorable Bob Buckhorn
Mayor, City of Tampa
1 City Hall Plaza
Tampa, Florida

RE: Department of Public Works, Facility Management Division, Audit 14-02

Dear Mayor Buckhorn:

Attached is the Internal Audit Department's report on the Department of Public Works' Facility Management Division.

Facility Management has already taken positive actions in response to our recommendations. We thank the management and staff of the Facility Management Division for their cooperation and assistance during this audit.

Sincerely,

/s/ Christine Glover

Christine Glover
Internal Audit Director

cc: Dennis Rogero, Chief of Staff
Sonya Little, Chief Financial Officer
Mike Herr, Administrator of Public Works & Utility Services
Irvin Lee, Director of Public Works
Ray Herbert, Building Services Superintendent

**DEPARTMENT OF PUBLIC WORKS
FACILITY MANGEMENT DIVISION
AUDIT 14-02
MAY 21, 2014**

/s/ Gary S. Chapman

Auditor

/s/ Christine Glover

Audit Director

**DEPARTMENT OF PUBLIC WORKS
FACILITY MANAGEMENT DIVISION
AUDIT 14-02**

BACKGROUND

According to its Policies and Procedures, Facility Management’s primary mission “is to perform the essential maintenance, repair, and alteration services necessary to make and keep the City of Tampa facilities operational and in compliance with legal requirements set forth in law or code.” “Priority is given to the operational preservation and reliability of the infrastructure and safety, environmental, and protective systems such as fire alarms and fire protection systems, lighting, elevators, plumbing, heating, cooling, ventilation and electrical systems and the performance of maintenance within program (preventative maintenance) of mechanical equipment.”

Facility Management provides maintenance and repair services for over 500 City buildings, ranging in size from multi-story office buildings to picnic shelters. In addition, Facility Management is responsible for maintaining over 3,300 building components such as HVAC equipment, fire systems, elevators, etc. To manage the work load, Facility Management uses WebTMA, which is a web-based application that captures, assigns, and tracks the results and costs of maintenance requests from user departments, facility inspections, preventive maintenance, and special projects.

STATISTICS

	<u>FY2011</u>	<u>FY2012</u>	<u>FY2013</u>
Personnel Services	\$2,428,520	\$3,309,293	\$3,299,733
Contractual Services	\$1,782,816	\$1,762,816	\$1,814,626
Other Services & Charges	\$3,140,732	\$3,768,806	\$3,500,764
Supplies, Materials & Equipment	\$694,636	\$726,980	\$624,636

Source: Oracle E-Business Suite

STATEMENT OF OBJECTIVES

This audit was conducted in accordance with the Internal Audit Department's FY2014 Audit Agenda. The objectives of this audit were to ensure that:

1. City facilities were adequately maintained and received periodic inspections.
2. Contracted preventive maintenance was performed and adequately monitored.

STATEMENT OF SCOPE

The audit period covered facility management activity that occurred from January 1, 2013, to February 28, 2014. Tests were performed to determine whether the Facility Management personnel were fulfilling their stated duties and responsibilities in an effective and efficient manner. Original records as well as copies were used as evidence and verified through observation and physical examination.

STATEMENT OF METHODOLOGY

To ensure City facilities were adequately maintained and received periodic inspections, a random sample of 30 facilities were physically inspected. Historic inspection reports were examined for all City facilities. To ensure contracted preventive maintenance was performed and adequately monitored, documentation supporting the completion of contracted maintenance and in-house contract monitoring was reviewed for a statistical sample of facility equipment.

For facility inspections, random sampling was used to improve the overall efficiency of the audit. For preventive maintenance, 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 used in order to infer the conclusions of test work performed on a sample to the population from which it was drawn. To achieve the audit's objectives, reliance was placed on WebTMA, Facility Management's web-based work order management application, which was previously determined to be reliable.

STATEMENT OF AUDITING STANDARDS

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

AUDIT CONCLUSIONS

Based upon the test work performed and the audit findings noted below, we conclude that:

1. City facilities were adequately maintained and received periodic inspections; however, Facility Management lacked a documented policy on the frequency of facility condition assessments.
2. While all life safety and major building components appeared adequately maintained during the audit period, outlying building components and associated equipment were not receiving adequate preventive maintenance.

NOTEWORTHY ACCOMPLISHMENTS

During the audit period, Facility Management reported the following (unaudited):

- Upgraded 5 HVAC systems – total project cost: \$105,000
- Upgraded various lighting and electrical systems at 11 locations to achieve energy savings of up to 56% – total project cost: \$382,000
- Upgrade/re-roof roof systems at 12 locations (cool roof systems installed at some) – total project costs \$674,000
- Remodel/upgrade projects at 4 locations – total project costs: \$211,000
- Upgrade paint at 4 locations – total project cost \$35,000
- Establish and renew 8 city-wide contracts for various services – contract total: \$3,750,000

While the findings discussed below may not, individually or in the aggregate, significantly impair the operations of the Facility Management Division, they do present risks that can be more effectively controlled.

FACILITY CONDITION ASSESSMENT POLICY

STATEMENT OF CONDITION: Facility Management does not have a policy on how often facility condition assessments should occur. Based on a random sample of 30 City facilities, it appears assessments were occurring every five years and being supplemented with contracted and more frequent inspections and preventive maintenance of specific building components (HVAC, roofing, fire systems, elevators, etc.). Inspections were performed on the sampled facilities. For the most part City facilities appeared adequately maintained; however, maintenance issues were identified at four facilities.

CRITERIA: All buildings and building components deteriorate with age and exposure to the weather. Routine inspection and scheduled maintenance help to extend their useful life. A facility management program encompasses a broad range of services required to ensure facilities function for the purposes intended and achieve their expected useful life. One aspect of a facility management program is the performance of a periodic facility condition assessment, which identifies future work needs and critical conditions that need to be addressed immediately.

Research provided little evidence on how often facility condition assessments should occur. There does not appear to be any industry standards or best practices. At the beginning of the audit, Facility Management indicated it was a goal to perform assessments every two years, but due to limited resources, this was not accomplished. One federal agency was identified that performs condition assessments every five years. Another divided its facilities into risk categories with inspection frequencies based on that risk assessment.

CAUSE: Reliance is placed on the users to notify Facility Management when maintenance issues arise. When this does not occur, minor issues could develop into expensive repairs. While Facility Management's Policies and Procedures manual provides adequate guidelines to employees on certain day-to-day operations, it does not address the proactive aspects of its facilities management program, such as preventive maintenance, which includes periodic facility condition assessments.

EFFECT OF CONDITION: Because users cannot always be relied on to report maintenance issues, periodic facility condition assessments are an important part of any facility management program. Without them, buildings and building components will have shortened useful lives and may incur significant repair costs that could have been avoided.

RECOMMENDATION 1: Because limited resources dictate how often facility condition assessments can be performed, Facility Management should develop a facility inspection program based on the type of facility, its use, and potential for deterioration. This assessment will help determine how often City facilities should be inspected and evolve into a preventive maintenance policy that should be documented in its Policy and Procedures manual.

MANAGEMENT RESPONSE: CONCUR. A written building inspection policy has been included in the Facility Management's Policy and Procedures requiring all major (downtown facilities) and high usage facilities (such as Community Centers) on a 1-year inspection cycle

and all other facilities on a 2-year inspection cycle. Inspection on major building components (such as roofs, HVAC equipment, elevators, and life safety equipment) will continue on their current inspection schedule. Facility Management will continue to request additional personnel and monetary resources through the budget process to address the increased inspections.

REACTIVE VERSUS PREVENTIVE MAINTENANCE

STATEMENT OF CONDITION: While all life safety and major building components appeared adequately maintained during the audit period, outlying building components and associated equipment were not receiving adequate preventive maintenance. WebTMA, software used by Facility Management to manage and schedule maintenance and repair activities, contained over 3,300 pieces of equipment. A statistical sample of the equipment was tested to determine whether building components and associated equipment received periodic preventive maintenance. The sample did not differentiate between major and outlying buildings or life safety components. Out of the 59 pieces of equipment sampled, 26, all life safety components or under a maintenance agreement, received the recommended preventive maintenance.

Due to limited resources, Facility Management focused its preventive maintenance efforts on the City's major buildings and their critical systems and performed reactive maintenance on the components of outlying facilities. Facility Management recognized the associated risks and costs of reactive maintenance and in early FY2014, took steps to correct the deficiency by securing contractors to perform regularly scheduled preventive maintenance. These efforts are on-going.

According to data obtained from Facility Management, nearly half (47%) of the building components contained in its inventory have reached the end of their useful lives. Without capital outlays, uneconomical repairs will have to be performed to keep these components operational. Reactive maintenance only shortens the life of equipment, resulting in more frequent replacement.

CRITERIA: The American Heritage Dictionary defines maintenance as “the work of keeping something in proper condition.” The purpose of performing preventive maintenance is to improve equipment life and to avoid or minimize breakdowns. According to a U.S. Department of Energy publication “data obtained in many studies over the past decade indicates that most private and government facilities do not expend the necessary resources to maintain equipment in proper working order. Rather, they wait for equipment failure to occur and then take whatever actions are necessary to repair or replace the equipment.”¹ The publication estimated that a 12% to 18% cost savings could be realized by performing preventive maintenance over a reactive maintenance program. In addition to reactive and preventive maintenance, the publication describes predictive and reliability centered maintenance methodologies. Each has its own advantages and disadvantages.

CAUSE: Facility Management did not have sufficient personnel resources to perform recommended preventive maintenance on all City building components and associated equipment.

EFFECT OF CONDITION: All equipment has an operational or useful life. By not performing the manufacturer's recommended periodic maintenance, that life is shortened. In

¹ U.S. Department of Energy, Federal Energy Management Program, “Operations & Maintenance Best Practices: A Guide to Achieving Operational Efficiency,” August 2010, page 49.

addition to the costs of having to replace equipment more often, equipment failures result in reduced efficiencies of the personnel affected by the failed equipment.

RECOMMENDATION 2: Facility Management should continue its efforts to ensure all City building components and associated equipment receive the manufacturer's recommended preventive maintenance.

MANAGEMENT RESPONSE: CONCUR. With the economic downturn over the past several years and associated budget and personnel reductions, preventive maintenance on air conditioning equipment in some of the outer buildings were deferred to meet budget thresholds. In October 2013, Facility Management with the assistance from our Budget Office was able to secure funding to award a city-wide HVAC preventive maintenance contract to Johnson Controls, Inc. This contract is providing preventive maintenance to all HVAC equipment, which will prolong equipment life and improve equipment efficiency.

Our current operational cost for the 7.7 million square feet maintained is \$1.437 per square foot; industry standard is \$2.831 per square foot. Facility Management will continue to request additional personnel and monetary resources through the budget process to align square footage maintenance cost with the current industry standard.

AUDITORS' COMMENT

The figures presented in management's response to Recommendation 2 were unaudited.