

**Construction Management Oversight Audit
June 2016**

Lori Brooks, City Auditor
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City Auditor's Office

June 1, 2016

Honorable Mayor and Members of the City Council:

I am pleased to present the Construction Management Oversight Audit Report. The purpose of the audit was to review and evaluate the oversight of construction projects, to include efficient coordination and timely completion of construction activities.

Management's response to our audit finding and recommendation, as well as target implementation date and responsibility, is included following the report.

We would like to thank staff from the Public Works & Transportation and Water Utilities Departments for their full cooperation and assistance during the project.

Lori Brooks

Lori Brooks, CPA, CIA, CGAP, CRMA
City Auditor

Attachment

c: Trey Yelverton, City Manager
Theron Bowman, Deputy City Manager
Jim Parajon, Deputy City Manager
Gilbert Perales, Deputy City Manager
David Wynn, Interim Director of Public Works & Transportation
Walter Pishkur, Director of Water Utilities

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Executive Summary

As part of the 2016 Annual Audit Plan, the City Auditor's Office has completed an audit of Construction Management Oversight. 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. The audit objective was to review and evaluate the oversight of construction projects, to include efficient coordination and timely completion of construction projects.

The City Auditor's Office noted the following:

- Prior to the beginning of a construction project, citizens who reside within the project area are given an opportunity to meet with City personnel and the general contractor to discuss concerns or ask any questions they may have regarding the project.
- City inspectors are regularly on-site to observe construction activities and ensure compliance with contract specifications. It was noted the inspection staff is well qualified to perform these duties based on documented education, experience and certifications/training.
- Project meetings, attended by appropriate City personnel and general contractor personnel, are held on a weekly/bi-weekly basis to discuss project status and any other concerns or questions.
- A consultant performs tests of pavement (concrete and asphalt), HMAC (hot mix asphalt) and soils to ensure quality work is being produced.
- The Street Tracker site, which can be accessed on the City website, allows citizens to review street construction activities, including street closures, future street projects and FAQs. Further, citizens may also file a complaint or concern related to street issues. The Water Utilities site also includes information related to water and sewer projects.

We noted an opportunity for improvement in the following area:

- Documentation of citizen complaints and/or concerns regarding construction projects

Details of audit findings, conclusions and recommendations are included in the following report.

Audit Scope and Methodology

The audit was conducted in accordance with generally accepted government auditing standards and included an assessment of internal controls. Specifically, the following methodology was used in completing the audit.

- Interviewed personnel responsible for the oversight of construction activities
- Reviewed operational processes related to construction activities
- Reviewed policies and procedures related to the oversight of projects
- Selected a sample of construction projects to review
- Reviewed information within the e-Builder (Project Tracking) system
- Reviewed daily inspection records prepared by the construction inspectors
- Reviewed construction materials testing reports prepared by the consultant
- Insured that inspectors were well-qualified to perform inspection duties
- Determined the amount and type of information available to citizens on the City website
- Reviewed citizen complaints and their resolution

Background

This audit was requested by the City Council as a Special Project for the purpose of reviewing management's oversight of construction projects, specifically related to street projects. It was anticipated that in addition to evaluating the adequacy of management's oversight of construction projects, the audit would help to provide citizens with a better understanding of how construction projects are monitored by City management. As a result, the Construction Management Oversight audit was added to the FY2016 Audit Plan.

For this audit, a judgmental sample of six projects was selected for review and evaluation. The projects were selected based on significance of their impact on residential areas and citizen travel.

Audit Results

Projects selected

For the purpose of this audit, the following projects completed during FY14 and FY15 were selected for review:

<u>Name of Project</u>	<u>Lead Department</u>
2010 Residential Rebuilds	PW&T Streets
Center Street (Arkansas to Nottinghill Gate)	PW&T Streets
McKinney Street Drainage Improvements	PW&T Storm Water
Willow Bend/Thousand Oaks Drainage Improvements	PW&T Storm Water
Southridge and Inwood Water and Sanitary Sewer Renewals	Water Utilities
Brandyridge, Britannia Gardens and Arbrook Heights W&S Renewals	Water Utilities

Information Available to Citizens

In November 2015, the Street Tracker program was made available to citizens on the City website (Public Works & Transportation). Via Street Tracker, citizens have the ability to view a significant amount of information related to roadway CIP projects. The available information includes:

- Current and future street construction projects
 - includes the name and which section of the street is to be reconstructed, the type of construction to be performed, the name of the engineering design company, the beginning and projected completion date, and a project map
- Current street closures
 - includes the name and which section of the street will be closed, the reason for the closure, the date of the closure, and the estimated re-opening date
- Interactive map that displays all Public Works & Transportation (PWT) and joint PWT/Water Utilities construction projects (streets, drainage, water/sewer)
 - click on the icon on the map and a pop-up window shows the name of the project and describes the construction that will be performed at that location
- Funding for street maintenance projects – i.e. whether the project is included in the annual CIP Bond Program or funded with the quarter-cent sales and use tax
- Financial summary of the most recent (2014) Bond Election
- Multiple year construction calendar
- Link to report a street problem

PWT will set up individual web pages for roadway projects that significantly impact the travelling public. PWT also will provide a web page for projects that require public input on the project.

The Water Utilities Department also has a website that offers citizens information related to construction projects. For each construction project, the website includes the name of the projects, along with the following information:

- A copy of the Public Meeting Invitation that includes the meeting notice, a copy of the project map and a description of the project
- A presentation of the project that includes the names and phone numbers of City contact personnel and the general contractor, and a more detailed description of the project
- Regular project updates to keep citizens informed about progress

All of this information related to street, drainage and water utility projects is available to the citizens of Arlington at any time.

Duration of Construction

The number of days allowed for a construction project is the result of a cooperative effort. First, the consulting engineer reviews the project and gives an estimate of the number of calendar days to complete the project. Second, the project engineer and the assigned inspector review the estimate for reasonableness. A Pre-Bid meeting is held with potential contractors to review the plans and offer input regarding the estimate. Ultimately, the decision about the number of days (to be written into the contract) is the responsibility of the lead department on the project. The City strives to establish a time schedule that is not too lengthy (i.e. the contractor may leave the site to work on another project) or too short (i.e. the contractor has to use additional crews to get the job done on time). The goal for setting the time for completion of projects is to provide a fair number of days to accomplish completion within a reasonable timeframe. PWT provides a bonus for each day the contractor finishes early, and liquidated damages for each day the contractor finishes the job late. The daily amounts for these are the same. Water Utilities only uses liquidated damages.

Pre-Construction Meeting

A Pre-Construction meeting with the contractor, sub-contractors, utility companies, and city staff is held prior to the start of every project. This meeting is to coordinate any known issues prior to the start of construction. In this meeting, the city staff will inform the contractor of the city's expectations relative to the project. The contractor provides a schedule for construction.

Construction Briefing Meeting

Prior to the beginning of construction, PWT holds a construction briefing meeting, along with the Water Utilities Department (WU), if water/sewer line renewals are included in the project. This meeting is designed to provide citizens with an opportunity to review the construction plan and ask any questions or discuss any concerns they may have regarding the project. The meetings are normally held at City Hall, and the following individuals within PWT and WU are in attendance (depending on the scope of the project): Engineering Operations Manager, Project Manager, Inspector, and Construction Services Manager, along with representatives from the general contractor. The council member representing the district, in which the project will occur, is often in attendance as well.

Each resident within the construction project area is mailed a Construction Briefing Meeting Notice. The notice includes the name and description of the project, the streets involved in the project, a project map, the construction start date and proposed completion date, and the names and phone

numbers of City contact personnel, and the general contractor. For this audit, six projects were selected for review, and in each case residents within the project area were sent the meeting notice. In addition, a meeting notice is placed in the Fort Worth Star-Telegram several days prior to the meeting date.

Additional Notifications to Residents

If during construction, the water needs to be turned off for an extended period of time or the street needs to be cleared of all vehicles for a certain period, citizens are notified. A door hanger is placed on the front door of each residence that will be affected by the specific activity. The notice states what service will be interrupted (water, travel, etc.), along with the date and time period of the interruption.

e-Builder Documentation

The e-Builder software is the project tracking system that is used to retain documentation related to all construction projects. During the review of the six projects selected for this audit, it was noted that each project folder in e-Builder contained a significant amount of documentation, which includes information such as, but not limited to:

- Design Phase – staff reports; design company proof of liability insurance and invoices
- Construction Phase – contract modifications/contingencies/addendums/change orders; pay estimates; staff reports; plans and specifications; bid documentation; contractor proof of liability insurance; final contract documents; pre-construction meeting; construction briefing meeting; construction schedules; and construction photos
- Inspections – consultant inspection testing results (concrete, HMAC and soils) and city inspector daily diary logs
- Right-of-Way – correspondence with franchise utilities and ROW agreements and payments to property owners

Project Oversight

According to City personnel within the Public Works & Transportation Department and the Water Utilities Department, all horizontal CIP projects (i.e. street maintenance, storm water drainage, and water/sewer renewals) are managed similarly. This statement was confirmed through the review of specific projects.

In most instances, CIP projects are joint projects, which include at least two or all of the departments mentioned above. The department/division that initiates the project, whether it is Streets, Storm Water or WU, is responsible for oversight of the project. The responsible division will assign a lead Project Manager (PM). Any other division(s) involved will assign a “secondary” PM from within that department to oversee the respective portion of the project. However, the lead PM is ultimately responsible for the entire project.

In addition, each project is assigned an inspector. The inspections group within the PWT Department is responsible for the inspection of all horizontal CIP projects. There are currently 13 inspectors in the department. With the exception of two (who have qualifying experience and

education, but are in the process of obtaining their Class C Water License) all have the required education, experience, training, licenses, and certifications to perform these duties. Each inspector is required to complete a daily diary, which is part of the e-Builder system, to record the daily activities performed on the construction site. After a review of the daily diaries for the six projects selected, it was determined that the inspectors are on-site monitoring construction activity for 65-100% of the construction days available. On a regular basis, the construction inspections supervisor reviews the diaries to ensure they are being completed accurately and timely, and to track progress. The number of visits may depend on the complexity of the project, the type of work being performed, and whether there are complications.

Quarterly meetings with utility franchisees help to coordinate current work being performed and inform franchisees about future projects. Prior to the beginning of a specific project, a project utility meeting is held to discuss that particular project. When franchise utilities are present within a project site, the City sends the franchisee a letter 120 days prior to construction, which advises them their utilities need to be relocated by a certain date. If there is a problem relocating the utilities and this process is not completed by the franchisee in the time-frame designated, the contractor could request additional days be added to the contract.

During construction, City staff (PM, Inspector, Engineer) meet with the contractor, usually on-site, on a weekly or bi-weekly basis. During these meetings, they discuss items such as construction progress, utility conflicts, citizen concerns/complaints and any questions about the project plan. The frequency of the meetings depends on the complexity of the project and if they encounter any complications.

A consulting company (TEAM Consultants, Inc.) is responsible for performing tests of construction materials, including concrete, hot mix asphalt and soils. These tests are performed on a regular basis to ensure that materials and construction specifications are being met.

Citizen Complaints

The majority of citizen complaints related to CIP projects are received by the Public Works & Transportation or Water Utilities Departments either by phone or email. Many complaints are actually received by the City inspectors while on-site or are communicated to the construction crew while on the job. A small percentage of complaints are received through the Action Center.

According to PWT and Water Utilities personnel, most complaints are minor (about 90%) and can be handled by the inspector in the field. However, others must be escalated to the Project Manager for review and approval. If the complaint results in some type of design change, the change must be approved by the Project Manager or Department Director. In any case, department staff stated they attempt to address and/or resolve the complaint as quickly as possible, which is usually the same or next day, and notify the resident of the result.

During the review of the six projects selected, it was noted that adequate documentation of citizen complaints, within the e-Builder system, was maintained for only one of the six projects. This deficiency will be discussed further in the Detailed Audit Findings.

Detailed Audit Findings

1. Citizen complaints are not being formally documented.

Citizen complaints are one way in which the City obtains feedback from its citizens regarding their satisfaction with construction projects performed. When a complaint is received, it is important that the City respond to the complaint in a timely manner, adequately document the complaint, and advise the complainant of the status.

As noted earlier, the majority of citizen complaints related to CIP projects are received by the Public Works & Transportation or Water Utilities Departments either by phone or email. Many complaints are actually received by the City inspectors while on-site or are communicated to the construction crew while on the job. A small percentage of complaints are received through the Action Center.

During review of the six projects selected, it was noted that adequate documentation of citizen complaints, within the e-Builder system, was maintained for only one of the six projects. Thorough documentation was noted in the Willow Bend/Thousand Oaks Drainage Improvements project. Within the Inspector's Daily Diaries, we noted 33 daily entries that mentioned a citizen complaint (name and address, reason and resolution of the complaint). In addition, we identified over 200 emails within the e-Builder folders containing citizen complaints or concerns. Each email contained the initial citizen complaint/concern, along with the response from City personnel. For the remaining 5 projects, there was very little or no documentation of citizen complaints.

Information that was entered into e-Builder related to complaints included items, such as citizen name and address, date of the complaint, reason for the complaint and the final resolution.

Consistent and sufficient documentation of citizen complaints may assist with monitoring citizens' satisfaction with projects, identifying lessons learned and areas for process improvement, and evaluating the City's overall satisfaction with general contractors.

Recommendation:

- 1. The City Auditor's Office recommends that the Directors of Public Works & Transportation and Water Utilities establish a system for ensuring citizen complaints/concerns related to City construction projects are documented consistently and sufficiently.***

**CITY OF ARLINGTON
CONSTRUCTION MANAGEMENT OVERSIGHT AUDIT
AUDIT RECOMMENDATIONS AND RESPONSE**

AUDIT RECOMMENDATION	CONCUR/DO NOT CONCUR	MANAGEMENT’S RESPONSE	RESPONSIBLE PARTY	DUE DATE
<p>1. The City Auditor’s Office recommends that the Directors of Public Works & Transportation and Water Utilities establish a system for ensuring citizen complaints/concerns related to City construction projects are documented consistently and sufficiently.</p>	<p>Concur</p>	<p>Public Works and Transportation and Water Utilities will implement a complaint tracking system for capital projects. This tracking system will be used to improve our service to citizens.</p>	<p>Public Works and Transportation Assistant Directors for Engineering and for Stormwater Water Utilities Assistant Director</p>	<p>9/1/2016</p>